Create a 3X bigger Indian Railways that is economically viable

20 November 2016

Two aspects of improving Indian Railways capacity

Improve throughput

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Build new infrastructure fast

Scope to improve throughput significantly

Key factors of throughput	India	China	Germany	North America
Average speed of train (kmph)	**24**	35	40	38
Horsepower/ton	**1**	2	2.5	1.9
Minimum time between 2 trains (in mins)	**15**	6	5	15
Max. gross load/train (tonnes)	**5,400**	20,000	6,000	20,000

Different speeds reduce overall throughput

SPEED WHEN LOADED

Type of wagon/coach	In Kmph
LHB	150
ICF	130
BLC	100
BCN/ BRN	75
BOXN/ BOBR	60
BOST	50

Solutions for throughput improvement

- Further improve horsepower/ton ratio to 2; has already been increased to 1.5
- Switch to lighter high-speed wagons and coaches for higher payload and speeds
- Remove all permanent speed restrictions
- Reducing the speed differential – allow higher speed for freight wagons
- Higher axle load for freight wagons
- All slow passenger trains to be replaced with DEMU/ MEMU trainsets

Improving terminal capacity is critical

The targeted incremental terminal capacity for Indian Railways is 400 goods sheds, 260 private sidings and 15 logistics parks

- Improve existing good shed – 24X7 functioning
- Revamp existing goods sheds in line with pre-defined infrastructure requirements
- Build a dedicated cross-functional team to fast-track set-up of terminals
- Design policy framework to bid out goods sheds (including land) to private players
- Partner with existing government agencies (e.g., DMIDC, State Governments, Ministry of Roads) to build multi-commodity, multi-modal freight logistics parks

Factors affecting infrastructure build-out

Target to increase new rail line/ doubling/ GC from 7 to 14 km day

- Low quality of DPRs with challenges in financial and physical estimates
- Sub-optimal allocation of resources due to large shelf – need to prioritize projects
- Contract structures that need improvement
- No sophisticated method of project monitoring
- Linking of project teams to project deliverables is weak

Improve quality of DPRs

Avg. time provided for DPR preparation	4-6 months
% where DPRs are re-worked	90%
Max. permissible limit for DPR consultants	INR 3 lakh per km

- Limited technology used in preparation of DPRs

- Allocation for preparation of DPRs to be as per requirements of project and terrain
- Develop Partners/ Consultants to make quality DPRs after detailed investigations using modern technology

Improve project identification, sanction and post-completion evaluation

- Budgeted aspiration of certain minimum number of projects to be commissioned each year
- 2-stage process for project execution post in-principle sanction
- Committed Funds availability during the execution of the projects

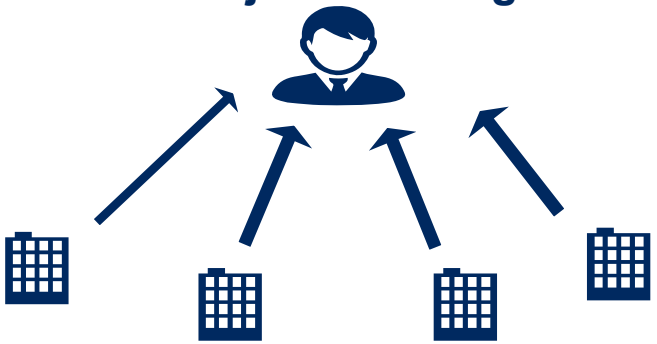
Improve contract structure

- Introduce composite contracts to get right contractors
- Encourage EPC/ outcome mode of contracts
- Structure contracts to include incentive/ penalty clauses linked to project milestones

Change project monitoring significantly

Current process

ED – Proj. monitoring



Every zone submits a **monthly physical** progress report; 16 reports received each month

Adopt project tracking technology

- Leverage technology
  - Building Information Modeling (BIM) for online real-time tracking
  - Drones technology to measure physical progress
- Performance measurement against pre-defined metrics – simple dashboards for reviews
- Project teams to be appropriately empowered with well-defined delivery schedules, stable tenure and incentives

Implementation timeline

Milestone	Planned date of completion
Implementation of throughput quick wins (HP/ trailing load)	June 2017
Implementation of throughput – strategic measures (Replacing with MEMU/ DEMU, high speed freight wagons, PSRs)	Jun 2017 to Dec 2021
Upgradation of goods terminals/ sheds	June 2017 to June 2020
Fast-tracking the infrastructure development projects from 7 to 14 km per day	April 2018 onwards

Thank You