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AUTOMOBILE INDUSTRY AND ENVIRONMENT AUTOMOBILE INDUSTRY AND ENVIRONMENT

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Growth of an economy depend upon urbanization and industrialization ,both these are considered as positive indication but as everything has a limit these two factors also have their own limitation , anything excess can cause negative effect. Urbanization, industrialization and globalization have severe impact on global warming further we will discuss about productivity of vehicle and its impact on environment.

India is expected to the world's third largest automotive market in terms of value by 2026, India is world's largest tractor, two wheeler and three manufacturer, second largest in bus manufacturing ,third largest in heavy truck manufacturing and fourth largest in four wheeler manufacturing.

So far vehicles register on road in India are given below:

NUMBER OF MOTOR VEHICLES REGISTERED IN NDIA

Table 1

TRASNPORT AMND NON TRANSPORT AS ON 31ST MARCH

Year	Buses	Taxis	Light Motor	Goods vehicle	Two wheeler	Cars	Jeeps	Miscellaneous	Grand total

2011	1238245	1789417	4016888	7064495	101864582	15467473	1974253	8045441	1.42E+08
2012	1296764	2011022	42429689	7658391	115419175	17569546	1987098	8866332	1.59E+08
2013	1418763	2216453	4718672	8596762	132550294	2503389	2132893	9768046	1.82E+08
2014	1468010	2109348	4638377	8697541	139409778	21671515	2216888	9778764	1.91E+08
2015	1527396	2256619	5028312	9344464	154297746	23807986	2546731	10474886	2.1E+08

Source : Transport research wing, Ministry of surface transport

Vehicle are considered to be the major contributor of air pollution, starting from raw material ,manufacturing, storing, fuel refilling and usage. At each level vehicle cause pollution.

Air pollutants released from vehicle

the process of burning fuel to power the vehicles emits harmful gases which pollutes the air.

The major pollutants are:

- Carbon mono oxide (CO)
- Carbon Dioxide (CO2)
- Sulphur Dioxide (SO2)
- Ozone (O3)
- Particular Matter (PM)
- Nitrogen Oxide (NOx)
- Volatile Organic Coumpound (VOC)

Vehicles have different level of toxic gas emission which is charted below

Table 2

Gases	Buses	Two wheelers	Light motor vehicles	Cars and Jeeps	Taxi	Trucks and Lorries	Trail and Tractors
CO2	515.2	26.6	60.3	223.6	208.3	515.2	515.2
CO	3.6	2.2	5.1	1.98	0.9	3.6	5.1
NOx	12	0.19	1.28	0.2	0.5	6.3	1.28

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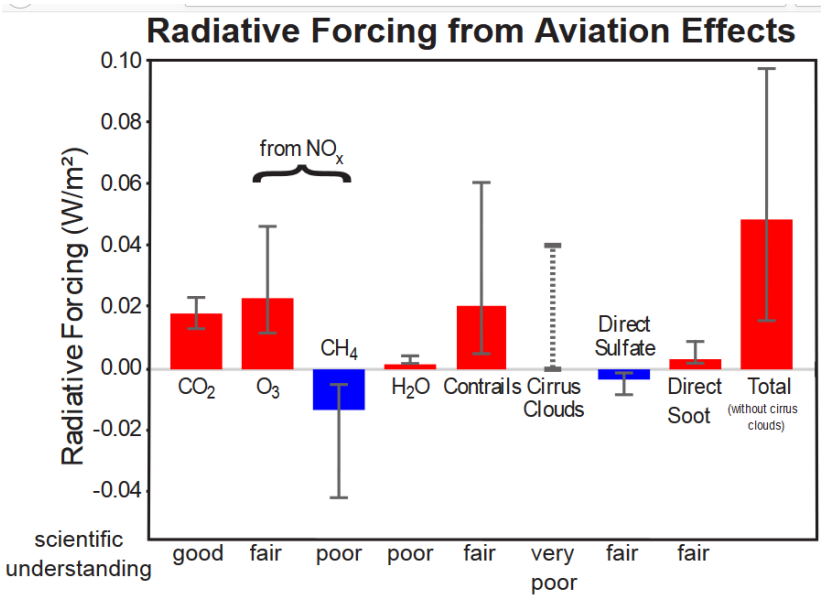
CH4	0.09	0.18	0.18	0.17	0.01	0.09	0.09
SO2	1.42	0.013	0.029	0.053	10.3	1.42	1.42
PM	0.56	0.05	0.2	0.03	0.07	0.28	0.2

Sources: IIP, ARAI IN UNEP 1999, MITHAL AND SHARMA 2003.

It can be seen from the above table, How big is the amount of gas emission from vehicles are. If we multiply this amount of gas with the numbers of vehicle, it is a huge number.

In regard with the Aircraft which also emits toxic gases. As per British Airways the emission of carbon dioxide is approximately 100 gms. per passenger in year 2018. The emission amount of Carbon Dioxide was 742 million tons for 8.5 trillion revenue passenger's kilometer with an average of 88 grams of CO2 per revenue passenger kilometer. These all toxic elements contribute to pollute the troposphere.



The above data shows the amount of toxic elements emitted from aircraft.

Vehicle air pollutant and human

The above discussed toxic matter results in severe negative impact on human health. It cause many diseases such as Cardio Vascular Failure, Partularly Angina , headache, infection etc.

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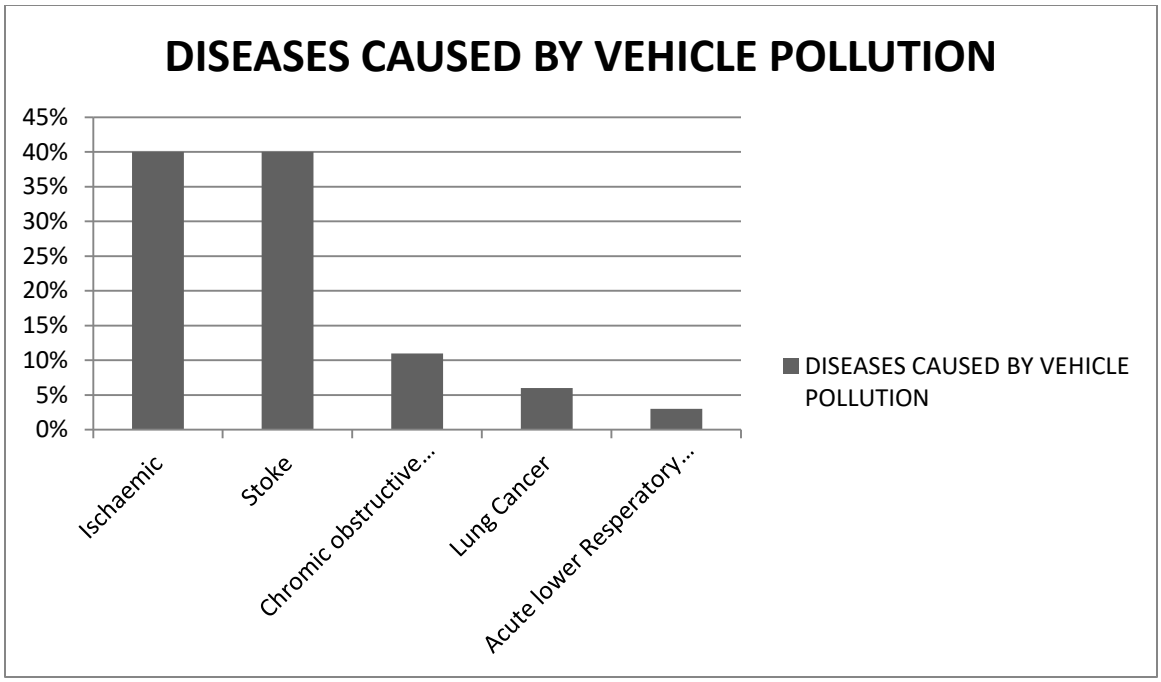

In the above table we can see that vehicle pollution creates approximately 40% of Ischemic heart disease ,40% of Stroke, 11% of Chronic obstructive pulmonary diseases , 6% of Lung cancer aand 3% acute lower respiratory infection in children.

Fuel Consumption

Fuels are one of the non-renewable resources .So far we saw the increase in vehicle production simultaneously they need to be provided with the fuel.

Table 3

Fuel consumption for Jan 20- Mar 20

(,000 metric tonnes)

Product	JAN	FEB	MAR	TOTAL
LPG	2449	2115	2306	6870
NAPHTHA	1383	1279	1386	4048
MS	2456	2511	2156	7123
ATF	740	690	484	1914
SKO	164	185	152	501

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HSD	6942	7160	5651	19753
LDO	57	54	49	160
LUBRICANTS AND GREASES	327	326	296	949
FO AND LSHS	486	503	482	1471
BITUMEN	598	670	525	1793
PETROLEUM COKE	1946	1786	1680	5412
OTHERS	986	946	917	2849
TOTAL	18535	18223	16083	52841

Source: Petroleum planning and analysis cell, Oil companies, DGCIS

And online SEZ data.

It can be seen from the above table tha t the consumption of fuel decreases ,that was due COVID 19 ,but still comparatively the consumption is huge in quantity.

Measure to control vehicles pollution

Various steps have been taken by the government to overcome the impact of pollutants which are as follows:

- **Emission standards:**

  Norms are been set by the government to control the pollution, which are as follows:

  Table 4

  Emission norms for passenger cars

Norms	CO(g/km)	HC +NOx(g/km)
1991Norms	14.3-27. 1	2.0(Only HC)
1996Norms	8.68-12.40	3.00-4.36
1998Norms	4.34-6.20	1.50-2.18
India stage 2000 norms	2.72	0.97
Bharat stage II	2.2	2.2
Bharat stage III	2.3	0.35(combined)
Bharat Stage –IV	1.0	Bharat stage-IV

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b. Emission norms for Heavy Diesel vehicles

Norms	CO(g/kmhr)	HC (g/kmhr)	NOx(g/kmhr)	PM(g/kwhr)
1991Norms	14	3.5	18	-
1996Norms	11.2	2.4	14.4	-
Indiastage2000norms	4.5	1.1	8.0	.36
Bharat stage-II	4.0	1.1	7.0	0.15
Bharat stage-III	2.1	1.6	5.0	0.10
Bharat stage-IV	1.5	0.96	3.5	0.02

- **PUC:**

  PUC is a mandatory certificate issued by the transport authority for all on road vehicle after checking the standard of vehicle.

- **Unleaded Petrol:**

  A reduction in the amount of lead petrol was implemented in different phases all over India.

Table 5

GASOLINE LEAD PHASE OUT PROGRAM IN INDIA

Phase- I	June 1994	Low leaded (0.15g/I)	Cities of Delhi, Mumbai, Calcutta and Chennai
Phase- II	1.4.1995	Unleaded(0.013g/I)	Cities of Delhi, Mumbai, Calcutta and Chennai
Phase –III	1.1.1997	Low leaded (0.15g/1)	Entire country
Phase- IV	1.9.1998	Ban on leaded fuel (Only unleaded fuel)	NCT Delhi
Phase- V	31.12.1998(Advance to1.9.98)	Unleaded (0.013g/1)(+low	All other capitals of States/UTs and other

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		leaded)	major cities
Phase- VI	1.1.99	Unleaded only(0.013 g/1)	NCR
Phase- VII	1.4.2000	Unleaded (0.013g/1)(+Low leaded)	Entire country

Diesel Sulphur Phase out Program in India

PHASE I	APRIL 1996	LOW SULPHUR (0.5%)	FOUR METROS AND TAJ TRAPAZIUM
PHASE II	AUGUST 1997	LOW SULPHUR (0.25%)	DELHI AND TAJ TRAPAZIUM
PHASE III	APRIL 1998	LOW SULPHUR (0.25%)	METRO CITIES
PHASE IV	APRIL 1999	LOW SULPHUR (0.25%)	ENTIRE COUNTRY

- **Individual Responsibility:**

Every individual has a responsibility to safeguard the environment following are some of the act which can avoid further vehicle pollution.

- Walk at walk able distance.
- Bike pooling and carpooling.
- Use of public transport.
- Drive efficiently
- Choose fuel efficient vehicle
- Use electric vehicle
- Off the vehicles in traffic signals.

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A small initiative can lead to a huge change entral pollution control board

Conclusion

Development backed by higher income group had led to purchasing power of people to increase today, even a middle class can afford to buy a car. Banks support the consumer to buy a car by providing car loan at a lower rate of interest. Where people use to travel with public transport, now a days the prefer the private service of Ola and Uber which has further increased the number of four wheeler on road. This increasing number of vehicles mnot only led increase in the price of fuels but also has increased the level of toxic gases in the atmosphere leading to global warming; No doubt development leads to crisis.

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