Gadkari's dream of **National Greenways Authority** for the greening of linear infrastructure in India

Under the aegis of Green Highways Policy of Ministry of Road Transport & Highways, formation of a dedicated SPV was proposed for the implementation of Green Highways Program. This was principally approved by the then NHAI Chairman and Union Minister Nitin Gadkari. Taking that concept forward, this paper examines the salient features of the proposed Institution.

Transportation sector plays a key role in trade, commerce and tourism development across the world. Often this development comes at the cost of exploitation of our limited natural resources, making ecosystem susceptible to climate change and global warming effects. Air, noise and water pollution caused by use of transportation mediums have irreversible effect on the environment, posing an imminent health threat to humans and other living beings. Under such circumstances, it is necessary to take proactive conservation measures to stop further environmental degradation.

Currently environmental management planning and practices in transportation sector are fragmented, glaring example being Central Pollution Control Board, MoEF which develop and monitor air, water and noise pollution standards, whereas implementation of environmental strategies have been dealt by respective transportation departments such as MoRTH, MoS, and MoRD. The issues of pollution containment largely remain similar across all surface transportation mediums, which provide us an opportunity to adopt holistic approach for planning and implementation of green initiatives.

With respect to the same, it is proposed to have a national level agency for environmental planning and implementation for surface transportation sector. The agency shall be called as "National Greenways Authority or National Green Pathways Authority" which shall undertake research, pilot projects and implementation of feasible Greenways (roads, rail-sides and waterways) strategies. National Greenways Authority shall work in collaboration with respective line departments of surface transportation for planning, implementation and monitoring of green initiatives such as green corridor development around roadways, railways and waterways.

National Greenways Authority will be mandated to work towards making Carbon Neutral Greenways in India for achieving sustainable environment and inclusive growth.

Background

Transportation sector comprises road, aviation, rails, waterways and other mediums. A developed transportation infrastructure facilitates trade, promotes tourism and bridges geographical divide between cities. Many a times this development causes irreparable damage to surrounding ecosystem. Air, noise and water pollution caused by use of transportation medium makes ecosystem susceptible to climate change and global warming effects. As per the studies conducted by CPCB, MoEF transportation sector is responsible for 14% of the global GHGs emissions which is only second to power sector (24%). Almost 89% of these emissions are from surface transportation mediums including roads, waterways and rails.

Road Transport

Road transportation sector is the most frequently used

transportation medium because of its last mile connectivity and ease of convenience. But, higher cost of freight transportation, lower tonnage capacity per vehicle and high amount of GHGs emissions make it the most expensive medium in terms of economic and environmental costs. In due course of time, road transportation system is bound to reach its saturation level and focus will shift on harnessing potential of other cost effective and energy efficient transportation mediums such as rails and waterways.

Rail Transport

Rail transport is energy efficient transportation medium but with increase in last mile connectivity of rails and development of dedicated freight corridors this advantage will be negated by sheer volume of rail traffic. Apart from the air pollution, efforts are required to arrest the rising noise pollution from moving trains.

Inland Waterways

Utilization of river transportation system (Inland Waterways Transport) for cargo movement currently accounts of only 7% of total surface transport, but with its inherent advantages in terms of low energy consumption, higher tonnage capacity per vessel and potential to augment the waterways infrastructure at lower cost makes it the most preferred alternative option for roads and rails.

Movement of motorized boats, cruise and cargo ships are responsible for disturbing the aquatic ecosystem. The discharge of effluents (fuel oils, lubricants & other chemicals) and release of black water from ships contain various harmful organic and inorganic matters which have devastating effects on growth cycle of aquatic fauna endangering their very survival. There are various hydro-morphological impacts which have far-reaching upstream and downstream effects in from of sedimentation and erosion.

Hence, it is important to consider the economic as well as environmental cost of transportation systems before developing an optimum transport mix which could minimize the environmental impact.

Many developed and developing countries (European nations, China, Brazil, USA, Japan, etc) with enormous potential of inland waterways transport have been working on developing optimum transport mix with waterways and rails combined handling on an average 70%1 of cargo movement. This is in deep contrast to existing Indian transport mix in which rails and roads handle 93% of freight movement, with roads alone handling almost 50%1 of the freight movement.

Existing transportation scenario in India can be seen as an opportunity in disguise, as it is easier to integrate environmental practices in new pathways (roads, rails and waterways) projects as compared existing one.

Need for National Level Authority for Greenways

Currently environmental management planning and practices in transportation sector are fragmented, glaring example being Central Pollution Control Board, MoEF which is responsible for monitoring air, water and noise pollution levels and releasing advisory to concerned government and private agencies about region specific pollution norms. But, managing implementation of environmental strategies has been dealt by respective transportation departments such as MoRTH, MoS and MoRD. The results of this fragmented approach for environmental planning and management is not satisfactory. Environment conservation is not the priority task of transport sector, due to which it often gets neglected or it is done to ensure the minimum statutory compliance.

Under such circumstances, a national level agency for planning and implementation of green initiatives on behalf of surface transportation sector is required. The issues of pollution containment largely remain similar across all surface transportation mediums, which provides us an opportunity to adopt a holistic approach for planning and implementation of green initiatives.

The proposed agency, "National Greenways Authority" shall undertake research, pilot projects and implementation of feasible green pathways (roads, rail-sides and waterways) strategies. NGA shall work in collaboration with respective line departments of surface transportation for planning, implementation and monitoring of green pathways projects such as green corridor development around roadways, railways and waterways. National Greenways Authority will be mandated to work towards making Carbon Neutral Pathways in India for achieving sustainable environment and inclusive growth.

Roles & Responsibilities of National Greenways Authority

- Develop understanding about existing environmental management practices followed by respective transportation departments.
- Document global practices and research regarding pollution containment strategies for surface transport sector such as green corridor development, river basin management for inland waterways, etc.
- Undertake research and pilot projects for identifying solutions for pollution containment along road, rails, and waterways corridors.
- Develop guidelines, strategies and action plan for undertaking pollution containment strategies/green initiatives.
- Implement feasible pollution containment strategies/green initiatives in collaboration with respective line departments.
- Develop forward linkages of environmental projects for

international funding, recognition and certification.

- Develop self-sustainable operational models for undertaking green initiatives.
- Liaison at international and national levels on behalf of respective transportation departments for environment related matters.

Addressing Climate Change and Global Warming Issues for Surface Transportation Sector

Mitigation and adaptation are two globally accepted strategies for combating climate change effects. It is important to assess the environmental impacts caused during surface transportation infrastructure development and operations period. Based on the EIA studies, strategies for environment conservation shall be developed. Although strategies such as developing efficient transportation systems through advancement in technology will happen with time but strategies such as building resilient ecosystem (green corridors) around transportation systems can be taken up with immediate effect.

For Roadways

Roadways are responsible for 73% of the GHG emissions, and rest 27% is contributed by other transport mediums such as aviation, shipping, rail, etc. Green corridor development alongside roadways in the form of median and avenue plantations will not only sequester GHGs emissions but will also improve the aesthetics.

National Green Highways Mission / Green Highways Division - NHAI, MoRTH has been working on effective implementation and monitoring of Green Highways Projects which involve green corridor development along 1.25 lakh km long National Highways network. National Highways constitute only 2% of Indian road network; similar initiative can be taken up on state highways, PMGSY roads and other artillery road networks of state.

Even if 50% of this road network is taken up for green corridor development, it is expected to bring approximately 112 lakh acres land under vegetative cover developing annual carbon sequestration capacity of 33 billion tons annually

For Railways

Railways although is an energy efficient transport system responsible for only 2% of GHGs emissions, but with future augmentation planned for its expansion, the energy consumption from this sector is bound to increase, thereby increasing its share of GHGs emission. Noise pollution due to train movement is also a cause of concern. Dense vegetation along rail lines can solve the dual purpose of arresting noise pollution and sequestering GHGs emission from trains.

Currently Railways have 65,000 km long rail network. Planning green corridors along them can bring 5.85 lakh acres land under vegetation with an annual sequestration capacity of 1.75 billion tons.

For Inland Waterways

India has potential of creating 7500 km long inland waterways transport system, and approximately 50% this is targeted to be developed as waterways by 2020. Waterways development process involves engineering techniques for ensuring Least Available Depth, prescribed width and continuous stretch of at least 50 km. The engineering processes adopted for waterways development have hydro-morphological impacts in the form of bank erosion, flooding in some areas resulting in blockage of wildlife/aquatic corridor and soil run off having large scale environmental impacts.

River basin management planning is required to minimize the impact of environmental degradation caused during waterways development and operations. Inclined banks will have to be planted with suitable trees and shrubs. To control water pollution, measures will be needed to avoid pollution due to surface water run-off, drainage, and contamination by organic matter and minerals from waste water. The plans should also include fish spawning and rearing areas.

Developing green corridors along 7500 km long waterways stretch can bring approximately 84,375 acres land under afforestation with an annual carbon sequestration capacity of 0.253 billion tons.

To fulfill India's commitment in CoP 21 for developing additional sink of 2.5 – 3.0 billion MT by 2030, and in the light of UN's declaration of 2020-2030 as Ecosystem Restoration decade and India's National Biodiversity Target by 2020 to integrate the values of biodiversity in national and state planning process, development programs and poverty alleviation strategies, formation of National Greenways Authority will be extremely crucial and appropriate. EPC World

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