# Evolving toll payments landscape in India

June 2022

pwc

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# Foreword

Dear readers,

It is my pleasure to bring to you the latest edition of our payments newsletter.

In this edition, we discuss how the National Electronic Toll Collection (NETC) programme or FASTag has transformed the way we travel on roads and make toll payments in India. We have also looked at various use cases where the NETC programme can be used as a payment solution to save time and how it can be integrated with different functionalities in the future.

I hope you will find this to be a useful and insightful read.

For details or feedback, please write to:

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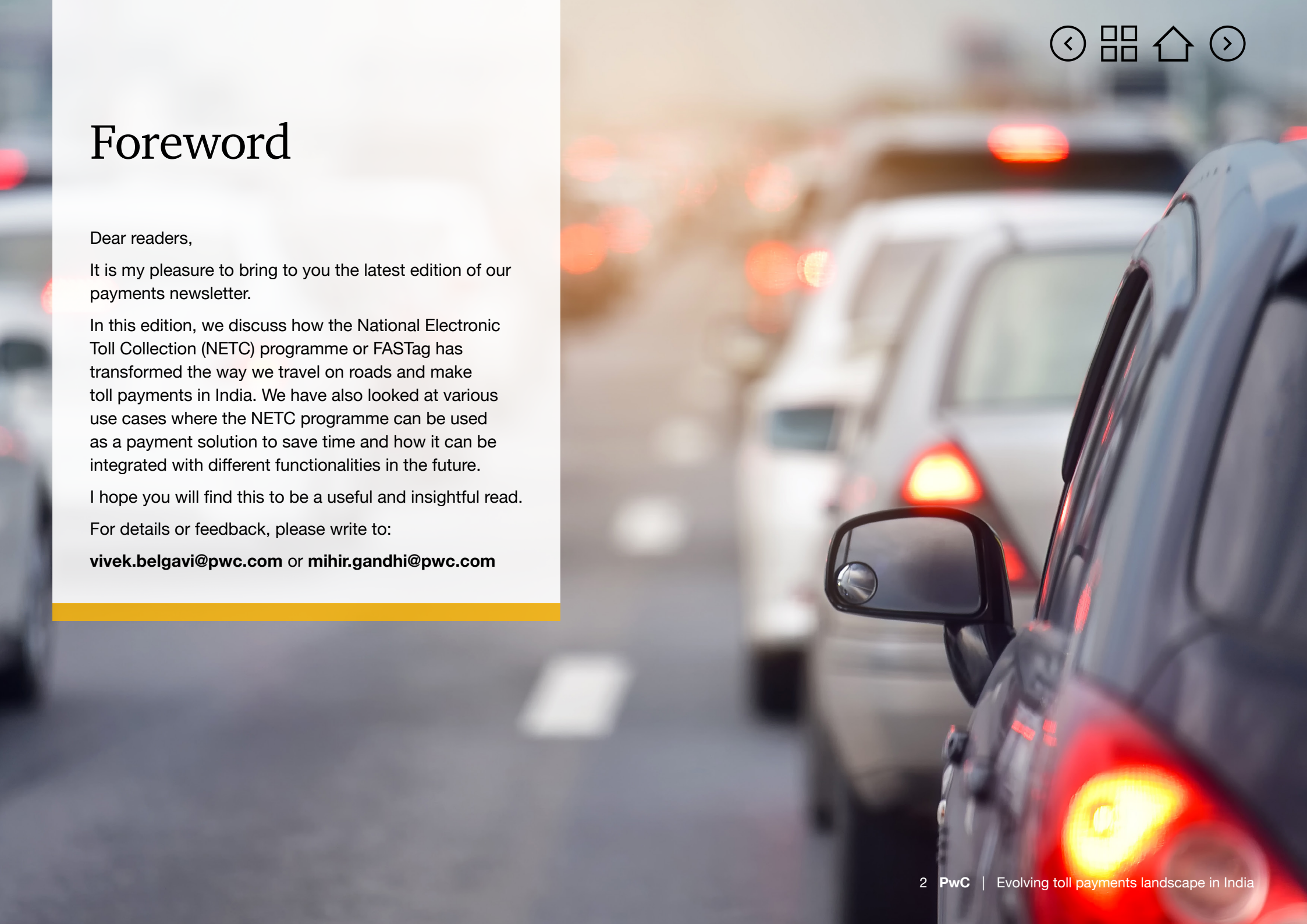


# In this issue

# 01 Introduction

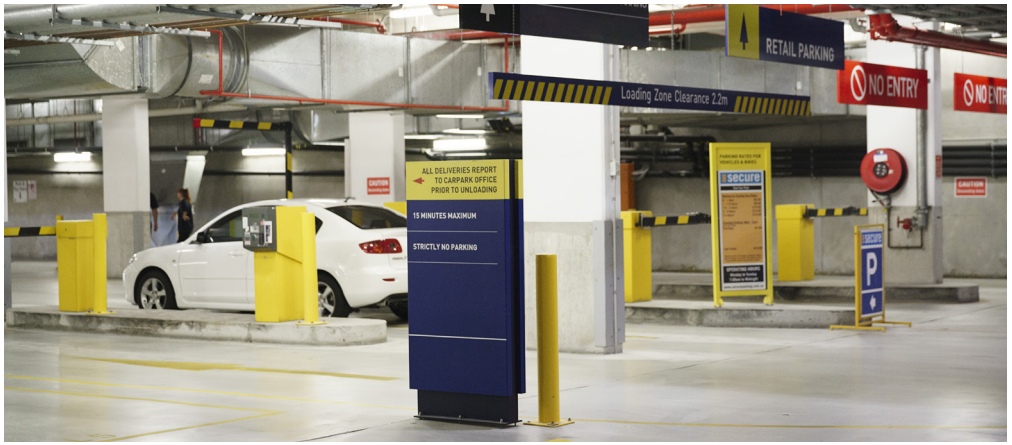
Over the past few years, the Indian roadways infrastructure has been constantly upgraded due to the increasing vehicle density. At the same time, digital transactions in the country have steadily grown in volume at a compound annual growth rate (CAGR) of 23%.[1] The National Electronic Toll Collection (NETC) programme using FASTags on vehicles has played a crucial role in the growth of digital transactions across the country. It has moved a large number of vehicles to the payments ecosystem[2] and reduced the use of cash for toll payments on roads and highways.

Though the national highways constitute just 2% of the overall road network in the country, around 40%[3] of the total traffic is concentrated on these highways. Any congestion at these highways or at toll plazas results in wastage of fuel and money and has significant environmental impacts. Another critical factor is the revenue leakage from toll plazas due to irregularities in reporting the actual toll money collected in cash and non-standardised vehicle classification. To provide the public with convenient, easy and cashless modes of payments at toll plazas across the country, the Indian Highways Management Company Limited (IHMCL) and National Highways Authority of India (NHAI) introduced FASTag. FASTag is a toll collection mechanism that uses radio frequency identification (RFID) tags and is placed on vehicles. It is being run by the National Payments Corporation of India (NPCI).

The project started as a closed-loop system in 2013 on the Mumbai–Ahmedabad highway. In the closed-loop mechanism, the tag-issuing bank and acquiring bank at the toll plaza were the same. In 2016, the NETC programme was launched with the NPCI to develop a central clearing house for such toll transactions and ensure interoperability.

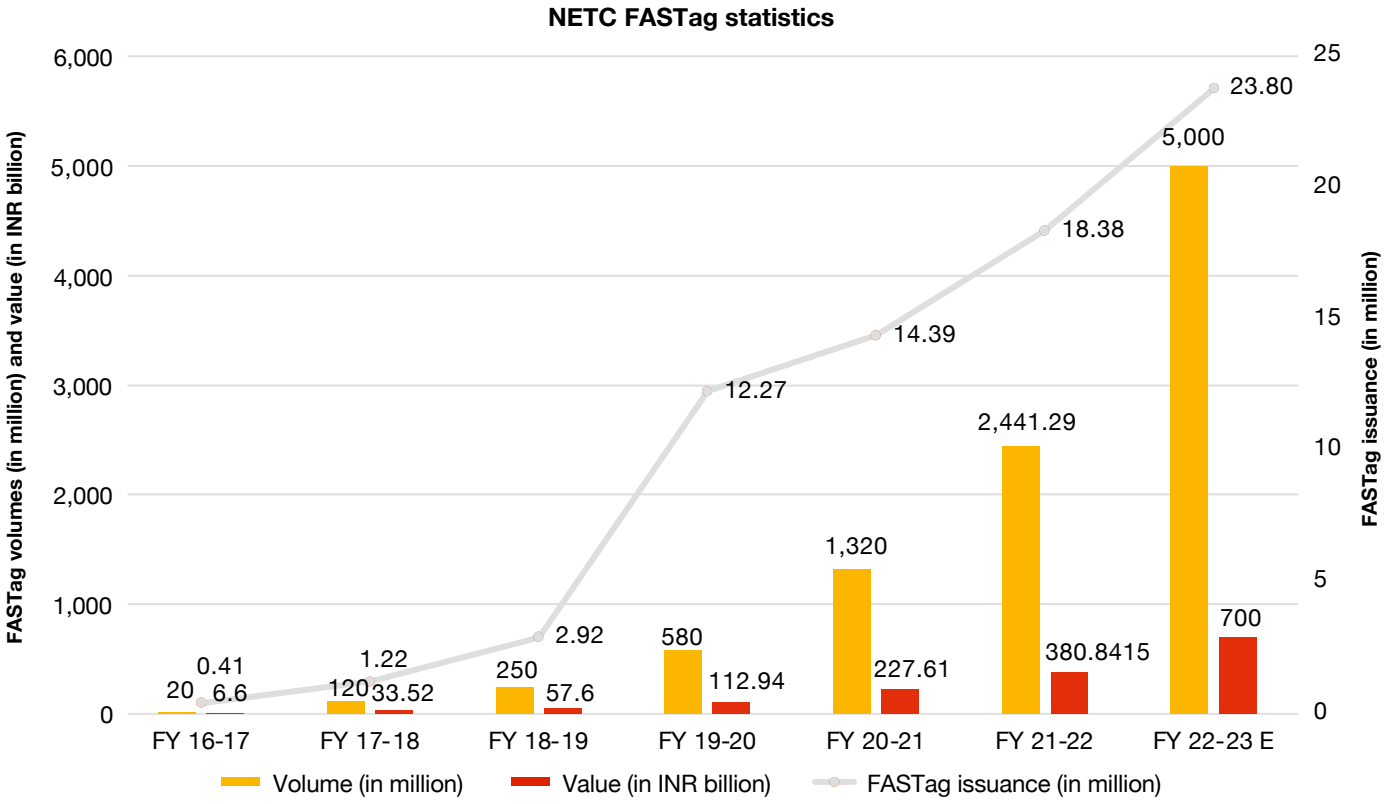
The NETC programme was adopted across the country and crossed 2.4 billion transactions worth USD 380.8 billion[4] in value in FY 2021–22 and considerably reduced the waiting time at toll plazas to less than 2 minutes per vehicle. A total of 49.58[5] million FASTags were issued in FY 2021–22 by 36 issuers through the NETC programme. The programme has seen 2.1x growth year on year, with an average daily collection of INR 107 crore in FY 2021–22. A FASTag is placed on the windshield of a vehicle for making toll or other payments from underlying wallets or the bank account provided by the tag-issuing bank.

The Government mandated the use of FASTag from February 2021 onwards. In addition, the convenience of using digital payment modes has resulted in considerable growth in toll payments through the NETC platform.




1 | The Indian payments handbook 2021-2026, PwC March 2022
2 | https://www.npci.org.in/what-we-do/netc-fastag/product-statistics
3 | https://pib.gov.in/newsite/PrintRelease.aspx?relid=91384
4 | https://www.npci.org.in/what-we-do/netc-fastag/product-statistics
5 | https://www.npci.org.in/what-we-do/netc-fastag/product-statistics

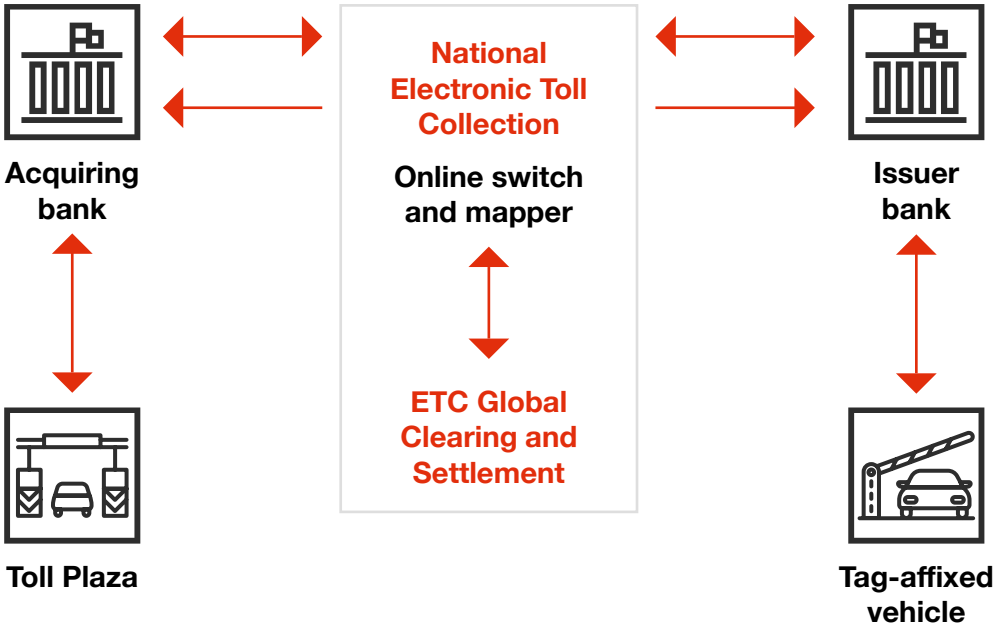
Today, FASTag is accepted at more than 650 toll plazas, including both national and state highways, through 14 acquiring banks. Although the programme covers almost all national highways, the NETC system is adopted only at very few state highways and other city toll plazas. Expansion of the NETC infrastructure to these state and city toll plazas will help in reducing the overall travel time for commuters and congestion within these road networks. FASTag recharge is available through an array of platforms including bank transfers, wallets, payment gateways, Unified Payments Interface (UPI), UPI with e-mandates and Bharat Bill Payment System (BBPS).
The NETC programme offers interoperability, clearing house services for the settlement of toll transactions and dispute management solutions for issuers, acquirers and toll operators.




# 02 NETC ecosystem, key trends and solutions

The NETC ecosystem involves multiple stakeholders such as tag-issuing and acquiring banks, concessionaire/plaza operators, the Ministry of Road Transport and Highways (MoRTH), tag manufacturers/vendors, and the NPCI and NHAI. These stakeholders play important roles in the efficient and successful operations of the NETC programme. Financial institutions (FIs) can play the role of acquirer or issuer banks. Tech operators can assist in designing the architecture and implementing the solution.

**NETC transaction and settlement flow**




Source: www.npci.org.in

## 1. Issuer bank

The issuer bank is certified by the NPCI for issuing FASTag chips/stickers and linking them to vehicles. This chip/sticker links the tag to the wallet or bank account of the customer, facilitating toll transactions.

In order to become an issuer bank, banks must apply for a licence from the NPCI, post completion of all necessary certifications and testing with the NPCI. Moreover, the banks should meet the following requirements:

- tag specification and branding guidelines (FASTag from an NPCI-empanelled tag vendor)
- transaction processing
- settlement and reconciliation
- dispute management
- FASTag loading/recharge feature
- vehicle mapper and classification
- tag linking
- tag blacklisting.

### Revenue for FASTag issuer:

The NETC ecosystem is also adding value to the overall ecosystem as there are revenue heads for both the issuer and acquirer.

| Issuer bank | | |
|---|---|---|
| NETC programme management revenue | 1.00% | Of toll payment value (revised from 1 April 2022) |
| Tag issuance fee* | INR 0–100 | A nominal fee collected by issuing banks for tag issuance (including GST) |
| Tag re-issuance fee* | INR 0– 100 | Re-issuance fee collected by tag issuers |
| Security deposit* | INR 200 | A refundable deposit collected to adjust any outstanding toll payments |
| Threshold amount* | INR 0–200 | First recharge amount collected by banks to activate the FASTag |

*The charges mentioned above vary by issuer and vehicle class.

The MoRTH had approved the payment of 4% of fee collected electronically through national highway toll plazas for different stakeholders until September 2021. However, the same was revised to 1.51%, with effect from 1 April 2022 to 31 March 2024. The collected amount will be distributed to the stakeholders – issuer and acquiring banks, the NPCI and IHMCL – as the programme management fee.

The issuer bank also gets a float income on the total amount loaded on the FASTag and the security deposit collected from customers.

## 2. Acquiring bank

An acquiring bank is certified by the NPCI and assigned by the toll plaza/ concessionaire to collect toll payments from the vehicles. The acquirer identifies the vehicle class based on the FASTag details and authenticates the transaction based on the response received from the NETC database.

An acquirer bank in the NETC programme must arrive at an agreement with the toll plaza operator and complete the NPCI certifications qualifying the testing of acquiring transactions, grievance redressal, settlement and reconciliation. The necessary hardware required to enable acquiring the NETC payments like RFID readers, automated barriers and vehicle detection systems is installed and maintained by the toll operator as per the specifications laid down by the NHAI and NPCI.

### Revenue for the acquirer:

The NETC programme provides programme management revenue to the acquiring bank as well. Further, the acquiring bank also benefits from a float income on the amount collected at the toll plaza.

| Acquiring bank | | |
|---|---|---|
| NETC programme management revenue | 0.13% | Of toll payment value (revised from 1 April 2022) |

## Challenges faced in the NETC programme and how to overcome them

Stakeholders may face certain challenges while providing various payment services, which may have an impact on the effectiveness of the programme. These challenges have been outlined below along with their possible solutions.

1. **Identification of vehicle category**

   One of the major issues faced in the NETC programme is that the vehicle category is identified incorrectly and toll is charged accordingly.

   **Possible mitigant:**

   A system to capture the vehicle weight and dimensions may be implemented at toll plazas. This can help the toll operator to verify the vehicle class considering the weight and overall length, number of axles, etc.

2. **Long issuance turnaround time**

   Tag issuance, at times, takes place during the customer's journey through toll plazas where the requirement is on an immediate basis.

   **Possible mitigant:** Issuers need to continuously work on improving the tag issuance turnaround time and keep their servers up and running without any technical glitches.

3. **Low balance and blacklisted tags:**

   Low balance tags are the ones whose balance is below the threshold amount fixed by the tag-issuing bank. The bank notifies vehicle owners about the low balance on their FASTag wallets. Such vehicles are restricted from crossing tolls owing to the insufficient balance. On the other hand, blacklisted tags are those that have been temporarily suspended because of negative balance or violation of traffic laws. In case of low balance and blacklisting due to negative balance, the vehicle is stopped at the toll plaza and the driver has to make the payment in cash.

   As a result, the traffic comes to a halt in the toll plaza lane, causing inconvenience to other travellers.

   **Possible mitigant:** Users can check their tag status and balance by using the issuer's missed-call service or **My FASTag app**. Issuers should create awareness campaigns to ensure that users are more informed about how to use FASTag and things to remember while using these tags for toll payments. Also, issuers may provide SMS- and WhatsApp query-based options to enquire about FASTag status and balance. Notifications in the form of SMSs/emails may be triggered if the balance goes below the threshold limit to ensure that sufficient balance is always maintained.

4. **Technical issues:** Hardware and network issues at toll plazas often lead to delays in tag status updates. This impacts the overall customer experience and creates further challenges for toll plaza operators traffic management.

   **Possible mitigant:** Toll plaza operators and acquiring banks should ensure proper hardware installation as specified by the ministry. Additionally, the system performance must be up to the mark to handle large transaction volumes at toll plazas. Moreover, acquirer banks also should have business continuity plan (BCP)/disaster recovery plan (DR) in place, to minimise the turnaround time and ensure service continuity. Also, a backup acquiring system with a different acquiring bank may be considered in case the system of the primary acquirer is down or unavailable.

5. **Unauthorised deductions or double debit:** Several unauthorised deductions or double debit type of transactions occur owing to technical issues at the toll plaza.

   **Possible mitigant:** In case of incorrect debit with the wrong amount or double debit of the toll amount, the Electronic Global Clearing and Settlement system provides the facility to raise a chargeback request through the tag-issuing bank. The incorrect deductions are then transferred back into the user's wallet. This makes the process of obtaining a refund convenient in case of any wrong debit. Issuers should spread awareness about the process and also provide access to the systems.

6. **Failure to process tag closure request:** Vehicle owners face challenges at the time of resale as the tag closure request may not get processed due to unclear procedures by the issuer.

   **Possible mitigant:** Banks should de-link old vehicles from their FASTag accounts and refund the security deposit to customers. This may be done by providing an option through their NETC portal and mobile app.

# 03 Innovations in toll payments and leveraging existing payment modes

Globally, tolling projects are undergoing constant innovation, and driving frictionless payments by users is one the prime focuses of these innovations. These projects try to solve important problems by enabling fluidity in journeys, minimising pollution, eliminating toll evasions, reducing fraud and malpractices, and digitising vehicle payments. Under the NETC framework, the NPCI has been innovating FASTag use cases by capitalising on the 50 million tags issued to vehicles.

In 2022–23, the Government has allocated a budget of INR 1.34 lakh crore for the NHAI, which is 106% more than the 2020–21 budget.[6] The funds are expected to be majorly used for the expansion and development of road networks and highways in the country, which will need more toll plazas and collection systems. Additionally, the domestic automobile industry is expected to grow at approximately 5–9% in 2022–23,[7] which will further boost FASTag issuance and digital transactions in the country. Also, FASTag could be mandated for two- and three-wheeler toll payments on city flyovers and state highways, thus making the ecosystem more streamlined.

With the mass adoption of the NETC in the country, FIs can focus on leveraging the large amount of data that is generated daily for further use cases. This data can be used to build sustainable business models and infrastructure development by understanding the concentration of vehicle movement in a particular region and opportunities for business expansion in these regions. Some innovations in toll fee collection have been discussed below:

## 1. Payment use cases with existing tolling solutions (live projects)

### 1.1 | Parking fee payments

The NPCI launched a FASTag-based parking facility in 2021, wherein a user can pay the parking fee at metro stations, malls, hospitals, tech parks, business parks, etc., using the existing FASTag placed on the vehicle. Apart from providing a real-time parking fee payment option, this method adds value to both the user and parking operators by enabling smooth and quick access to parking space and thus saving time and fuel. Using the NETC ecosystem, the FASTag issued by any bank can be used for making the fee payment at these parking plazas, and the amount will be deducted from the user's FASTag account balance.

Currently, more than 41 parking plazas that accept FASTag payments are already live in the country. [8]Large expansion plans for wider acceptance in the country are underway, as a part of India's drive for cashless payments.

This use case can have the following benefits:

- easy and quick movement within the parking space
- parking lot operator gets real-time data regarding vehicles parked, daily collections, etc.
- reduction in the exchange and handling of cash
- digital receipts and SMS can be retained for future reference
- easy recharge of tags and interoperability at multiple parking spaces will drive customers to keep a large balance in the tag, increasing the float/ interchange income for issuers.

6 | https://prsindia.org/budgets/parliament/demand-for-grants-2022-23-analysis-road-transport-and-highways

7 | https://www.ibef.org/industry/automobiles-presentation

8 | https://www.npci.org.in/what-we-do/netc-fastag/netc-fastag-for-parking

Stakeholders involved in parking fee collection using the NETC programme include parking lot operators, issuer and acquiring banks, NPCI and IHMCL, and various solution and system providers who support the integration of the NETC solution into each stakeholder system.

City/state parking operators, mall owners, railways and airports, smart cities

Member banks – issuers and acquirers

NPCI/IHMCL

System and platform providers

A parking lot operator – at railway stations, metro stations, airports, shopping malls, smart cities and tech parks – may approach the acquiring bank to integrate the NETC programme into their current system with the help of other solution integrators. The acquiring bank, which is certified by the NPCI, can set up the parking fee solution for the operator. Any vehicle with a valid FASTag can make fee payments using the NETC platform. The solution can be customised to collect the vehicle parking fee based on the entry and exit time. Once the vehicle exits the parking lot, the fee is auto-calculated based on the hours of parking, thus making the process seamless and faster.

Today, several FinTechs provide a completely integrated solution, real-time data dashboards for businesses and intuitive mobile applications for end users. These organisations support in expanding the NETC programme and help to deliver value to all the stakeholders.

## 1.2 | Fuel payments

A few banks have been adding innovative use cases for the FASTag wallet by providing the facility of making fuel payments. The fuel payment by FASTag is currently live with two of the country's largest fuel companies, with more than 9,000 outlets accepting FASTag-based payments.

FASTag-based fuel payments are currently live with two banks that act as both an issuer and acquirer. Multiple payment models have been adopted to facilitate digital transactions. Of these, model one is a mobile application-based payment process, and model two is a point-of-sale (POS) machine-based payment method, wherein the vehicle owner receives an OTP for authentication at the POS terminal.

Apart from faster payments and reduced traffic congestion, the NETC system offers the following benefits:

- provides fuel services to a larger number of vehicles in a day
- helps to conveniently track vehicle expenses using FASTag – especially for large fleet owners
- provides instant debit SMS and transaction receipt for future record.

## 2. Tolling solutions in other geographies

### 2.1 | Location-based payment systems

This type of toll collection method uses the global positioning system (GPS) installed in vehicles. The GPS facilitates the tracking of a vehicle and notes its entry and exit from virtual toll booths, thereby charging the user for the distance covered by the vehicle. Adopting this system will help to avoid the installation of physical toll plazas, reduce long queues on highways and minimise congestion, enabling free traffic movement.

**Benefits** of the location-based tolling solution include the following:

- no physical toll plaza required
- faster deployment of toll collection services as part of the road network expansion
- option to pay the toll only for the stretch of road used by the vehicle.

However, as with every new solution, there are a few challenges with implementation:

- possibility of a breach of user data privacy, as the vehicle will be tracked for the entire journey
- accuracy may be affected in case device tampering occurs
- connectivity issues at remote locations
- standardisation of the system will require setting up acceptance infrastructure which will be expensive
- integration of the existing FASTag system with the GPS-based solution will be challenging, as new device installation will take place in all vehicles.

**Implications/considerations for banks**

The key considerations for banks will be as follows: access to information regarding the regional penetration of vehicle payments and using the data for cross-selling opportunities, integration of the existing NETC solutions with the new technology for accurate and real-time toll collection, and development of a system to identify highway usage of vehicles in case of insufficient funds in the GPS-linked wallets.

### 2.2 | Automatic number plate recognition (ANPR)

The ANPR technology enables multiple lane free-flow tolling without barriers. The technology uses vehicle number plate readers at the toll plaza to quickly identify a vehicle and deduct the toll fee from the linked payment instrument. The vehicle license plate image is captured as the input and the associated vehicle details are the output, along with time stamping.

Once a vehicle is issued with a registration number by the transport authority, the number plate can be fixed on the vehicle and mapped to the NETC system.

The **benefits** of the ANPR system include:

- elimination of the need for separate tags to be affixed to vehicles, as the number plate itself becomes the vehicle identifier
- convenient customer onboarding and vehicle mapping into the system
- removal of barriers to stop vehicles as high-speed cameras will capture number plate data.

Potential **challenges** of the system may be as follows:

- This system may be highly challenging to implement in the Indian scenario as licence plates are not standardised.
- Developing a reliable decoding algorithm can act as a barrier in the implementation of the system without proper standardisation.
- A gantry-based set-up will be required for installing cameras to record number plates.

**Implications/considerations for banks**

Banks can easily link vehicles to the toll systems if a standardised number plate is adopted across manufacturers and users. Separate POSs will not be required for the sale and registration of tags. Vehicles can be seamlessly linked to the toll system according to the vehicle category by the manufacturer itself, or by the dealer, prior to vehicle sale, thus reducing the expenses for banks in terms of FASTag sales and enabling them to focus more on innovations.

## 3. Innovations using toll solutions internationally

### 3.1 | Electronic vehicle (EV) charging and payments

With the digitisation of toll payments using FASTag, companies are identifying innovative ways to make payments for public EV stations using these tags. This is currently being explored in India, with an increasing number of EV charging stations being deployed across the country.

The **benefits** of making EV-related payments using FASTag include the following:

- convenient payments using the FASTag wallet
- secure method with the semi-closed NETC platform; transactions can be tracked by users through a mobile app or portal
- easy access to vehicle data and subsidies that can be passed on to encourage adoption of EV vehicles.

A few **challenges** of this use case are as below:

- EV charging service providers need to be onboarded on to the NETC platform post due diligence
- additional infrastructure is required for EV stations to mount RFID readers/ devices
- connectivity requirement is critical in order to communicate with the NETC platform.

**Implications/considerations for banks**

FIs can partner with EV station service providers and the Government to extend the FASTag acceptance infrastructure by acting as an acquirer. The vehicle charge status and data can be shared with the user through mobile apps in order to view and retrieve the transaction details. FIs can further utilise the data collected for other cross-selling opportunities and also as an environmental, social and governance (ESG) initiative.

## 3.2 | In-vehicle payments technology

In-vehicle payments technology is at a nascent stage and is gaining traction with the driverless vehicle concept and EV market growth. Here, these vehicles already have smart solutions as part of the original equipment manufacturer (OEM) package. Globally, several partnerships are being developed between automobile manufacturers and other service providers to meet customer expectations and growing market needs.

This solution uses a vehicle's infotainment system and smart mobile connectivity to make payments for various services, even by using voice commands. Although there is limited acceptance and very few fragmented use cases exist currently, this could be the future of toll payments, with more automobile manufacturers and OEMs entering this space. In-vehicle payments are seeing increased growth, with a few players integrating the infotainment systems with inbuilt food delivery apps, voice assistants, GPS and other connectivity solutions as part of their package in order to try and attract the masses.

The key **benefits** of in-vehicle payments technology are as follows:

- separate stickers, tags or devices may not be required for toll collection
- vehicles can easily be linked with users' bank details for payments using OEM platforms
- inbuilt payment system eliminates the need for a separate mobile app or portal to manage toll and vehicle payments.

While this technology offers several benefits, there may be a few **challenges**, such as:

- regulatory challenges that may arise with vehicle manufacturers getting access to transaction data
- threat to data privacy and increased chances of fraud or data breach.

**Implications/considerations for banks**

The in-vehicle payment technology will enable banks to extend digital payments capabilities to vehicles. These institutions can enter into new partnerships with vehicle manufacturers to provide inbuilt solutions that can be easily linked to customers' bank accounts.

## 3.3 | Recycle to pay: Green recharge

Adopted by certain countries, green recharge is an interesting form of toll wherein repayment credits are earned through the recycling of plastic bottles and other such materials. Users receive virtual green coins or credits based on the number of bottles and other trash that is recycled by them. These green credits can then be used for making toll payments through the underlying payment instruments at toll plazas.

The **benefits** of this technology include:

- recycling of plastic waste and protecting the environment through use of recyclers installed at public spaces like highways, banks, malls and parking lots.
- encouraging users to pay toll fees by linking them to a social and environmental cause.

A few **challenges** that may hinder the adoption of this technology are as follows:

- a standard system that can evaluate the value of material recycled may need to be developed, which can be time consuming and expensive
- securing the coins earned and preventing tampering of equipment with malware
- a high maintenance cost may be incurred due to misuse of the recycler in case of deposit of plastic waste other than bottles.

**Implications/considerations for banks**

To help in the adoption of this process, banks will have to integrate their toll payment platforms with these recycling solutions without compromising any data. The accurate credit of virtual coins and their availability for payments need to be ensured by FIs. This facility will also prove to be beneficial in various ESG initiatives of the stakeholders. Banks may consider provisioning an additional space in their branches or ATM lobbies to install these recyclers as part of their ESG or corporate social responsibility (CSR) initiatives.

## 3.4 | Integration of e-way bills

To efficiently track carrier vehicles and movement of goods on highways, the NETC system can be adopted by law enforcement units. This will give them access to location details and timestamps concerning each vehicle movement.

This technology can also be utilised by delivery and courier companies to update their systems with data on real-time location and provide information to end users.

The key **benefits of this technology** are as follows:

- helps to curb tax evasion by tracking goods movement by contract carriages and other vehicles without an e-way bill
- enables free movement of goods without the need for checkposts by revenue authorities on highways.

The **challenges** related to FASTag dependence would be as below:

- data sanity and liability of data ownership as e-way bills need to be entered into the toll payment portal for tracking
- limited feasibility of integration with existing platforms developed by banks and third parties; where additional fields to capture and validate e-way bill details are to be provisioned
- difficulty in capturing e-way bill details if the tag has low/no balance or is not readable due to any technical issues.

**Implications/considerations for banks**

The key considerations for banks would be integrating the e-way bill portal into the existing tolling platform and ensuring data sanity from external portals. These banks also need to protect the data in a secure manner in order to avoid the risk of fraud. Moreover, regulatory aspects on storing non-financial information on FASTag – other than vehicle details and toll payments – will need to be assessed by issuers.

## 3.5 | Vehicle insurance and documents and traffic violation challans

The NETC system can be modified to feed and store information regarding vehicle insurance policies and validity, registration details, tax payments, pollution control certificates and traffic violation challans to help the authorities to penalise vehicle owners for noncompliance/offences. A constant check on compliance will contribute towards more road safety and help in reducing crimes. Integration of such functionalities in the existing system would also limit or completely remove the need for traffic personnel to conduct random checks as the system would be controlled from centralised locations.

**The benefits of this integration would be as below:**

- digital storage of vehicle documents for quick retrieval when required
- online tracking of vehicles and their details by enforcement authorities to reduce crimes and improve road safety
- reminders and alerts for timely renewal of insurance and other vehicle-related documents
- direct debits of penalties from FASTag in real time, helping the timely retrieval of fines
- blacklisting of vehicles with active traffic violation challans with support from issuer banks and restricting use of vehicles on highways with the support of acquiring banks.

A few possible **challenges** related to this technology are as below:

- data validation and integrity of the details entered in the systems
- accuracy of the data in multiple systems like Government portals and toll collection platforms, need for real-time data integration across platforms.

**Implications/considerations for banks**

This solution helps banks to become part of the governance system by providing real-time data to the authorities and helping to ensure the safety and security of vehicles and passengers on the road. Also, banks shall have access to vehicle insurance, registration, tax-related documents, etc., which can be utilised as a cross-selling opportunity for third-party financial products and lending.

## 3.6 | Payments at drive-through restaurants and drive-in theatres

Pilot runs are being conducted by a few domestic start-ups to capitalise on FASTag-based payments. These third-party service providers are integrating their solutions with FASTag wallets to enable payments at drive-through restaurant chains, fuel stations and drive-in theatres across the country.

The **benefits** of this method include the following:

- making payments on the move without the need for the driver to step out of the vehicle at restaurants or theatres
- raising travel standards with more drive-through restaurants across highways.

A few **challenges** and considerations for banks include:

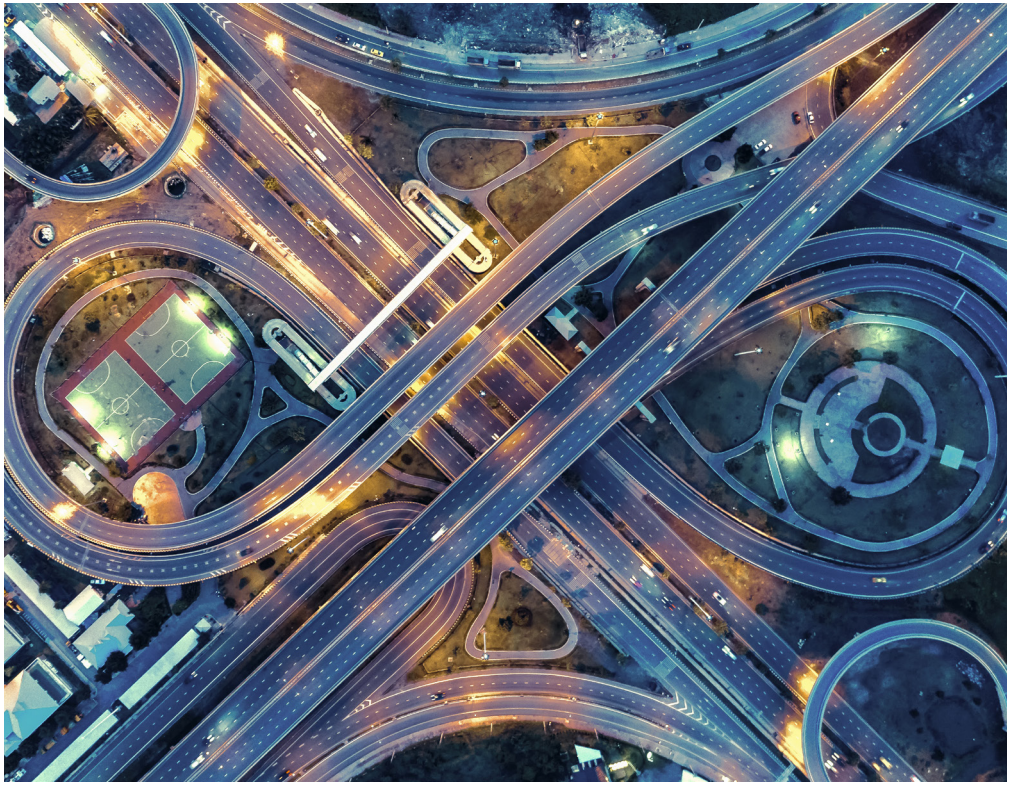
- direct partnerships with restaurant chains and theatres for a closed-loop model, as the NETC platform may not support food and entertainment
- use of multiple mobile apps for each merchant as interoperability might be lacking in a closed-loop system.

# 04 Conclusion

This edition of the newsletter has discussed recent and potential innovations in the electronic toll collection system. These innovations offer considerable advantages to multiple stakeholders as compared to the conventional systems in terms of better tracking, increased revenue and lower operating and economic costs. With more widespread adoption of the NETC, millions of people will benefit from improved commuting times and air quality through reduction in traffic congestion. With changing customer preferences, new use cases are being made a part of product offerings, rendering traditional payments modes obsolete.

Various other innovative projects are currently being piloted by the NPCI and MoRTH using the NETC programme to enable commuter convenience – apart from saving fuel and money.

The different technologies involved are logically integrated with each other, but they are flexible and can be upgraded. Consequently, tolling solutions are turning out to be more innovative. The NETC ecosystem can be embedded with various payment solutions which would only increase the scope for opportunities in this space in the future. The COVID-19 pandemic has also resulted in more users adopting digital payment modes, and this trend is expected to continue as economies worldwide continue to recover.



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