Abstract of the CRISIL

Infrastructure Yearbook 2018

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Infrastructure Advisory

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CRISIL Infra Intelligence is a platform that aims to offer multi-dimensional views and insights on the infrastructure space in India

Foreword

The CRISIL India Infrastructure Conclave was launched last year as a platform to track, highlight and deliberate on emerging issues, challenges and opportunities in the domestic infrastructure sector.

The CRISIL Infrastructure Yearbook 2017, which was brought out on the occasion, had emphasised how deeper capital markets and access to funding were the key facilitations required to broad-base infrastructure financing. The yearbook also reiterated the need to draw private investments for sustainable acceleration in infrastructure spending. However, overall risk appetite in the private sector continues to be subdued amid the debt overhang, even though the renewables and highways sector have done relatively well.

To be sustainable, India's infrastructure build-out requires support from both, a vibrant private sector and healthy capital markets. and to bring investor confidence back, there is a need for a material change in public private partnership frameworks by addressing legacy challenges in policy, institutional capacity, project structuring, recalibration of risks, and flexible contracts. Deepening the financial sector to reduce over-reliance on bank financing is as critical. So both, the demand and supply sides of infrastructure financing need resolute tackling.

This edition of the yearbook also updates the CRISIL InfraInvex scores, which is arrived at after assessing the drivers and drags of private investments.

I am sure this report will provide useful perspectives to all stakeholders. I am also hopeful that some of the insights here will help advance the dialogue that would make India's infrastructure sector more resilient, sustainable and vibrant.

Season's greetings, and warm regards,

Ashu Suyash
Managing Director & CEO
CRISIL Ltd

Foreword

We take great pleasure in presenting the second edition of the CRISIL Infrastructure Yearbook, which comprehensively chronicles progress across sectors, and measures their attractiveness in terms of private investments using CRISIL InfraInvex, our unique investability index. Last year, CRISIL had estimated that India needs to spend ~Rs 50 lakh crore in five fiscals between 2018 and 2022 to build out infrastructure. The government has had to do much of the heavy lifting, with private investment capacity and risk appetite sharply down. Although private investments have been strong in the renewables and road construction sectors, several challenges remain, which impede broad-based revival and acceleration of public private partnerships (PPPs).

Ramp-ups in PPPs continue to be constrained by weak public counterparty institutions, inadequate project development rigour, and proximate factors such as land acquisitions and clearance. Additionally, prolonged debt overhang has limited private risk appetite and financing. These challenges require expeditious redressal, as government spending alone is inadequate to address the massive gaps. Getting PPPs back on track is critical to bridge infrastructure deficits sustainably.

Reason why this *CRISIL Infrastructure Yearbook 2018* has 'private infrastructure investment imperative' as its theme. It traces the progress of India's PPP programme and distills measures for its sustainable revival and acceleration. Chapters on sectors, too, reflect this focus.

We have also updated the CRISIL InfraInvex scores. With a record length of highway projects awarded under the hybrid annuity model and a successful debut of toll-operate-transfer in fiscal 2018, the road construction sector has leapt ahead. Renewables also remain a bright spot for investments, although recent headwinds have dragged the sector's score down. Power transmission remains a balanced risk investment destination, but *suo motu* allocation of projects to government entities reduces potential for private investment. The railways sector sees tangible progress on the dedicated freight corridor and electrification, but weakening operating ratio is a red flag. Urban infrastructure is weighed down by weakness in implementation capacity.

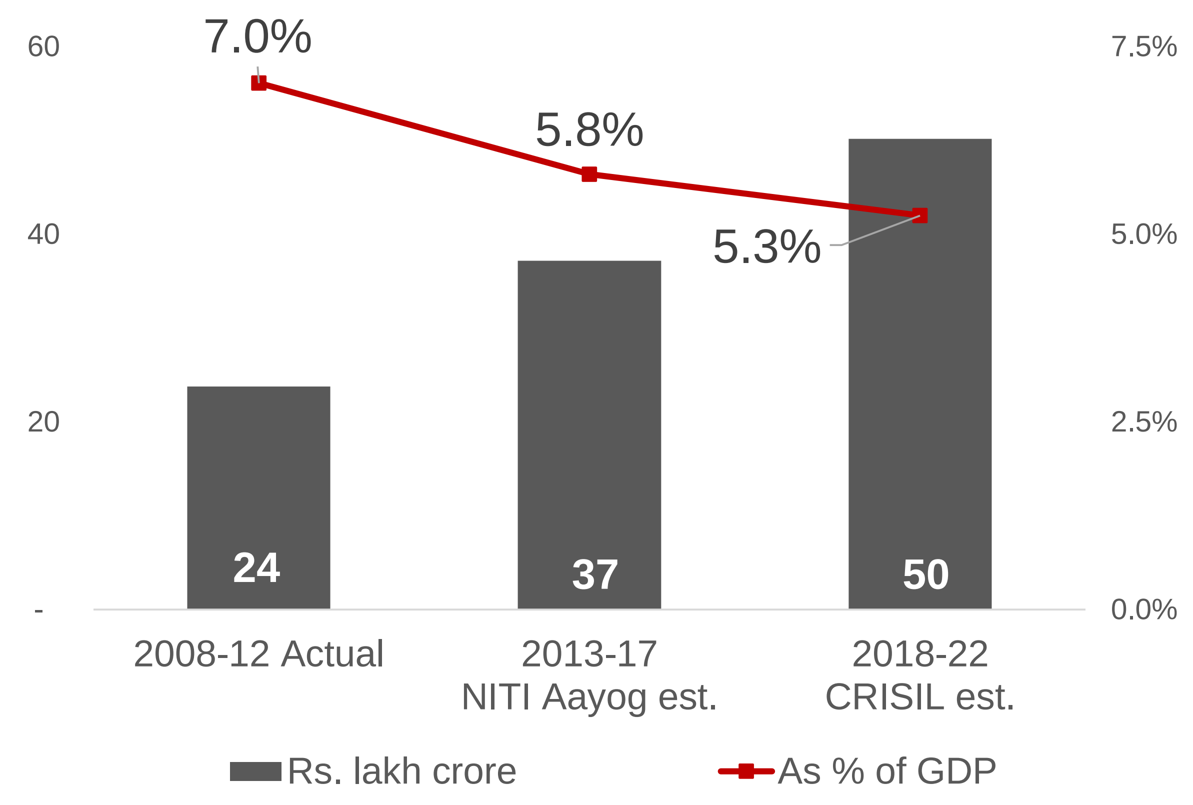
I am sure you will love perusing this yearbook, which reflects our commitment to contribute to the growing body of knowledge and insights to help take India's infrastructure development agenda forward.

Warm regards,

Sameer Bhatia
President
CRISIL Infrastructure Advisory

Infrastructure investment needs projected at ~Rs 50 lakh crore* between fiscals 2018 and 2022

Infrastructure spending (% of GDP)



- **CRISIL projections for 2018-22 factor in**
  - Average GDP growth of 7%
  - Sustained infra spending @ 5.3% of GDP

Investments spending *(Rs lakh crore)*

	FY 08-12 Actual	FY 13-17 RE Niti Aayog	FY 18-22 E CRISIL*
Power	7.8	12.7	**14.7**
Railways	2.0	3.8	**8.0**
Airports and ports	0.8	0.9	**1.0**
Highways	4.6	7.6	**10.0**
Urban	0.8	0.9	**5.5**
Others	7.4	10.2	11.0
Total	**23.8**	**37.2**	**50.2***

- **~76% of total requirement from the power, transport and urban sectors**
- **Doubling of investment in railways from previous plan and significant increase in urban infrastructure**

*** Estimate provided in CRISIL Infrastructure Yearbook 2017**

Private investment ~ Rs 20 trillion, or a third of total infra investments in 2008-17

But there has been a sharp deceleration in recent years

Transformative role in several infrastructure segments

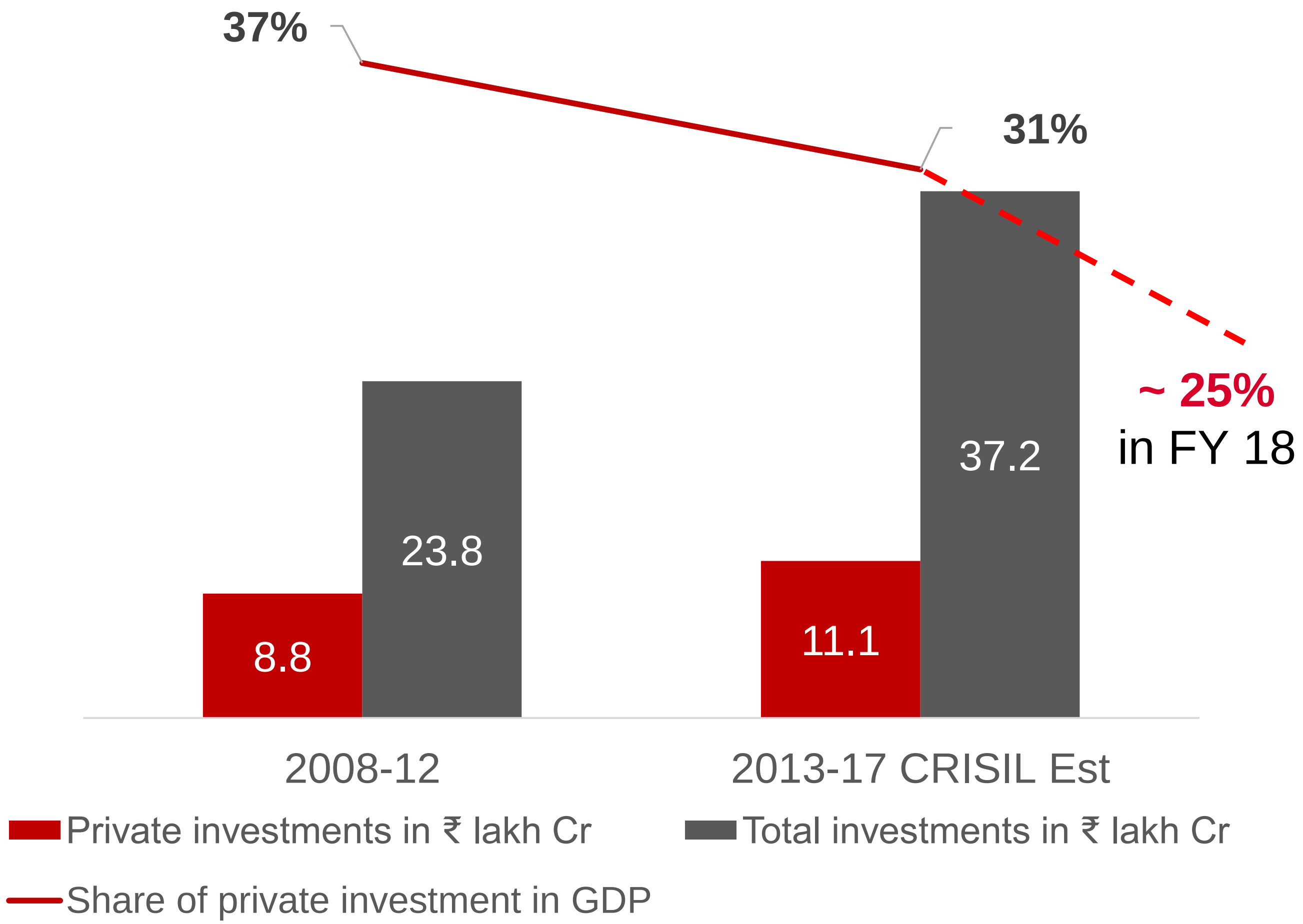
Highways ~₹2 lakh crore investment (FY 08 -17)

Power generation ~ 120 GW, 45 GW in green energy (FY 08-17)

Ports ~ 75% of traffic volumes hand led (FY 17)

Airports ~ 55% of traffic hand le (FY 17)

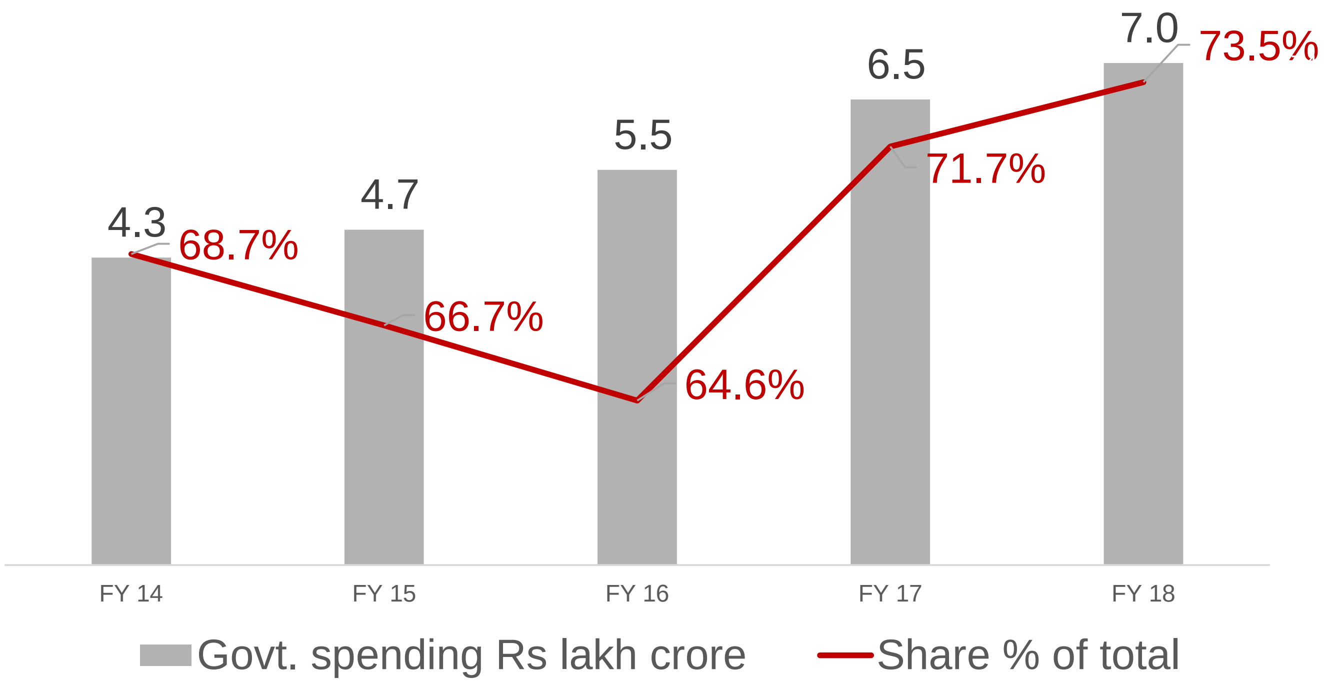
But share in total has fallen sharply



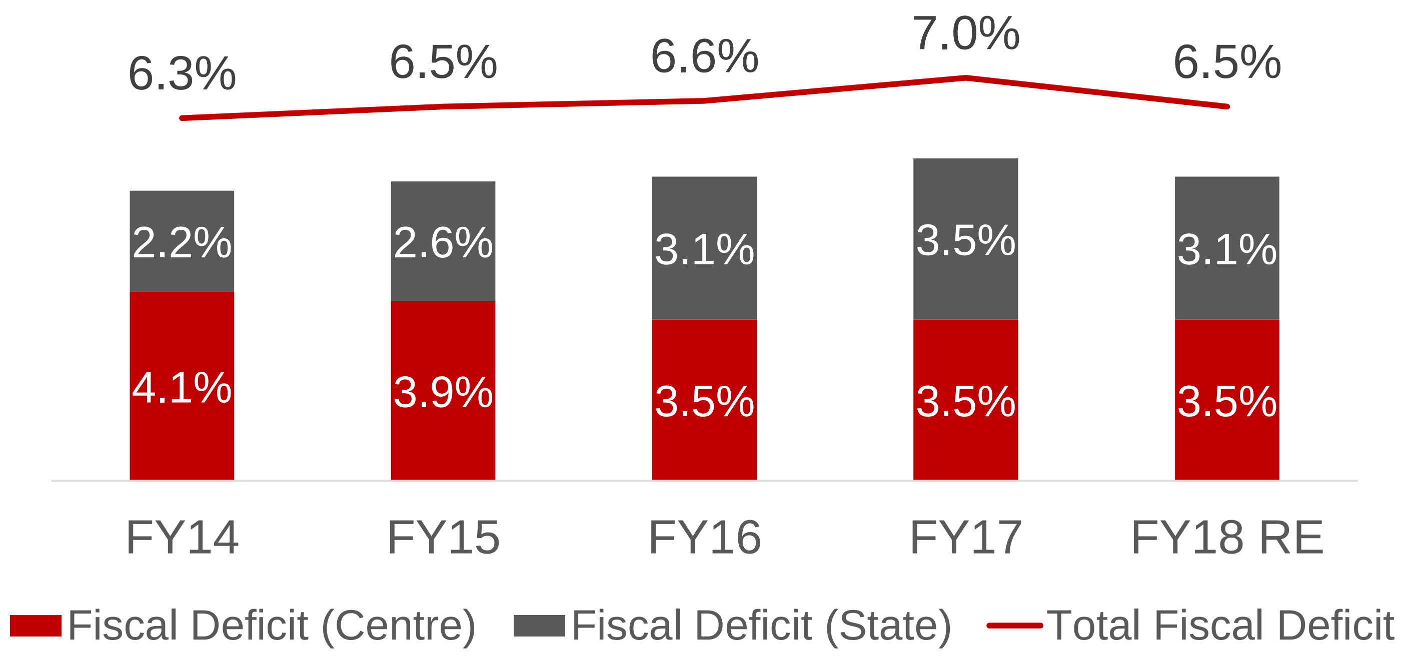
Government has done the heavy lifting on infrastructure in recent years

But fiscal constraints will limit future growth in public spending

Share of government investment in Infrastructure sharply up



But fiscal constraints could limit spending growth in future



^RE: Revised estimates

As fiscal concerns rise, a revival of private investment is key to sustaining and scaling infrastructure investment

PPP activity remains muted, and remains concentrated in a few sectors

Relatively bright spots

- **National Highways**
  - Action on stalled projects + HAM help revive PPPs
  - Successful TOT bid; scale-up under Bharatmala
  - Land acquisition, financial closure remain concerns

- **Renewables**
  - Continued momentum ~ 18 GW in fiscal 2018
  - Favorable policy support
  - Headwinds loom – stiffening tariffs, discom vulnerability, transmission gaps, canceled bids

The challenges

- **Thermal Generation**
  - ~35 GW of operational strand ed assets; debt overhang
  - Fuel, demand and financial constraints persist
  - Speedy resolution critical, policy intervention

- **Railways and urban infrastructure**
  - Inadequate programmatic push
  - Weak institutional and financial capacity
  - PPP models and capacity remain work-in-progress

Government support and policy push are critical to revive private capital

CRISIL InfraInvex

Sector scores update

CRISIL InfraInvex

Transmission, highways and renewables sectors most attractive

	2017	2018	Drags and drivers impacting score in 2018
Conventional generation	4.9	5.1	+ Centralised power procurement, directive to pass changes in cess and taxes, revision in coal escalation, rise in overall PLF and merchant power prices, old plant decommissioning - Stranded assets challenge remains, discoms still financially vulnerable
Renewables	7.0	6.8	+ Robust investment interest, especially from global funds - Safeguard duty, rising costs, currency depreciation, bid cancellations
Power transmission	8.1	7.9	+ Private transmission catching up in states; growth in project awards - Preferential allotments to PGCIL and its dual role in planning and operation
Power distribution	5.4	5.6	+ Electrification progress, policy support to universal access, ACS-ARR gap down - Slow pace of operating improvement, discoms remain financially vulnerable
Highways	6.9	7.4	+ Record PPP awards in FY18, successful TOT bid - Increase in land acquisition costs
Railways	5.0	5.0	+ Step-up in public investment, sharp pace of electrification to yield savings - Decline in operating ratio, slow progress in PPP projects
Airports	6.1	6.4	+ Strong traffic growth, ongoing changes to PPP framework - Slow progress in PPP bids
Ports	6.6	6.7	+ Window to migrate old PPP terminals to new regime, cabotage law changes - Slowing traffic growth and capacity overhang
Urban	4.5	4.6	+ Municipal bonds in a few cities, slow pick-up in flagship government schemes - Implementation capacity limitations continue to constrain absorption

Resolving key challenges to improve investability

Power

- Improving competitive land scape for signing of PPA and coal allocation
- Integrated energy planning and PPP in distribution

Road and Highway

- Regulatory separation (NHAI)
- Improving bank credit and reducing irrational bid exuberance

Port

- Implementation of amendment of New Major Port Authorities Bill
- Regulatory strengthening and enhancing approval/ clearance processes

Aviation

- Robust PPP models to generate investor interest including foreign investors

Railway

- Hasten institutional reforms and Independent tariff regulation
- Rework and implement PPP models

Urban

- Institutional strengthening- capacity and empowerment of local bodies
- Revenue enhancement measure and municipal bonds issuance

Three vectors for reviving private investments in infrastructure

Three vectors to revive and accelerate private infrastructure investment

Wider array of PPP models, nuanced risk-sharing and contracts

- Look beyond BOT | tap monetisation and investment-light models | redraw contracts for flexibility and performance

Nurture empowered counterparties

- Ring-fence capabilities and capital in public institutions | Upfront preparation of bankable, shovel-ready projects

Interventions to deepen financial sector

- Thrust to new instruments, guarantee frameworks, bond markets

1: Wider array of PPP models, nuanced risk-sharing and contracts

- **Look beyond BOT, embrace varied PPP models with nuanced risk-sharing**
    - Consider contextual factors, development objectives and bidder ecosystem
    - Tap asset monetization in sectors/ assets with stable revenue
    - Adopt investment-light PPP options, including franchise arrangements, and performance-based contracts

- **Re-draw contracting frameworks for flexibility and performance**
    - Benchmark and align contractual frameworks with global best practices and stand ards
    - Strengthen performance monitoring
    - Regulatory independence and effectiveness

2: Nurture empowered public counterparties, strengthen project preparation

- **Ring-fence capabilities and capital in public institutions**
  - Intensify reforms and ensure institutional capacity building and delegation of powers
  - Remove barriers and distortions in land and labour markets
  - Nudge States to right-price infrastructure services and to accord thrust to universal infrastructure access

- **Upfront preparation of a bankable project pipeline worth ~$150 billion annually**
  - Creating in-house capacity with specialist capabilities to steer project preparation
  - Ring-fenced budgets for project preparation
  - Guidelines to empanel consultants and transaction advisors to undertake preparatory work
  - Rigorous multi-stage reviews to make projects shovel-ready and bankable

3: Create supply-side enablers to deepen infrastructure financing market

- **Deepen and diversify infrastructure financing land scape**
  - Intensify reforms and ensure institutional capacity building and delegation of powers
  - Remove barriers and distortions in land and labour markets
  - Nudge States to right-price infrastructure services and to accord thrust to universal infrastructure access

- **Sustained policy support to cement gaps in infrastructure financing**
  - Set up a well-capitalised national-level bond guarantee fund
  - Scale market instruments including InvITs and IDFs and NIIF
  - Sustained reforms to unlock and grow corporate bond markets

Annexures

CRISIL InfraInvex, which indicates investability by evaluating risks

Pillar 1: Policy direction

- **Policy consistency –** including extent of focus, clear programmes and projects pipeline
- **Public financing support –** budgetary outlays, and other public instruments for sector not de-licensed

Pillar 2: Institutional strength and regulatory maturity

- **Entity implementation capacity -** covering capacity and autonomy of organisation(s)
- **Financing models –** Availability of PPP and other financing models and access to capital markets
- **Regulatory robustness –** including independence, and effectiveness of regulatory institutions

Pillar 3: Financial sustainability

- **Cost recovery –** Extent of cost recovery, subsidy dependence
- **Demand risk –** Offtake and market risk in the sector

Pillar 4: Implementation ease

- **Track record –** Past performance versus targets
- **Externalities –** Approvals (land , too) and challenges

Uses C-IRIS proprietary framework that maps risks related to infrastructure projects

CRISIL InfraInvex assesses drags and drivers on scale of 1 to 10

- Scorecard scale and interpretation
  - The CRISIL InfraInvex is a 10-point index with ‘1’ reflecting least investment attractiveness and sector maturity, and ‘10’ reflecting highest investment attractiveness and sector development maturity.

1-3	**: Poor**
3-6	**: Weak**
6-8	**: Stable**
8-10	**: Mature**

- Drivers and drags underscore the favourable and unfavourable factors impacting each sector’s investment attractiveness

Parameter	Drivers	Drags
Policy direction	↑	↓
Institutional maturity and strength	↑	↓
Financial sustainability	↑	↓
Implementation ease	↑	↓

Power sector conventional generation

Proactive action to relieve stress, ease regulatory hurdles, but market dynamics poor

2017 score	2018 score
4.9/10	5.1/10

Investment requirement up to fiscal 2023: Rs 3.2 lakh crore

Drivers and drags

DRIVERS	DRAGS
• High Level Empowered Committee • Centralised procurement (2,500 MW) • Revision in coal escalation index • Establishment of DEEP portal • Demand pick-up and improved cost recovery in short-term	• Central gencos – PPAs via MoU and domestic coal through SHAKTI • Poor redressal and arbitration framework; delay in approvals • Aggressive bids, lack of fresh PPA, and offtake risk • Raising finance a challenge

Competitively bid PPAs, centralised power procurement and equitable distribution of fuel will potentially revive the sector

Power sector renewables generation

Policy uncertainty, weak rupee and aggressive bidding hinder achievement of full potential

2017 score	2018 score
7.0/10	6.8/10

Investment requirement up to fiscal 2023: Rs 3.5 lakh crore

Drivers and drags

DRIVERS	DRAGS
• Policy push - 175 GW by FY22 • Centralised procurement • Low-cost financing availability • Levelised cost of energy dipping • Success of solar parks	• Safeguard duties on imports • State reluctance and counter-party risk • Aggressive bidding; curtailment and renegotiation of PPAs • Land acquisition and transmission

Regulatory alignment and discouraging PPA renegotiation will improve investment climate

Power sector transmission

Dual role of PGCIL and projects on nomination basis eat up a chunk of the competitive pie

2017 score	2018 score
8.1/10	7.9/10

Investment requirement up to fiscal 2023: Rs 3.4 lakh crore

Drivers and drags

DRIVERS	DRAGS
• $3.5 billion investment in GEC and proposed implementation of GNA • Strong execution capability of PGCIL • Assurance of regular revenue streams • Doubling of inter-regional transmission capacity between FY13 and FY18	• Contracts awarded on nomination basis to PGCIL • Dual role of PGCIL – transmission planning and interstate execution • Slow state level planning • Right of way issues

Reduce projects on nomination basis and address dual role played by PGCIL to ensure larger private sector participation

Power sector distribution

Slight upturn in demand and reduction in ACS-ARR gap improve fare; but a long way to go

2017 score	2018 score
5.4/10	5.6/10

Investment requirement up to fiscal 2023: Rs 3 lakh crore

Drivers and drags

DRIVERS	DRAGS
• Central schemes UDAY, IPDS, DDUGJY, 24x7 PFA, Saubhagya • Pockets of success in PPP, such as DF • Slight improvement in recovery because of UDAY • Pockets of success in feeder separation and distribution metering	• Poor baseline data quality, monitoring and reporting mechanisms • Miss on AT&C loss reduction target under UDAY scheme; • Inadequate tariff hikes and lack of targeted subsidy • Poor governance structure and lack of regulatory independence

Improve governance, structure PPP projects, step up use of technology for improving discom health

Roads and highways sector

Well-defined programmes, budgetary support, mature PPP models to enable investability

2017 score
6.9/10

2018 score
7.4/10

Investment requirement up to fiscal 2023 – Rs 10 lakh crore

Drivers and drags

DRIVERS	DRAGS
• Well-defined national programmes, viz. NHDP, Bharatmala, Setu Bharatam • Clear pipelines and commensurate increase in budgetary support • Strong credit profile of NHAI; HAM and TOT models driving private investment, mature PPP models • Fairly stable toll policy regime; electronic/ digital toll stepped up; sizeable VGF and increased public allocation on-year • Steady reduction in median delays in project completion	• NHAI's status as owner-regulator continues • Expressway programme slow off the blocks • EPC still dominates contracting • Share of BOT-toll bids declines, irrational bidding at times remains a concern • Dip in project awards in H1 FY19 • Increasing land acquisition cost

Regulatory separation (NHAI), addressing land acquisition challenges can make sector more attractive

Railways

Innovative funding, first PPP annuity project, focus on reforms augur well

2017 score	2018 score
5.0/10	5.0/10

Investment requirement up to fiscal 2023 – Rs 9 lakh crore

Drivers and drags

DRIVERS	DRAGS
• Thrust on investment of Rs 8.5 lakh crore over five years; MoU with LIC; sharp capex increase during 2014-17	• Chronic under-investment and incomplete implementation of reforms proposed
• 100% electrification plan – leads to savings	• Limited private sector participation
• Some forward movement on decentralisation; Cabinet nod for rail regulator, though delayed	• Station re-development PPPs lag
• First PPP Annuity project - Essel Infraprojects	• Independent tariff regulation not in place
• First packages of DFC expected to start work; LA for DFC finally achieved	• Operating ratio becomes adverse; competition from airlines in higher classes
• Planned elimination of unmanned railway crossings by 2019; initiatives to introduce high speed locomotives, modern coaches	• Spate of recent accidents have raised concerns on safety

Identifying and structuring PPP projects and operationalising regulatory framework will push private sector participation

Aviation sector

Nabh Nirman, UDAN and new airport models to improve investability

Investment requirement up to fiscal 2023 – Rs 0.5 lakh crore*

2017 score	2018 score
6.1/10	6.4/10

Drivers and drags

DRIVERS	DRAGS
• Nabh Nirman initiative to target a billion trips in next 10 years; 100+ airports to be developed	• Capacity constraints in larger airports, high aviation turbine fuel prices, tax burden
• Next phase of UDAN to connect tourist destinations to major cities	• Low appetite for PPP in O&M, brownfield and smaller airports
• Predetermined tariff for greenfield airports under consideration	• AERA capacity constraints and delays
• New airports developed under pre-determined tariff model outside AERA's purview	• Regulatory uncertainty and delay in operationalisation of routes (under UDAN)
• Rising traffic growth and revenues for PPP	• Airport expansion faces externality challenges such as land acquisition

** Ports and Airports combined*

Focus on development of smaller airports and reduce procedural delays for improving investability

Ports and shipping sector

Bigger budget outlay, cabotage relaxation, firmer margins to spur investments

Investment requirement up to fiscal 2023 – Rs 0.5 lakh crore*

2017 score	2018 score
6.6/10	6.7/10

Drivers and drags

DRIVERS	DRAGS
• Migration of older terminal operators in new rate regime; relaxation in cabotage law lifting restrictions on foreign vessels • Doubling of budget outlay for FY15-19 • 100% foreign direct investment • Major ports transitioning to land lord port model; Cabinet approval of revised MCA for PPP projects • PPP projects structured to recover full costs • Improvement in turnaround time and operating margins	• Delay in New Major Port Authorities Bill, overhaul of the TAMP regime • Low SFC project approval cut-off • Tepid trade growth and decline in capacity utilisation • Inordinate time taken for concept-to-implementation of greenfield ports • Land acquisition and environmental clearances for greenfield ports a challenge

** Ports and Airports combined*

Rehaul of TAMP regime and implementation of New Major Port Authority Bill will further improve investability

Urban sector

Investability set to look up on VCF, property tax and municipal bond issuances

2017 score
4.5/10

2018 score
4.6/10

Investment requirement up to fiscal 2023 – Rs 5.5 lakh crore

Drivers and drags

DRIVERS	DRAGS
• Increase in central transfers and Rs 2.5 lac crore allocation under Smart Cities and AMRUT • Revival of interest in municipal bonds • Revenue enhancement through VCF and property tax • Rs 20,000 crore projects awarded	• Utilisation and absorption capacity at the city level • Weak institutional capacities • Lack of O&M cost recovery, barring in a few pockets • Slow pace of execution of Smart City projects and other programs

Institutional strengthening, revenue enhancement measures and faster execution can improve score

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