

ENVIRONMENT AND SUSTAINABLE ROAD TRANSPORT

Roads are used by motorist, non-motorized vehicles and pedestrians. Roads have significant impacts on the users, nearby communities and the natural environment. Environmentally sustainable roads represent an investment in the long-term prosperity of our planet and also society. Today more than ever, it has been appreciated that economic development and road transport are inextricably linked. New roads may bring development to previously underdeveloped areas, but sometimes causing significant impact on sensitive environments and the lifestyles of indigenous people. It is now an accepted fact that growth and poverty reduction cannot be achieved without physical access to resources and markets. Similarly, quality of life flows from physical access to jobs, health, education and other amenities. But people and properties may be in the direct path of road works get affected in a major way. People may also be indirectly affected by construction and maintenance activities, through the disruption of livelihood, loss of accustomed travel paths and community linkages, increases in noise pollution and more road accidents. Disturbances to the natural environment may include geological disturbance, soil erosion, changes to flow of streams and underground water and interference with animal and plant life.

Now-a-days, there is general concern that road development has major environmental impacts. Data shows that transport-sector CO₂ emissions represent 23 percent of overall CO₂ emissions from fossil fuel combustion. The sector accounts for approximately 15 percent of overall greenhouse gas emission. With emissions predicted to increase by two thirds over the next thirty years, any credible and coherent future strategy must emphasize innovative thinking and cooperation by all stakeholders. The

objective shall be improvement of design standards and environmental performance of road sector, without unduly compromising the mobility and access. Today, the road authorities are facing challenges to deliver a safe and efficient network of roads within the framework of sustainable development. The road authorities are conscious of the potential environmental impacts that can arise due to individual road project and also for the delivery of the national roads programme. Co-operation with local authorities and other relevant stakeholders for implementation of these programmes is prerequisite to avoid or mitigate adverse effects on the environment. The objective shall be to maintain a balance between development and preservation of environment.

Road development projects usually call for comprehensive Environmental Impact Assessment (EIA) studies, carried out by EA professionals comprising of both specialists and generalists, who support the main engineering team. EIA has emerged as the most used tool in recent times, as it focuses on the amalgamation of the environmental management into the decision making process for sustainable development. The procedure of EIA is not only assessment of possible adverse impact on environment and on the pollution control issues, but also determines opportunity for society to take part in the development of environmental issues, to obtain information, to express proposals and to influence in decision making process. EIA determines impact on environment in various project implementation stages, taking into consideration different alignment alternative and technology scenarios. EIA ensures complex approach to the problems, not allowing to act in accordance with economic reasons only.

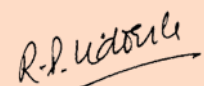
Road design standards in many cases originate from what was used decades ago in the developed world. These are blindly followed without comparing and judging actual required traffic conditions, vehicle patterns, geographical & weather conditions and workmanships. Therefore, it is necessary to modify these standards as per own traffic and environmental conditions. By adapting these approaches, it is very easy to develop sustainable road environment infrastructure. These Infrastructures give the framework for the physical movement within a society. Infrastructure planning, design, implementation and maintenance involve many levels of activity and disciplines. Roads must be designed to satisfy multiple needs and their construction must involve suitable practices to prevent environmental degradation. To reduce the environmental impact of road construction, appropriate preventive measures are to be made at the planning, construction, maintenance and operation stages. In general, road design must aim at serving the largest area with the shortest route development. Routes must be selected that allow the minimum crossing of streams, avoiding unstable slopes and other both geological and ecological sensitive areas. Planning must include setting apart of undisturbed zones and the construction of a suitable drainage system. In particular, drainage structures must be dimensioned for the highest expected peak flow.

Design and Construction technology for roads to be constructed shall be evolved keeping in view the environmental effects on the surrounding area, as road infrastructure project induce a different impact, by the technologies used during execution and operation mode. Each project is unique in terms of existing environmental conditions and measures to avoid or reduce the impact on environmental components. The construction process has particular environmental impacts and mitigation options at each level of work

like site establishment, construction work and site restoration after the completion of work. During site establishment and construction activity, key environmental issues are the location of work facilities and resources. Erosion which is a major risk factor can be prevented by prompt planting and control of runoff water. In addition, other important factors like traffic, noise, waste disposal and restoration of work areas like quarries, borrow pits, work depots and material storage sites also need to be addressed by road contractors. The concept of environmental protection and resource conservation has to be made an integral part of road development programmes.

For safeguarding environment, there are legal provisions which have been evolved to maintain a balance between the protection of environment and development requirement. These legal provisions are mandatory for implementation of road project. Therefore, all concerned should be aware of the current applicable environmental and social regulations for execution of road project right from the inception to operation stage.

Environmental impact is inevitable, because any construction or technology implanted in nature, cause an impact, but this should not stop the development of road infrastructure. Now is the time to embrace a new way to design, plan, build and maintain our road infrastructure, consistent with environment friendly practices, leveraging new technologies and preparing our country to take a leadership role in environmental stewardship and infrastructure development.



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