

PRESENTATION OF NEPAL

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TITLE OF WORKSHOP

**“Regional Capacity Building
Workshop on measurement of
Inland Transport CO2
Emissions and Mitigation
Policies”**

TWO TRANSPORT



INTRODUCTION OF NEPAL

Population: 26,494,504

Land area: 15 million
hectars

Mountains: 75 percent

Rural area: Almost 78 percent

Nepal is a landlocked country.

Most of the people are unemployed and some migrate to other countries.

Nepal's current GDP per capita is about \$1,000.

It is the second largest country in the world to have more water resource. Its water resources are so big that it helps to provide immense potential for hydroelectric development.

Nepal is also rich in natural and medical herbs found in mountain region. There are coal, iron ore, Magnesite, copper, cobalt, limestone, pyrite and mica.

Nepal is also rich in its forest resources. Nearly 1/3 rd of the Nepal's area is forested.

Mt. Everest is famous thing to see in Nepal. Thousands of tourists come to Nepal to see its **Natural beauties** and sceneries.

People spend a lot of money in trekking, hunting, mountain climbing and many of other stuff.

Tourist from all around the world comes to Nepal for rafting in these **dangerous rivers**. There are also many lakes in Nepal.

The Lord Budda Birth Place is Nepal

TRANSPORTATION

In Nepal, four different modes of transportation are available:

- **Surface transportation:** Roadways, Railways
- **Air transportation:** Domestic, International
- **Water transportation:** Ferries, Boats
- **Cable transportation:** Rope-ways, Cable Car

ROAD STATISTICS

The total of 23,209 km of road was constructed comprising 9,902 km black topped; 5,670 km graveled, and 7,637 km earthen (fair weather) roads.

Regular and periodic maintenance work of the total 6,575 km road was carried out.

TRANSPORT

The number of transportation vehicles registration has reached 1,280,690.

The maximum number of registered vehicles is motorcycle followed by the car.

During the span of 13 years the number of registered vehicles has increased by 5.2 times.

CONTD...

Heavy-duty vehicles, like buses, trucks and construction equipment have also increased in number and they consume a relatively large quantity of petroleum products emitting more and more GHG emissions and pollutants causing air pollution.

RAILWAY

The country has total railway line of 59 km. The Nepal Railway Company (NRC) owns 53 km.

32 km from Jaynagar, India to Janakpur, Nepal and

21 km from Janakpur, Nepal to Bijalpur, India.

The Indian Railway manages the 6 km railway line from Birgunj to Raxaul.

AIR TRANSPORT

Total Airport: 54; Working Condition: 39; providing service throughout the year 19 only. 8 airports are closed, 5 are under construction and 2 are recently proposed.

1 International Airport

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Most of the airports are just green long fields without modern navigation system. In some parts of Nepal air transportation is the only choice to get to their destination.

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The capital Kathmandu has links with other cities such as; New Delhi, Kolkata, Hong kong, Karachi, Dubai, Lhasa, Dhaka, Colombo, Bangkok, Singapore, Malaysia, China and other major cities.

CONTD...

Total no of airlines: International 29 and Domestic 18.

Regular Domestic airlines: 7

Agni Air, Buddha Air, Guna Air, Nepal Air Corporation, Sita Air, Tara Air, Yeti Air.

NO OF VEHICLE

	1999/00	2012/13
Total	2,43,990	12,80,690

CONTD...

The composition of motorcycles is the highest with 73.2% among registered vehicles in the Kathmandu valley followed by cars with the share of 18.5%. Public transportation constitutes only 2.5% of the total passenger vehicles in the Kathmandu Valley.

STUDY 1

Technology and Rural Upliftment Service Team (TRUST) Pvt. Ltd submitted a study report on “Detailed energy consumption survey in transport sector of Nepal” to WECS in 2000 where it has reported the poor data management system. It is still very difficult to get the exact number of vehicles that are in running conditions, the specific fuel consumption record and the mileage of the vehicles by type.

STUDY 2

A study was conducted on “Economics of reducing greenhouse gas emissions in South Asia” Options and Costs in five South Asian Countries: Bangladesh, Bhutan, Maldives, Nepal and Sri Lanka, where the authors have mentioned that the total energy-related GHG emissions in the five South Asian countries (without India) would be 3.3 times higher in 2030 than that in 2005 in the base case. (Shrestha et.al., 2013).

STUDY 3

The Kathmandu Valley, Nepal's major urban center, now has air pollution that is comparable to that of other industrialized cities in Asia, such as Bombay, Calcutta, Delhi, and Shanghai (Tuladhar, 2008).

STUDY 4

A similar observation on “deterioration of air quality and its impact on health” has been reported by ICIMOD (2007). The rapid increase in urbanization in the Kathmandu Valley and the concomitant rise in the number of vehicles are responsible for an increased level of polluting gases and solid particulate matters in the ambient air.

STUDY 5

The results of Shovakar Dhakal's study (2006) indicate that the Kathmandu Valley's motorized travel demand increased 8.7 times in 2004 from nearly one billion passenger-km in 1989 and suggest that it will increase to 27 billion passenger-km by 2025.

the rate of ownership of cars and motorcycles is expected to double and the length of road available per vehicle to decline by one-third by 2025.

STUDY 6

Rapid population growth, urban sprawl, and increasing motorization in the Kathmandu Valley are creating complexity of traffic congestion, poor public transportation system, pedestrian and vehicular conflict, and poor air quality are the major factors of air pollution(Udas,2012).

NEPAL VEHICLE MASS EMISSION STANDARD, 2012:

“Maximum limitation of Positive Ignition Engines, Type Approval and Conformity of Production”

Limit Values, Grams per Kilometer

Type of Vehicle	Mass of carbon monoxide (CO)	Mass of Hydrocarbon (HC)	Mass of Nitrogen Oxide (NO _x)
Passenger Cars	2.3	0.2	15

NEPAL VEHICLE MASS EMISSION STANDARD, 2012:

Note: The driving cycle adopted by the vehicle manufacturing countries in accordance with the principles of EURO III driving cycle will be accepted.

B. Carbon Monoxide

Carbon Monoxide

Limit Values with catalytic converter
At idle speed =0.3% by volume
At increased idle speed (>2000 rpm) =
0.2% by volume; and $\lambda=1\pm 0.03$

NEPAL VEHICLE MASS EMISSION STANDARD, 2012:

C. Low temperature test:

Limit Values, Grams per Kilometer

Type of Vehicle	Mass of carbon monoxide (CO)	Mass of Hydrocarbon (HC)
M1 and N1C11<or =2.5 T GVW and or <or = 6 seat	1.5	1.8

Note: The manufacture of vehicle where this type of test is not feasible because of climate is not applicable here also.

TRANSPORT EMISSION IN NEPAL

456 GJCO₂e emissions from the **transportation** sector, which is nearly **5%** of the net emission and remaining **95%** from other sector (National Communication Report, **2004**).

1,906 GJCO₂e in Fiscal Year **2012/13**.

Note: GJCO₂e: Giga-joules Carbon Dioxide Equivalent

NEPAL VEHICLE MASS EMISSION STANDARD, 2012:

“Maximum limitation of Compression Ignition Engines, Type Approval and Conformity of Production”

Limit Values, Grams per Kilometer

Type of Vehicle	Mass of carbon monoxide (CO)	Hydrocarbon (HC) and Nitrogen Oxide (HC+NOx)	Mass of Nitrogen Oxide (NO _x)	PM
Passeng	0.64	0.56	0.50	0.05

CHALLENGES

Inefficient structure, poor monitoring and lack of accountability of public.

Weak resources of domestic and heavy dependence on foreign assistance in the road sector.

60% of the road development expenditure is received from donors.

Poor accessibility in the remote hill and in the mountainous districts of the country.

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Poor maintenance system of motor vehicles which causes an increasing number of polluting vehicles and road accident.

Unreliability of transit service.

Lack of integrated section policies and an effective implementation strategy.

COCLUSION

The number of vehicles is increasing year by year and there are few old and not well-maintained vehicles running on the streets. They are the main culprits of pollution. Besides, the freight carriers are overloaded. They not only pollute but also consume more fuel and thus emit more GHG. The more vehicles are on the roads the more emission of GHG.

GHG emission increased by 2.7 times during this period.

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Vehicle kilometer travelled and fuel consumption by vehicle type has been identified. The numbers of vehicle that are registered at DoTM and are in running condition are calculated.

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The introduction of bus rapid transit, electric vehicles or hybrid vehicles should be reduce the use of fossil fuel and introduction of bio-fuel like ethanol and biodiesel should be ultimately reduce the GHG from transportation.

Low carbon vehicles should be considered.

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Maintaining the fuel quality, performing repair and maintenance of vehicles in regular basis and regular maintenance of road should be reduce the vehicular emissions.

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Petroleum products are also used for other purposes in industries, business centers, agriculture etc., such as for running captive generator sets and water pumping, causing more emission of GHG.

Thus, alternative energy should be manage.

CONTD...

Though GHG emission from air transportation is not that significant in comparison to road transportation at the present context, there is always possibility of adding more airplanes for domestic flights and this will also lead to increase in the GHG emission in future. If the road infrastructure is well established the number of air flights can be maintained at the minimum level.

THE END



Thank u

