

IMPACT SHEET: Switching to Sustainable Auto-rickshaw System (Namma Auto Project)

Switching to a greener city



Promoting sustainable lifestyles and poverty reduction in urban India.



CHALLENGE

Autorickshaws are an essential part of the Indian transport system, but the sector operates with a set of costs to the environment and public health. Switching to cleaner technologies is emerging as an increasing need. This switch cannot happen without identifying and addressing the issues faced by the community of autorickshaw drivers. The auto-drivers mostly hail from economically weaker sections of the society and are less educated. A significant percentage are migrants from rural areas to urban centres. They earn daily, spend daily and save minimally. To invest in a new four-stroke auto that costs 175,000 Rupees (2,240 Euros) or an electric auto that is worth 300,000 (3,840 Euros) is therefore a difficult decision for these auto-drivers. In addition, the lack of formal means to finance vehicles remains a key deterrent for drivers.

With minimal social protection cover, the drivers are also exposed to occupational hazards of long working hours and pollution. Adding to this are the multiplicity of policies governing the auto-rickshaw sector. As the drivers are mostly unorganised, they have not been able to adequately participate and represent their needs before policymakers and other stakeholders.

PROJECT BACKGROUND

The urban transportation system in India builds on various mobility modes including private transport (cars, two-wheelers and cycles), public transport (metro rail, suburban rail and city buses) and IPT or Intermediate Public Transport (auto-rickshaws and taxis). Within the IPT segment, auto-rickshaws act as cost-effective and efficient mode of travel, especially for the first and last mile connectivity. In Bengaluru, which is one of India's five megacities, despite the presence of formal public transport systems such as Bangalore Metropolitan Transport Corporation (BMTC) buses, the suburban rail system and the metro rail system, autorickshaws have a 10.4 % transport mode share (DULT, 2014). These auto-rickshaws are typically internal combustion (IC) engines and over 80% of these autos in both Chennai and Bangalore run on Liquefied Petroleum Gas (LPG). However, IC-based auto-rickshaws deteriorate the urban air quality through their exhaust emissions. It is estimated that in Bengaluru, average annual carbon emissions from an LPG auto-rickshaw is 3.72 tonnes (TERI, 2018). The National Urban Transport Policy adopted by the Government of India in 2006 and further revised in 2014 recommends that clean vehicle technologies should be promoted to address the problem of vehicular pollution in cities. In Bangalore, the Transport department initiated a subsidy scheme for two-stroke IC engines (older model) auto-drivers for switching to a less polluting four-stroke IC engine in 2011. The scheme was revised with an

increased allocation in 2014. In 2016, it was estimated over 24,000 two-stroke autos are still plying in the city, and the subsidy intake was quite low. The transition to cleaner fuels/technology is challenging and slow in the auto-rickshaw sector as the auto-driver owner is from economically weaker section of the society with no or low access to financial services and are often unorganised.

PROJECT OBJECTIVES

The Switching to Sustainable Auto-rickshaw System (Namma Auto project) was designed on an "ecosystem" approach, working closely with the driver communities, giving them access to financial services, engaging with policy makers as well as industry players. The project aimed at facilitating an ecosystem that allows the switch to happen through awareness, training, pilots, enabling agreements, arranging policy dialogues and curating models to integrate autos to public transport.

The overall objective of the project was to promote sustainable lifestyles and poverty reduction while reducing CO₂ emissions and air pollution in urban areas.

It was implemented from March 2016 to May 2020 by a consortium led by ACRA, and consisting of The Energy and Resources Institute, Women Health and Development, Stichting Enviu Nederland, with the specific objective to scale-up an integrated model of sustainable auto-rickshaw transport, based on clean technologies in the Cities of Bangalore and Chennai.

TARGET GROUPS

- **Auto-rickshaw drivers** and their family members who are empowered to invest in a clean tech autorickshaw.
- **Commuters of auto-rickshaws**, especially who use public transport systems like Metro Rail and need reliable first and last-mile service.
- **Vehicle Financing companies** who create financial products that suit the target group of auto-rickshaw drivers.
- **Auto-rickshaw manufacturers** that promote clean technology products and associated servicing facilities.
- **Local government departments** such as the State Transport Department, State Traffic Police Department who are responsible for policies and regulations promoting clean technologies and reducing traffic congestion.
- **Metro Rail companies**, who have a mandate of ensuring reliable and affordable last-mile services for their customers.

PROJECT ACTIVITIES

Increasing the demand for eco-friendly auto-rickshaws in the Cities of Bangalore and Chennai

Leading the narrative of eco-friendly auto-rickshaws in the cities of Bangalore and Chennai, the Project organised two primary pieces of research on the estimation of carbon footprint and vehicular emissions from the auto-rickshaw sector that were disseminated to local government and media. In Chennai, the Project ran a pilot in collaboration with the metro rail company to demonstrate the feasibility of electric auto-rickshaws as a last-mile transport option. In Bangalore, the Project launched a white-labelled ride-booking application for metro rail users on shared auto-services, that was supported with a behaviour change campaign promoting shared and clean-tech autos. The campaign reached over 7 million people in Bangalore, over seven month period. Post-COVID-19 related lockdown, the campaign also created awareness on hygiene practices among rickshaw drivers and users while promoting safety-certified auto-rickshaws.

Making auto-rickshaw becomes environmentally, economically, financially and socially efficient for passengers and operators (auto-rickshaw drivers and service providers) thus evolving into a credible green business proposal

The Project also built one of the first green finance instrument for electric autos that allows financing up to 100% of the asset value along with a buy-back option of the older polluting vehicle and income guarantee from an auto-ride aggregator. Besides, the operators of these rickshaws (drivers) were mobilised and trained on available technology options such as electric auto-rickshaw models, besides the need to shift to cleaner technologies. To improve the financial inclusion of drivers and their families, the drivers were mobilised into savings groups and organised under a credit cooperative society. Drivers were also trained and branded under a common code of conduct.

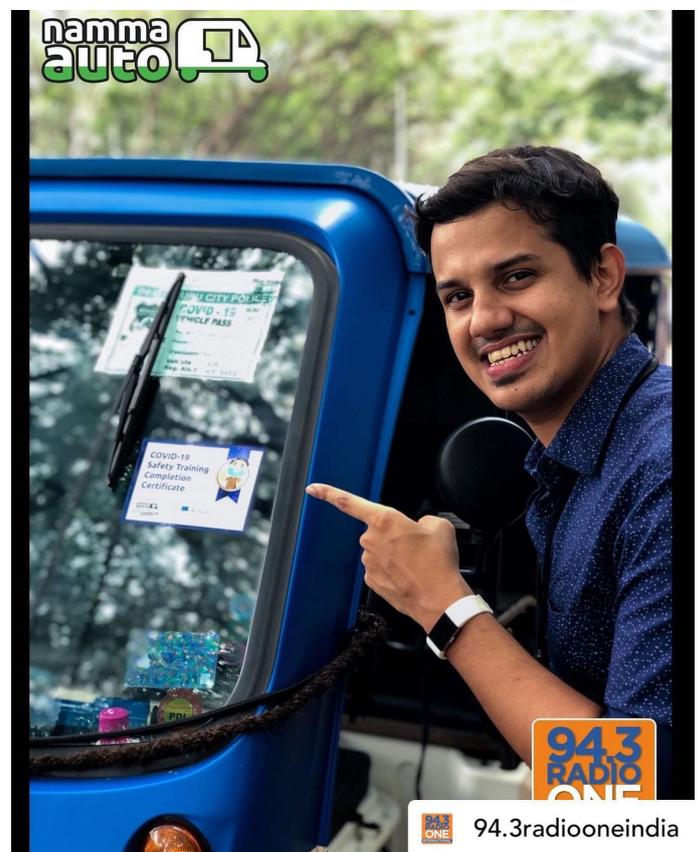
Supporting regulatory authorities to promote the use and purchase of eco-friendly/cleaner auto-rickshaws

The Project organised three policy roundtable meetings to address regulatory gaps in switching to a sustainable auto-rickshaw system and formulated policy briefs to promote eco-friendly auto-rickshaws in the system. It also worked actively to promote knowledge exchange on the subject through seminars, webinars and research publications and as contributors to various national, international events.

PROJECT ACHIEVEMENTS

The project made a significant impact in form of enabling policy dialogue and inducing behaviour change:

- 30,000 drivers reached, 10,000 trained on financial inclusion, 8,427 drivers followed a code of conduct, 2,500 drivers trained on safety and hygiene issues, also related to COVID-19;
- A cooperative society of drivers formed with 1,314 members (37% women);
- Development of a green finance instrument for the promotion of green auto-rickshaws. 70% of electric autos plying in Bangalore city are financed through the Green finance instrument;
- 1,783 drivers switched to less polluting rickshaws. Drivers register 95% repayment rates till date;
- In-depth Behavioral Research on Metro Rail Users and their last-mile preference, understanding their travel goals followed by BCC campaign that reached 7 million people;
- Estimation of vehicular emissions from auto-rickshaws for Bangalore city;
- Policy briefs disseminated to promote benefits of sustainable auto-rickshaws for both cities.



CHALLENGES

The primary challenge was the multiplicity of policies governing the auto rickshaw sector. Despite the willingness by the driver to invest in clean technologies, it was difficult for individual drivers to navigate through all these policy frameworks. The project team consistently followed up with respective government offices on this matter obtaining clarity on the process for registering electric autos in the city, after which drivers agreed to buy new electric autos. The outcome of this exercise is that until today, over 70% of the electric autos bought and registered in the city have been supported by the Project. An equally challenging scenario emerged in Chennai where the Project implemented a pilot intervention of launching electric autos as last-mile service to the metro rail. With no formal electric vehicle policy in place, the project team took special permissions to register the electric autos used in the pilot, which are among the first electric autos registered in the city of Chennai.

The second major constraint was the lack of financial inclusion of the auto rickshaw driver community. The project baseline study indicated a financial inclusion of less than 20% in the identified samples. Drivers with no credit history were also perceived as non-bankable by most formal financing institutions and banks, hence, drivers mostly borrowed from informal sources at higher interest rates. Through the social enterprise 'Three Wheels United', the Project facilitated the first few hundred loans from nationalised banks where the drivers registered an impressive repayment rate of over 99%. Aiming at a long term solution, one of the project partners applied to set up an NBFC that exclusively focused on green financing. While the approvals from Reserve Bank of India took considerable time, the NBFC was finally set up in the third year of the Project. A green finance instrument was also developed to allow lending to drivers who are purchasing an electric auto with a hundred per cent guarantee and the full cost of the asset.

By working on these two challenges, the Project has cleared the path for scaling up these initiatives not just in Bangalore and Chennai but to several other cities that will be ultimately benefitted.

LESSONS LEARNED

The Project has several interesting learnings during the implementation process, which can be grouped into three types. **The first one** is related to the better understanding of the end-users (Auto driver and Auto passenger) who are key agents of change in the Project. Through in-depth research on behaviours related to transport goals, we learnt that Cost, Comfort and Time are crucial for regular customers and their daily travel behaviours are an optimisation of one

or more of these goals. Without meeting these goals, the switch will not happen. The need for dependable last-mile services to public transport emerged as a key need among passenger segments. In the COVID scenario, safety also emerged as a key concern for passengers who find auto-rickshaw safer than other modes of public transport. We learnt that drivers have very low financial inclusion levels and are increasingly dependent on person to person lending. They are very enterprising, inquisitive and willing to adapt to new technologies such as e-wallets. There is still a significant percentage of drivers who cannot afford smartphones and hence are left behind. **The second set** of learnings are linked to factors that are pertinent to push the adoption of electric autos. The Project demonstrates the need for low-cost financing for uptake among drivers, which may be complemented with some subsidies offered by local government besides strict regulation on the ban of older polluting vehicles. Public charging infrastructure is crucial as most drivers cannot charge their vehicles at their homes. The Project identified that auto-manufacturers and government could promote buy-back schemes (buying back an older rickshaw while a driver buys a new electric rickshaw, and the cost is adjusted as the down payment of loans) based on circular economy models. The Project also realised the need to explain policy frameworks and related processes to drivers. This brings to the **third learning** which is related to policy and research. The Project found that each city had a particular pattern of traffic and transport modes; strategies must be customised for each of the cities. Decarbonisation and decongestion has to be a city-level narrative and promoted actively by specific cities. The Project also learnt that the transport policy and implementation strategy has to be viewed holistically as the transport goals of a city is a combination of accessibility, comfort, affordability and safety besides, being clean and sustainable. Project experience also indicates that when multiple policy frameworks are not communicated well, they can impair and add confusion and lead to non-compliance.





Manju Menon
ACRA



This project was confronted with innumerable bottlenecks and a resistance to change at every stage; however, the power of the programme's vision kept us going as we focused on the sustainability of the initiatives that were undertaken. Looking back, everything was relevant. I hope that the lessons learned from our project can greatly contribute to all SMART City missions, heading towards sustainable mobility.



Long-term project sustainability

The Project was designed with the intention of continuity and sustainability of its activities and outcomes. The most crucial change that the project built was to provide easy access to low-cost financing for green vehicles. This has been made possible through two aspects: by strengthening the **Three Wheels United (TWU)** social enterprise, which is one of the key beneficiaries of this Project. The social enterprise will continue to act as the nodal agency to promote green financing of auto-rickshaws while improving livelihood options for rickshaw drivers. The second aspect is the creation of a green finance instrument that has customised a financial product for the switch to green vehicles for drivers that will continue to provide a credit guarantee and a hundred per cent of the loan of the asset cost. These two measures put together a system that will continue to promote means of shifting to greener autos not just in Bangalore, but wherever there is a demand. The other institution that was set up with the support of the Project is the **Auto-rickshaw Driver's Cooperative Society**, with shareholding from auto-drivers and their families. This is a non-partisan institution managed by the drivers, which was provided with management support by the project team. The strengthening of this institution will ensure that drivers will have a formal platform for savings, small-ticket loans and other financial services, besides exploring other business opportunities in their ecosystem like insurance services, garages and vehicle maintenance activities, smart charging facilities etc. The knowledge assets created by the project have been shared with relevant stakeholders and can inform policy planning related to promoting clean auto-rickshaws.

Project contributions to Climate Change Mitigation and SDGs

Thanks to project efforts, electric auto-rickshaws are a reality in the cities of Bangalore and Chennai, and the latter are consistently growing. The Project raised awareness on GHG emission from the transport sector, in particular autorickshaws. It has created awareness among drivers on less polluting technologies. It also undertook primary research to measure the GHG emission from the sector while upholding the need for shifting to cleaner technologies.

With regards to [SDG 12](#), the goal was to support Sustainable Consumption by promoting shared and clean technology-based mobility options among passengers through a communication campaign. The Project is the only focused and targeted intervention in the country facilitating SCP among auto-rickshaw drivers through easy financing and collaboration with manufacturers.

The Project contributed to the achievement of [SDG1 \(No Poverty\)](#) by facilitating drivers into inclusive social programmes such as insurance coverages, access to easy loans and training. Understanding that the auto-rickshaw sector is male-dominated, the Project undertook initiatives to identify and promote women drivers and motivate and trained females to become driver entrepreneurs. The Project also ensured the participation of women in the family on key decisions related to auto-loans, savings, etc., thus contributing to [SDG 5 \(Gender Equality\)](#). The Project worked towards financial inclusion and new business linkages for the drivers including advertisement spaces, linkages for grocery handling during COVID lockdown, etc., thereby contributing to [SDG 8 \(Decent work and economic growth\)](#). With income disparity increasing, the Project works towards improving the earning potential of the rickshaw drivers [SDG 10 \(Reduced Inequalities\)](#), supported them with asset ownership among drivers through loan support and, better recognition and inclusion of driver communities. In the endeavour to promote [SDG 11 \(Sustainable cities and communities\)](#), a Behavioural Change Campaign (BCC) was organised to promote the shift to sustainable public transport and support shared last-mile connectivity in both cities. The Project also organised primary research to highlight the Analysis of carbon footprint of auto-rickshaws.

Impacts at a Glance

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| Economic Impact | <ul style="list-style-type: none"> • The income of the auto-drivers increased by at least 40% by shifting to less polluting auto-rickshaws. • SME (owner driver) saves on an average 50-60% in fuel and maintenance cost by switching to cleaner technology. • Minimum business guarantee from an aggregator like UBER for drivers willing to purchase EV Auto Rickshaws has been created. • Retro-Fit variant and a New Electric Vehicle variant with two type of charging models: Fixed Battery and Swappable Battery. |
| Environmental Impact | <ul style="list-style-type: none"> • 27% reduction in LPG fuel usage from switching to four-stroke engine; 100% reduction in electric vehicle. • 1 million litres of LPG saved every year. |
| Social Impact | <ul style="list-style-type: none"> • Code of conduct training improved self-confidence, relation with clients, and increased potential clients /retention. The behavioural change campaign created a positive image for drivers. • Drivers shifting to an EV experienced lesser physical strain due to easy vehicle operation. These drivers, as well as commuters, were free from noise and air pollution. • Training activity during COVID-19 phase improved safety of service and sensitised drivers and family on COVID-19 risks, prevention measures and given protocols. Provided hygiene kit to 2,500 drivers. • The Drivers' Co-operative Society has 37% women shareholders, who are also part of the saving programme under SHGs. • A driving programme for women to learn Auto Rickshaw driving was initiated and four women have benefitted from it. • 2 Third Gender Community organisers were part of the team in helping the community in grouping, training, facilitating loans and other project deliverables. • 18 out of the 24 staff in the project were women. |
| Climate Benefits | <ul style="list-style-type: none"> • 1,444 tonnes of carbon emission reduced per year. With an estimation that 80% of the remaining two-stroke will switch to four-stroke and 20% of electric in next two years, there will be reduction of carbon emission by 33,200 tonnes every year. |
| Green Finance | <ul style="list-style-type: none"> • Over 2 million USD directly mobilised. This will directly unlock over 6 million USD of capital and create interest for new funders. • 1,783 drivers benefitted from the finance of four-stroke vehicle under the Project. • 40 drivers benefitted from a new Green Finance Instrument. |
| Target Group Engagement | <ul style="list-style-type: none"> • Continuous engagement with over 30,000 drivers for various training programmes on clean technologies, financial inclusion, setting up of cooperative societies, code of conduct for drivers. • Engaged with over 25 different stakeholders in the auto-rickshaw sector. • The last mile service piloted was used by 10,000 customers. • A Behavioural change campaign that involved media and residents spread across 7 months touching over 7 million residents of Bangalore. • 4 round tables in which 42 stakeholders from auto-rickshaw industry deliberated to create Voluntary Guidelines of CSR and Sustainability for IPT sector. |
| Policy Development | <ul style="list-style-type: none"> • Over 40 direct meetings with government stakeholders, 3 roundtable discussions, 1 international seminar, 3 national webinars, 1 south-south exchange programme for policy makers. • Contributed to scrapping policy issued by the Government of Karnataka in 2017, Registration of retrofitted auto-rickshaws in case of Chennai pilot with CMRL. |
| Europe-Asia Cooperation | <ul style="list-style-type: none"> • Participated in three international summit events as panelist and thematic speakers. |



FUNDING

EUR 1,554,742
(EU co-financing EUR 1,243,793)



DURATION

March 2016 - February 2020



PARTNERS



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This impact sheet is developed together with SWITCH-Asia SCP Facility

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