

GNSS-based Toll Collection

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Context

The central government is planning to implement a **highway toll collection system based on the global navigation satellite system (GNSS)**.

Global Navigation Satellite System (GNSS)

- GNSS refers to a constellation of satellites providing signals from space that transmit positioning and timing information to GNSS receivers. The receivers then use this information to determine location.
- Examples of GNSS include Europe's Galileo, the country's GPS, Russia's GLONASS and China's BeiDou.

How will the GNSS-Based Toll System work?

- The system will use an **automatic number plate recognition (ANPR)** system by cameras mounted on highways and deduct tolls based totally on the space traveled by a vehicle.
- The device monitors the actions at the same time as riding, appropriately marking the access and go out factors on tolled segments. By studying travel distance, it computes the expenses thus.
- This eliminates the uniformity of fixed tolls at cubicles, making sure equity for drivers traversing shorter distances.

Difference among FASTags and ANPR tech

- The present day system of FASTags allows the manner of electronic payment at the toll plaza, which has a scanner. This permits the vehicle to pass by the plaza, without needing to stop.
- In the case of the GNSS-based system, the toll may be deducted based totally on the distance measured through ANPR technology, thereby making the toll plazas redundant.

Challenges

- **Non-Compliance Detection:** Without bodily obstacles, it turns into challenging to come across non-compliant motors. This includes motors without an On-Board Unit (OBU), eliberate switch-offs to avoid payment, or fraudulent sports like putting in a vehicle's OBU on a truck to pay much less toll.
- **Infrastructure Requirements:** Setting up gantry-installed Automatic Number-Plate Recognition (ANPR) structures across highways is vital for shooting violations and implementing toll payments.
- **Quality of License Plates:** The fulfillment of ANPR systems depends on the quality of license plates. If license plates do no longer meet the desired standards for correct reputation, it'll restrict the effectiveness of enforcement efforts.
- **Data Privacy and Security:** GNSS-based toll systems contain the collection and processing of sensitive place information from vehicles.

Way Ahead

- The purpose of the generation is to provide customers the gain of paying toll best for the real distance traveled on a highway, or pay-as-you-use.
- To safeguard privacy the government has decided to apply the GAGAN satellite tv for pc system and not GPS, that's owned by the U.S., to ensure statistics security in the country.
- Also the coordinates of the entire length of the country's countrywide highways can be logged by the government with the assistance of digital picture image processing.

Source: The Hindu

UPSC Mains practice Question

Q.What is a GNSS-based Toll Collection system? Discuss the significance of replacing the current toll collection system with GNSS-based Toll Collection system.