

Sri Lanka as hub of environment protection in Asia: constructing expressways while mitigating its environmental impact

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Abstract— Expressways are seen as an important device to stimulate 'economic development', an objective which states seek to achieve. However, development in most instances, as in the case of expressways, comes at the cost of environment. As a result, the subject of expressways has become a significant topic of discussion in the environment law arena. Despite this factor, there is no single-direct instrument dealing with the array of environmental concerns arising out of the construction and maintenance of expressways. These concerns however, could be brought under different international instruments.

In this backdrop, the objective of this study to find out the various kinds of Environmental issues in a background of expressways construction process and to explore mechanism in mitigating environment impact within an such situation in Sri Lanka further to propose an effective mechanism, and comparative study will be done in order to minimize environmental problem and to improve the laws relating to this area or how to minimize these types of environmental issues in order to shelter environment.

This research will be conducted as a literature review based on the secondary sources including statutes, text books, electronic data bases, journals etc. In order to ensure that the situation in Sri Lanka is understood in the light of the international developments in this regard, further this study engages in International Environmental principles as a whole.

It is clear that there are several environmental issues occurring when constructing expressways. Such as air pollution, water pollution, soil pollution, deforestation, wildlife and noise pollution. These environment problems were addressed by several legislations in Sri Lanka. And at the moment we are having a mechanism in order to assess the environment harms when constructing such construction. These mechanisms are identified as procedural requirements under the National Environment Act in Sri Lanka. Through tracing the environmental issues that arises when constructing an expressway, this research expounded the protections guaranteed under national and international law. It is discernible that Sri Lanka has an adequate legal framework to mitigate the environmental impact in constructing expressways. However, the issue lies in its implementation. Furthermore, it is commendable that

international standards relating to EIA and EPL in certain aspects have been absorbed in to the national system.

Keywords— Expressways, Environmental protection, Sri Lanka.

INTRODUCTION

After three decades of civil war, Sri Lankan is in a significant stage of its development process. In the development process highways used as an effective tool to achieve development targets, therefore, highways act a chief role in development process. Currently we can realize that Sri Lankan government has invested large number of rupees to the construction of high ways. When constructing highways and to maintain highways we are utilizing natural resources in a large extent. Therefore constructing highways impact on different ways to the environment.

II. ENVIRONMENTAL ISSUES RELATING TO EXPRESSWAYS

The aim of the expressways is to link two far destinations within a slight time. Same time it helps to improve the rural economy and reduce the impact of freight transport on suburban areas. Also it reduces driving times and increase safety for travelers from the urban areas and regional communities. Therefore most of these expressways fall across on environmentally significant areas. Consequently it has resulted to occur large number of environmental issues. These environmental issues can categorize under air, water, soil, deforestation, and noise.

A. Air Pollution

One of the most important issues pertaining to expressways is the impact they cause on air quality. During the construction period, the machinery used and the activities done such as metal crushing, removal of structure and transportation of construction material, produce and release a great amount of dust and other pollutants (Revision/update of the EIA for the for the Northern section from Kerawalapitiya to Kadawatha of outer Circular Highway to the city of Colombo project, hereinafter referred to as 'EIA to the Northern Section Highway', Chapter 4.1(e)). In addition to that, numerous toxic gases and dust are released by the exhaust from vehicles when they run on the expressways. The contaminated air is said to cause many health issues in the respiratory in both humans and animals. There are many instances where

expressway projects are cancelled or set aside due to the public complaints regarding air pollution. (a planned series of expressways in Toronto, Ontario, Canada which were only partially built were cancelled due to public apposition due the derogation of air quality. In addition to that there were many public resistances during the designing and the construction period of Hawke's Bay expressway in New Zealand). Moreover, long term effects of the vehicular emissions would contribute towards global warming.

B. Water

There is a high probability of deteriorating the quality of the surface water during the construction of expressways as well as afterwards. Water can be contaminated with emissions from construction vehicles and equipment, by disposal, spilling and leakage of construction of chemicals, due to the inadequacy of sanitary facilities (EIA for the Northern section Highway chapter 4.1(b)) as well as by unsystematic construction practices (Environment Management Plan for the Southern Transport Development Project at p. 12) and so on. Ground water also can get easily polluted when these substances leak to the ground water level which is facilitated by land excavating rock blasting and so on (Environment Management Plan for the Southern Transport Development Project at page 13).

The pollutants which deposit on the pavements and in the area near the expressways are carried to the nearby surface water with the rainfall through the drainage systems built on the expressways and this affects the whole ecosystem in that vicinity. This primarily affects the aquatic organisms and might cause serious health hazards to humans and eventually may result in breakdown of the whole system (the well-known *Colombo-Katunayake expressways* which is still under construction runs along the *Muthurajawela* marshes which is well known and even recognized by International instruments for its Bio Diversity)

Furthermore, it is very important to provide for a through drainage system coupled with cross drainage, when constructing an expressway, especially when it crosses marsh areas, paddy fields and river valleys. Inadequate drainage and reduction of flood retention areas could cause flooding in upstream side of roadway (EIA for the Northern Section /highway, Chapter 4.1(a)(1)). And construction on an expressway would also have an impact on the natural drainage system of an area invariably, where they are filled due to the construction (EIA for the Northern Section, Chapter 4 1(a)(2)). If new alternative drainage paths are not introduced to such areas, flash flood situations could occur even for a minor rainfall event.

C. Soil

The impact of expressways on soil is also vast. Cutting and filling operations which result in excessive soil masses are a direct outcome when constructing an expressway. Soil erosion could occur if these cut slopes are exposed

to rains or filled slopes are kept incompact. Moreover, where chemicals such as Bentanite which used for boring operations are dumped or spilled, adverse effects on the soil would result.

D. Deforestation

Deforestation is also a major issue resulting from constructing expressways. Such activity would have huge direct impact on the bio diversity of an area and particularly on its indigenous flora and fauna. (When deforestation of a vast area for the purpose of constructing expressways happens, undergrowth clearance is also uncontrollable which would lead to disappearance of reproduction and food zones for species of animals and fish, aquatic and migratory birds as well. This is evident from the destruction caused by the expressways built through the great Amazon rain forest in Brazil and Darian Gap in North America.

E. Wild life

Repercussions of deforestation along with the construction of expressways directly affect the wildlife in that specific area in many ways. According to the wildlife experts, there is a notable increase of road-kill of animals, habitat loss, habitat fragmentation and disturbance to animals resulting from expressways.

F. Noise

Another factor that cannot be neglected is the excessive noise created during construction and by excessive traffic afterwards. During the construction period, removal of structures, extraction and transportation of material etc. can cause increased noise and vibration levels (EIA for the Northern Section Highways, Chapter 4.1 (f)). Moreover, the constant noise of vehicles also would create annoyance, disturbance to activities for human and wildlife. This may also cause adverse effects on human and animal health such as increased blood pressure, heart rate and impaired performance due to lack of sleep

III. PROTECTION UNDER INTERNATIONAL ENVIRONMENTAL LAW

Expressways are grasped as utmost importance device to encourage economic development of a country. However, development in most instances, as in the case of expressways, comes at the cost of the environment. As a result, the subject of expressways has become a significant topic of discussion in the international arena. Despite this factor, there is no single-direct instrument dealing with the array of environmental concerns arising out of the construction and maintenance of expressways. These concerns however, could be brought under different international instruments.

The concept of sustainable development is significant in relation to expressways as the construction of expressways involve two competing interests, that of development and protecting environment. The importance of this concept lies

in the fact that it seeks to reconcile these two interests and is recognized by some of the key international instruments. In the case of *Gabcikovo-Nagymaros (Hungry v. Slovakia, 1997, ICR Rep.7)* justice Weeramantry suggested that the concept of sustainable development is a principle of international law with normative value. According to the Stockholm Declaration (1972) states that in order to provide the maximum benefit to the people, states should integrate economic development with protection of environment (Principle 13). Furthermore, the Charter for Nature (1982) call states to take due account of conserving the nature in development activities and lay down specific principles for environmental protection which are designed to guide economic development (principle 7).

The Rio Declaration could be identified as a cardinal instrument that could be applied to expressways, as it addresses some of the important concepts in international environmental law, such as inter-generational equity (principle 3), public participation (Principle 10), precautionary principle (principle 15) and environment impact assessment (principle 17), in addition to sustainable development. Actually if we can adhere and conscious of these concepts help to mitigate environment damage that could be caused through expressways.

While the aforementioned international instruments deal with environmental issues in a broad sense, there are instruments that specifically deal with issues arising out of expressways. Such as, harmful emission from the usage of expressways could contribute to global warming and this issue is addressed by the Vienna Convention (convention for the protection of the ozone layer 1985), Kyoto Protocol (Kyoto protocol to the United Nations framework convention 1997) and Montreal Protocol (1987), which advocate the protection of ozone layer.

And also when we are considering the impact on animals and plants, Convention on Biological Diversity (1992) calls for the sustainable use of biological components (Article 6(b)), and to minimize the effects of human activity on the environment. The World Heritage Convention (Convention Concerning the Protection of the World Culture and Natural Heritage 1972), requires state parties to identify and protect its natural heritage (Article 5). It is important that, this convention expressly mentions to seek international assistance to ensure optimum utilization or resources (Article 5). Thus if a country does not possess the necessary technology to construct expressways with minimum impact to the environment, the convention encourages states to seek international assistance. In this scenario this is a significant place where we can use this international assistance to mitigate environmental impact when constructing expressways.

Further, in relation to the issues disturbing wetlands when constructing highways, the Ramsar Convention (Convention on wetlands of International Importance

Especially as Waterfowl Habitat- 1971) could be utilized. In its preamble, it stipulates that conservation of wetlands and their flora and fauna can be ensured by combining far-sighted national policies with co-ordinated international action.

Apart from the above instruments, we can explore in to the guidelines issued by lending institutions, when assisting projects such as construction of expressways. These Donor Guidelines play an important role in mitigating environmental impacts as several conditions are placed in order to protect the environment, as a pre-requisite for granting assistance (For example, Sri Lanka had to fulfill the Asian Development Bank(ADB) and JAIKA guidelines to protect the environment when constructing the Southern expressway as the ADB was its project funder).

IV. SRI LANKAN LEGISLATIVE FRAMEWORK

According to the directive principles of state policy in 1978 Constitution, the state shall protect, preserve and improve the environment for the benefit of the community (Section 27(14)). Actually this directive principle could be implemented by using Article 12 of the 1978 constitution, which discusses the equality. This article provides a platform to bring in the concept of 'environment justice'. This article has been extremely beneficial in protecting individual rights and assessing the impact of environment. In *Heather Mundy v. Central Environment Authority (58/03 SC, 2003)* this article had been used with regard to the southern expressway.

Apart from the Constitution of Sri Lanka, National Environment Act is a significant legislation in relation to protecting environment. This Act(National Environmental Act No:47 of 1980) established the Central Environmental Authority and has provisions with regard to protection and management of the environment and matters related to it. It provides the legal basis for environmental assessment in Sri Lanka.

When considering expressways under this statutory provisions, development of expressways exceeding 10km will fall within the list of prescribed projects which listed in Regulation no. 1 of 1993 Gazette Extra-ordinary no 772/22. And it involves in conducting of an Initial Environment Assessment (IEE) or an Environment Impact Assessment (EIA) based on the Terms of Reference (TOR) prepared by the relevant project approving agency (PAA). In *Kerawalapitiya to kadawatha* outer Circular Highway to the city of Colombo, the Southern Expressway and Northern Connectivity Project, this procedure have followed to investigate the environment impact on those projects.

Moreover, according to the Road Development Authority Act no 37 of 2009 it concerns planning, development and administration of expressways. According to the Section 2

of this act, road development authority consists of seven members and includes inter alia the chief executive officer of the CEA(Central Environmental Authority), nominated by the minister in charge of that subject. And section 3 of the act establishes an advisory council and among the members is a senior officer of the ministry of environment and natural resources nominated by the minister. Therefore, we can see this act attempt to consider the environment impact which occurs when constructing expressways. But it was found that apart from those two sections there wasn't a single section dedicated to environmental issues by the act. And through this act expressway authority bill was suggested but bill is silent on this matter as well.

Under National Environment Act there are some regulations, which try to protect the environment. Noise Control Regulation no 1 of 1996 and Protection and Quality Regulation no 1 of 1990. These regulations prohibit the discharge, deposit and emission of waste into the environment, which will cause noise pollution expert under the authority of a license issued by the CEA. They regulate maximum allowable noise levels for construction activities during proposed project activities.

When considering water issues, there are significant legislations which we should focus. Water Resource Board(Amendment) Act no 42 of 1999, Fisheries and Aquatic Resource Act 1996, Flood Protection Ordinance no 4 of 1924, Irrigation Act no 23 of 1983, and National Water Supply and Drainage Board Act no 2 of 1970. These acts formulate policies and programs in regard to subject of water resources management and prevention of pollution of rivers, streams, and other water resources. They take the key role when it comes to construction, operation and maintenance of irrigation schemes, drainage and flood control in construction process.

Further air pollution is also a significant issue which arises in this process. In this scenario Motor Traffic Act no 14 of 1995 and its Amendment Act no 5 of 1998 utmost importance. Through these statutory provisions Green Emission Test introduced in to the Sri Lankan jurisdiction. Green Emission Test checks whether the emissions of the vehicles are within the standard limits set out by the Motor Traffic Act. The department of motor traffic, CEA, gaseous resources management center and the department of measuring units and standards, carry out monitoring of vehicle emission. So this is a momentous place where we are controlling this air pollution after constructing expressways. Apart from those statutory provisions CEA's Air Quality Monitoring Program help out to identify air pollution caused by vehicles or other construction activities.

As author mentioned previously throughout this expressway construction lots of issues can arise in relation to the physical geography. These issues will covered by the

Fauna and Flora Protection Act 1993, Felling of Trees Control (Amendment) Act no 30 of 1953, and Coast Conservation Act no 57 of 1981. These acts deal with conservation and protection of natural resources of the country-its flora and fauna. These acts provide the actions that can be taken against commercial actions or urbanization programs, therefore if an expressway directly or indirectly affects the physical geography of the country and their habitats, such projects could be prohibited or modified, and thereby protect the bio-diversity.

Finally when we are considering the land issues which will arise in this construction process, then we have to find the relevant laws in Sri Lanka. Soil Conservation (Amendment) Act no 24 of 1996, Geological Survey and Mines Bureau Act no 33 of 1992 and Sri Lanka Land Reclamation and Development Corp Act no 15 of 1968, are the legislations concerning issues related to land. These acts make provisions for enhancement and substance of productive capacity of soil, to restore degraded land for prevention and mitigation of soil erosion, for conservation of soil resources and protection of land against damage by floods, salinity, alkalinity and drought and to provide for matters connected there with or filling and developing marshy lands, obtaining approvals for sand mining and rock quarrying. Thereby necessary actions could be taken if an expressway project affects the land in the aforementioned ways.

V. EFFECTIVENESS OF THE LEGAL REGIME TO PROMOTE ENVIRONMENT PROTECTION

A. Effectiveness of the EIA Process

The EIA process has been effective in identifying and mitigations most of the environmental harms resulting from expressways (Southern Expressway). However in practice, certain issues arisen when implementing and conducting an EIA.

B. EIA Approval for Alterations

During the construction of Southern Expressway(SEW) CEA approval was obtained by the RDA for the original trace and combined trace relevant EIA's were conducted. However, the RDA failed to obtain fresh approval for the final trace which they modified and no supplementary EIA was submitted. RDA officials states that the final trace was modified to mitigate the effects to the *Koggala* and *Bolgoda* wetlands(*The Island*,2003). Changing the trace of highway without the necessary approval by the project approving agency (PAA) may undermine the value of an EIA process in the construction of expressways.

C. Public Participation

The provision for the public participation is a significant strength in the EIA process. On of the criticisms leveled against the RDA during the construction of the SEW is that they made arbitrary changes to the trace without due consideration of all affected parties(AP). According to the

judicial committee appointed by the Court of Appeal on the SEW, the incumbent priest of the Kohobadeniya Temple in Bandaragama complained that... the final trace traversed through the temple and beyond its Bo tree. (SC Appeal 58/2003 (CA App. No. 688/2002)). Even though the AP's of the original and combined trace were consulted, those affected by the final trace complained that they had no opportunity of making representations to the authorities, and that certain local authorities themselves were unaware of the changes in the trace (SC Appeal 58/2003 (CA App. No. 688/2002)).

However, the *Colombo-Katunayake Expressway* (CKE) went further in improving public participation and conducted vernacular public hearing which enabled EIA consultants to express themselves clearly (Zubair. L, 2001). Generally RDA officials, following the completion of the expressway, investigations are conducted based on the complaints by AP's. In addition, the RDA has grievance redress mechanisms in place to address complaints made by AP's relating to pollution. Thus we see that Sri Lanka seems to be moving towards more public engagement in expressing their environmental concerns relating to the construction of expressways.

D. Non-Identification of Certain Aspects of the Affected Environment

The EIA on the SEW failed to identify the threat to dogs and monitors. As the final trace was introduced to mitigate the effects to the wetlands it can be criticized that this damage was not seriously considered during the EIA. However, one can only hope that future EIA's will be more efficient in addressing all environment issues.

VI. EFFECTIVENESS OF POST EIA MONITORING

The RDA engages in several types of monitoring to oversee the work of the contractor, and this monitoring is conducted on several levels as; period monitoring, complaint based monitoring and activity based monitoring (Kodithuwakku.D.C, 2004). All environment impact records are then sent to the CEA for further scrutiny. Such monitoring measures promote environment protection and are a commendable feature in our system. However, practically this process is not followed as seen where off shore sand mining has been taken place for CKE(Kodithuwakku. D.C, 2004). The perpetrators of such violations remain unabated due to political influence, which has a negative impact on environment protection.

VII. INCULCATING INTERNATIONAL STANDARDS AND PRINCIPLES

The Sri Lankan courts have recognized the need to balance the right to development with the right to environmental protection (*Heather Mundy v. CEA* (S.C. 58/03, 2004) and *Bulankulama and others v. secretary, Ministry of Industrial Development* (2000, 3 SLR 243)). Nevertheless, as a state policy Sri Lanka seems to be lacking in its commitment

towards such principles. JICA and ADB are some of the biggest donors in expressway construction in Sri Lanka. These donor institutes which are well immersed with principles of sustainable development impose environmental standards that should be maintained as per the conditions when granting financial assistance. Officers at the RDA are of the view that even though Sri Lanka follows such guidelines they are skeptical whether this is a genuine undertaking as a state policy or if it is done merely to comply with external pressure. To truly balance the goals of development with environmental protection, Sri Lanka should maintain uniform high environmental standards in all its development projects, irrespective of the donor body.

VIII. SUGGESTIONS TO IMPROVE ENVIRONMENT PROTECTION RELATING TO HIGHWAYS

It is submitted that the RDA has adequate capacity for monitoring and implementation of environment and social issues related to expressway projects. However, better coordination between the client and contractor regarding the implementation of EMP is necessary. This can be achieved through conducting meeting and workshops. This will help to clarify any issues, doubts regarding the project and will help to implement EMP more effectively (IEE report for Sri Lanka; Northern Road connectivity project-additional financing, 2012).

Furthermore, the legal system should be more effective in addressing environmental violations that occur following the EIA.

It is suggested that to mitigate pollution arising from vehicles on the highway, only vehicles that have passed the emission test should be allowed to the highways.

IX. CONCLUSION

Having an effective highway network is a sign of development in a country. Through facilitating speeder services in assists in bringing about economic development. As seen through this research economic development is achieved at the cost of environment preservation.

Through tracing the environmental issues that arise when constructing an expressway, this report expounded the protections guaranteed under national and international law. It is discernible that Sri Lanka has an adequate legal framework to mitigate the environmental impact in constructing expressways. However, the issues lie in its implementation. Furthermore, it is commendable that international standards relating to EIA and public participation in certain aspects have been absorbed into national system. It is suggested that Sri Lanka should be consistent in its application of the law. Moreover, it is recommended that coordinating among different bodies relating to the construction of expressways in implementing environmental policies can be improved.

In this light it can be stated that with the expansion of expressway's in Sri Lanka the public and relevant bodies should be more mindful in mitigating the environmental impacts that occur when constructing expressways.

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