ENVIS CENTRE, CHANDIGARH
NewsLetter
Paryavaran - Patra
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Chandigarh State of Environment

Chandigarh: Stepping towards EV driven city

Introduction

The transportation sector is one of the important sectors that determine the economic prosperity of the nation. A good transportation sector governs the industrial prosperity of a nation, which in turn determines its economic accomplishment. In the modern world, every nation is making efforts to improve its transportation infrastructure. However, as transportation grows, there is an issue of air pollution due to the emissions of gases and particulate matter from these mobile sources.

Electric vehicles(EVs) have emerged as one of the options to mitigate or regulate the issue of air pollution. Although electric vehicles were first developed in the 19th century, it was not until the 21st century that they began to acquire popularity, which was ascribed to current environmental concerns. These vehicles use an electric motor that is powered by electricity from batteries or a fuel cell, as compared to conventional cars that use a petrol or diesel engine. The EVs come in various forms and offer a number of advantages, including reduced operating and maintenance costs, zero tailpipe emissions, tax and financial advantages, decreased noise and air pollution, easy home charging, etc (Figure1).

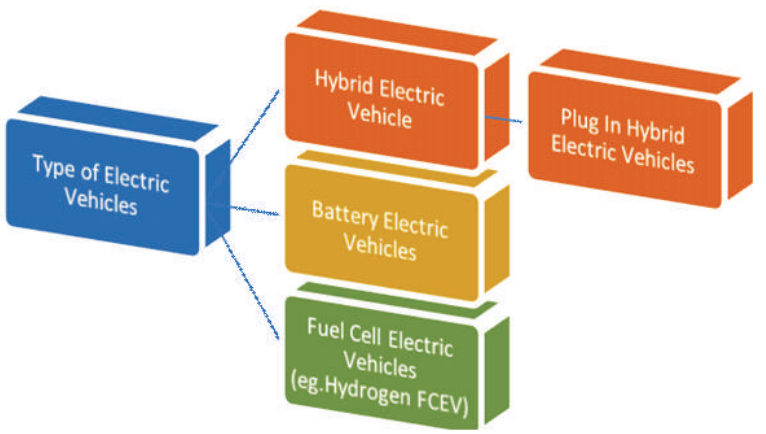

Figure 1. Types of Electric Vehicles

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Paryavaran Patra

❖ Initiatives for the promotion of the Electric Vehicles

a. International Initiatives

The transport sector is the fastest-growing contributor to greenhouse gas emissions (GHGs), and it will eventually account for more than 30% of all GHG emissions in the future. Additionally, it is a significant source of short-lived climate pollutants and air pollution. Several international initiatives, have been launched to address issues related to air pollution from the mobility sector.The following initiatives are a few of those in which India has participated:

- The EV30@30 campaign, which was launched in June 2017 during the 8th Clean Energy Ministerial, aims to accelerate the mobilisation of electric vehicles with a target of at least 30% new electric vehicle sales by 2030. There are currently 13 member nations and 23 firms and organisations supporting the initiative.

Source (https://www.iea.org/areas-of-work/programmes-and-partnerships/electric-vehicles-initiative)

- The United Nations Environment Programme has developed the ***UNEP Electric Mobility Programme***, (2019) a new global initiative to support the transition to electric mobility in low- and middle-income countries worldwide, in collaboration with various stakeholders, including international organisations and partners from the private, financial, and academic sectors, in order to meet the goals of the Paris Climate Agreement and reduce rising air pollution. The initiative promotes e-mobility goals and regulations on a global scale. The programme has created four Global Working Groups in collaboration with the International Energy Agency (IEA) to offer policy guidance and support the national programmes.

Source (https://www.unep.org/explore-topics/transport/what-we-do/electric-mobility/supporting-global-shift-electric-mobility)

a. National Initiatives

Long before major international initiatives to promote EVs were launched, India launched its first initiative in 2011. Such an initial step was the formation of the National Council for Electric Mobility by the Government of India in 2011. Later in 2015 Phase-I of scheme named FAME (Faster Adoption and Manufacturing of (Hybrid and) Electric Vehicles), a flagship scheme, was launched to boost the promotion of EVs in India. The government has approved Phase-II of the FAME Scheme with an outlay of Rs. 10,000 crores for a period of three years commencing from April 1, 2019.

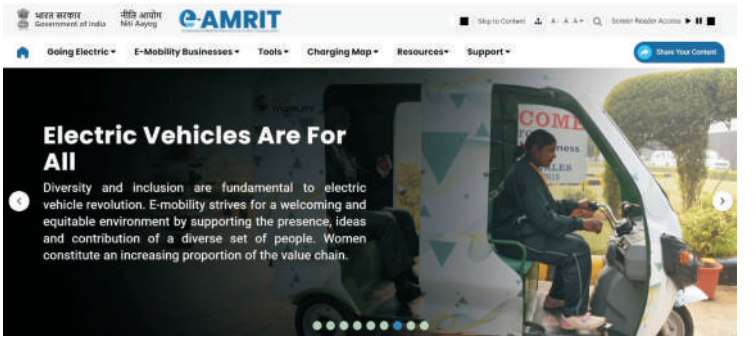

Figure 2. Interface of E-Amrit Portal by NITI Aayog

Later in 2021 a web portal on electric vehicles (EVs), was launched at the ongoing COP26 Summit in Glasgow, UK.In partnership with the UK Government, NITI Aayog developed the e-AMRIT (Accelerated e-Mobility Revolution for India's Transportation) (Figure 2) platform to raise awareness of electric mobility in India. The portal promises to act as a "one-stop platform" for all the data pertaining to India's adoption of electric vehicles.(**https://e-amrit.niti.gov.in/home**). The Figures 3 below gives a detail timeline of different initiatives carried out by Government of India for the support of EVs in India.

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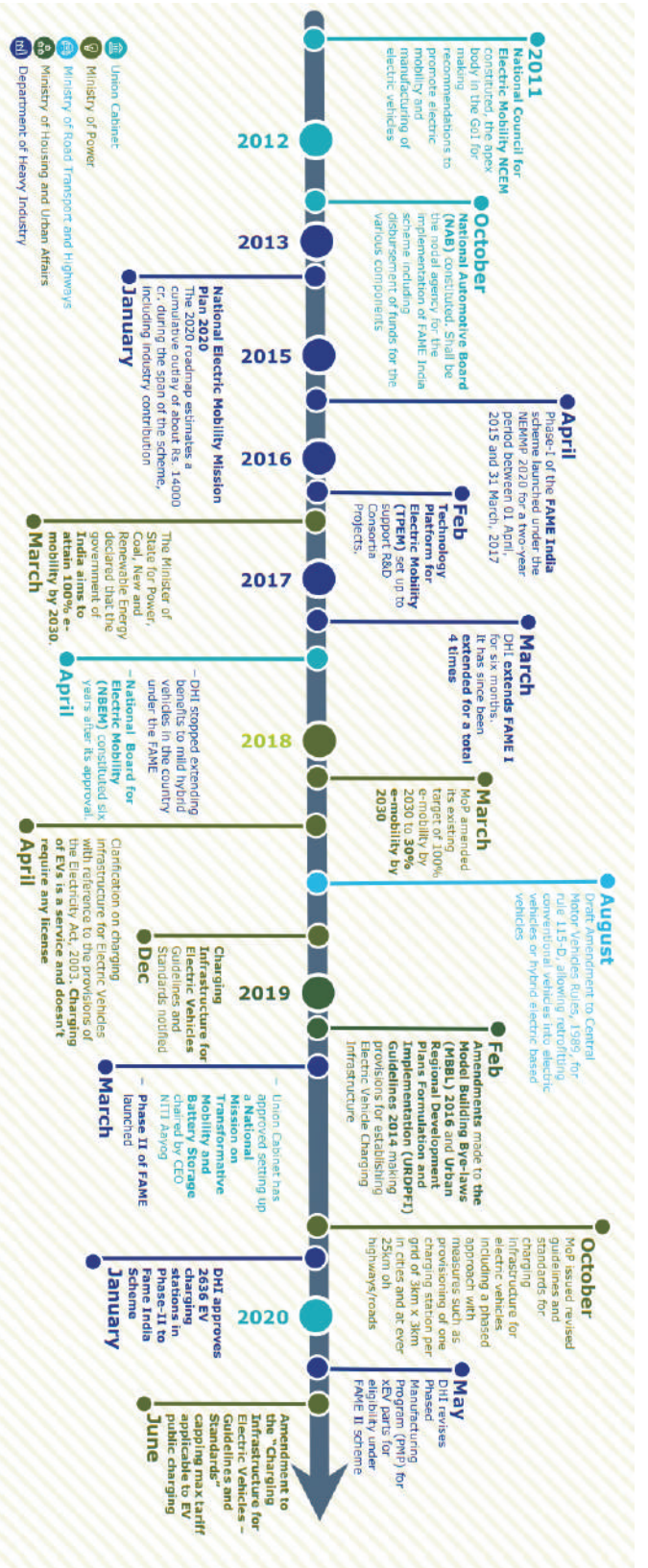

Figure 3.Timeline for various initiatives taken by policymakers and regulators
Sources:https://e-amrit.niti.gov.in/national-level-policy

c. Initiatives to support EVs by Chandigarh Administration

The Chandigarh Union Territory developed its own policy based on the national policy document as a framework for the promotion of EVs in the U.T. The Chandigarh administration complied and released the policy document on EVs in September 2022 to encourage the usage of electric vehicles and lower emissions from the transportation sector (Figure 4). This document serves as a roadmap for Chandigarh to become carbon neutral in mobility sector by 2030. The mission of this policy is "To provide an enabling framework through incentives and initiatives for promoting zero emission mobility with societal, economic and environmental considerations at forefront". While the main objective is "To accelerate adoption of EVs in the UTs so that they contribute to 70% of new vehicle registrations by the end of policy period."

Source (https://solar.chd.gov.in/assets/frontend/layout/website_docs/News_Updates/Electric%20Vehicle%20Policy%20-%20Chandigarh%202022.pdf)

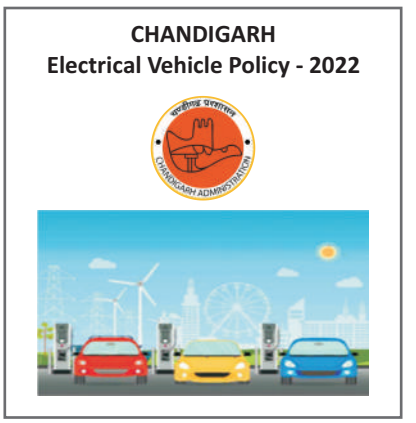

Figure 4: Electric Vehicle Policy-2022 Document

❖ Present Status of Number of EVs in Chandigarh

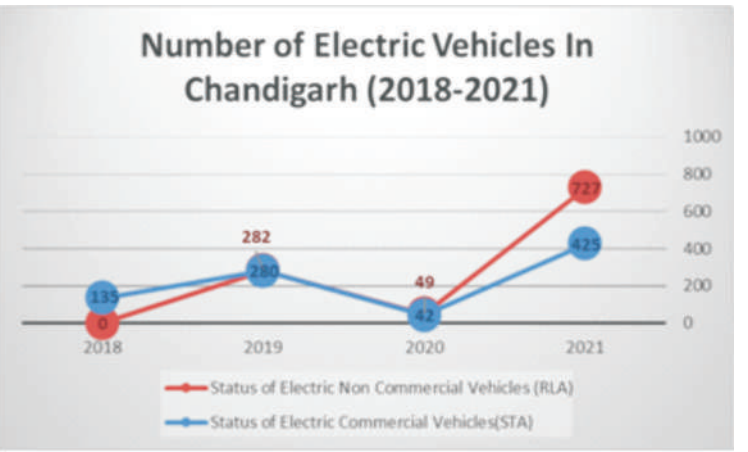

Figure 5. Number of electric vehicles in Chandigarh (2018-2021)
Source : Registration & Licensing Authority and State Transport Authority Chandigarh

The Figure 5 above compares the numbers of commercial and non-commercial electronic vehicles. From 2018 to 2021, this figure shows a similar trend of growth in the number of electronic vehicles in both of these categories. For the year 2021, Chandigarh has seen an increase in the number of electronic vehicles. 2020 shows a decline, which may be caused by the COVID-19 outbreak, which hindered the purchase of electric vehicles. Overall, non-commercial electric vehicles have become more popular over time than commercial ones.

❖ Objectives and Incentives provided under EV Policy

Apart from the main objective other sub objectives of the Policy documents for EVs in Chandigarh are

1. To establish Chandigarh as a 'Model EV City' by achieving one of **the highest penetrations of Zero Emission Vehicles** amongst all Indian cities, by the end of policy period as defined in Clause 3 of the document. (Refer policy document Chandigarh for more details)
2. To leverage the cycling track infrastructure of city for promoting usage of **Electric Bicycles** as a replacement of 2/4 W especially for short trips
3. To establish wide network of **Charging points** by enabling availability of power supply and related processes
4. To harness the **New & Renewable Energy sources** for charging of EVs to positively impact the indirect emissions
5. To enable **fleet operators** lik E-commerce companies, last-mile delivery/logistics companies and mobility aggregators transition to zero emission vehicles
6. To nurture **skill development, R&D and startup** for electric mobility space in the UT.
7. To develop a **communication plan** focused on driving awareness regarding the key elements of this policy and the benefits of adopting EVs.
8. To support adoption of Electric Vehicles in every vehicle category prioritizing phase-wise transition.

The policy document also states that "*The policy shall be valid for a period of 5 years from the date of notification with a detailed review to be undertaken annually or as required. The incentives shall be extended only for the policy period unless otherwise stated/notified*". The following incentives mentioned in Table 1. are being provided by the Chandigarh Administration for the promotion of EVs.

Table 1. Incentives Provided for the promotion of Electric Vehicles by Chandigarh Administration

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Vehicle Category	Incentive	Maximum Incentive	Number of Electric Vehicles to be incentivized
e-Bicycle	**Upfront: 25% of Cost of Bicycle**	Rs. 3,000	First 25,000 Bicycles purchased during the policy period
e-2W	**Upfront:** **Fixed Battery**: Rs.5,000/kWh **Swappable Battery** :Rs.3000/kWh **Scrapping:** Rs. 5,000	 Rs. 30,000 Rs. 15,000 Rs. 5,000	First 10,000 vehicles registered during the policy period
e-Cart	**Upfront:** **Fixed Battery**: Rs. 5000/kWh **Swappable Battery**: Rs. 3000/kWh **Retrofit Kit**: 15% of cost	 Rs. 30,000 Rs. 10,000 Rs.10,000	First 1000 e-Carts registered during the policy period
e-Autos	**Upfront:** **Fixed Battery:** Rs.5000/kWh **Swappable Battery**: Rs. 3000/kWh **Retrofit Kit:** 15% of cost **Scrapping :** Rs 7,500	 Rs. 30,000 Rs. 15,000 Rs. 15,000 Rs. 7,500	First 1000 e-Autos registered during the policy period
e-Goods Carrier L5N	**Upfront :** **Fixed Battery: Rs. 5000/kWh** **Retrofit Kit: 15% of cost** **Scrapping:** 15,000	 Rs. 50,000 Rs. 15,000 Rs. 15,000	First 1000 Goods Carrier L5N registered during the policy period
e-Goods Carrier N1	**Upfront:** **Fixed Battery**: Rs. 5000/kWh **Retrofit Kit**: 15% of cost **Scrapping**: 15,000	 Rs. 80,000 Rs. 25,000 Rs. 15,000	First 1000 Goods Carrier N1 registered during the policy period
4 W- e-Cars (Personal)	**Upfront:** **Fixed Battery**: Rs. 5,000/kWh **Scrapping**: 7000	 Rs. 1,50,000 Rs. 7,000	First 2000, 4 W-e-Cars (Personal) (including Hybrids as defined in FAME II) registered during the policy period. Applicable only for vehicles with ex- showroom price upto INR 20 lakhs
4 W- e-Cars (Commercial)	**Upfront:** **Fixed Battery**: Rs. 10,000/kWh **Scrapping**: 7000	 Rs. 2,00,000 Rs. 7,000	First 1000, 4 W- e-Cars (Commercial) (including Hybrids as defined in FAME II) registered during the policy period

Source: Chandigarh Electric Vehicle Policy, 2022 (https://solar.chd.gov.in/Website/News_Updates)

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❖ **Actions taken till date by Chandigarh Administration for the promotion of EVs**

I. 617 e-bike docking stations have been established in different sectors for the city's public bike sharing programme (Figure 6).

II. For public transportation within cities, 80 electric buses have already been bought (Figure 7).

III. Nine electric vehicle charging stations (slow and fast chargers) have already been installed at various sites throughout Chandigarh, and further stations will be installed soon at 38 other locations(Figure7). Currently, these charging stations and battery swapping stations charge Rs 8 per unit for slow to moderate charging, Rs 10 per unit for fast charging of batteries, and Rs 11 per unit to charge swapped batteries.

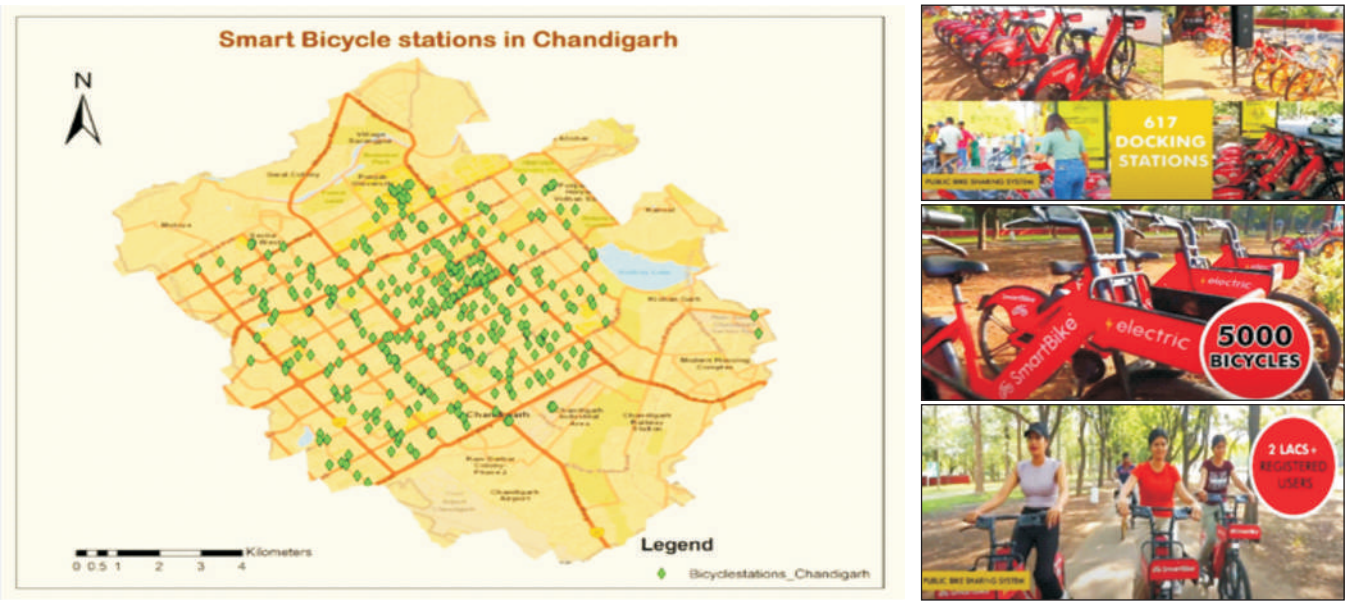

Figure 6. e -Bicycle Docking stations in Chandigarh

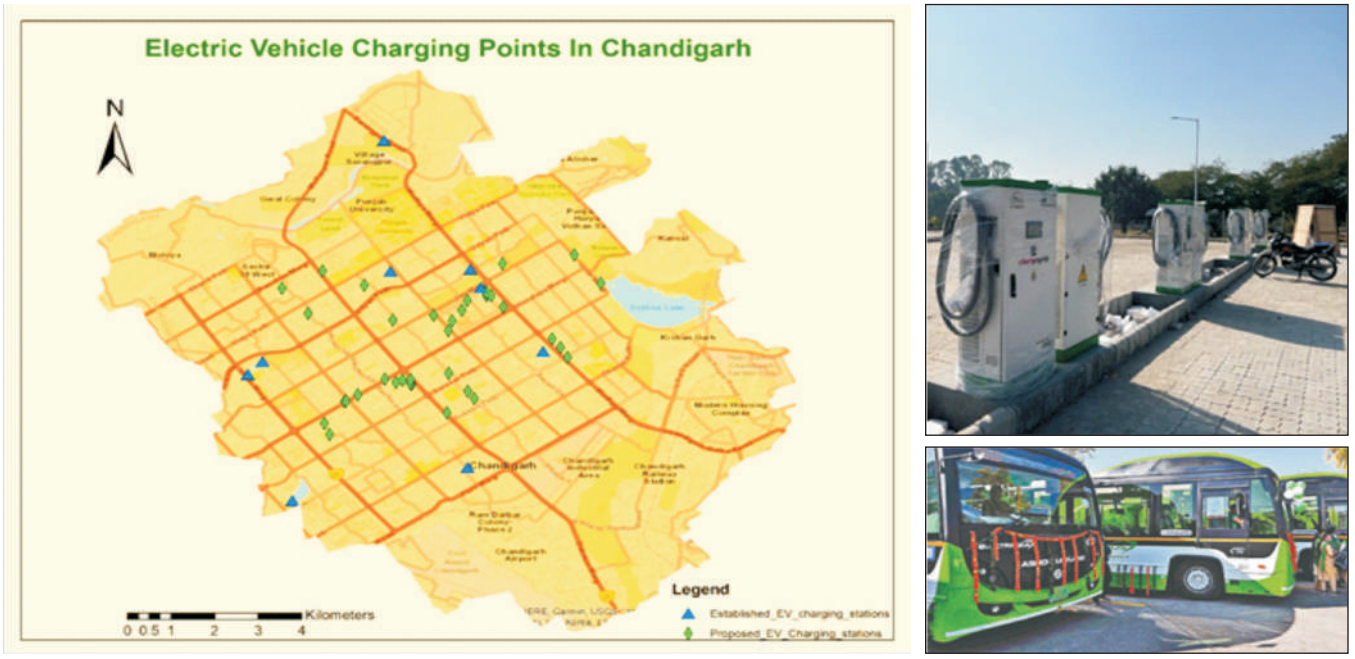

Figure 7. Electric Vehicle Charging Points (proposed and established)

E-mail : ch@envis.nic.in Web : www.chandigarhenvis.gov.in

ENVIS CENTRE TEAM

Sh. Debendra Dalai, IFS
(Director Environment)

Dr. Brij Bhushan
(Project Coordinator)

Er. Mohit Badhwar
(Sr.Programme Officer)

Ms. Smriti Thakur
(Information Officer)

Sh. Surinder Sharma
(I.T. Officer)

Conclusion : Electric vehicles are the technology of the future for the transportation industry since they offer a cheap and environment friendly means of transportation, but they also increase reliance on the electricity sector. Since coal is a carbon-emitting source and is used mostly for thermal energy production in India, the appropriateness of using EVs is therefore reduced. To support the goal of low carbon and pollutant emissions by converting the transportation sector to EVs, the Indian government must make efforts to produce more green energy. To boost the effectiveness of using EVs for reducing air pollution, renewable energy methods like solar energy, wind energy, etc. should be encouraged to produce electricity, which will truly convert the transportation sector into a green and clean one.

General Recommendations

- More advertisements are required for the government financial assistance programmes, which consists of low interest rates offered in partnership with various banks and financial institutions.
- For the smooth operation of these vehicles, the infrastructure, such as charging stations and service stations, should be set up more quickly by the government and EV manufacturing companies.
- The initiatives should be taken by centre government to establish uniform manufacturing standards for EVs to save on customer operating expenses.
- Capacity building of various stakeholders, including government line departments, EV manufacturing and distribution agencies and outlets, EV operating and maintenance agencies, and owners of charging station, financing agencies etc.
- Increase in the budget for the research and development activities of EV in order to continue improvements in their costs and efficiency.

From:

ENVIS Centre
Department of Environment
Chandigarh Administration
3rd Floor, Paryavaran Bhawan,
Madhya Marg
Sector 19B,
Chandigarh - 160019

Ph. No: 0172-2700065, 0172-2770998
Email: ch@envis.nic.in
Website: www.chandigarhenvis.gov.in

To,