Tech-Focused Traffic Policing in India

Mains: *GS-III - Infrastructure & GS-II – Governance*

Why in News?

Recently, the Prime Minister of the Netherlands visited Bengaluru Traffic Police's Traffic Management Centre (TMC), where he spoke about the Actionable Intelligence for Sustainable Transformation Management (ASTraM) system.

What is Tech-focused traffic policing?

- **Tech-focused traffic policing** – It refers to the use of advanced technologies—such as AI, the Internet of Things (IoT), and automated surveillance—to monitor road conditions, enforce traffic laws, and manage traffic flow in real-time.
- It is often termed as "*Intelligent Traffic Management Systems*" (ITMS), moves away from manual enforcement towards data-driven, automated, and proactive solutions that reduce the need for physical police presence on the road.

What is ASTraM and how does it work?

- **ASTraM** – It is a *smart traffic engine* which provides holistic insights into the road traffic scenario for Bengaluru city.
- **Introduction** – The Bengaluru traffic police have introduced ASTraM *in 2024* to enhance traffic management.
- **Purpose** – To provide situational awareness to take data-driven decisions for effective traffic management.
- This includes congestion alerts, incident reporting using BOT (mobile application), special event management, and dashboard analytics.
- **Development** – It was developed in *collaboration with the Dutch company Arcadis*, pools data from CCTV footage and open data sources to monitor and predict trends in real-time across Bengaluru's congested roadways.
- **Working –** It identifies congested areas, batches them, and then alerts relevant officers at every 15 minutes interval.
- By capturing both recurring and non-recurring congestion points, this application provides insights that can be *used for predictive traffic policing and incident reporting*.
- **Contrast to other systems** – Google Maps and other prominent mapping applications have been providing users with real-time traffic congestion data for years.
- They also report on traffic incidents and affected regions, but these systems *do not provide predictive services*.
- **Integration**

    - **e-attendance system** – Alerts are sent to the junction jockeys and sector officers, apart from various stakeholders for better traffic planning and management.
    - **Dashboard analytics** – It intends to provide actionable intelligence regarding traffic conditions, road safety, and enforcement.

What are the various technologies and initiatives used across the country?

- **Delhi** – Used AI cameras and Automatic Number Plate Readers (ANPR) to enforce bans on old vehicles to reduce air pollution.
- **Greater Chennai Traffic Police** – It uses an integrated traffic regulation system (ITRS) that involves AI and live feeds for efficient traffic management, allowing them to track down repeat offenders.
- **AI Camera Surveillance** – Kerala has implemented AI cameras to detect violations like not wearing helmets, triple riding, and speeding, aimed at reducing accidents.
- **Smart Traffic Management** – Bengaluru uses the Adaptive Traffic Control System (BATCS) to monitor 165+ intersections, adjusting signals based on real-time traffic flow.
- **ATMS on Expressways** – The Delhi-Mumbai Expressway (Dwarka section) utilizes advanced AI to monitor traffic, detecting infractions in real-time to enhance safety.
- **Automated Enforcement** – Cities are adopting automated challan systems via SMS, reducing manual intervention and increasing transparency.
- **Predictive AI** – Projects like iRASTE (Intelligent Solutions for Road Safety through Technology and Engineering) use AI to predict accidents and analyze high-risk areas.
- **Global Perspectives**
    - **Western countries (EU, North America)** – Predictive policing and surveillance often considered undesirable; some US cities have banned it.
    - **Asia & Latin America** – The greater acceptance and deployment of such systems.

What are the advantages of tech-focused traffic policing?

- **Consolidated Traffic Insights** – Intelligent traffic policing systems allow the authorities to quickly process data across many media formats (cameras, sensors, apps, reports).
- This gives authorities a consolidated picture of which areas require immediate intervention and urgent traffic policing solutions.
- **Predictive Preparedness** – The police can also build on this data to prepare for future events like processions, unrest, and traffic chokeholds.
- **More effective than existing app** – This is far more effective than relying on existing app-based GPS systems, or waiting for users to telephone or post their complaints on social media before taking action.
- **Accident Prevention** – Intelligent traffic policing systems have more localised data to work with, they can potentially prevent accidents that occur due to a mixture of Google Maps and human errors.
- For instance, take past incidents where Google Maps misdirected drivers onto unsafe bridges, leading to fatalities.

- **Surveillance & Enforcement** – Surveillance/intelligence policing can help the authorities identify rule violators in risky areas, without officers having to be physically present at the scene.

What are the threats of predictive traffic policing?

- **Privacy Risks** – AI surveillance techniques and live data analysis can caution against privacy risks that arise from increased surveillance.
- **Errors in AI Traffic Systems** – Intelligence-based systems can make mistakes in detecting violations or predicting congestion.
- Such errors may cause unfair penalties or poor traffic management.

What lies ahead?

- **Cybersecurity Safeguards** – As more citizen data is collected for traffic policing, greater cybersecurity safeguards and investments are required to secure sensitive and personally identifiable information.
- **Balancing Benefits & Risks** – AI surveillance can improve road safety and traffic management, but they carry inherent risks - data management, privacy, and cybersecurity challenges.

References

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