



Urban transport congestion and climate: Imphal context

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Abstract

Small state like Manipur (India) is on the way to develop as smart state by connecting good transport system. More or less, the system of transport starts as early as during the reign of King Tompok by constructing a bridge over Ningthi turel, known as Chindwin River in Myanmar. The transportation continues by opening the road to Assam and construct a drain called Tokhelkhong by King Kabomba. Slowly or rapidly, further development leads to the establish of well-maintained transport system in a state. Moreover, good transport system plays an important role in ensuring sustainable economic growth. On the other side, transport becomes an issue all over the world in terms of greenhouse gases emissions and global climate variability and changes. Studies suggest that in the last three decades, the level of carbon dioxide comes from the transport sector only. The need of time is to handle the transport sector holistically after a systematic research and analysis. Every corner of the world needs to formulate ambitious and responsible policies for the future generation. For the State of Manipur, the author examined visible causes of congestion on the case road.

Keywords: Manipur, transport system, greenhouse gases, climate change, congestion.

1. Introduction

According to United State Environment Protection Agency (US EPA), transport sector accounts 23% global carbon dioxide emissions. The United Nation Environment Programme (UNEP) 2010 report estimates 22% of global carbon dioxide emission from the transport sector part [1-3]. The Fifth Assessment Report (5AR) of the Intergovernmental panel on Climate Change (IPCC) suggests not more than 7 giga-tonnes of carbon dioxide present in greenhouse gases are borne by the transport only. The fourth assessment report of Intergovernmental Panel on Climate Change (IPCC) reported 120% of greenhouse gas emissions increase between 1970 and 2004 comes from the transport. Scientifically, the concentration level of carbon dioxide in the ozonosphere is highly responsible by the transport. The emission is projected to 140% from 2000 to 2050, with the biggest emissions in developing countries like India. In fact, most industrialised countries are the main sources of carbon

dioxide emissions. Some 12% of carbon dioxide emissions are releases from the air agency organisation. All surveys and journals record the expected emissions to increase by 57% worldwide in the period 2010-2030. The IPCC Working Group III has well documented the influence of transportation systems on global climate change. The same have been summarized by the IPCC Working Group II [4-5]. Overall, Kyoto protocol defined carbon dioxide as the largest emission of greenhouse gases at this era [6].

1.1 Study Area

The capital city Imphal has gradually become a traffic congestion zone contributing to small amount of carbon dioxide emissions. Most traffic congestion are observed during the office and return hour. The identified congestion areas are Imphal secretariat, Head Post Office up to the Nupi Lan complex [7-8]. It further goes to Governor's residence cum office, Keishampat Junction, Wahengbam Leikai, Nagamapal, Khoyathong, Nityaipat

Chuthek till Thangmeiband legislative assembly road. On the other side, Sanjenthong, housing quarters for MLAs, Konung Mamang and New Checkon to Porompat are sometimes stuck by stopping here and there. Besides, most lanes (Leirak) in Imphal are struck in the problems of poor quality of roads, illegal parking, wrong-way driving, overloading, mixed traffic, lack of traffic lights, flooding of the roads due to improper drainage, ill managed diversions during on-road constructions etc. In addition, personal motorization and growing urbanization are other main challenges faced by the Imphal people. The increase in vehicles numbers, as well as other forms of motorized transportation (Cab, Autos, Buses, etc.) contributes to existing number of vehicular emissions. For personal purposes and trending fashion, more new vehicles are on the rise as addition emissions of carbon dioxide. Present article focuses on analysis of congestion status of Imphal city transportation and possible way out to solve the troubles.

2. Materials and Methods

The materials and methods followed for the fulfilling the objective is as follows

- a. Primary and secondary data collection
- b. Review literature
- c. Surveying the case area
- d. Public awareness, alternative option of E auto and E rickshaw
- e. Plantation of indigenous species in and around Imphal valley in terms of mitigation and adaptation plans

Primary data were collected through survey and the secondary data were obtained from government periodicals, unpublished thesis, journals, local newspaper etc. Furthermore, as an initiative measure taken by the Directorate of Environment and Climate Change in

collaboration with the United Nations development programme (UNDP), E autos and E rickshaw were planned as an alternative option in terms of the existing auto (Diesel and Petrol) to stabilize the ratio of climate at a safe level in the State [8]. Moreover, native tree plantation programs must be undertaken to mitigate the current ecological problems. In fact, no detailed inventories and information trends on transport demand are yet available in Manipur. In most cases existing data is inadequate. More importantly, there is lack of comprehensive and reliable databases in the State in order to identify effective strategies for reducing emissions. Most of the studies on climate change mitigation and adaptation have been carried out with the purpose of reducing the vehicle miles travelled. More awareness through various seminars, workshops, events and meetings about traffic rules and regulations set by the government is the need of time.

3. Result and Discussion

According to the Directorate of Transport, Manipur, the number of motor vehicle registered in Imphal west and Imphal East are 11,719 and 13,681 respectively, total stand to 25400 vehicles as a whole. Out of this, Imphal East has more two-wheeler vehicles than the Imphal West district. Besides, the total number of registered vehicles in the state increases from 26628 in 2015/16 to 34757 in 2017/18. Moreover, the number of two-wheelers, car, auto rickshaw and jeep have risen their number in accordance to the Directorate of Transport. The below tables (1 and 2) numerate the type of vehicles registered and total number of registered vehicles in Imphal areas. According to the Survey report, Imphal-Thoubal route report the highest busiest route followed by Thoubal Kakching Sugnu road and then the Imphal Bishnupur Road. Besides, Sekmai and

Kangpokpi (NH-2) recorded the highest frequency of traffic in terms of the hill district. The volume of traffic slowly gradually down northwards up to Mao. Moreover, the hill district, Churachandpur has 28 routine buses that regularly run between Imphal and Churachandpur. The daily traffic volume exceeds 1200 persons in this route. There are other local routes where intensity of traffic flow is depending according to the vehicle numbers. In practical, Imphal is the principal commercial center of the State. Technically, increasing numbers of cars and shared auto-rickshaws add to the traffic congestion in the valley and increase the level of air and noise pollution. In fact, different vehicles have different carbon footprint which is measured in terms of tons of emitted carbon per passenger mile, or per ton-miles. Moreover, the State is showing signs of some days warmer, some days colder and some days wetter or drier, more storms, or more intense weather events in a year.

Table 1. District wise type of vehicles registered in Imphal, 2017/18

SL No	Type of Vehicles	Imphal West	Imphal East
1	Two-wheeler	6864	9613
2	Car	3255	2417
3	Auto Rickshaw	367	252
4	Jeep	171	780
5	Truck	529	281
6	Taxi	1	35
7	Bus	31	19
8	Others	463	276
Total		11681	13673

A study by Walsh et al [20] suggest that changes in frequency and magnitude of climate variables are bound to increase the pressing issues of infrastructure damage, floods, urban heat islands and air pollution

amongst many other health and ecological impacts. Increased temperatures, rising sea levels and water shortages may lead to changes in behavior and use of resources. While no one knows exactly what will occur where, climate variability and change is well-acknowledged as a threat to our socio economy, environment and health sectors. More focus on road safety, innovative design of road space in terms of climate change design would add to better perfection of the environment.

Table 2. District wise number of registered vehicles in Imphal, 2017-2018

Sl. No.	District Name	Total Number of Vehicle Registered
1	Imphal West	11719
2	Imphal East	13681
Total		25,400

Conclusion

Fortunately, the introduction of e-rickshaw or battery-based vehicles in and around the Khwairamband Bazaar is achievable step taken up by the Government of Manipur. The starting of low floor city buses along three important routes in Imphal city namely, Canchipur Mantripukhri, Nambol Chairenthong, Imphal West DC, Imphal East DC (Top Khongnangkhong) is a dream come true step from the Government side to the public. The technology helps in decreasing the noise pollution in Imphal valley by indirectly decreasing the frequency of diesel auto rickshaws. Road side plantation of fast-growing tree species like Eucalyptus Spp, Gmelina arborea, Populus deltoides, syzizium cuminii, Cinnamomun spp, Toona ciliata, Mallotus phillipinensis, Michelia champaca, Bauhinia variegata, Callistemon linearis, and Macaranga Spp etc are effective means of drawing carbon dioxide from the atmosphere.

The need of time is aware the public in terms of environmental degradation, urban heats, pollution and climate change. According to the annual report of the Manipur Pollution Control Board and the Central Pollution Control Board, the air quality in all the four districts of central Manipur is good since SMP in air are within the permissible limits. Besides, the Government of Manipur is taking preventive measures to reduce pollution level by banning all the vehicles which have exceeded 15 years and by imposing penalty on those who are using these vehicles. Moreover, the 11th Urban Mobility India Conference 2018 discussed the need for aligning transportation towards climate change goals. The nation is estimated to see sales of 30.81 million electric vehicles by 2040 as suggested by NITI Aayog.

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Conflict of interest

The author declares no conflict of interest.

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