

Summary of the Session

M N Prasad

Session Chairman

Former Chairman, Railway Board

1. The Chairman, in his opening remarks, made the following observations to serve as a background for the deliberations and also to provide a special focus on Kerala, in keeping with the theme of the Workshop.

* Global Warming (GW) due to transportation arises out of its “Green-house gas” (GHG) emissions which are proportional to the energy consumed. This, in turn, varies with the mode of transport adopted, as could be seen from the following relative energy consumption figures for the different modes of surface transport :

<u>Road</u>	<u>Rail</u>	<u>Waterways</u>	<u>Pipelines</u>
4.30	1.00	0.625	0.25

* Taking the payload-tare ratios of vehicles into account, the net advantage of rail over road is more significant in the movement of freight, being of the order of 4.5. Hence, in the context of GHG emissions, the reduction in Railways’ share of the total freight traffic from 75% in 1971 to 50% in 1990 and to as low as 30% in 2000, has been highly detrimental to national interest.

* From 2000 onwards the Railways have achieved a major turn-around through increased inputs to step up freight traffic growth and it is hoped that the Railways’ share of the traffic will improve in the coming years.

In the case of passenger traffic the proliferation of road vehicles in recent years,



without a matching development of the infrastructure, coupled with inadequacies in public transport services, have been the main reasons for increased GHG emissions.

* The use of electrical energy for transport, as in the case of electrified railways, had traditionally been regarded as pollution-free. But in the context of GHG emissions and GW, electric power generation by thermal plants makes it no less polluting than other forms of energy. Considering the total power scenario of the country, there is an urgent need for a rethinking on the future policy for power generation, with due regard to exploitation of alternative sources which are non-polluting and also renewable, such as hydel, solar and wind energies. A series of dams on our rivers will also help conserve water and make the environment greener..

* As for Kerala, the State is blessed with a variety of transport modes, including inland waterways and ports which had, in fact, been the sole means of transport until the middle of the 18th century. In the later years, with roads developing to cover wider areas, the waterways gradually lost their primacy. Consequent on motorisation and speeding-up of road transport during the 20th century, water transport dwindled and some sections of the coastal waterway system became defunct.

* The State is presently served by National Highways running for its entire length, along with an extensive network of lesser roads covering the hinterland. It has also got a B.G railway system in parallel with the north-south N. Highways. Compared to Railways, the roads have been lagging far behind in the development of infrastructure to cope with traffic growth. Easing of movement by improving roads to 4-lane or 2-lane standard and completion of by-passes around towns are a must for reducing GHG emissions.

* For achieving economy in energy consumption, as well as cost, development of the transport infrastructure ought to be based on an optimum inter-modal mix, for which Kerala should assign the highest priority to reviving and developing its inland waterway system into a National Waterway extending over the entire length of the State.

2. Dr E..P.Yesodharan, Prin. Secy, Sc.& Tech. and Exec.Vice-President, State Council for Science & Technology, in his address, gave an overview of the scientific facts of the GW phenomenon and the resultant climate change, which were an inexorable process that could make the earth uninhabitable in another 1000 years, if the warming continues at the present rate of 2.5 degrees C in 100 years.. Rise in temperature and water level of the seas is already in evidence and has started affecting the biodiversity of marine life.

* Transport sector is one of the main contributors of GHG emissions, accounting for over 20% globally. (In India the share of this sector is even larger, being of the order of 30%, as added by the Chairman.) 75% of the GHG emissions of automobiles is from cars and two-wheelers, proliferation of which is a cause for grave concern, especially with the inadequacies of the infrastructure..

* In Kerala the total number of motor vehicles has gone up from 2400 in 1960 to around 41 lakhs in 2008,



ie, a 170-fold increase in 48 years. Inadequacies in road width and public transport services have led to traffic congestion and increase in GHG emissions.

* While air pollution in the local context has lately been controlled to some extent by enforcing emission norms, the question of GHG emissions is yet to be addressed. The answer to this will lie in improving public transport, promoting energy-efficient modes like rail and waterways, developing fuel-efficient engines and cleaner fuels and increasing resort to non-polluting energy sources.

3. Shri. R.M.Nair, Former Member, Inland Waterways Authority of India presented a paper on “Global Warming and its Impact on Water Transport Sector in Kerala” (instead of “ Global Warming and its Impact on Transport Sector “, as mentioned in the programme.) This was a welcome change in view of its direct relevance to Kerala, having great potential for water transport development. The following were the main points.

* Maximisation of water transport will help ease road traffic in the coastal belt and also reduce energy consumption and GHG emissions.

* The due priority needs to be given to completion of the National Waterway No III which has been dragging on although sanctioned way back in 1993. Impediments on account of delays in land acquisition and clearance of obstructions in the navigational channel must be got over and steps taken, side by side, for timely completion of road approaches to terminals and for ensuring availability of floating craft and other equipments.

* Work on the remaining stretches of waterway from Kollam to Colachel in the south and from Kottappuram to Hosdurg in the north should also be got sanctioned and taken up straightaway, instead of waiting for final completion of NWW III.

* Development of a navigable waterway for the full length of the State will give a major boost to tourism, provided that adequate safeguards are taken against increased pollution of the water-bodies..

4. Dr. G.Ravikumar, Head, Extension Services Division, NATPAC presented his paper on “Economic Recession and Climate Change”. The following were the main points made.

* GW is caused by the accumulation of GHG around the earth’s atmosphere. Of these carbon dioxide (CO₂) constitutes 60%. The heavy build-up of GHG in recent times is the result of increased emission of CO₂ and other harmful gases, especially by the industrial and transport sectors.

* To meet India’s future needs of transport a 6-fold boost may be necessary in energy sources. To economise in energy consumption and also minimize GHG emissions, the Govt should promote and support studies for development of cleaner fuels, non-polluting energy sources and appropriate engine technologies. This should be done notwithstanding the present economic recession.



* The road infrastructure should also be developed side by side to ease the existing congestion and meet the future needs. While doing so attention should be paid to ensuring greenery along the borders and medians and provision of cycle paths wherever justified.

5. Prof. B.Anil, of the College of Engg, Tvpm presented a paper on “ Development of Alternate Fuels for Automobiles “.

* He explained the advantages and disadvantages of various alternate fuels such as natural gas, bio-fuels and hydrogen, as well as of electric-hybrid engine technology. He observed that hydrogen was a clean fuel in terms of GHG emissions.

* With the present concern about GW and the need to control GHG emissions, systematic further studies need to be undertaken to develop alternate fuels / energy sources for road vehicles.

* For short journeys, people should be encouraged to resort to bicycles, instead of cars and two-wheelers.

6. Prof. U. Prakash of SCT College of Engineering, Thiruvananthapuram presented a paper on “ Challenges and Opportunities in Controlling Automobile Pollution for Better Environment “. His findings were generally on the same lines as those of the previous speaker. The following were the additional points brought out. by him.

* The present resource and energy crunches, coupled with the dual concerns of environmental pollution and GW do pose a major challenge to all concerned.. To meet this, a strategic approach covering all aspects is called for.

* Since the problems are of global dimensions international co-operation would be conducive to developing and perfecting new / improved technologies for cleaner energy sources, energy-efficient vehicles, etc and laying down standards for the same.

7. Capt. S. Vijayan Pillai, Director of Ports, Government of Kerala, made a presentation on the subject, “ Impact of Climate Change on Kerala Ports “.It was mostly based on the worst projections of the likely rise in sea level on account of GW.

* Ports which are presently sheltered by the presence of coral reefs, etc will get exposed to the full fury of the sea.

* Depending on the extent of rise of sea level, wharves may get submerged and call for raising to remain operational.

* The rise in sea level may also disrupt some of the roads and other communication links serving the ports.

Main Observations and Recommendations of the Session

1. The Railways should continue their thrust on promoting freight traffic growth , in view of its energy efficiency being 4.5 times that of haulage by road lorries. The aim should be to improve the Railways’



share of the total freight traffic which had dropped from 75% in 1971 to as low as 30% in 2000. (This will also help cut down on petroleum imports since over 60% of freight movement by rail is by electric traction.)

2. The development of road infrastructure has been woefully slow in Kerala and it needs to be speeded up to ease the traffic flows on highways, as well as in towns en route. Due urgency should be assigned to the completion of by-passes around towns so as to save the loss of fuel due to slowing-down of both through and local streams of traffic.

3. Wasteful use of both fuel and road space by private passenger vehicles needs to be curbed through provision of adequate public transport services which are also fuel-efficient. Another step in this direction would be to get the Railways to introduce fast suburban trains on the busier routes, especially those which have been double-tracked and electrified.

4. With the growing concern about GW and GHG emissions, there appears to be an urgent need for re-evaluating the relative merits and demerits of the different alternative sources of power generation in the country. Electric power is traditionally regarded as clean energy, but if the source is thermal it is no less harmful in terms of GHG emissions. On the other hand, hydel projects which are generally objected to by environmentalists have some intrinsic merits like a renewable god-given resource and total avoidance of GHG emissions. Besides, it also helps conserve water and make the environment greener.. Most of the objections commonly voiced against such schemes can be overcome by enforcing suitable safeguards as necessary in each case.

5. In Kerala the revival and development of the Inland Waterway system for the entire length of the State deserves high priority in the context of minimizing energy consumption and GHG emissions. Along with completion of National Water Way.III, sanctioned in 1993 between Kollam and Kottappuram, the balance stretches should also be taken up and got completed side by side. Steps should also be taken to ensure timely completion of road links en route, as well as availability of the requisite floating craft and other equipments.

6. Transport development in Kerala should be based on a rational approach, ensuring an optimum inter-modal mix. For this it would be worth adopting the Greater Mumbai model as per which the north-south corridors, both road and rail, are to form the backbone and the rest of the road network developed to serve the hinterland and connect the main corridor at various points en route.

7. Efforts to improve engine design and to develop alternate fuels which are energy efficient and also environment-friendly, should continue.

8. Land use plans should, in future, aim at minimizing the commuting distances for people, so as to reduce energy consumption on transport.



“We have become a plague upon ourselves and upon the Earth. It is cosmically unlikely that the developed world will choose to end its orgy of fossil energy consumption, and the Third World its suicidal consumption of landscape. Until such time as Homo Sapiens should decide to rejoin nature, some of us can only hope for the right virus to come along.”

- **David Graber**, *Scientist U.S. Nat'l Park Services*