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RGICS ISSUE BRIEF

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The Dismal Safety Standards of Indian Railways

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RGICS Issue Brief

The Dismal Safety Standards of Indian Railways

2

KEY MESSAGES

- The CAG report on maintenance of track on heavy traffic sections¹ (released on 13 March 2018) notes that during 2014-2017, 16 accidents/derailments took place due to deficient track maintenance in the selected five Zonal Railways. The reasons were rail fracture, weld fracture, track defects, defects in point, track buckling, etc.
- According to the Railway Minister's White Paper of February 2015, out of the total track length of the railways, 4500 km should be renewed annually. However, the annual length of tracks renewed has been declining for the past four years as compared to the earlier periods.
- In the last four years, i.e. 2014-15 to 2017-18 (up to 28 Feb, 2018), there were 259 consequential train derailments in which 361 persons lost their lives and 860 sustained injuries.
- The introduction of the Rashtriya Rail Sanraksha Kosh (RRSK) came at the cost of the Depreciation Reserve Fund (DRF), which is meant for financing the replacement of old assets – including tracks, rolling stocks, signalling systems, etc. In Revised Estimates 2017-18, the entire amount of Rs. 5000 crore of contribution towards RRSK was advanced from the DRF. Worse, the allocation for the DRF in the 2018 Budget was brought down to Rs. 500 crore – a 90% reduction from the 2017-18 (RE) figure.
- The CAG audit observed shortages of staff in different safety categories responsible for track maintenance in selected Zonal Railways ranging from 9 to 22 per cent. This needs to be read in the context of the observation by the 12th report of the Parliamentary Standing Committee on Railways that there is definite callousness by the government towards promptly filling up the vacancies in safety category.
- The 15th report of the Parliamentary Standing Committee on Railways expressed dismay at the fact that there is no technological support available to the loco-pilots to avoid Signal Passing at Danger (SPAD). Although the Ministry of Railways on 7 March, 2018 stated that it plans to provide Automatic Train Protection (ATP) signalling system conforming to European Train Control System Level-2 (ETCS-L2) standards to provide technological aid to loco-pilots for avoiding SPAD, the plan has now been rolled back at the insistence of the Prime Minister on the grounds of high costs and being “untested for Indian conditions.”

¹ <https://www.cag.gov.in/content/report-no45-2017-compliance-audit-maintenance-track-heavy-traffic-sections-over-indian>

RGICS Issue Brief

The Dismal Safety Standards of Indian Railways

PART I. BACKGROUND

The Comptroller and Auditor General (CAG) recently released its compliance audit report on the maintenance of track on heavy traffic sections. Tabled in the Parliament on 13 March, 2018, the purpose of the audit was twofold: first, to assess whether the maintenance of tracks was planned and undertaken following the laid down norms and instructions; and second, to check whether the resources/infrastructure required for maintenance of tracks was available and used efficiently and effectively. For this, the audit reviewed 37 selected sections (29 high density routes [HDN] and eight non-HDN routes) of five Zonal Railways – namely, North Central Railway (NCR), East Central Railway (ECR), South Eastern Railway (SER), Southern Railway (SR), and South Western Railway (SWR). These sections were running with a line capacity of 100 per cent to 168 per cent in 2015-16, except four sections where line capacity was between 90 per cent and 99 per cent.

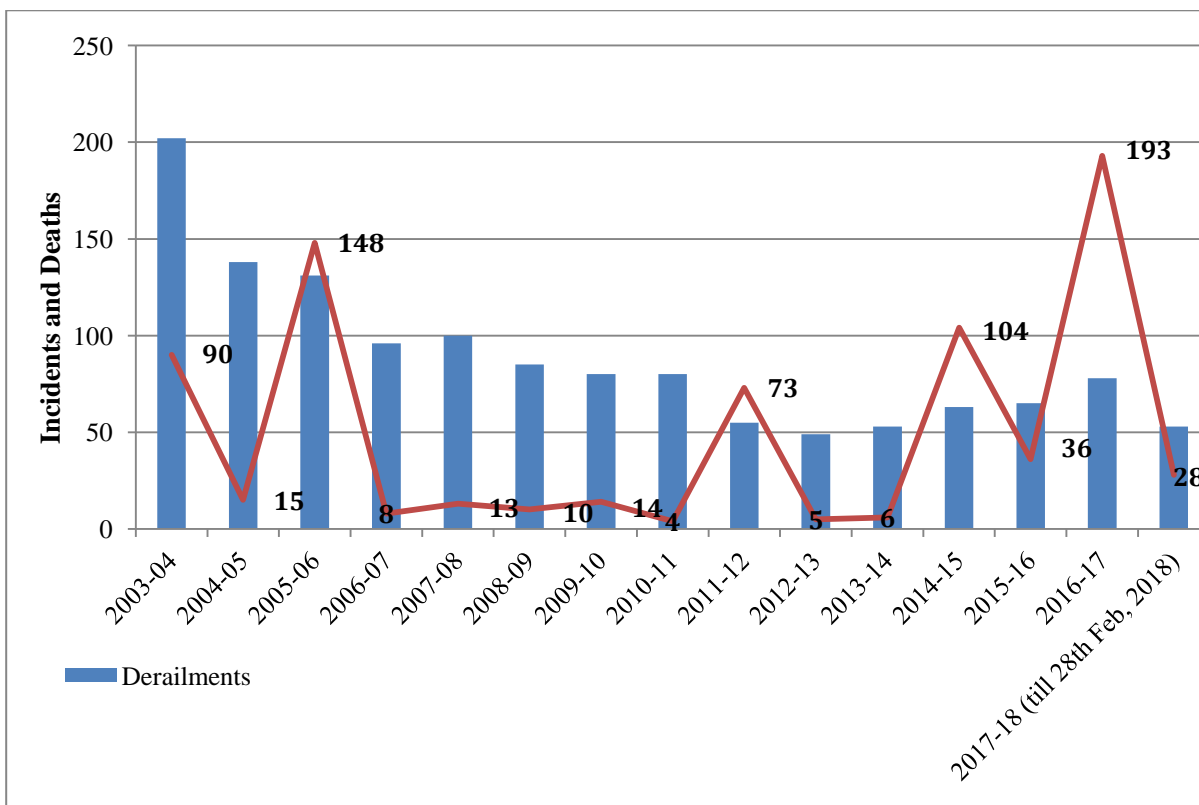
The issue of track maintenance has assumed special importance in the last four years – a period marked by a spate of train derailments across the country. In the last four years, i.e. 2014-15 to 2017-18 (up to 28 Feb, 2018), there were 259 consequential train derailments in which 361 persons lost their lives and 860 sustained injuries. Data collated from the Rajya Sabha² shows that at 193 deaths, the death toll from train derailments in 2016-17 was the highest it has been in nearly one-and-a-half decade.

² <http://164.100.47.190/loksabhaquestions/annex/14/AU3096.pdf> and <http://164.100.158.235/question/annex/242/Au3473.docx>

RGICS Issue Brief

The Dismal Safety Standards of Indian Railways

Figure 1
Train Accidents and Derailments over last 15 years



Source: Rajya Sabha

Thus, increased derailments and the subsequent loss of lives of hundreds of passengers necessitates that we draw attention to the distressing state of safety in the railways. Hence, in the light of the CAG audit report, the aim of the present document is to take stock of the shortcomings of the government in ensuring adequate safety standards in the railways during the last four years, i.e., 2014-2018. The document summarises the major discoveries of the CAG audit and contextualises them by reference to previous findings and recommendations of the parliamentary standing committee on railways and available government data on track maintenance, renewals, understaffing, technology, etc.

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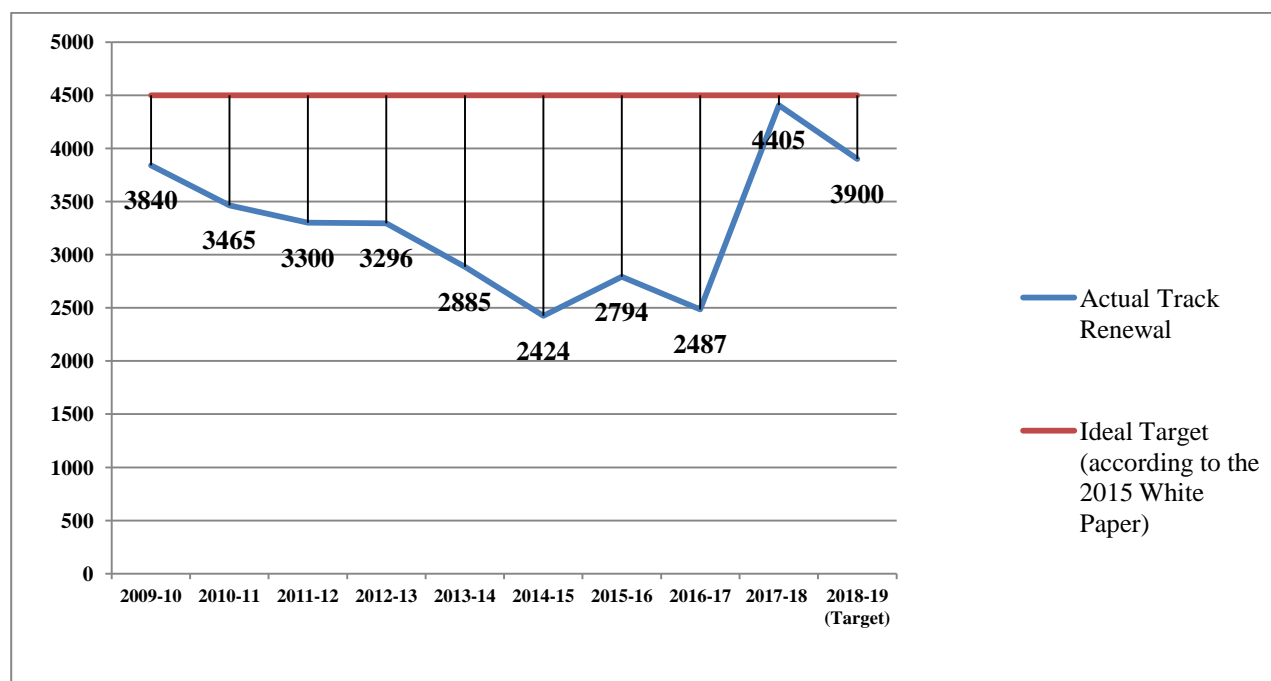
The Dismal Safety Standards of Indian Railways

PART II. KEY ISSUES

1. Track Renewal and Maintenance

Amongst a number of challenges that mar the safety standards of the Railways, delayed track renewals is one of the most pressing issues today. According to the Railway Minister's White Paper of February 2015, out of the total track length of the Railways, 4500 km should be renewed annually.³ However, the annual length of tracks renewed has been declining for the past four years as compared to the earlier periods.⁴

Figure 2
Annual Track Renewal (in Kms)



Source: Lok Sabha; Rajya Sabha; and Media Reports

Although one sees a progressive decline in track renewal starting from 2009, the figures touched their lowest marks during 2014-15 to 2016-17. The CAG report highlights that during this period, 16 accidents/derailments took place due to deficient track maintenance in the selected five Zonal Railways. The reasons were rail fracture, weld fracture, track defects, defects in point, track

³ http://www.indianrailways.gov.in/railwayboard/uploads/directorate/finance_budget/Budget_2015-16/White_Paper-English.pdf

⁴ <http://164.100.158.235/question/annex/242/Au3473.docx>; <http://164.100.47.190/loksabhaquestions/annex/14/AU3102.pdf>; <http://pib.nic.in/newsite/PrintRelease.aspx?relid=178166>; and <http://164.100.158.235/question/qhindi/228/Au3551.docx>

RGICS Issue Brief

The Dismal Safety Standards of Indian Railways

6

buckling, etc. Further, there were 274 cases of rail fractures and 465 cases of weld failures during 2015-16 and 2016-17 in the selected section of five Zonal Railways. During this period, seven accidents occurred due to rail fractures/weld failures in these five Zonal Railways.

According to statements in the media by railway officials, the Railways carried out renewal work of 4405 km in 2017-18,⁵ a satisfactory figure as compared to the last four years. However, this is still slightly below the ideal target of 4500 km. Further, the target for 2018-19 has been set at 3900 km, again below the target.⁶ This again leaves room for backlogs in track renewal.

One of the ways through which the Railway detects weld failures and fractures in the tracks is by Ultrasonic Flaw Detection (USFD) machines. Through these machines, cracks can be located in the tracks by sending an ultrasonic signal into the rail and measuring the time it takes for the signal to bounce back.

Reviewing the utilisation of USFD machines over 37 selected sections of five Zonal Railways, the CAG report points out that a number of cases of rail fracture/weld failure were detected within 30 days of these having undergone USFD testing, which shows deficiency in the quality of USFD testing. Additionally, in selected sections, USFD testing was not undertaken as per the required time. This is significant, since the report notes that timely USFD testing without shortcomings in the quality could help avoiding accidents.

2. The Depletion of the Depreciation Reserve Fund

It is substantial that in an apparent bid to rectify its security failures, the government in 2017-18 introduced a ₹1 lakh crore-safety corpus fund, namely 'Rashtriya Rail Sanraksha Kosh' (RRSK). However, the introduction of the RRSK came at the cost of the Depreciation Reserve Fund (DRF), which is meant for financing the replacement of old assets – including tracks, rolling stocks, signalling systems, etc. On being asked by the Parliamentary Standing Committee on Railways (PSCR hereafter) about the financing and expenditure out of the RRSK, the Ministry submitted that in Budget Estimates 2017-18, the Railways' contribution of ₹5000 crore towards the RRSK comprised of ₹4000 crore transferred from the DRF and ₹1000 crore from Railways' revenue surplus. In Revised Estimates 2017-18, the entire amount of ₹5000 crore of contribution towards RRSK was advanced from the DRF.⁷ Worse, the allocation for the DRF in the 2018 Budget was brought down to ₹500 crore – a 90% reduction from the 2017-18 (RE) figure. In their 13th report on Demand for Grants, the PSCR had stressed that “rather than appropriating separate funds to RRSK, diverting the amount already appropriated to two different funds i.e. Central Road Fund and Depreciation Reserve Fund is not a matter of financial prudence but jugglery of finances.”

⁵ <https://www.financialexpress.com/infrastructure/railways/indian-railways-creates-record-carries-out-highest-ever-track-renewal-of-4405-km/1119769/>

⁶ <http://164.100.47.190/loksabhaquestions/annex/14/AU3102.pdf>

⁷ http://164.100.47.193/isscommittee/Railways/16_Railways_19.pdf

RGICS Issue Brief

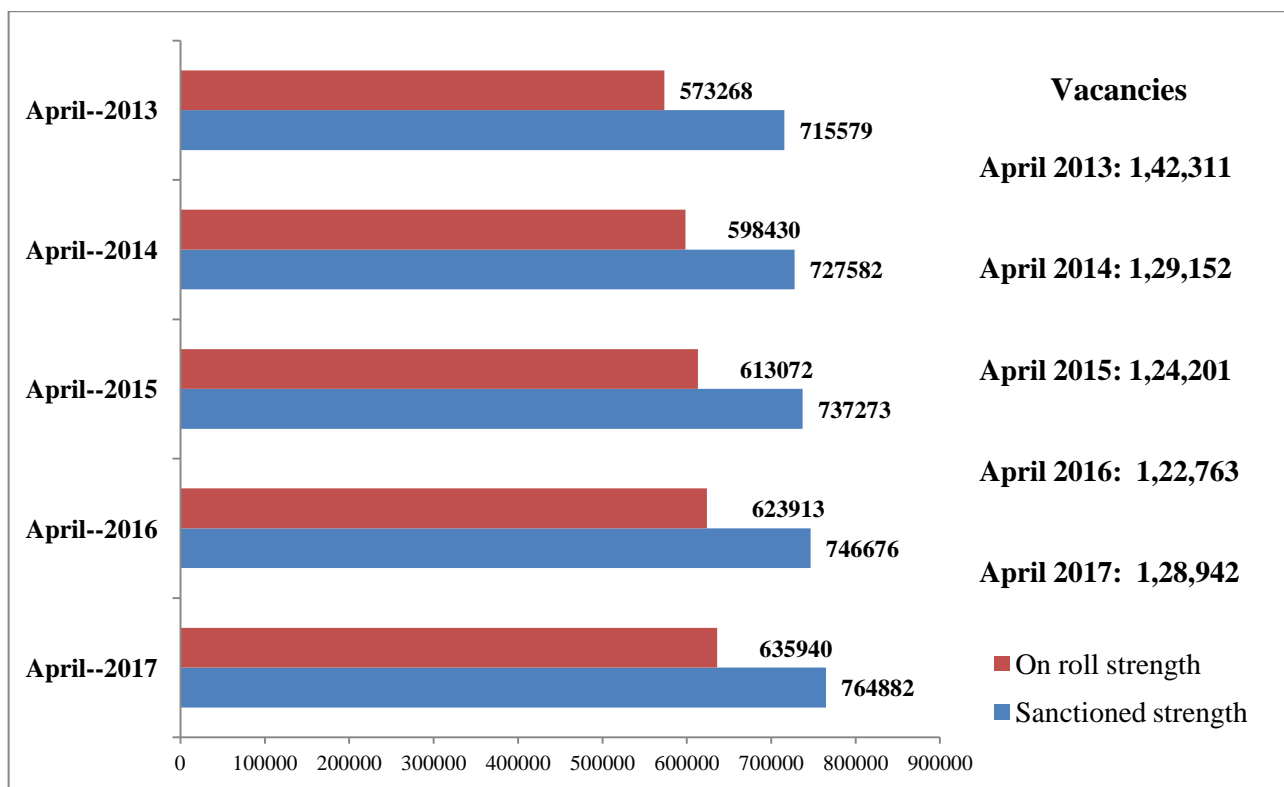
The Dismal Safety Standards of Indian Railways

3. Shortage of staff in safety category

The 15th report of the PSCR, presented to both houses of the Parliament on 3 August, 2017 noted that more than half of the accidents are on account of the lapses on the part of the railway staff. Out of 69, 71, 85 and 78 rail accidents during 2012-13, 2013-14, 2014-15 and 2015-16, respectively, 46, 51, 60 and 54 accidents, respectively were on account of the failure on the part of the railway staff. The faults of railway staff in such cases include carelessness, poor maintenance, adoption of short-cuts, non-observance of laid down safety rules and procedures.⁸

It is thus worrying that the CAG audit observed shortages of staff in different safety categories responsible for track maintenance in selected Zonal Railways ranging from 9 to 22 per cent. The CAG report further notes that the situation was made worse by diverting available track maintainers to work other than track maintenance. This observation needs to be read in the context of high levels of vacancies in the safety category of the Railways.

Figure 3
Vacancies in Safety Categories



Source: Parliamentary Standing Committee Reports

⁸ http://164.100.47.193/Isscommittee/Railways/16_Railways_15.pdf

RGICS Issue Brief

The Dismal Safety Standards of Indian Railways

As on 1 April, 2016, the Railways were functioning with a vacancy position of around 16.44% (vacancies as a percentage of sanctioned strength) in the safety category. The 12th report of the PSCR on ‘Safety and Security in Railways,’ presented to both houses of the Parliament on 14 December, 2016, had expressed concern in this regard. Noting that “there is definite callousness towards the need to fill up these vacancies promptly,” the Committee had recommended that the Ministry ensures that the posts for all the safety category posts are filled up promptly on regular basis.⁹ Despite this, as on 1 April, 2017, vacancies stood at 16.85%, highlighting virtually no change as compared to the previous year.

4. Technological Support to Loco-Pilots

According to 15th report of the PSCR, one of the most serious forms of railway accidents is collision due to Signal Passing at Danger (SPAD) – wherein a loco-pilot misses the red signal requiring her to stop. The report, however, expressed dismay to the fact that there is no technological support available to the loco-pilots to avoid SPAD, forcing them instead to depend upon their own vigilant watch on the signal. What makes it even more alarming is that with rail traffic going up, there has been substantial increase in number of signals and the loco pilot encounters a signal almost every kilometre.

The PSCR in its report noted that while it had advised the Ministry of Railways (Ministry hereafter) to thoroughly investigate the reasons for the increasing trend of accidents due to failure on the part of railway staff, the reply of the Ministry, stating that “lapses are duly investigated” while remaining silent on issue of technological aids for loco pilots, is “perfunctory.” The Committee recommended that the issue should be addressed properly and the Ministry should outline the steps taken in this regard.¹⁰

On 7 March, 2018, in a reply to a question in the Lok Sabha, the Ministry stated that it plans to provide Automatic Train Protection (ATP) signalling system conforming to European Train Control System Level-2 (ETCS-L2) standards on the entire Indian Railway Broad Gauge (BG) network. This, the Ministry noted, will provide technological aid to loco-pilots for avoiding SPAD.¹¹ However, according to media reports, the plan has now been rolled back at the insistence of the Prime Minister on the grounds of high costs and being “untested for Indian conditions.”¹²

⁹ http://164.100.47.193/lssccommittee/Railways/16_Railways_12.pdf

¹⁰ http://164.100.47.193/lssccommittee/Railways/16_Railways_15.pdf

¹¹ <http://pib.nic.in/newsite/PrintRelease.aspx?relid=177093>

¹² <http://indianexpress.com/article/india/pm-narendra-modi-says-no-to-railways-signalling-plan-worth-rs-78000-crore-5129432/>

RGICS Issue Brief

The Dismal Safety Standards of Indian Railways

PART III: WAY FORWARD

An inevitable result of the lack of stringent safety measures in railways is the loss of human lives, which, as data shows, in 2016-17 was the highest on account of derailments in nearly 15 years. However, as is clear by the CAG audit and the standing committee reports, safety in railways was compromised by the government in the last four years on various fronts – these areas range from track renewal targets to deficient track maintenance, from the DRF to vacancies in the safety staff, etc. Further, the introduction of the RRSK will have little effect on safety standards since till now it has been financed entirely through the already existing funds, such as the DRF and the CRF, under which renewal and infrastructural works were taking place anyway. These gaping holes necessitate that when it comes to Railways, the government puts safety at the top of its priority list since these have material repercussions on human lives.

A number of committee reports have stated that tracks forms the backbone of the rail transportation system and therefore needs to be maintained in a safe and fit condition. The CAG audit highlighted many of the accidents during 2014-15 and 2016-17 were due to rail fracture, weld fracture, track defects, defects in point, track buckling, etc. To this end, yearly renewal works should have been given utmost priority by the government and targets should have been commensurate with the actual requirement on the ground, i.e. 4500 km (as suggested by the 2015 White Paper) while at the same time taking into account the arrears from the previous years. It is a matter of concern that for three years (2014-15 to 2016-17) the annual track renewal track was below that for 2013-14. While it is heartening to see renewal of 4405 km in 2017-18, the target of 3900 km for 2018-19 must be revised upwards.

It is imperative that modern technological support be provided to loco-pilots conforming to ETCS level-2 standards on the entire Indian Railway BG network. There must be formal mechanisms to fund the modernisation of existing signalling systems which conform to ETCS level-1 standards along with their regular monitoring and evaluation.

Further, the introduction of the RRSK should not come at the cost of the DRF. As has been recommended by both the 13th and the 15th PSCR, the government should have a dedicated, non-fungible financing for the RRSK and the Ministry should ensure prudent deployment of the fund strictly on the works it has been assigned with regular scrutiny of the progress.

As noted, the ever-increasing vacancies in the safety category are worrying. The Ministry should conduct recruitments on a priority basis. However, given the long lead in time in the recruitment process and the training required once the safety personnel are recruited, the Ministry must plan its capacity requirements more efficiently. Further, the 15th PSCR report suggested that it is imperative on the part of the Railways to make a fair assessment in advance of the vacancies that are likely to arise in the course of a year due to retirements etc. and conduct recruitments accordingly so that there is no shortage of safety staff at any given point.