

# Charting the path to a developed India: Viksit Bharat 2047

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## NCAER Working Paper

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### Abstract

How can India leverage its potential and implement effective strategies to become a developed nation by 2047? In his 2022 Independence Day speech, the Prime Minister (PM) outlined an ambitious vision for transforming the nation into a developed country by 2047—'Viksit Bharat (VB)'. It aims to reshape India into a technologically advanced, economically strong and socially inclusive nation. This paper delves into the various aspects of VB, examining the critical strategies and policies required to achieve this transformation. It highlights significant progress in green energy, infrastructure development and socio-economic programmes and discusses the necessary reforms to achieve Viksit Bharat and a \$30 trillion economy. The goal of achieving a \$30 trillion economy by 2047 is a cornerstone of the VB vision, encompassing a broad vision for holistic development, renovating India into a prosperous, inclusive and sustainable nation. The study explores India's unique opportunities in the context of its demographic dividend, technological advancements and socioeconomic initiatives. By drawing insights from historical transformations, the paper presents a strategic roadmap for India, emphasising the importance of coordinated efforts across energy, infrastructure, agriculture, services and governance sectors. It underscores the interlinked nature of these initiatives and the vital role of governance, technology and economic growth in realising 'India@2047'—India's future on the occasion of its 100th anniversary of independence. This paper provides a comprehensive guide for policymakers, outlining the path to a prosperous and developed India.

**Keywords:** Viksit Bharat; Energy efficiency; Sustainable agriculture; Enhanced infrastructure; Inclusive service and governance

**JEL codes:** O10, O22, R11, Q01

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## 1 Background

Nations that have harnessed pivotal economic moments have historically achieved rapid growth. Japan, for example, underwent a remarkable transformation post-World War during the 1950s-60s, often referred to as the 'Japanese Post-War Economic Miracle', establishing itself as a leading global economy. Similarly, Germany's *Wirtschaftswunder* (economic miracle) during the 1950s-70s transformed it into a robust economy with a strong manufacturing base and technological advancements. Singapore evolved from a developing nation to one of the richest between the 1960s-70s, also marked by technological transformation. South Korea, from the 1960s-90s, transitioned from an agrarian economy to a leading industrial nation, a period known as the Miracle on the Han River.

India now stands at a similar turning point fuelled by demographic advantages, technological advancements, urbanization and economic reforms, ready to leverage its potential for a significant leap forward. After the Lok Sabha election results, the Indian PM has taken office for the third time, leading the NDA, poised to see through their economic promises. The VB vision they champion is something citizens have heard for about two years now. But what does this VB mean for India? And why is the ruling party emphasising it so strongly? The past decade has highlighted India's capacity for substantial transformation in sectors such as technology, healthcare, education, renewable energy and infrastructure. Sports initiatives like *Khelo* India have significantly improved India's performance in international competitions.

The rapid establishment of ₹40cr *Jan Dhan* accounts has ensured widespread financial inclusion. India's COVID-19 vaccination programme, supported by the COWIN platform, was the largest globally, showcasing India's capabilities to harness digital technology for public health. The *Chandrayaan* Mission demonstrated India's prowess in space technology, achieving significant scientific milestones with limited budgets. India has surpassed its Paris Agreement targets, harnessing 40% of its power capacity from non-fossil fuel sources of energy. India's Digital Public Infrastructure, including the *Aadhaar* and UPI, has rapidly expanded, making India a leader in digital innovation. Infrastructure expansion, particularly in railways and highways, has significantly accelerated. India's leadership in international forums like the G20 and the establishment of the International Solar Alliance reflect its rising global influence (Baruah, 2019). India is thus at a pivotal moment, poised for a transformative leap.

In his 2021 Independence Day address, the PM articulated his VB vision for *Amrit Kaal* and 2047, when India will mark its centenary of independence. He called upon the nation to seize new opportunities, achieve new resolutions and advance with assurance. Emphasising collective effort and teamwork, he underscored their importance for the nation's progress. In her Union Budget 2022-23 speech, the Finance Minister outlined the government's VB objectives for the *Amrit Kaal* (from India at 75 to India at 100).

These goals include: (1) integrating macroeconomic growth with microeconomic welfare initiatives; (2) promoting the digital economy, fintech,

technology-driven development, energy transition and climate action; and (3) encouraging a virtuous cycle of private investment, supplemented by public capital investment (GOI, 2022a). The VB objectives thus aim for India to be a fully developed nation by 2047, marking 100 years of independence. The PM has stated that the core objective of the VB vision is to foster inclusive economic participation among all citizens. A crucial element of this initiative is the ambitious goal of making India the world's third-largest economy within the next five years.

The VB vision outlines aspirations for economic growth, sustainable development, ease of living, ease of doing business improvements, enhanced infrastructure and strengthened social welfare initiatives. The vision also accounts for four significant international factors expected to dominate by 2050: (1) the rising prominence of India and Africa on the global stage; (2) reflecting PM Modi's emphasis on the Global South at G20; (3) a world marked by growing affluence and polarisation; and (4) escalating climate crises; and a rapidly changing geopolitical landscape. Additionally, it considers the emergence of a 'phygital' future, where rapidly advancing digital technology reshapes the physical world to make human life easier, increase economic productivity and enhance overall efficiency (N. R. Singh, 2024).

The Union Budget for 2023-24, the inaugural budget of the *Amrit Kaal* (the 25-year period leading up to India's 100th independence anniversary, aligned with the transformative goals of VB), envisioned India as a technology-driven and knowledge-based economy with robust public finances and a resilient financial sector. It reiterated that the principle of *Jan Bhagidari* (a Government initiative aimed at promoting public participation in development and decision-making processes) through *Sabka Saath Sabka Prayas* (Emphasises inclusive development by encouraging collective efforts and public participation in India's growth initiatives) is vital (PIB, 2023a). By 2047, the VB vision aims to achieve: (1) a \$30 trillion economy with a per-capita income of \$18,000-\$20,000, underpinned by strong public finances and a robust financial sector; (2) world-class infrastructure and amenities in both rural and urban areas; (3) minimising government interference in citizens' lives while promoting the digital economy and governance; (4) developing global champions in various sectors through mergers or restructuring and fostering indigenous industry and innovation; (5) attaining self-reliance in defence and space sectors and enhancing India's global role; (6) promoting green growth and climate action by expanding green energy capacity and reducing carbon emissions; (7) empowering youth with skills and education, creating more employment opportunities; (8) collaborating with international R&D organisations to establish top-tier laboratories in India and positioning at least ten Indian institutions among the global top 100.

India's *Amrit Kaal* designed for VB signifies a period ripe for transformation, bolstered by extensive socio-economic infrastructure development. Initiatives such as *Samagra Shiksha* (Integrated program by the Indian government to ensure equitable and inclusive quality education from pre-primary to senior secondary levels), *Pradhan Mantri Kaushal Vikas Yojana* (Aimed at providing skill training and certification to enhance employability for India's youth) and the expansion of

universities and technical institutions have strengthened India's educational framework. The healthcare sector has similarly seen massive improvements in terms of increased access and better quality of services, with over 160,000 *Ayushman Bharat* centres and extensive immunisation programmes significantly enhancing public health metrics. Rural India has witnessed remarkable progress, nearing universal coverage in essential services like electricity, drinking water, banking and mobile connectivity. Initiatives like *Pradhan Mantri Garib Kalyan Anna Yojana* (A government initiative providing free food grains to the poor to ensure food security during crises) and MGNREGA (An Indian government program that guarantees 100 days of wage employment per year to rural households for unskilled labour) have provided substantial support to people experiencing poverty, while housing schemes have aimed at providing homes for all (PIB, 2024b).

Moreover, India's demographic dividend, with a youthful population and a median age of 29, presents an immense opportunity. With over 1.4 billion people and more than 40% below the age of 25, the demographic structure presents a substantial opportunity for economic growth. This young workforce, coupled with innovative government policies like Digital India and Startup India, has fostered a thriving startup ecosystem, positioning India as the world's third-largest startup hub. Advancing with the PM's VB vision to make India a developed country by 2047, the government is preparing an Action Plan and Vision Document, termed 'India@2047'. This national vision plan aims to steer India clear of the middle-income trap that has ensnared several nations at similar stages of development. The middle-income trap is a situation where a country attains a certain income level but struggles to transition to high-income status due to rising costs and declining competitiveness. These reforms will be crucial for transforming India into a \$30 trillion economy by 2047, with a per-capita income of \$18,000-\$20,000. The NITI *Aayog* is finalising the plan India@2047, which has been in development for nearly two years.

Further, India's share of global GDP has increased from 1.1% in 1991 to 3.5% in 2023, making it the world's fifth-largest economy (Inamdar, 2024). Despite this growth, none of the world's largest banks, contractors, legal consultancies or accountancy firms are Indian. VB-driven India@2047 seeks to change this by pushing various sectors and companies to become global champions and by developing the skills needed by India's young population to meet global demands. India is currently the world's fifth-largest economy, with a GDP of \$3.7 trillion and it is expected to surpass Japan and Germany by 2030. Rating agency S&P projects that India's nominal GDP will increase from \$3.4 trillion in 2022 to \$7.3 trillion by 2030. By 2030, India's GDP is forecast to exceed that of Germany, making it the second-largest economy in the Asia-Pacific region. Preliminary estimates from NITI *Aayog* suggest that in order to achieve the VB vision (Larrdis, 2023), India's economy will need to grow at an annual average rate of 9.2% between 2030 and 2040 and 8.8% between 2040 and 2047.

As India approaches 2047, the vision for VB and its contextual background requires unwavering commitment, innovative thinking and strategic leadership. A transformative agenda is essential to propel India towards its goal of becoming a developed nation. This vision encourages the youth to contribute ideas and actively

participate in nation-building, fostering a collaborative effort towards achieving a thriving and sustainable economy. The initiative invites youth across India to engage in the discourse on VB by contemplating how a developed India should look in 2047 across various dimensions and what actions are necessary to achieve these goals. The focus, as defined based on the 2023-24 Budget plans, spans five key themes: empowered citizens, a thriving and sustainable economy, innovation, science and technology, good governance and security and India's role on the global stage.

This paper, dedicated to understanding how to achieve VB, is structured as follows: Section 2 provides an overview of the energy sector, including the current status, future goals, key initiatives and projects; Section 3 discusses infrastructure development, highlighting major projects and investments; Section 4 covers agricultural transformation, focusing on sustainable practices, technological innovations, challenges and future outlook; Section 5 addresses the service sector and governance, detailing the growth of the IT and digital services sector and skill development; and Section 6 concludes with the ways forward and recommendations.

## **2 Energy and environment**

This section provides a comprehensive overview of the energy sector in India. It begins with an examination of the current status, detailing the energy mix, production capacities and consumption patterns. It then outlines the future goals set by the government and industry stakeholders, emphasising the shift towards green energy sources and sustainability. Key initiatives and projects are highlighted, showcasing the efforts being made to enhance energy efficiency, expand green energy infrastructure and ensure energy security for the nation.

### **2.1 Toward energy independence**

India currently relies on imports for 90% of its oil and 80% of its industrial coal (Abhyankar et al., 2023b). The volatility in global energy markets, as evidenced in recent years, strains India's foreign exchange reserves, leading to economy-wide inflation. The PM's dedication to Atmanirbhar Bharat aims to achieve energy independence for India by 2047. India's CO<sub>2</sub> emissions are projected to peak in the early 2030s, subsequently decreasing to around 800 million tonnes/year by 2047—equivalent to 85-90% progress towards achieving net-zero emissions (Menon, 2022). Energy security and independence are paramount, ensuring that India can meet its energy requirements reliably and sustainably while reducing reliance on external sources. Therefore, it is imperative to chart a course for VB to meet its escalating energy demands and attain nearly complete energy self-sufficiency by 2047.

Given that much of India's energy infrastructure is yet to be constructed, it is crucial to ensure that the majority of new energy assets are environmentally friendly. The government aims to install over 500 GW of non-fossil electricity generation capacity by 2030, achieving an 80% green grid by 2040 and reaching 90% by 2047 (PTI, 2023a). Nearly all new vehicle sales could be electric by 2035. Heavy industrial production would primarily shift towards using green hydrogen and

electrification, aiming for 90% of iron and steel, 90% of cement and 100% of fertilisers to be produced using these methods by 2047. Furthermore, India aims to position itself as a global hub for the production and export of green hydrogen, recognising the vast potential of hydrogen as a clean and versatile energy carrier capable of playing a pivotal role in decarbonising various sectors such as transportation, industry and power generation.

The transition to electric vehicles could reduce crude oil imports by over 90% (equivalent to \$240 billion) by 2047, while green hydrogen-based and electrified industrial production could decrease industrial coal imports by 95%. Lithium required for manufacturing new electric vehicles and grid-scale battery storage systems (approximately two million tonnes cumulatively between 2023-40) could be domestically sourced using newly discovered reserves (Shetty, 2023). In order to retain global competitiveness, Indian industries must also transition to green technologies such as green steel manufacturing, especially as major export markets like the European Union commit to carbon neutrality.

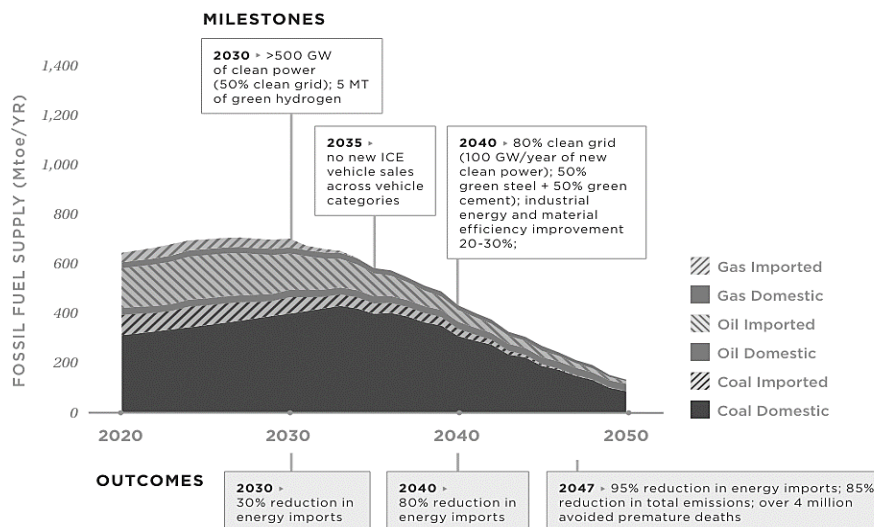
Taxes, duties and royalties from fossil fuels contribute around 12% of state and central government revenue. Despite an aggressive transition towards green energy, fossil fuel consumption and associated tax revenues are not expected to drop below 2020 levels until the mid-2030s. Green energy will diminish and safeguard India's energy expenses, as renewables, EV batteries and hydrogen infrastructure are capital assets with rapidly declining costs. A shift to electric transportation could result in net consumer savings of \$2.5 trillion (₹19 million crores) by 2047 (Abhyankar et al., 2023a).

## 2.2 Transforming energy landscape

Due to increasing needs for transportation, industrial electrification and the production of green hydrogen, the most energy-heavy sectors, there could be a nearly fivefold increase in electricity demand by 2050, rising from 1300 TWh/yr to over 6600 TWh/yr. Achieving this would necessitate a substantial escalation in the deployment of green energy to 40 GW/year by 2030, escalating to approximately 100 GW/year between 2030 and 2050. The deployment of green energy will require significant capital investment, with an estimated net additional outlay of ₹11-15 million crores between 2023 and 2047, compared to the BAU scenario. An aggressive transition towards green energy could prevent over 4 million premature deaths related to air pollution between 2023 and 2047.

The VB policy framework must be built upon five key pillars: implementing mandates for the deployment of commercial and cost-effective green technologies to leverage economies of scale, providing financial support for emerging technologies, engaging in long-term infrastructure planning, accelerating and scaling up domestic manufacturing and planning for a fair transition, as illustrated in Figure 1.

**Figure 1. Pillars of energy framework for VB**



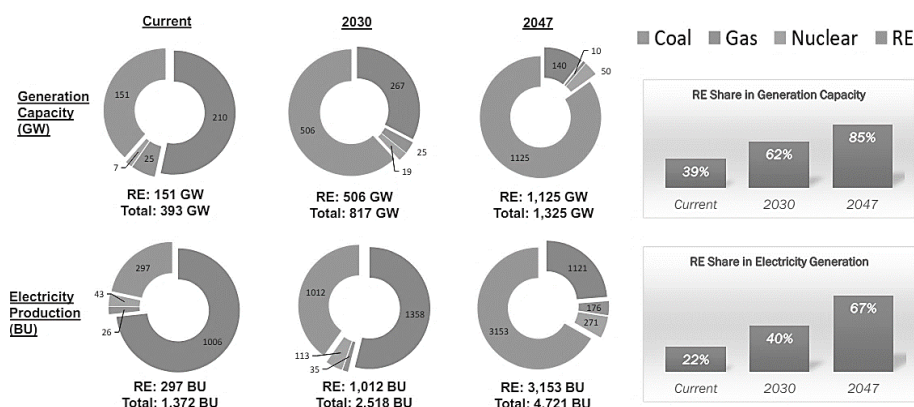
Source: Abhyankar et al. (2023a)

India has set forth an ambitious vision for 2047, with a focus on key objectives aimed at revolutionising its energy landscape. Simultaneously, there is a strong emphasis on advancing the decarbonisation of the energy sector, recognising the necessity to mitigate climate change by curbing greenhouse gas emissions.

Additionally, India is committed to achieving self-sufficiency in the manufacturing of green energy technologies, acknowledging the strategic significance of cultivating indigenous capabilities to drive innovation, create employment opportunities and enhance economic growth in the burgeoning clean energy sector (CEA, 2023).

At the recent COP-26 summit, the Indian PM outlined a set of ambitious goals to expedite the nation's transition to a low-carbon economy. These objectives encompass achieving net-zero emissions by 2070, augmenting the capacity of non-fossil energy sources to 500 GW by 2030 and ensuring that green energy constitutes 50% of the country's energy blend by the same year (PIB, 2023d). Furthermore, India aims to diminish its estimated carbon emissions by 1 billion tonnes by 2030 and decrease the emissions intensity of GDP by 45% compared to 2005 levels (PIB, 2022d), showcasing its resolve to pursue sustainable developmental pathways whilst simultaneously tackling climate change adversities (see Figure 2 for an overview).

**Figure 2. Shift in energy sources**



Source: CEA (2023)

### 2.3 CLEAN-India aspirations

The reference scenario outlines historical and recent trends in clean energy deployment, assuming progression on existing targets and commitments at the current pace of deployment. In alignment with these aspirations, the CLEAN-India scenario incorporates the potential for swift and cost-effective deployment of clean energy that is commercially viable today. It delineates a trajectory for green energy deployment that attains the current 2030 targets (over 500 GW capacity from non-fossil sources), 80% clean generation by 2040 and 90% by 2047. Additionally, it envisages nearly 100% electrified new vehicle sales across all vehicle categories by 2035, alongside a transition to green hydrogen and electrification in industrial production, replacing coking coal, natural gas and oil. It's imperative to grasp that the CLEAN-India pathway isn't a forecast; rather, it serves to illustrate a potential route towards achieving energy self-sufficiency. We include each scenario in detail (see Table 1).

**Table 1. Progress towards CLEAN-India**

<b>Sector</b>	<b>Policy Aspect</b>	<b>Reference Scenario (Original)</b>	<b>CLEAN-India Scenario (Modified)</b>
Power	Percentage of Carbon-free Electricity Production	In 2020, 23%; by 2030, 37% (equating to 39% of domestic power demand or 350 GW of clean energy); by 2040, 50%; by 2047, 60%.	Starting at 23% in 2020, it will rise to 46% by 2030 (meeting 50% of domestic power demand or 500 GW of clean energy), 80% by 2040 and reach 90% by 2047.
Appliance Energy Efficiency	Yearly Improvement in Energy Efficiency	From 2020 to 2030, about 2-3% annually; from 2030 to 2040, about 1-2% annually; from 2040 to 2050, approximately 0.5-1% annually.	Enhancements are projected at 4-6% annually from 2020 to 2030, 2-4% annually from 2030 to 2040 and 1-2% annually from 2040 to 2050.
Transport	EV Sales Mandates	By 2030, 23% for two and three-wheelers, 15% for cars and 7% for medium and heavy-duty vehicles, respectively, will increase to 60%, 30% and 15% by 2040 and to 70%, 60% and 35% by 2050.	Two and three-wheelers are expected to be 100% electric by 2035; cars by 2035; medium and heavy-duty vehicles at 80% by 2030 and 100% by 2035.
Industry	Percentage of Electrified Production	By 2050, 15% for iron & steel and 15% for cement; no change by 2030 for cement.	By 2050, electrification will reach 35% for iron & steel and 65% for cement.
Green Hydrogen Production	Sectoral Implementation	By 2050, the iron & steel and cement sectors will be at 5% each, with the fertilisers, chemicals	By 2050, iron & steel will reach 60%, with a progression to 10% by 2030 and 40% by 2040; cement will achieve 25% by 2050, starting at 15% by 2040;

		and petrochemicals sectors reaching 25%.	and the fertilisers, chemicals and petrochemicals sector will be fully converted (100%) by 2050.
Process and Material Efficiency	Energy and Material Efficiency Improvements	From 2020 to 2050: Steel improves by 10% and cement by 5%; increase the scrap ratio in steel recycling to about 0.5 by 2040-2050; improve the clinker to cement ratio by 2% per decade. It is crucial for steel recycling in India as it reduces dependency on raw materials, lowers production costs and minimises environmental impact.	From 2020 to 2050: Steel's efficiency will improve by 25%, cement by 15% and fertilisers, chemicals and petrochemicals by 15%; steel recycling's scrap ratio will reach 0.9 by 2050; improve the clinker to cement ratio by 5% per decade; demand reduction/material efficiency by 10% in cement and 50% in petrochemicals; increase captive heat utilisation in cement by 2.5% by 2050.
CCUS + DAC	Sectoral Emissions Share	By 2050, 0.5% of power sector emissions will be captured via CCUS, 2.5% of industrial emissions will be captured and no DAC implementation will be implemented.	By 2050, 2% of power sector emissions and 5% of industrial emissions will be captured via CCUS; economy-wide, 1% of emissions will be mitigated through DAC by 2050.

*Source:* Abhyankar et al. (2023a)

It is crucial to establish a policy framework that ensures the majority of new assets are environmentally sustainable. Policies and regulations are also in place to encourage decarbonisation and circularity throughout value chains. Additionally, there is an expansion of programmes for increasing non-fossil fuel energy sources such as offshore wind, waste to energy, distributed green energy and initiatives for farmers such as KUSUM and rooftop solar initiatives. Strategic bilateral and multilateral partnerships focused on technology, finance and trade, together with efforts to develop supply chains for critical materials and components, are also vital. Enhancing institutional capacity and industrial competitiveness remains a priority.

## 2.4 Green development pact and achievements

Under the auspices of India’s G20 Presidency, the Green Development Pact emphasised the creation of explicit national strategies. These strategies are intended to coordinate long-term objectives with intermediate and immediate goals. Utilising tools such as the India Energy Security Scenarios 2047, developed by NITI Aayog, India is formulating decarbonisation pathways up to the year 2047 (PIB, 2023c). This is in pursuit of achieving a Net Zero status by 2070. The observed changes in India’s energy composition under both the BAU and Net Zero scenarios are included in Table 2.

**Table 2. Shifts in energy composition**

Key Factor	2022 Data	2047 Target	Strategies and Outcomes
Growing Energy Demand	7,017 kWh	12,547-13,477 kWh	Energy needs will increase 2-2.5 times to meet the growing economy.
Doubling of Demand Electrification (share)	19%	40%	Focus on decarbonising the electricity sector to achieve net zero by 2070.
Increase in Non-Fossil Capacity (share)	43.7%	85%-90%	RE capacity to grow from 177 GW (2023) to 512 GW by 2030 and 1819 GW by 2047.
Share of Coal in Primary Energy Mix	~50%	29%-37%	Shift towards clean fuels using technologies like CCS, CCUS and Coal to Chemicals.
Role of Nuclear Energy (share)	1.6%	12.5%	Increase the share of nuclear power to contribute to the decarbonisation of the electricity sector.
Lower Emissions (per capita)	4.7 tons (global avg.)	3-4 tons	Reduce emission intensity of GDP by ~80% from the 2005 level by 2047, promoting Green Growth strategies.

Source: Mothkooor & Rajnath (2024)

Over the past nine years, India's green energy capacity has more than doubled, placing the country fourth globally in terms of installed capacity. India's past policies promoting renewable energy have been pivotal in achieving its G-20 commitments, significantly boosting its green energy capacity. These initiatives set a strong foundation for future growth, aiming to meet ambitious sustainability goals and reduce carbon emissions. From 2014 to September 2023, solar capacity surged from 2.63 GW to 71.78 GW. By October 2023, the installed solar capacity reached 71.78 GW, with ongoing efforts to develop a global grid based on the vision of "One Sun, One World, One Grid." Additionally, the solar park scheme's target expanded from 20 GW to 40 GW, achieving a record low solar tariff of ₹1.99 per unit (PIB, 2024c).

The GOBAR*dhan* scheme was launched on April 30, 2018, as part of the SBM-G. GOBAR*dhan* aims to transform waste into wealth, aligning with the circular economy and the Government of India's Mission LiFE initiatives (PIB, 2023b). The focus is on establishing community projects for the scientific management of bio-waste, improving cleanliness in villages and generating wealth and energy from cattle dung and solid agricultural waste through composting and biogas production. Phase II of SBM-G includes a provision of up to ₹50 lakh per district for community GOBAR*dhan* projects, with at least one mandatory plant per district. To date, 796 biogas/CBG plants are operational, with 424 under construction and 443 districts having initiatives under biogas and CBG (PIB, 2022c).

The PM-KUSUM scheme was initiated in February 2019 to help farmers integrate solar energy generation alongside traditional farming practices. The scheme has facilitated energy provision to over 35 lakh farmers through solar agriculture pumps and feeders, setting up 10,000 MW of solar energy plants and installing 2 million stand-alone solar agricultural pumps.

## 2.5 Recent budget (2024-25)

The recent governmental budget (1<sup>st</sup> February 2024) has emphasised commitments towards achieving energy transition and a Net Zero status by 2070 through several key initiatives:

- **Rooftop Solar Projects:** This programme aims to equip one million homes with solar panels, providing up to 300 units of free electricity monthly, potentially saving each household approximately \$200 to \$240 every year. Homeowners will also have the opportunity to sell excess electricity back to utility companies. The expected outcome is a substantial decrease in carbon emissions by approximately 35 million tonnes annually. This reflects a significant increase in solar capacity, from 2.63 GW in 2014 to 71.78 GW in September 2023. The government has also successfully reduced the cost of solar energy to a new low of ₹1.99 per unit (PIB, 2023h).
- **Expansion of EVs:** The automobile sector has responded positively to government plans to enhance the EV infrastructure, which includes

boosting production capacities and developing charging stations. This expansion is designed to encourage EV adoption across India, providing business opportunities for a myriad of suppliers involved in equipment installation and maintenance.

- **Green Energy Initiatives:** (1) **Wind Energy Support:** The government is introducing funding to bridge the viability gap for offshore wind energy projects, which is expected to catalyse significant growth in the sector and help meet India's green energy goals for 2030 and Net Zero targets for 2070. (2) **Coal Gasification:** by 2030, the initiative to enhance coal gasification and liquefaction capacities to 100 MT aims to decrease the import of key commodities like natural gas, methanol and ammonia, which in turn will support domestic industries and reduce environmental impact. (3) **Biogas Integration:** A phased plan for integrating CBG with natural gas sources for transportation and domestic use will bolster the production and utilisation of biogas (PTI, 2024a).
- **Biomanufacturing Development:** The launch of a biomanufacturing initiative is set to promote environmentally friendly solutions such as biodegradable polymers and bio-agricultural products. Industry leaders have praised this move as a significant step towards a bio-based economy, offering not only environmental benefits but also new economic opportunities for agricultural sectors.
- **Blue Economy 2.0:** The government has introduced plans for the 'Blue Economy 2.0', focused on enhancing climate resilience and sustainable practices along the coastline (Raj, 2024). This includes measures for ecosystem restoration and the expansion of aquaculture, which aims to mitigate the effects of climate change and promote sustainable development.

The NITI Aayog is highlighted as playing a crucial role in these transitions, notably in spearheading advancements in the EV industry and supporting state-level green energy initiatives.

### **3 Infrastructure**

In this section, we delve into the critical aspect of infrastructure development, which is pivotal for India's growth. The discussion includes an analysis of major infrastructure projects that have been initiated or completed in recent years, such as highways, railways, airports and urban development schemes. The section also addresses challenges faced in the implementation of infrastructure projects and the innovative solutions being employed to overcome them.

#### **3.1 India's strategic infrastructure development**

India's ambition to attain 'developed nation' status by 2047 is heavily reliant on the enhancement of its infrastructure, a crucial factor in nurturing sustainable,

climate-resilient and inclusive urban hubs that propel economic advancement. The government's dedication is underscored by its earmarking of 3.3% of GDP for the infrastructure sector in 2024, with a specific emphasis on bolstering the transport and logistics domains (Sharma, 2024).

The predominant portion of this allocation is directed towards Roads & Highways, trailed by Railways and Urban Public Transport. The government has set ambitious objectives for the transportation sector, with aims to construct a national highway grid spanning 2 lakh kilometres across the country, with a focus on enhancing connectivity and development, including rural areas, by 2025 and elevate the number of airports to 220. Furthermore, the agenda encompasses the operationalisation of 23 waterways by 2030 and the establishment of 35 MMLPs. The overall budgetary provision for infrastructure-related ministries surged from approximately ₹3.7 trillion in 2023 to ₹5 trillion in 2024, presenting investment prospects for the private sector across diverse transportation segments (PTI, 2022a).

PPPs have become pivotal in engaging the private sector across various infrastructure sectors, notably in the construction of airports, ports, highways and logistics parks nationwide. To propel India towards its target of achieving a \$5 trillion economy by 2025, substantial emphasis on PPPs is imperative (Naik, 2024), alongside backing from the central government and state administrations through various initiatives. In 2021, the government unveiled the PM *Gatishakti* NMP, primarily geared towards enhancing multimodal connectivity infrastructure across diverse economic zones, especially in major transportation segments. This plan entails an exhaustive inventory of core and ancillary infrastructure, covering both ongoing and upcoming ventures across various ministries/departments at both the Central Government and State/Union Territory levels. As per the India Investment Grid database, there are currently 15,580 projects valued at \$2388.93 billion at varying stages of progression (GOI, 2024). Furthermore, the NLP seeks to foster the development of integrated infrastructure and bolster service efficiency, encompassing procedural and regulatory frameworks within its Comprehensive Logistics Action Plan. The NMP and the NLP collectively establish a framework for instituting a data-centric decision support mechanism aimed at enhancing logistics efficiency and trimming costs within the nation's logistics network.

### 3.2 Scope and major attainments

Table 3 provides an overview of major infrastructure development plans and their progress in India, focusing on four key areas: roads, airports, railways and ports.

**Table 3. Infrastructure development plans**

	<b>Major Plans</b>	<b>Progress with future focus</b>
Roads	The <i>Bharatmala Pariyojana</i> aims to develop 34,800 km of National Highways, with a focus on corridor-based development.	Phase I of the project is presently in progress, aiming for completion by 2027-2028. It encompasses 31 States/Union Territories and more than 550 districts. Moreover, there are plans underway to develop 22 new greenfield expressways.
Airports	The UDAN initiative seeks to enhance air connectivity to regional airports in small towns.	Commencing in 2016, the UDAN initiative has effectively launched 425 fresh routes and 58 airports within its initial five years. In the 2023–24 budget, ₹1,244.07 Cr was assigned to UDAN, marking a twofold increase from the previous year. Additionally, strategies are being devised to revitalise 22 airports and establish 50 additional ones.
Railways	Various ambitious projects in the railway sector include the Mumbai-Ahmedabad Speed Rail Corridor, the construction of the world’s highest pier bridge and the Chenab bridge in Jammu & Kashmir.	As of December 2023, the progress of railway electrification has extended to 61,508 km of the Broad Gauge network. Furthermore, 35 Vande Bharat Express trains have been introduced, with more in the pipeline. Indian Railways is striving to achieve net zero carbon emissions by 2030 and it has made significant advancements in this direction, including the deployment of solar and wind power installations.
Ports	The <i>Sagarmala</i> Scheme is aimed at promoting port-led development by harnessing India’s coastline and waterways.	Significantly, the turnaround time at Indian ports has been reduced to 0.9 days, surpassing that of countries like the USA, Australia and Singapore, according to the World Bank’s Logistics Performance Index Report 2023. Plans are also in motion to elevate the country’s port capacity from the current 2,600 MTPA to over 10,000 MTPA by 2047.

*Source:* Multiple (CNBCTV18.com, 2024; Goel & Tiwari, 2014; Northern Railway, 2024; PTI, 2023b)

India's developmental priorities require a balanced focus on both urban and rural areas to ensure comprehensive national advancement. By 2030, an estimated 40% of India's population is expected to reside in urban centres, significantly boosting the nation's GDP. However, the rapid urbanisation poses challenges in effectively managing infrastructure and service provision. The Smart Cities Mission emerges as a crucial initiative aimed at addressing these challenges adeptly. As of February 2024, tangible progress has been made, with 6,753 projects completed out of a total of 7,991 under the Smart Cities Mission, demonstrating a concerted effort to enhance urban infrastructure and quality of life nationwide (Goel & Tiwari, 2014).

Furthermore, India has made significant strides in digital infrastructure, with rural areas poised to contribute significantly to the growth of new internet users. Reports indicate that approximately 56% of new internet users by 2025 will come from rural India, highlighting the increasing connectivity between rural and urban regions in the country (Kayastha, 2023).

### **3.3 Infrastructure development and sustainability**

India's economic trajectory appears robust, with a projected average real GDP growth of 6.5% between 2023 and 2028, positioning the nation among the fastest-growing economies globally (EY, 2023b). At the core of this growth strategy lies a steadfast commitment to infrastructure development, which constitutes a pivotal aspect of India's economic agenda. The government's proactive stance is evident in its policies aimed at fostering top-tier infrastructure. Central to these efforts is the NIP, an ambitious initiative targeting the completion of infrastructure projects worth \$1.4 trillion by 2025, with an anticipated 21% of the investment originating from the private sector (EY, 2023b). The NIP's extensive portfolio encompasses transportation, energy, communications and social infrastructure, with objectives focused on enhancing connectivity, resource allocation and capacity creation in a timely manner.

Within the NIP, the transport sector assumes a prominent role, reflecting India's commitment to strengthening its transportation infrastructure. Ongoing projects in this sector, valued at ₹69 lakh crore according to the India Investment Grid, cover various initiatives across Roads and Highways, Railways and Urban Public Transport. Looking forward, India's transportation and logistics sector is poised for sustained growth, with a projected compounded annual growth rate of approximately 4.5% from 2022 to 2050 (S. Singh, 2024). This growth trajectory aligns with the government's overarching vision to modernise and revamp the country's transport infrastructure, including expansions in port capacity, development of greenfield airports and construction of expressways. The NIP in India outlines a comprehensive plan to invest in infrastructure sectors such as energy, transportation and urban development. This initiative is crucial for sustainability as it promotes the development of green infrastructure, renewable energy projects and sustainable urban mobility solutions. By integrating sustainability principles into its projects, the NIP aims to foster long-term economic

growth while minimizing environmental impact and enhancing resilience to climate change.

Given that transportation contributes 14% of greenhouse gas emissions, addressing this sector is crucial for achieving climate goals, necessitating the adoption of sustainable practices. Private sector involvement in the NIP, particularly in the transportation sector, is vital for investment, expertise and innovation, all of which are essential for India’s infrastructure modernisation, economic growth and climate goals. Table 4 outlines various major targets from a private sector viewpoint, supporting policies and paths to a sustainable future across different sectors of infrastructure in India.

**Table 4. Major targets of infrastructure development**

	<b>Major targets [supporting policy]</b>	<b>Paths to a sustainable future</b>
Roads	<p>Develop 22 new greenfield expressways to reduce travel time</p> <p>Build a two lakh-km national highway network by 2025</p> <p>[<i>Bharatmala Pariyojana</i>]</p>	<p>As of July 2021, India had constructed 703 kilometres of highways utilising waste plastic materials.</p> <p>To increase dependability and lower emissions, national highways and expressways incorporate a minimum of 25% precast materials.</p> <p>An allocation of ₹65,000 crore has been made for the ‘Delhi Decongestion Plan’, with the aim of rendering the capital’s roads dust-free and enhancing drainage infrastructure.</p> <p>The world’s inaugural bamboo crash barriers, offering an alternative to steel, have been installed along a 200-metre stretch of the Wani-Warora highway in Maharashtra.</p>
Airports	<p>Increase the total number of airports from 140 in 2022 to 220 by 2025</p> <p>Reach a milestone of 220 operational airports by 2025</p> <p>[UDAN Scheme]</p>	<p>Green energy exclusively powers 66 Indian airports.</p> <p>The AAI aims to transition all airports to green energy sources by 2024.</p> <p>AAI-managed airports are targeting carbon-neutrality for scope 1 and 2</p>

		<p>emissions by 2027, with the goal of achieving Net Zero emissions by 2030.</p> <p>Airports such as Delhi, Mumbai, Hyderabad and Bengaluru are actively working towards achieving carbon-neutral status and acquiring level 4+ accreditation from the Airports Council International.</p>
Railways	<p>The target for higher construction speed: 19 km of new tracks daily in 2024 (up from 12 km in 2023)</p> <p>Multinational Corporations are expected to deploy KAVACH, an indigenous train safety system developed in India.</p> <p>[National Rail Plan Vision – 2030]</p>	<p>Striving for Net Zero emissions by 2030 through the electrification of railway tracks.</p> <p>Introducing a 5% blending of biofuels in traction diesel fuel.</p> <p>Aiming to improve water usage efficiency by around 20% by the year 2030.</p> <p>Setting aside 1% of expenses in all approved projects for environmental endeavours.</p> <p>Introducing eco-friendly bio-toilets in passenger coaches; over 250,000 units will be installed by 2021, with expenditure amounting to ₹1,500 crore.</p>
Ports	<p>Increase ports' handling capacity from 2,600 MTPA in 2023 to 10,000 MTPA by 2047</p> <p>Operationalise 23 waterways by 2030</p> <p>[Sagarmala]</p>	<p>Seventy Memorandums of Understanding have been signed for sustainable development, representing a total investment of ₹2.37 lakh crore.</p> <p>The objective is for all 12 major ports to offer green hydrogen bunkering services by 2035. There is a target for all ports to source at least 60% of their energy from renewable sources by 2030, increasing to 90% by 2047.</p> <p>Over 50% of port equipment is slated to be electrified by 2030, with the aim of reaching 90% electrification by 2047. Adequate</p>

		<p>EV charging infrastructure is set to be established within port campuses by 2025.</p> <p>The goal is to decrease carbon emissions per ton of cargo handled by 30% by 2030. Paradip Port, Deendayal Port and VO Chidambaram Port have been designated for development as Hydrogen Hubs by 2030.</p> <p>The aim is to position itself as a global Green Shipbuilding hub and convert 50% of Tugs to Green Tugs by 2030.</p>
<p>Logistics</p>	<p>35 MMLPs planned for development in India</p> <p>Developed under PPP</p> <p>Mode: Design, Build, Finance, Operate and Transfer</p> <p>Lower logistics cost from 13% of GDP to a global average of 8% by 2030</p> <p>[NLP]</p>	<p>Various government departments are collaborating on the establishment of design standards for sustainable packaging.</p> <p>The encouragement of sustainability within supply chains through the adoption of green energy sources.</p> <p>The implementation of recycling facilities, efficient waste management systems and material flow optimisation strategies, drawing upon global best practices.</p> <p>The promotion of increased freight transportation by large trucks and rail at MMLPs aims to reduce emissions by approximately 12% across the top 15 nodes.</p> <p>The creation of a GHG calculator to incentivise sustainability in freight transportation.</p>

Source: EY (2023a)

### 3.4 Recent budget (2024-25)

Looking ahead, the focus on infrastructure remains steadfast, with an 11.1% increase in the outlay for the next fiscal year (2024-25), reaching ₹11,11,111 crore

(equivalent to 3.4% of GDP); it is important to overview the Interim Budget 2024-2025 which outlines sector-specific initiatives.

The recent initiatives across various sectors demonstrate a comprehensive approach to infrastructure development. In the railway sector, three major economic corridors have been introduced, focusing on energy, mineral, cement, port connectivity and high traffic density, along with the conversion of 40,000 rail bogies to *Vande Bharat* standards and the expansion of Metro and *NaMo Bharat* systems in large cities. The aviation sector has seen increased infrastructure investment, especially in Tier 2 and 3 cities under the UDAN Scheme, with the number of airports doubling to 149 in the past decade. Road infrastructure received a slight budget increase to ₹2.78 lakh crore. Additionally, significant infrastructure and port connectivity projects are being undertaken in India's islands, including Lakshadweep, to support domestic tourism and enhance employment opportunities through improved tourism infrastructure and amenities.

The Interim Budget 2024-25 lays a strong foundation for realising the India @2047 Vision. As the goal is to achieve a developed India by 2047, it is necessary to forecast effective capital expenditure until then. The projected effective capital expenditure for the upcoming years is detailed in Table 5.

**Table 5. Effective capital expenditure projections**

	<b>Forecasted Effective Capital Expenditure (₹ in Lakh Crore)</b>		<b>Forecasted Effective Capital Expenditure (₹ in Lakh Crore)</b>
2026	14.75555556	2037	33.33651751
2027	16.67191358	2038	34.90881509
2028	18.58535665	2039	36.53191076
2029	20.48767052	2040	38.18697113
2030	22.16445526	2041	39.84315597
2031	23.6791718	2042	41.48029065
2032	25.16450219	2043	43.0843939
2033	26.67838177	2044	44.66810198
2034	28.31527709	2045	46.30618412
2035	30.21759408	2046	47.94582786
2036	31.7810875	2047	49.57904773

Source: Mohan (2024)

These projections underscore the government's long-term commitment to infrastructure development and its vision for a prosperous future for India.

## 4 Agriculture

Numerous studies highlight the achievements of Indian agriculture following independence, particularly since 1970, with notable growth trajectories emerging, notably commencing in 2005-06. In order for India to attain the status of a developed nation by 2047, its per capita GNI must increase by approximately sixfold from its current levels (Damodaran, 2024). This necessitates substantial growth not only in per capita GNI but also in the incomes of the populace, ensuring a comprehensive approach to development. Thus, Enhancing farm incomes is of paramount importance, given that nearly 46% of the workforce is engaged in agriculture, characterised by small average holdings and a comparatively modest contribution to GDP (Gulati et al., 2024). The enhancement of farmer conditions and incomes is essential for fostering inclusive, sustainable development and realising the vision of VB. Here, we focus on the transformation occurring in India's agricultural sector. The section begins with an overview of sustainable agricultural practices that are being adopted to ensure long-term productivity and environmental health. Technological innovations, such as precision farming, genetically modified crops and advanced irrigation techniques, are discussed in detail. We also examine the challenges faced by the agricultural sector, including climate change, land degradation and market access issues. The section concludes with a future outlook, highlighting the potential for growth and the strategies required to achieve sustainable agricultural development.

### 4.1 Agriculture-inclusive development

Looking towards the forthcoming 23 years leading to India's centennial independence, referred to as Amrit Kaal, strategic planning, forecasts and policy formulation pertaining to agriculture should take into account several factors: anticipated future demand for agricultural products; insights derived from past experiences, particularly concerning growth catalysts; existing challenges and emerging issues within the agricultural sector; potential opportunities and shifts in the agricultural operational landscape; societal and national needs and objectives.

According to projections by the United Nations, India's population is anticipated to ascend from 1.38 billion in 2020 to 1.5 billion in 2030 and 1.59 billion in 2040, with annual growth rates of 0.857% and 0.577%, respectively (UN, 2019). Addressing the food requirements of this expanding population is imperative, as is augmenting per capita food consumption to combat hunger and malnutrition. The growth in per capita income influences demand, with an estimated expenditure elasticity of food pegged at 0.45, exhibiting a declining trend as per capita income rises. India's real per capita income witnessed a 41% increase from 2011-12 to 2021-22 and is projected to accelerate further.

Consequently, the expenditure elasticity post-2023 is anticipated to be lower than 0.45. A 5% upsurge in per capita expenditure correlates roughly to a 2% growth in demand. Coupled with a 0.85% annual population growth, the short-term food demand is estimated at approximately 2.85%, with a likelihood of tapering over time (Chand & Singh, 2023). Addressing the food requirements of this expanding population is imperative, as is augmenting per capita food consumption to combat hunger and malnutrition.

## 4.2 Farmer prosperity and sustainable agricultural growth

The primary objective of the Indian government, in line with its vision for 2047, is to augment farmers' income, reduce farming costs and provide them with modern amenities spanning from seed procurement to market accessibility. Numerous initiatives have been rolled out to address the projected demands of both the population and agricultural producers.

One such initiative is the PM *Kisan Samman Nidhi*, launched in 2019, which disburses ₹6,000 annually to farmers in three equal instalments (Akhtar, 2022). This nationwide scheme hailed as the first of its kind, has already benefited over 11.8 crore farmers. Another vital programme, the *Pradhan Mantri Fasal Bima Yojana*, introduced in 2016, provides financial assistance to farmers facing crop losses or damages (PIB, 2024d). With 49.5 crore farmers enrolled, the scheme has witnessed over 14.9 crore applicants receiving claims totalling more than ₹1.45 lakh crore in the past seven years. Notably, 84% of the enrolled farmers belong to the small and marginal categories. Crop insurance has experienced a significant upsurge, with a 3.19-fold increase in applications, a 7.2-fold increase in the participation of non-loanee farmers and a 2.36-fold increase in the average insured sum per hectare.

Electronic National Agriculture Market, launched in 2016, aims to integrate existing markets through an electronic platform. As of September 2023, 1361 *mandis* have been integrated, with 1.76 million farmers registered and trade valued at ₹2.88 lakh crore recorded. Furthermore, MSPs for rice and wheat have witnessed substantial growth, rising from ₹1310 and 1400 per quintal in 2013-14 to ₹2183 and 2275 per quintal in 2023-24, respectively, marking an increase of 67% and 62.5%, respectively (PIB, 2022a). Launched in 2014-15, the SHC scheme aims to optimise the utilisation of soil nutrients, thereby enhancing agricultural productivity. Over 23 crore Soil Health Cards have been distributed to farmers nationwide (Shah, 2023), offering crucial insights and recommendations on soil health and nutrient management practices. This empowers farmers to make informed decisions regarding fertilisation and crop management strategies.

Recognising the vital role of coarse grains in providing nutritious food and stimulating both domestic and international demand, the Government of India championed the 2023 declaration of the International Year of Millets at the United Nations General Assembly. India's proposal garnered support from 72 countries, leading to the United Nations officially designating 2023 as the International Year of Millets as early as March 2021 (PIB, 2021). The KCC scheme has been extended to cover all PM-KISAN beneficiaries through a dedicated initiative. As of March 31,

2023, a significant 7.34 crore KCC applications have been sanctioned, with a sanctioned credit limit totalling ₹8.85 lakh crore. Further, The PMKSY aims to improve water use efficiency at the farm level, primarily through the adoption of drip and sprinkler irrigation systems. Since its inception in 2015-16, the scheme has successfully covered 78 lakh hectares. Additionally, a Micro Irrigation Fund of ₹5,000 crore has been established in collaboration with NABARD. Notably, a substantial allocation of ₹93,068 crore has been earmarked for the PMKSY for the period 2021-26.

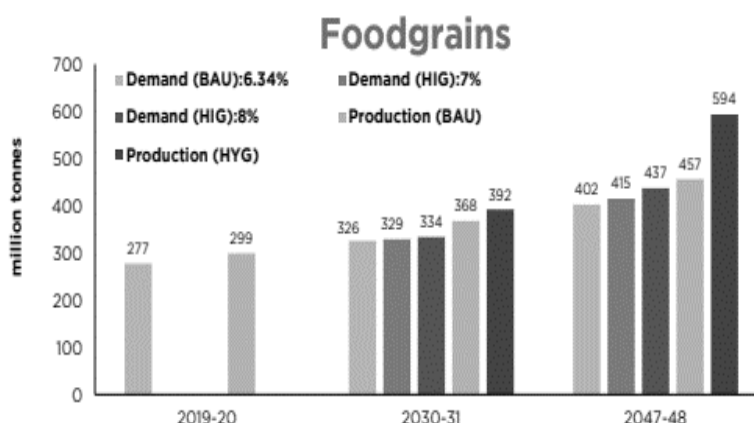
The Survey of Villages and Mapping with Improved Technology in Village Areas initiative, launched in April 2020, aims to ensure transparent ownership of property in rural areas. Over 1.6 crore property cards have been generated under this scheme. By September 2023, Property Cards Title Deeds had been issued in more than 97,200 villages and drone surveys had been conducted in 2.81 lakh villages. The Agriculture Infrastructure Fund, a financing facility amounting to ₹1 lakh crore, is dedicated to the development and modernisation of post-harvest management infrastructure and community farming assets. Remarkably, within just under three years of its implementation, the scheme has sanctioned over 38,326 projects, mobilising ₹30,030 crores in the agriculture infrastructure sector. These projects have facilitated a total loan worth ₹50,988 crore (PIB, 2023g).

Completed agricultural infrastructure endeavours have not only created employment opportunities for more than 5.8 lakh individuals but have also contributed to saving 3.7 LMT of food grains and 46.3 LMT of horticulture produce annually. Moreover, they have ensured better price realisation for farmers, improving their income by 20-25%. In a significant development, the Cabinet Committee on Economic Affairs approved the "PM Programme for Restoration, Awareness Generation, Nourishment and Amelioration of Mother-Earth" in its meeting held on June 28, 2023. This initiative aims to bolster the ongoing mass movement led by states to preserve the health of the earth by advocating for sustainable and balanced fertiliser usage, promoting organic farming practices and implementing resource conservation technologies.

### **4.3 India's food demand and agricultural needs**

Overall, the food demand is anticipated to increase at an annual rate of 2.44% from 2019-20 to 2047-48. The demand for food encompasses household consumption, food consumed outside the home, feed, seed, wastage and other utilisations. This growth trajectory is poised to accelerate to a range of 2.69% to 3.07% if the economy experiences a swifter pace of growth. However, the growth rates are projected to vary among different food commodities, ranging from 0.34% for rice to 5.42% for meat (NITI, 2024).

**Figure 3. Demand for food grains**



Source: NITI (2024)

The total demand for food grains in 2030-31 is estimated to lie between 326 to 334 million tonnes and in 2047-48, it is projected to range from 402 to 437 million tonnes. Under the BAU scenario, the anticipated production exceeds demand by 10-13% (34-42 million tonnes) in 2030-31 and by 5-14% (22-55 million tonnes) in 2047-48 (Mukherjee, 2024). On the other hand, HYG scenarios exhibit greater trajectories (see Table 6).

**Table 6. Production trajectories**

Category	Projected Demand in 2047-48
Total Foodgrain Demand	BAU scenario: 402 million tonnes
	HIG scenarios: 415-437 million tonnes
Growth in Demand for Specific Items	Maise, pulses and nutri-cereals are expected to experience significantly higher growth compared to rice and wheat.
Pulses	Pulses demand is estimated to range between 49-57 million tonnes in 2047-48 under various income growth scenarios.
Vegetables and Fruits	BAU scenario projects 365 million tonnes of vegetables and 233 million tonnes of fruit demand in 2047-48.

	HIG scenarios anticipate 385-417 million tonnes of vegetables and 252-283 million tonnes of fruit demand in the same period.
Sugar and Products	Sugar and related products are expected to maintain demand levels at 44-45 million tonnes in 2047-48.
Edible Oils	The demand for edible oils is projected to be in the range of 31-33 million tonnes.
Milk and Milk Products	BAU scenario expects a demand of 480 million tonnes of milk and milk products in 2047-48.
	HIG scenarios suggest a higher demand range of 527-606 million tonnes for the same period.
Eggs, Meat and Fish	Under the BAU scenario, demand is projected to be 16 million tonnes for eggs, 21 million tonnes for meat and 37 million tonnes for fish in 2047-48.
	HIG scenarios predict a higher demand range of 18-21 million tonnes for eggs, 24-29 million tonnes for meat and 41-48 million tonnes for fish.

*Source:* NITI (2024)

Table 7 captures the anticipated food intake alignment with normative requirements, growth in the gross cropped area and the potential for surplus food grain production by 2047-48.

**Table 7. Anticipated food intakes**

<b>Year</b>	<b>Key Projections and Expectations</b>
2030-31	Average daily food intake aligns with normative requirements
	Pulses, fruits and vegetables may fall short of recommended consumption levels.
2047-48	Average daily food intake surpasses normative requirements by 20%
	All food categories meet or surpass recommended intake levels.

2019-20	Beginning period for projected trends
2019-20 2047-48	Gross Cropped Area grows at an annual rate of 0.45%
	Growth primarily due to enhancements in cropping intensity
	Fulfilment of domestic demand hinges on yield augmentation rather than acreage expansion
2047-48	Both BAU and HYG scenarios project a surplus in food grain production, surpassing demand and enabling potential exports.
	Rice and wheat are pivotal in generating surplus.
	Demand for nutri-cereals may outpace production unless cultivation areas are expanded and yields improved.

*Source:* Multiple (Alae-Carew et al., 2019; DAFW, 2023; GTBharat, 2024)

Under the BAU scenario, maize production is forecasted to fall short of meeting demand, highlighting the necessity to optimise maize yield potential. Conversely, the HYG scenario anticipates maize production meeting demand, underscoring the importance of maximising yield. Pulses production is expected to be insufficient to meet demand in both scenarios, with self-sufficiency potentially achievable if current trends in expanding cultivation areas and enhancing yields persist (Mukherjee, 2024).

Currently, there exists a deficit in the production of fruits, vegetables and edible oils compared to demand, a situation likely to persist until there's a notable increase in yield growth. Shortages in edible oils may endure temporarily, but augmenting oilseed yields and tapping into secondary sources can help alleviate the gap in the short term and achieve self-sufficiency in the long run. Conversely, sugar production is projected to surpass demand. Domestic production is anticipated to meet the demand for animal-source foods, excluding meat, under normal economic conditions. However, in the event of faster-than-usual economic growth, there may be a shortfall in meeting the demand for these foods (see Table 8). Moreover, the projected demand for agricultural inputs further complicates the situation.

**Table 8. Shortfalls in meeting demand (faster-than-usual growth scenario)**

Input	2030-31 Demand (thousand tonnes/quintals)	2047-48 Demand (thousand tonnes/quintals)	Remarks
Fertilisers	339 - 396 lakh tonnes	432 - 640 lakh tonnes	Dependent on government initiatives and influencing factors
Pesticides	68,062 - 79,233 tonnes	83,209 - 1,18,405 tonnes	Dependent on cotton-growing area
Seeds	34,068 - 78,571 thousand quintals	49,701 - 92,335 thousand quintals	Dependent on seed replacement rates
Credit	₹42,60,769 crores	₹1,31,51,319 crores	Long-term credit demand is expected to increase

Source: Pareek (2024).

#### 4.4 Recent budget (2024-25)

In the Interim Budget for the fiscal year 2024-25, the Finance Minister reiterated the government's steadfast commitment to the welfare of farmers, ensuring food security. Notably, it was underscored that the successful integration of 1361 *mandis* into the Electronic National Agriculture Market has benefitted approximately 1.8 crore farmers, with a trading volume totalling 3 lakh crore.

Furthermore, a slew of initiatives have been introduced to augment value addition in the agricultural sector and elevate farmers' income. These encompass fostering both private and public investment in post-harvest activities such as aggregation, modern storage, efficient supply chains and marketing and branding. Additionally, the expansion of the Nano-DAP (which aims to streamline the distribution of fertiliser subsidies directly to farmers' bank accounts—can potentially improve farmers' incomes by reducing delays and leakages in subsidy disbursement, ensuring they receive the benefits in a timely and transparent manner. By cutting down on middlemen and administrative inefficiencies, Nano-DAP could help farmers access fertilisers more affordably and efficiently, thereby supporting their agricultural productivity and income levels) application across all agro-climatic zones has been prioritised. In pursuit of self-reliance in oilseeds production, a strategic framework named the *Atmanirbhar Oilseeds Abhiyaan* will be formulated, with a focus on crops like mustard, groundnut, sesame, soybean and sunflower. Additionally, a comprehensive programme for dairy development will be devised, leveraging the successes of existing schemes such as the *Rashtriya Gokul Mission*, National

Livestock Mission and infrastructure development funds for dairy processing and animal husbandry.

Furthermore, efforts to bolster aquaculture productivity and double exports will be intensified through the implementation of the *Pradhan Mantri Matsya Sampada Yojana* (Mishra, 2024), aimed at generating more employment opportunities. As part of this initiative, the establishment of five Integrated Aquaparks is on the agenda. The corporate sector has hailed the positive measures introduced for the agricultural domain. Experts within the industry have commended the government's initiatives, highlighting several pivotal points. They particularly praise the introduction of the forward-thinking '*Atmanirbhar Oil Seeds Abhiyan*', which prioritises essential oilseeds such as mustard, groundnut, sesame, soybean and sunflower (Biswas, 2024). This initiative encompasses various critical aspects, including research into high-yield varieties, widespread adoption of modern farming techniques, establishment of market linkages, procurement, value addition and crop insurance.

Moreover, they applaud the comprehensive programme supporting dairy and fisheries farmers, viewing it as a holistic commitment to enhancing the overall agricultural sector and ensuring the well-being of farming communities. The budget is lauded for its consistent support for agricultural growth and productivity, with interventions in crop insurance, encouragement of nano fertilisers, promotion of oilseed self-sufficiency and increased investments in microfood processing. The government's persistent support for farmers under the crop insurance facility, with plans for further strengthening, is seen as a positive step towards enhancing penetration and awareness of insurance in rural India, thereby providing a boost to the insurance industry. The allocation of ₹20 lakh crore for targeted agricultural credit and the launch of the Agriculture Accelerator Fund have also garnered high praise.

There is a palpable sense of enthusiasm in the seed industry regarding the emphasis placed on oilseeds and the imperative to achieve self-reliance in this area in the Interim Budget. Lastly, the importance of digital infrastructure and the infusion of technology is underscored as crucial not only to sustain current momentum but also to realise the full potential of agricultural growth.

## 5 The service sector and governance

This section addresses the dynamic service sector and the role of governance in its expansion. The growth of the IT and digital services sector is explored, with emphasis on the contributions of this sector to the economy and employment generation. Skill development initiatives are detailed, showcasing the efforts to equip the workforce with the necessary skills to thrive in a digital economy. Additionally, the section covers governance reforms aimed at improving service delivery, transparency and efficiency in public administration. The interplay between government policies and private sector innovation is analysed to understand their combined impact on the service sector.

## 5.1 Growth and platforms

As stated before, future projections position India as the fastest-growing major economy, anticipating that it will become a \$26 trillion economy by 2047-48, with a per capita income likely to surpass \$15,000—a sixfold increase from current levels. This projection is based on a steady growth rate of approximately 6% per year (EY, 2023b).

Both domestic and international IT firms have significantly supported the expansion of India’s economy. Moreover, multinational corporations are tapping into Indian expertise through over 1,500 GCCs located in India, which employ around 5 million people. These centres, which account for 45% of the world’s GCCs, have evolved from being centres of cost arbitrage to hubs of top-tier talent and cutting-edge innovation. India is strategically positioned to further capitalise on its achievements and address the need for more skill-intensive and digital services. The country is also making considerable progress in IP-based platforms and products, which offer greater scalability and distinctiveness, fostering a robust environment for the rise of ‘India Hyperscalers’ in the coming years (EY, 2023c). The rise of India’s hyperscalers stimulates economic growth by fostering technological innovation, creating high-skilled jobs and improving digital infrastructure, which enhances business efficiency and global competitiveness. Their scalable digital services also empower SMEs, driving broader economic expansion and digital transformation. Additionally, in non-IT service sectors, India stands to benefit from a global talent shortfall in developed nations, particularly in fields like education and healthcare, which are increasingly shifting to digital platforms.

**Table 9. Growth across platforms**

Category	Details
Telecom & Internet Users	India boasts a telecom subscriber base of 1.2 billion and 837 million internet users.
Digital Economy Growth	Driven by government initiatives in digital infrastructure, India’s digital economy expanded by 15.6% from 2014 to 2019, outpacing the overall economic growth by 2.4 times in terms of \$.
Digital Platforms & Services	Successful implementation of platforms like Cowin, Ayushman Bharat, DIKSHA, GSTN, GeM and UMANG, with more such as AgriTech Stack and DESH underway.
India Stack & UPI	India Stack, recognised globally, supports high-volume, low-cost transactions with an open architecture. UPI is used by 260 million unique users, positioning India as a leader in real-time digital payments globally with over 40% market share.

Financial Platforms	Platforms like OCEN and ONDC aim to enhance credit access and integrate small to medium enterprises into the digital economy.
Economic Indicators	India's debt-to-GDP ratio stands at 55%, relatively low among major global economies. The banking sector shows a significant reduction in Non-Performing Assets, reaching a seven-year low of 5% as of September 2022.
MSMEs & Financial Market	MSMEs, contributing 30% to GDP, face a credit supply shortfall estimated between \$250 billion to \$300 billion. The corporate bond market, though growing, remains modest at 16% of GDP compared to other large economies.
Opportunities in Digitization	The digitisation of the economy and enhanced data availability are improving credit assessment processes, offering substantial opportunities for the financial services sector to cater to the needs of individuals and businesses in India.

*Source:* Multiple (Choksi, 2024; PIB, 2023f; PTI, 2022b)

## 5.2 Administration and targets

India's administrative system is robust, rule-based and designed to build a nation and be inclusive. The 'Whole of Government' approach underpins the vision for India in 2047, setting long-term and short-term goals with clear outcomes, timelines and milestones for this decade. This strategy coordinates government departments and agencies to work together toward common objectives (ET Online, 2024). The vision aims for India to achieve unprecedented prosperity by 2047, enhance urban and rural facilities, reduce government interference in daily life and develop world-class infrastructure. It emphasises several key areas for development.

**Table 11. Key areas for development**

Key Themes	Focus Areas and Initiatives
Governance and Civil Servants	Encouraging young civil servants to embrace complex future governance models requiring domain expertise.
	Ten thematic areas for governance: Energy, Education, Health Care, Water Infrastructure, Transport, Urbanization, Rural Development, Fintech, Information Security.

Digital Transformation	Emphasis on 'Maximum Governance, Minimum Government'.
	Digital transformation across government operations to modernise and meet citizen demands.
Benchmarking and Learning	Regular benchmarking against ideal governance models.
	Learning from global and regional best practices.
National Initiatives	Ayushman Bharat Digital Mission for digital health IDs.
	E-shram portal for worker security and CO-WIN for COVID-19 vaccinations.
State Initiatives	Sarai portal in Haryana for unified government services.
	Seva Sindhu in Karnataka is responsible for delivering government services in a streamlined manner.
	NDMC's Smart City projects for comprehensive IT and digitisation of services.
Public Grievance Redressal	Moving towards single window agencies for better service delivery.
	Data analytics, multilingual CPGRAMS and personalised services are used to enhance grievance redressal.
Vision India@2047	Integration of digital technology to bring government and citizens together, fostering innovations and digital excellence.

*Source:* GOI (GOI, 2022b)

The government has launched several initiatives, laying the groundwork for achieving these aspirations. Below is a detailed overview (See Table 12) of India's key goals for 2047, the current services in place to support these objectives and the governance envisioned to ensure their successful realisation.

**Table 12. Key goals for 2047**

<b>Area</b>	<b>Goals for 2047</b>	<b>Current Initiatives</b>	<b>Strategies for Achievement</b>
Economic Growth	Become a \$30 trillion economy.	Economic reforms, liberalisation policies.	Increase FDI, foster startup ecosystems and innovate within the manufacturing sector.
Healthcare	Universal health coverage; build new AIIMS in every state.	Ayushman Bharat scheme, which provides health coverage of ₹5 lakh to over 50 crore people.	Expand medical infrastructure, increase the number of medical colleges from 387 to 706 and double medical seats.
Education	Achieve a 100% literacy rate.	NEP was implemented in 2020.	Enhance digital education platforms, improve teacher training programmes and focus on vocational training.
Infrastructure	Develop advanced public transport systems across all cities.	PM <i>GatiShakti's</i> master plan for infrastructure integration.	Prioritise sustainable urban planning, expand metro and rail networks and invest in regional transit systems.
Energy & Environment	Become a leader in green hydrogen and achieve net-zero emissions.	Increased investment in green energy sources.	Expand capacity in solar and wind energy, incentivise green technology and push for wide adoption of electric vehicles.
Technology & Innovation	Become a global leader in technology and innovation.	Startup India, Digital India initiatives.	Support research and development, enhance digital infrastructure and establish innovation hubs across the country.
Social Equity	Eliminate poverty and achieve	<i>Poshan Abhiyan</i> for nutritional support.	Implement targeted welfare programmes, promote women's

	significant gender equality.		empowerment and ensure equitable access to resources.
Governance	Achieve robust, transparent and efficient governance.	E-governance initiatives to streamline services.	Improve public service delivery systems, promote digital governance and strengthen accountability mechanisms.
Global Trade & Diplomacy	Enhance global trade relations and export capacity.	Hosting G20 summit, forging new trade agreements.	Strengthen diplomatic ties, enhance trade facilitation measures and participate actively in global forums.
Urban Development	Develop smart cities with modern amenities for all.	Smart Cities Mission is targeting multiple cities.	Focus on sustainable city planning, integrate advanced technology in city management and improve public amenities.
Rural Development	Elevate rural incomes and improve rural quality of life.	Initiatives to support agriculture and rural entrepreneurship.	Support Farmer Producer Organisations, enhance agricultural infrastructure and promote rural industries.

*Source:* Primus Partners (Primus Partners, 2024)

### 5.3 Recent budget (2024-25)

The recent Interim Budget reflects the government's commitment to a developmental strategy that is comprehensive, extensive and inclusive, addressing the needs of all societal layers and regions. This approach marks a significant step toward achieving social inclusiveness. The budget allocates substantial funds to improve public services, including healthcare, education and sanitation and enhances administrative efficiency through digital governance and streamlined processes. This commitment ensures equitable access and better service delivery across all societal layers and regions. The government has launched several key initiatives aimed at enhancing the quality of life for all citizens. These initiatives include providing universal access to housing, clean water, electricity, cooking gas and banking and

financial services. Such measures are illustrative of a compassionate and inclusive developmental philosophy.

Furthermore, the government's inclusive policy framework is evident in its efforts to elevate various segments of society. Over the past decade, this policy has successfully lifted approximately 250 million people out of multidimensional poverty. The government has extended support to myriad stakeholders across the country, as follows. The implementation of direct benefit transfers through PM-*Jan Dhan* accounts has resulted in substantial financial savings of approximately ₹2.7 trillion, with total transfers amounting to ₹34 trillion. Additionally, financial assistance has been provided to around 780,000 street vendors, with over 230,000 receiving repeated credit access.

The Skill India Mission stands out as a notable endeavour to promote skill development and economic empowerment, having trained 14 million youth and further enhanced the skills of 5.4 million. The establishment of new educational and training institutions—including 7 IITs, 16 IIITs, 7 IIMs, 15 AIIMS and 390 universities—underscores the government's focus on improving access to quality education in fields such as engineering, medicine and management (PIB, 2024a). The PM *Mudra Yojana* has played a crucial role in supporting the entrepreneurial dreams of the youth by approving 430 million loans totalling ₹22.5 trillion (PTI, 2024b). Additionally, initiatives like the PM-JANMAN and PM-*Vishwakarma Yojanas* are specifically designed to uplift vulnerable tribal groups and provide comprehensive support to artisans and craftspeople involved in 18 different trades. Moreover, the government has demonstrated its commitment to inclusivity through targeted schemes for the empowerment of *Divyang* (persons with disabilities) and transgender communities, reaffirming its dedication to ensuring that no one is left behind in the quest for development. These multifaceted efforts highlight the government's strategy of embracing all aspects of inclusivity, from social to geographical, ensuring a balanced and equitable development across the country.

## 5.4 Relevance

This paper comes at a critical juncture in Indian economic and political history where the nation is poised for growth. The following table presents the key areas of growth and development for the Indian economy that will be crucial to achieving VB. Table 10 provides an overview of various aspects of India's economic and business environment, highlighting key areas of growth and development.

**Table 10. Growth and development: Key areas**

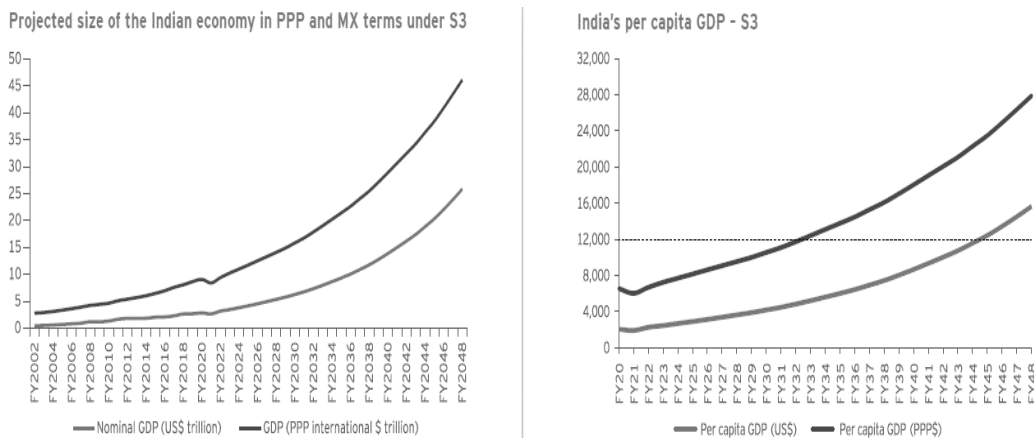
<b>Aspect</b>	<b>Details</b>
Entrepreneurial Growth	India's entrepreneurial spirit has been enhanced by digitalisation and supportive policies.
	India is now the third largest ecosystem for startups globally, with startups growing significantly over the last six years.
	As of August 2022, India has 107 unicorns with a total valuation of \$341 billion.
Investment	PE/VC investments reached \$82 billion in 2021-22.
	Successful exits totalling \$42.5 billion in 2021-22 demonstrate rising investment confidence.
Workforce Demographics	India will become the most populous country in 2023, with about 67% of its population in the working age group.
	By 2030, India's working-age population will exceed 1 billion.
	Nearly 49% of higher education enrollees are female, predicting more women in the workforce.
Global Workforce Support	India can support the global workforce with its skilled talent, including a large pool of English-speaking STEM graduates and healthcare professionals.
Consumer Behaviour/Behavior	Domestic consumption grew by 11.5% over the last decade, with personal loans, credit card debt, vehicle loans and housing loans showing significant increases.
Manufacturing & Infrastructure	The government has launched initiatives like 'Atmanirbhar Bharat' to establish India as a manufacturing hub.
	Manufacturing growth is expected to create new jobs and drive further infrastructure and service sector growth.

PLI Scheme	The PLI scheme covers 14 sectors, attracting investment commitments of approximately ₹2.5 trillion (\$31.3 billion), impacting sectors like textiles, food processing, semiconductors and electric vehicles.
Emerging Sectors	The Indian EV ecosystem is expected to grow significantly, with the government committing \$14.5 billion for supply and demand side incentives.
Regulatory Improvements	Efforts are ongoing to simplify labour laws and recalibrate the definition of Medium and Small Enterprises, aiming to improve the ease of doing business and enhance the competitiveness of manufacturing.

Source: EY (2023b)

The analysis from EY highlights the expected growth of the Indian economy, which was evaluated using both market exchange rates and PPP. This dual perspective reveals different trajectories and significant milestones for India’s economic expansion (see Figure 4).

**Figure 4. Economic expansion trajectory**



Source: EY (2023b)

In terms of market exchange rates, India is anticipated to surpass key economic thresholds in the future: a \$5 trillion economy by the fiscal year 2028, \$10 trillion by 2036 and \$20 trillion by 2045 (ET Bureau, 2024). These projections illustrate a steady climb in India’s economic stature on the global stage, marking each threshold as a testament to its growing economic capabilities. Conversely,

when viewed through the lens of PPP—a metric that adjusts for differences in price levels across countries—India presents a more accelerated economic timeline. It has already achieved a significant milestone, surpassing the \$5 trillion mark back in 2011. The economy is expected to reach the \$10 trillion mark in the ongoing fiscal year of 2023 and is forecasted to double to \$20 trillion by 2034 (ANI, 2024). These PPP measurements underscore a quicker growth rate, suggesting a robust increase in India's economic productivity relative to its population.

Moreover, examining per capita GDP provides further insights into economic development from an individual's perspective. In PPP terms, India's per capita GDP is projected to reach \$13,000 by 2034, demonstrating substantial growth in the average economic well-being of its citizens. In terms of the market exchange rate, this milestone is expected to be achieved by 2045. By 2048, the per capita GDP is anticipated to increase further to \$15,602, reflecting continued economic advancement and increased income levels (PIB, 2023e). This layered analysis, considering both aggregate and per capita measures under different economic valuations, offers a comprehensive view of India's future economic trajectory, highlighting both its potential and the challenges it faces in sustaining long-term growth.

## 6 Conclusion

We have discussed paths to enhance energy security, bolster infrastructure, promote sustainable agriculture and foster a robust service sector. This last section emphasises the importance of continued investment, policy support and innovation in driving India's growth. VB is an ambitious project initiated by NITI *Aayog*, India's premier policy think tank, to transform the nation into a developed economy by 2047, marking the centenary of its independence. The primary goal of VB is to elevate India's economy to \$30 trillion, with a per capita income between \$18,000 and \$20,000. This vision includes robust public finances and a strong financial sector, which are essential for sustainable growth. A significant focus is on building world-class infrastructure in both rural and urban areas, thereby enhancing the quality of life across the country. This vision aims to position India as a global leader in innovation and technology, a model of human development and social welfare and a champion of environmental sustainability. The project also aims to reduce unnecessary governmental interference, promoting a digital economy and governance system that is efficient and transparent. The project's objectives are vast, ranging from economic growth to social development and environmental stewardship.

Furthermore, VB aspires to develop three to four global champions in every economic sector through mergers, restructuring and boosting indigenous industries and innovation. Achieving self-reliance in the defence and space sectors is another critical objective, along with enhancing India's role on the global stage. Fostering green growth and climate action by increasing green energy capacity and reducing carbon emissions is pivotal to the project. Empowering the youth through skills and education, creating more employment opportunities and partnering with foreign R&D

organisations to build top laboratories in the country are also integral to this vision. Additionally, the project aims to bring at least ten Indian institutions among the top 100 globally.

The Indian government's budget for 2024 outlines an ambitious vision for the country's future, emphasising a holistic approach to development, fostering inclusion and addressing sustainability. Leveraging the trinity of demography, democracy and diversity and is backed by the collective efforts of the nation as follows:

- The budget focuses on substantive development across various forms of infrastructure—physical, digital and social. Digital Public Infrastructure is promoted to facilitate formalisation and financial inclusion, while the GST deepens and widens the tax base. Strengthening the financial sector has brought savings, credit and investment back on track, with the GIFT International Financial Services Centre emerging as a robust gateway for global capital and financial services. Proactive inflation management ensures that all regions participate actively in economic growth.
- A notable achievement highlighted is the reduction in multidimensional poverty, with 25 crore people moving out of poverty. The Direct Benefit Transfer scheme has resulted in savings of ₹2.7 lakh crore and credit assistance under the PM-SVANidhi scheme has supported 78 lakh street vendors. The government has also significantly increased budget allocation for the PM-SHRI initiative, enhancing educational infrastructure and empowering youth through the Skill India Mission, which has trained 1.4 crore young individuals.
- The welfare of farmers is a priority, with direct financial assistance provided to 11.8 crore farmers under the PM-KISAN scheme and crop insurance to 4 crore farmers under the PM *Fasal Bima Yojana*. The e-NAM initiative integrates 1,361 *mandis*, supporting trading volumes of ₹3 lakh crore. Women's empowerment is equally emphasised, with 30 crore *Mudra Yojana* loans disbursed to women entrepreneurs and a significant rise in female enrolment in higher education and STEM courses. Initiatives like the *Saksham Anganwadi* and *Poshan 2.0* aim to improve nutrition delivery and early childhood care.
- India is committed to achieving 'Net Zero' by 2070, with viability gap funding for wind energy, setting up coal gasification and liquefaction capacity and phased blending of CNG, PNG and CBG. The government supports rooftop solarisation for one crore households and the adoption of e-buses for public transport. A new biomanufacturing and bio-foundry scheme will support environmentally friendly alternatives. Efforts to enhance non-fossil fuel electricity capacity and the distribution of energy-efficient devices under the UJALA scheme further underscore the commitment to sustainability.
- The budget outlines significant investments in infrastructure, including the implementation of three major railway corridor programmes under PM *Gati Shakti* to improve logistics efficiency and reduce costs. The promotion of foreign investment through bilateral investment treaties is also planned.

Notable improvements in physical infrastructure include the doubling of national highways and FDI inflow, as well as expansions in port, rail and airport capacities.

- The Aspirational District Programme aims to accelerate development in 112 districts, focusing on employment generation and healthcare improvements. Initiatives such as cervical cancer vaccination for girls, the *Saksham Anganwadi* and the *Poshan 2.0* programme, are expedited for better nutrition delivery. The U-WIN platform will enhance immunisation efforts, while *Ayushman Bharat* health coverage will be extended to ASHA and Anganwadi workers.
- The *Pradhan Mantri Awas Yojana (Grameen)* is nearing its target of 3 crore houses, with an additional two crore planned for the next five years. A new housing scheme for the middle class will encourage home ownership. States are encouraged to develop iconic tourist centres to promote local entrepreneurship and attract business. Long-term, interest-free loans will support states in these development efforts.
- The government aims to promote private and public investment in post-harvest activities and expand the application of Nano-DAP in all agro-climatic zones. The *Atmanirbhar Oilseeds Abhiyaan* seeks self-sufficiency in oilseed production and a comprehensive programme for dairy development is planned. The *Pradhan Mantri Matsya Sampada Yojana* will enhance aquaculture productivity and exports, with five integrated aquaparks to be established.
- The budget highlights India's resilient economic performance, noting a declining current account deficit and unemployment rate, alongside rising digital transactions and GST collections. Tax reforms have led to a significant increase in direct tax collections and the number of return filers, with faster processing of refunds benefiting consumers. Positive sentiments about GST are reflected in industry feedback and survey results, showing benefits in logistics cost reduction and supply-chain optimisation.
- The budget maintains continuity in taxation, extending certain benefits for startups and investments by sovereign wealth funds and pension funds. Outstanding direct tax demands up to ₹25,000 for 2010 and ₹10,000 for 2011-15 will be withdrawn, benefiting approximately one crore taxpayers. The tax rates remain unchanged, with no tax liability for individuals with incomes up to ₹7 lakh under the new tax regime.
- The budget details allocations for specific ministries, with significant funds directed to Defence, Agriculture, Food Distribution, Road Transport and other key sectors. Major schemes such as *Ayushman Bharat-PMJAY*, solar power projects and the National Green Hydrogen Mission receive substantial funding to drive India's development agenda forward.
- The revenue and capital receipts and expenditures are projected to increase in the fiscal year, supporting the various initiatives outlined in the budget.

This financial framework ensures the effective capital expenditure required to sustain and accelerate India's growth trajectory.

Currently, India is the fifth-largest economy in nominal terms and the third-largest in PPP terms. By 2022, India's GDP had already surpassed that of the UK and France. Several estimates suggest that India's GDP will overtake Japan and Germany by 2030. For instance, S&P projects that India's nominal GDP will rise from \$3.4 trillion in 2022 to \$7.3 trillion by 2030. This rapid economic expansion is expected to make India the second-largest economy in the Asia-Pacific region. Preliminary forecasts by NITI *Aayog* indicate that by 2047, India's exports will be valued at \$8.67 trillion, while its imports will reach \$12.12 trillion. Additionally, India's average life expectancy is projected to increase from 67.2 years in 2021 to 71.8 years and the literacy rate is expected to rise from 77.8% to 89.8%. Several factors contribute to India's potential for economic growth. The demographic dividend is a significant advantage, with India's large and young population providing a skilled and productive workforce for various sectors. The expanding middle class is another vital factor, projected to grow from about 50 million in 2023 to over 500 million by 2050. This burgeoning middle class will create a massive domestic market and drive demand for goods and services. India's embrace of digital transformation and innovation in sectors such as e-commerce, fin-tech, ed-tech, health-tech and agri-tech also holds immense potential. These sectors can create new jobs, improve efficiency and increase access to services. Additionally, India's investments in green energy, green infrastructure and climate resilience aim to reduce its carbon footprint and enhance environmental quality, creating new opportunities for growth and development.

Despite these promising prospects, several challenges need to be addressed to realise the vision of a \$30 trillion economy. One major concern is averting the middle-income trap, for which surpassing a per capita income of \$5,000-6,000 will be critical. Another challenge is the ageing population. India's population is projected to peak at 1.64 billion by 2048 before declining, which presents challenges such as rising healthcare costs, pension liabilities and labour shortages. In addition, constantly maintaining high GDP growth rates is crucial. While the Indian economy is growing at a robust rate of around 8%, sustaining this growth over the long term will be challenging. Various estimates indicate that the economy will need to post an annual average growth rate of 9.2% between 2030-2040, 8.8% between 2040-2047 and an overall 9% from 2030 to 2047 to achieve the vision. The rupee-dollar exchange rate is another critical factor, as India's GDP in dollar terms is influenced by various factors such as inflation, trade balance, capital flows and monetary policy.

Geopolitical tensions also pose a significant challenge. India's complex geopolitical environment, marked by rising tensions with China, Pakistan and other neighbours, as well as changing relations with major powers like the US and Russia, can impact its economic trajectory. Additionally, stagnation in the agriculture and manufacturing sectors needs to be addressed. Improving productivity in agriculture, which employs over half of the workforce but contributes only 17% to GDP and revitalising the manufacturing sector is crucial for sustained growth. Lower labour force participation, particularly among women, is another significant challenge.

According to the Periodic Labour Force Survey Annual Report 2022-2023, India's labour force participation rate was 40.4%, below the global average of 61.4%. In order to overcome these challenges, several policy measures are necessary. Divestitures and privatisation of public sector enterprises can raise funds, improve productivity and attract foreign investment. Boosting the middle class by reducing tax rates or replacing personal income tax with a consumption tax can increase disposable income and drive consumption and growth. Improving education and skill development through initiatives like the NEP and Skill India Mission is crucial for creating a skilled workforce. Accelerating the NIP's execution and financing will improve connectivity, efficiency and quality of life.

Enhancing the manufacturing sector by improving the ease of doing business, labour laws and skill development will attract more investment. Attracting private investment in infrastructure and manufacturing projects is also essential for boosting economic growth. Implementing targeted structural reforms in the financial sector, urban planning and e-commerce can enhance productivity and competitiveness. Increasing capital accumulation by boosting investment as a proportion of GDP is critical, with the government playing a key role in supporting infrastructure projects and incentivising manufacturing.

In summary, VB sets an ambitious roadmap for India's transformation into a developed economy by 2047. Achieving this vision will require addressing significant challenges, leveraging the country's demographic dividend, expanding the middle class, embracing digital transformation and implementing robust policy measures. With focused efforts, India can aspire to become a \$30 trillion economy and a global leader in innovation, human development and sustainability.

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