INDIAN ECONOMY
CURRENT AFFAIRS 2017
RAIL SAFETY

BACKGROUND
- Indian Railways is the largest employer in the country, employing over 1.3 million people.
- It is among the top 10 employers in the world.
- It is the third largest rail network by size globally.
- It handles the largest number of passengers in the world; 8,300 million annually.

WHAT HAPPENED?
- According to latest data, over the past 5 years (2012-17), a total of 586 accidents took place on the Indian railways network. These accidents led to 1,011 casualties and left 1,634 people injured
- Total serious train accidents declined from 135 in 2014-15 to 104 in 2016-17. But the number of derailments went up from 63 to 78 during the same period. The share of derailments in total accidents has soared from 47% in 2014-15 to 75% in 2016-17.
- In 2016-17, railways witnessed 78 derailments which left 196 passengers dead and 327 injured.
- Till August 2017, 85% of the total rail accidents occurred due to derailments.
- The Kakodkar Committee (2012) on Railway Safety found that out of 441 derailments it analysed, only about 15% were the result of sabotage, while the majority were caused by factors completely under the control of the Railway Administration.
- According to Niti Aayog,
  - Accidents due to derailments and level crossings accounted for 90% of total accidents, 85% casualties and 82% injuries on railway networks.
  - Human failures accounted for about 87% of all accidents, of which 46% of these are a result of railway staff failure and 41% failure of road users. The remaining was due to failure of equipment (2%), sabotage (2%), incidental factors (6%) and unknown errors (3%).
  - Since 2012, 6 out of every 10 rail accidents have occurred due to mistakes or negligence of railway staff.
- Other than human loss and infrastructure damage, it creates fiscal strain to the already financially-stressed Organisation in terms of compensation provided to victims.
CAUSES

- **CONSEQUENTIAL TRAIN ACCIDENTS:** These include collisions, derailments, accidents at level crossings, train fires and similar accidents that have serious repercussions in terms of casualties and damage to property. These exclude cases of trespassing at unmanned railway crossings.

- **DERAILMENTS:** Accounted for more than 50% of the total consequential accidents. Derailments occur due to wear and tear of track, failure of components like wheels, rolling stock and human error. Track defects had the highest share of around 44% in train derailments between 2012-13 and 2016-17.

- **LEVEL CROSSING (LC) ACCIDENTS** (manned and unmanned): Accounted for about 40% of the total consequential accidents. Currently there are about 15,000 Unmanned Level Crossings (UMLCs) in the railway network.

- **LACK OF MAINTENANCE:** The IR has a total track length of 1,14,907 km of. Of this, 4,500 km should be renewed annually. However, due to financial constraints, no more than half of that is generally carried out.

- **UNFILLED VACANCIES:** There is a persistent shortage of loco-pilots; about 20% of posts lie vacant. As a result, loco-pilots are overworked and prone to error in signals. There is also a 16% shortage in safety staff, which means others have to work longer and harder.

- **FINANCIAL MISMANAGEMENT:** Track upkeep and renewal are carried out from the Depreciation Reserve Fund. Significantly, instead of increasing this fund, Governments seem to decrease allocation to it. For instance, appropriation to the fund in 2016-17 Budget was 3,200 crore rupees which is nearly 60% less than the 2015-16 Budget figures.

- **PROCEDURAL LAPSE:** Non observance of mandatory operating procedure has led to several accidents recently, for e.g.: Utkal Express. Sometimes no speed restriction warnings are put at the maintenance spot. This is so that delays don’t reflect poorly on the performance report of the division and zone. This is far more dangerous than infrastructural failures, as it represents a breakdown of basic processes. According to the 15th report of the Parliamentary Standing Committee on Railways, more than half the accidents are on account of lapses on the part of the railway staff, of which the chief is loco-pilots missing signals.

- **SLOW EXPANSION:** The Standing Committee on Railways noted that the slow expansion of rail networks has put undue burden on the existing infrastructure, leading to severe congestion and safety compromises. Most accidents occur on
the over-capacity routes. Since independence, while the railways’ route kilometers have increased by 23%, passenger and freight traffic has increased by 1,344% and 1,642% respectively. This suggests that the railway lines are severely congested. Over-utilisation is leaving little time for safety inspections and essential maintenance of track and other infrastructure as well as the rolling stock.

- **NATURAL CAUSES:** Like floods, fogs, landslides etc.
- **OTHERS:** Although a small fraction, accidents occur also due to vandalism sabotage and terrorism.

**WAY FORWARD**

- **OPTIMIZE TIMETABLES:** The Railway timetable should be reworked to ensure that workmen get enough time for daily safety checks of rail tracks.
- **TIMELY INSPECTION:** Field inspections and accountability at appropriate levels are crucial. If track repairs need time and resources, it must be stated upfront.
- **IMPROVE INFRASTRUCTURE:** Replacing ageing and unsafe carriages with modern coaches has been slow and its supply has not kept pace with requirement. Travel demand has, meanwhile, continued to leap as economic growth both needs and encourages greater mobility. Therefore, avoiding accidents would also require significant investments towards capital and maintenance of railways infrastructure.
- **ELIMINATE UNMANNED LEVEL CROSSINGS:** The Standing Committee on Railways has recommended implementing audio-visual warnings at level crossings to warn road...
users about approaching trains. Also, **road speed-breakers** should be constructed before level crossing gates to reduce the speed of approaching traffic.

- **FILL VACANCIES:** IR has a **shortage** of over **2 lakh** employees, of which more than half belong to the **safety** category. Also, there have been recommendations for **regular refresher courses** for each category of railway **staff** covering case studies of accidents, technology upgradation and other related topics.

- **SAFETY MEMBER/DEPARTMENT:** A separate post for **Member (Safety)** in the Railway Board or/and a **department** must be created for the same.

- **INDEPENDENT SAFETY AUTHORITY:** Due to a 97.5% increase in the number of **causalities** due to railway accidents (from 122 in 2015-16 to 241 in 2016-17), a NITI Aayog report has suggested the setting up of a statutory independent outfit; ‘**Railway Safety Authority**’, to improve the safety situation of Indian railways. The **administrative structure of the railways** prevents proper safety oversight. The **railway board** is rule maker, operator and regulator at the same time. This prevents accountability from being fixed. The need of the hour is an **independent and empowered regulator**, outside the ambit of the railway ministry, to audit rail safety. It was also suggested by the **Kakodkar Committee**. This would be in line with **global best practices** where railway systems prepare an analysis of the **risks** faced and set **measures** to mitigate them.

- **IMPLEMENT TECHNOLOGICAL INNOVATIONS:** Initiatives that **reduce** the potential of **human errors** such as automated **inspection** and **asset monitoring** techniques, **mechanisation** of maintenance, **detection** systems for derailment and replacement of **over-aged assets** (tracks, signaling) needs priority emphasis. Also, technologies such as **ultrasonic flaw** detection to keep tracks safe, **crash-proofing** coaches among others must be looked at to carry passengers safely. Similarly, the production of **conventional coaches** that topple over one another in case of derailments must be discontinued. Instead, a shift to Linke Hofmann Busch (LHB) coaches, that do not pile, should be **expedited**.

- **SHIFT TO LHB COACHES.** Stop the production of conventional Integral Coach Factory coaches that topple over one another in case of derailments. **Shift to LHB coaches** that do not pile up on top of each other in the event of derailment should be expedited.

- **OPTIMAL UTILISATION**- According to the latest data, utilisation exceeds the capacity on 65 per cent of busy routes. It is 120 per cent to 150 per cent on 32 per cent of the routes, and utilisation exceeds 150 per cent on 9 per cent of the routes. For optimal performance, **utilisation should be 80 to 90 per cent of the capacity**.
RECENT GOVERNMENT INITIATIVES

- **MISSION ZERO ACCIDENT**: It was proposed in the Railway Budget of 2016-17 and comprises of 2 sub-missions;
  - a. **Elimination of Unmanned Level Crossings**
  - b. **TCAS (Train Collision Avoidance System)**: This safety system is aimed at avoiding head-on collisions by preventing train accidents caused due to driver’s error of Signal Passing at Danger (SPAD) or over-speeding. It is planned to equip 100% of the high density networks with the indigenous technology in the next 3 years.

- **RASHTRIYA RAIL SANRAKSHA KOSH (National Rail Safety Fund)**: For passenger safety, budget 2017-18 announced the creation of a ‘Rashtriya Rail Sanraksha Kosh’ with a corpus of 1 lakh crores over a period of 5 years. This fund will be utilized for track improvement, bridge rehabilitation, rolling stock replacement, human resource development, improved inspection system and safety work at level crossing, among other objectives.

- **GIS AND REMOTE SENSING**: Ministry of Railways has signed a memorandum of understanding (MoU) with ISRO for developing Remote Sensing and Geographic Information System (GIS) for Remote Sensing at unmanned railway crossings and other uses. This is a step in the right direction. (This could also be extended for natural disasters like landslides, heavy rains, fogs etc.)

- **ELIMINATION OF UNMANNED LEVEL CROSSINGS**: In the Union Budget 2017-18, elimination of all unmanned level crossings on broad gauge lines by 2020 has been proposed.

- **LHB COACHES**: The Government has taken a decision that henceforth only LHB coaches will be manufactured.
ANIL KAKODKAR COMMITTEE

- There should be an independent body like Railway Safety Authority under the government with chairman and experts from outside.
- A robust and powerful Safety Architecture should be there have a safety oversight on the operational mode of Railways.
- Elimination of both manned and unmanned level crossings within the next five years
  - To avoid accidents and deaths at level crossings which account for 65 per cent of total deaths.
  - To improve the line capacity as trains get held up at busy level crossing gates.
  - Save operation and maintenance costs incurred in the gates.
  - Doing away with level crossings needs Rs.50,000 crore. the investment could be recouped in about 8 years as the monetary saving from a phase-out of level crossings would be in the region of Rs.7,000 crore per annum.
- Advanced signalling system based on continuous track circuiting and cab signalling similar to European train control system Level-II on the entire trunk route of about 19,000 route kilometres within five years.
- Public Premises Eviction Act should be amended so that eviction of encroachment is easily possible with the help of local railway police forces.
- Better coordination between Indian railways and the policing authorities.
- Railways Act should be suitably amended to impose stringent punishment on persons found guilty of sabotage.
- Railways had classified at least 3,000 bridges to be 100 years old or more and 32 bridges as distressed structures, wanted vulnerable bridges fitted with water level gauges and turbine flow meters to measure flow which should be interlocked in a way to warn the driver of the approaching train.