



Key Partners

Delhi Metro Rail Corporation (DMRC)

- The DMRC will provide its infrastructure to incorporate the E-rickshaws and create an ecosystem.
- Metro will allow the usage of metro cards in the system for payment methods.

Banks

- Regional level banks will help E-rickshaw drivers to easily link their wallet to their bank accounts to withdraw money .



Key Activities

- Safa-E representative helps **E-rickshaw drivers get affiliated to the system by obtaining their proof of ID and KYC.**
- The representative also **monitors the battery** at the metro station.
- The E-rickshaw driver **swaps a discharged battery** for a new one and puts the **discharged battery back for charging.**
- The passenger connects the metro card and Safa-E wallet by either scanning or entering the metro card number in the app. (App Development)
- The passenger will **scan QR code through the application** to make payments from their metro card wallet to e-rickshaw driver.



Key Resources

- Personnel**
 - Safa-E employee (for battery swap booth)
 - Design and Development team for integration of DMRC app with Safa-E.
- Location**
 - Metro station parking
- Equipments**
 - Lithium-ion batteries
 - Battery swapping booth (for kiosk and charging machine)
 - QR codes available on the booth.
 - Metro Card
 - QR codes on E-rickshaws



Value Proposition

E-rickshaws mainly function on lead acid batteries which have been a part of the Indian market for quite some time now. But with this, issues such as battery maintenance, changing it every six months and the time and money lost in charging arise as well.

We aim to deliver a shared system that helps e-rickshaw drivers manage their finances to earn more and also optimise their daily work hours while having a positive social and environmental impact.

The key value propositions are:

- The DMRC uses **solar energy** in most of the metro stations and this same **source of renewable energy** will also be used to charge batteries at the battery swapping booth which will **lower the electricity prices.**
- With a shift towards battery swapping methods, the e-rickshaw drivers will now have to invest only in the vehicle **eliminating the battery costs** which are approximately **40% of their initial investment.**
- By using the existing DMRC infrastructure and introducing battery swapping, the system will be much more inclined towards **shared economy** leading to a **cooperative environment.**
- With the integration of E-rickshaws and DMRC, the **earnings from selling carbon credits will increase** as well.
- It also satisfies the needs of **4 sustainability goals** introduced by UN: **Goal 7 (affordability and clean energy), Goal 9 (Industry, innovation and infrastructure), Goal 11 (sustainable cities and communities) and Goal 13 (Climate action).**



Relationships

The service aims to increase the adoption of E-rickshaws and establish a long-term relationship with the drivers providing them with a better model to help **manage their finances and optimize their daily work hours on road.**

- Providing them with battery swapping booth at metro stations to **quickly swap their discharged battery** for a charged one **under 2 minutes.**
- The drivers will be affiliated to Safa-E by subscribing with our service every 3 months.
- With set per kilometre prices it will help create a seamless user experience between the drivers and passengers.



Channels

Acquistion channels:

- Word of mouth
- Delhi Metro
- Advertisements
- Battery swapping booth
- Interaction with DMRC app

Delivery channels:

- DMRC app integration with Safa-E for metro card payments.
- Battery swapping booth
- Safa-E Employee



Customer Segments

- E-Rickshaw drivers** will subscribe to a quarterly subscription model to be included in the battery swapping service.

Future customers:

- As more auto rickshaws convert to an electric mode the customers will increase.
- As the metro network expands, the service will scale up along with it, incorporating E-rickshaw drivers of those areas as well.



Cost Structure

One time investments

- Battery swapping booth – 2 per station (kiosk and machine)
- Acquisition of Lithium-ion batteries (12 batteries per machine)
- Mobile app development

Operational Costs

- Salary of Safa-E employee.
- Maintenance and charging of batteries



Revenue Stream

- Subscription plans that will get renewed every 3 months.
- Advertisements on Safa-E kiosk for other businesses.
- DMRC sold 3.5 million carbon credits from 2012-18 for ₹19.5cr rupees (2.5 million dollars) and incorporating E-rickshaws in the service will help DMRC earn more carbon credits.



Social Impact

- Improving the standard of living of e-rickshaw drivers in the society.
- Helping E-rickshaw drivers in increasing their daily income by introducing battery swap stations instead of traditional charging methods which used to hinder their work hours.
- Reduce the practice of power theft to charge their vehicles which used to cost the government losses of around 200cr every year.
- Passengers will be more inclined to choose a more environment friendly and sustainable mode of transport and also reduce their carbon footprint.



Environmental Impact

- Battery waste produced will be less as compared to the traditional lead acid batteries used by E-rickshaws that get recycled after every 6 months.
- The system formed relies on the existing infrastructure of DMRC.
- Reduction in the emission of carbon-dioxide.