

## ANALYSIS OF THE APPLICATION OF SEA IN TRANSPORT PLANS

### ABSTRACT

Nini Luferly Castillo Soto

*University of São Paulo, School of Engineering of São Carlos, Environmental Engineering Sciences*  
[luferly@sc.usp.br](mailto:luferly@sc.usp.br)

Marcelo Pereira de Souza

*Professor, Faculty of Philosophy, Sciences and Literature of Ribeirão Preto - University of São Paulo*  
[mps@usp.br](mailto:mps@usp.br)

The Strategic Environmental Assessment (SEA) is a systematic process, formal evaluation of the environmental impacts of Policies, Plans and Programs (PPPs), its alternatives, and environmental consequences of its proposed initiatives in order to ensure it is directed appropriately in making decisions in light of the economics and social considerations. Thus SEA is a key instrument for regions with specificities and vulnerabilities, such as Brazil that have a huge biodiversity among other characteristics of particular value. The present paper deals with methodologies and tools for the development of SEA processes in Brazilian transport plans. Since a large number of countries have made use of SEA applied to Transport Plans (TPs), this research analyzes the application of SEA in the Local Transport Plan for city Tyne and Wear (England) and the Local Transport Plan 3 in Durham (England) through a qualitative analysis of the content of environmental reports based on the European Directive 2001/42/CE (ED); variables to consider are: guidelines, factors / evaluation issues, indicators and consultation/ public participation. This analysis contributes subsidies and recommendations of the SEA of TPs that could be implemented in the National Plan of Logistics and Transport (NPLT) of Brazil.

**Keywords:** Strategic Environmental Assessment, Transport Sector and Plans.

### INTRODUCTION

The Strategic Environmental Assessment (SEA) is recognized worldwide as a tool for planning and supporting the formulation and decision making of Policies, Plans and Programs (PPPs) (DALAL-CLAYTON and SADLER, 2005; FISCHER, 2007). The early adoption of SEA makes possible the design and evaluation of strategic alternatives for the formulation of PPPs, contributing to the consideration of environmental implications in an advanced way and for the induction of more sustainable forms (and THÉRIVEL PARTISAN, 1996).

In developing countries, the discussions about SEA are recent and the dissemination of the concept and the encouragement of its implementation have been influenced by developed countries (DALAL-CLAYTON and SADLER, 2005). According to Fischer (2007), the European Directive 2001/42/CE (ED) became a world reference for the practice of SEA, since its purpose is to establish a high level of environmental protection and contribute to the integration of environmental considerations into the preparation and approval of plans and programs (EUROPEAN UNION, 2001).

According to Pellin et al. (2011) in the Brazilian Context, it is necessary that the discussion about the methodologies, approaches and ways of application of SEA are magnified. In the seminar “technical dialogue” on Strategic Environmental Assessment and Planning in Brazil (2005) it was concluded that the country should begin by the definition and general model for SEA, with the initial premises and gradually evolve with the practice of its application from pilot cases as in the transport sector. In the same way, the National Plan for Logistics and Transport (NPLT) in Brazil points the need to incorporate a SEA into its planning (PERRUPATO, 2011).

Based on this context where contributions are needed to a better understanding of SEA practice in transport sector, it's required to develop a debate about influence of this instrument on the decision making in the future formulation process of Brazilian NPLT. This discussion focuses the search for more sustainable alternatives and integration of environmental factors. Thus this article aims to analyze criteria included in SEA reports for Transport Plans (TPs) with good practices guided by DE.

## **Methodology**

This research is exploratory, in which are analyzed SEA reports related to transport plans of countries that have good practices and are guided by the European Directive 2001/42/CE. The qualitative analysis of variable factors / evaluation issues, indicators, evaluation Guidelines and consultation / public participation, indicate key contributions in determining which and how other guidelines (plans, programs and documents) were considered at the time to address strategic alternatives. The case studies are: *Local Transport Plan for city Tyne and Wear-2011 (England)* and Local Transport Plan 3 in Durham- 2011(England).

## **Results**

The results of the analysis are presented in Table 1, and each plan was analyzed considering four variables: factors / evaluation issues, indicators, evaluation guidelines and consultation / public participation.

## **Discussions**

Sánchez (2008) highlights that there is need of researching before starting any form of institutionalization of Strategic Environmental Assessment. The analysis of these two SEA reports for Transport Plans based on the principles of European Directive 2001/42/CE indicate key contributions in determining which and how other guidelines (plans, programs and documents) were considered at the time of searching for strategic alternatives. Moreover, it supports for future elaborations of TP that seek to have environmental objectives, such as the case of the National Plan for Logistics and Transport in Brazil (NPLT) (Ministries of Transport and Defence, 2007).

According to observations by Jansson (2000) in a range of European countries (North and West) the main strategic levels of the SEA framework in transport consist of including policies, planning systems and other plans and programs; This experience was also observed in Germany, Netherlands and the UK by Fischer (2002). The variables analyzed in the scope reports presented in this study, (see Table 1) highlight the issues exposed in the case studies, the indicators used to address the difficulties and the guidelines (Plans, Programs and Documents) that influenced the framework of these SEAs.

According to Fischer (2007), the Scoping stage, which is part of a Strategic Environmental Assessment, determines probable extensions (geographical, temporal and thematic) in a detailed level of assessment, in which gaps and environmental problems must be identified. Thus, the results indicated for the factors / evaluation issues show the identification of environmental, economic and social problems. Consequently, the variable of indicators presents a thematic extension that will allow the search of strategic alternatives and options addressing the issues found. This fact is also required by ED at the time to identify, describe and evaluate the alternatives of SEA

**Table 1: Analysis of the SEAs transport plans based on the European Directive 2001/42/CE**

<b>Case Study 1: Local Transport Plan for city Tyne and Wear (England)</b>				
<b>1) Factors / Evaluation Issues</b>	<b>2) Indicators</b>	<b>3) Guidelines</b>	<b>4) Consultation/ Public Participation</b>	<b>Comments</b>
1. Historically a Low Base of the Local Economy and Related Social Issues	Population, Material Assets, Human Health	HIA, EqIA	Two consultation periods (Scoping, the Environmental Report) involving the statutory consultation authorities and, in the latter period, the public participated in the SEA Regulations. The Draft Environmental Report was published in support of the public consultation for the draft LTP3 disclosed for consultation from October 2010 until December 2010. Comments were received from Natural England, English Heritage, NHS South of Tyne and Wear and Gates head Access Panel. Following consultation amendments were made to the SEA report.	Considers issues (indicators of other PPPs) that are closely linked in the search for suitable alternatives  Displays consultation of authorities involved in the process, questioning the feasibility of SEA; consultation amendments were made to the final report.  Two consultation periods.
2. Deprivation				
3. Child poverty				
4. Low Income Groups				
5. Barriers to Accessibility				
6. Road Safety and Crime Levels				
7. Disabled Residents				
8. Population	Population, Human Health			
9. Problems of General Health and Health Inequalities	Material Assets, Population, Air Quality, Human Health			
10. Car Ownership	Air Quality, Material Assets, Human Health			
11. Congestion	Landscape, Human Health, Material Assets			
12. Low Tranquility Levels and Noise Pollution	Population, Material Assets			
13. Ethnicity	Population	EqIA		
14. Lesbian, Gay, Bisexual and Transgender People	Cultural Heritage, Material Assets, Population			
15. Heritage	Air Quality, Human Health			
16. Poor Air Quality	Climatic Factors, Human Health, Material Assets, Water	HIA, HRA		
17. Need for Climate Change Adaptation	Water	HIA		
18. Water Quality	Climatic Factors, Air, Human Health			
19. Need to Mitigate Climate Change	Biodiversity, Flora, Fauna, Human Health			
20. Biodiversity Threats and Green Infrastructure	Cultural Heritage, Flora, Fauna, Material Assets	HRA		
21. Negative Trends in Landscape Character Change				
<b>Case Study 2: Local Transport Plan 3 in Durham (England)</b>				
<b>1) Factors / Evaluation Issues</b>	<b>2) Indicators</b>	<b>3) Evaluation Guidelines Used</b>	<b>4) Consultation/ Public Participation</b>	<b>Comments</b>
1. High levels of deprivation – including employment deprivation	Population. Community severance. Access to the transport system.	Index of Multiple Deprivation, 2007. County Durham LTP2, 2006-2011. LTP2 First Progress Report, 2006-2008. Durham County Council Corporate Research and Information Unit, 2008. County Durham Plan Core Evidence Base: Technical Paper 23, 2009.	The draft SEA of LTP3 Environmental Report was issued for consultation to the statutory consultees (English Heritage, Natural England and the Environment Agency) and	Considers issues (substantive aspects of documents and other indicators of other
2. Limited public transport provision in some areas – with poor east-west connectivity				
3. Declining satisfaction with bus Services				
4. Increasing and ageing Population				
5. Road safety	Population. Accidents. Community severance. Security.	Durham County Council Strategic Transport Planning Team, 2010. Floors Target interactive websites, 2009.		
6. Public confidence / fear of crime				
7. Degraded urban environments with traffic levels contributing to community severance in some areas	Human health. Population. Air (Local air quality). Physical fitness.	County Durham Landscape Strategy, 2008. County Durham LTP2, 2006 – 2011. Index of Multiple Deprivation, 2007.		
8. Poor levels of health and wide geographical variation in health levels				

<p>9. Difficult access to services, transport, local jobs and leisure opportunities in some areas and for some groups</p> <p>10. Hotspots of traffic congestion at peak times</p>	<p>Material assets. Population Public accounts. Business users and providers Consumer users.</p>	<p>Index of Multiple Deprivation, 2007. LTP2 First Progress Report, 2006-2008 .</p>	<p>other stakeholders for a statutory six week period which commenced November 1<sup>st</sup> 2010. Following consultation amendments were made to the SEA report.</p> <p>PPPs) that are closely linked in the search for suitable alternatives.</p> <p>Displays consultation of authorities involved in the process, questioning the feasibility of SEA; consultation amendments were made to the final report.</p> <p>One consultation period.</p>
<p>11. Rising levels of car ownership and use, including for tourist /visitor trips</p> <p>12. Growth in tourism sector</p>	<p>Climate factors. Noise. Local air quality. Greenhouse gases. Physical fitness.</p>	<p>Census, 2001. Department for Transport –forecast growth in car ownership, 2006-2026. One NorthEast: Visitor Survey: County Durham Report, 2008. One NorthEast: County Durham STEAM report, 2007. One NorthEast: Visitor Survey: County Durham Report, 2008.</p>	
<p>13. Greenhouse gas emissions</p> <p>14. Generally good air quality, but issues at some specific locations</p> <p>15. Need for greater re-use and recycling of waste</p>	<p>Climate factors. Greenhouse gases. Local air quality.</p>	<p>National Indicator 185 annual results. County Durham Plan Core Evidence Base: Technical Paper on Contamination and Pollution 2009. Former District and Borough Council air quality monitoring reports. National Indicators 192 &amp; 193 annual results. North East Regional Aggregates Working Party annual reports.</p>	
<p>16. Inevitable impacts of climate change</p>	<p>Climate factors. Water. Landscape. Townscape.</p>	<p>North East Climate Change Adaptation Study, 2008. County Durham Strategic Flood Risk Assessment, 2010.</p>	
<p>17. Richness of ecological and geological assets</p> <p>18. Habitat deterioration /fragmentation and wildlife Conservation</p>	<p>Biodiversity. Flora. Fauna. Landscape.</p>	<p>County Durham Biodiversity Action Plan 2007. SSSI condition information (Natural England) 2010. County Durham Landscape Assessment and Strategy 2008. Durham County Council Ecology Section 2010.</p>	
<p>19. Diversity in landscape and unique sense of place</p> <p>20. Quality of nationally recognized landscapes</p> <p>21. Carbon absorption assets</p>	<p>Landscape. Biodiversity. Cultural heritage. Townscape. Noise.</p>	<p>County Durham Landscape Assessment and Strategy, 2008. County Durham Historic Landscape Characterization, 2010. North Pennines AONB Management Plan, 2009-2014. Durham Heritage Coast Management Plan, 2005-2010. County Durham Landscape Assessment and Strategy 2008.</p>	
<p>22. Richness of heritage assets.</p> <p>23. Deterioration or loss of heritage assets.</p>	<p>Cultural heritage. Landscape. Townscape.</p>	<p>County Durham Sites and Monuments Record. County Durham Historic Landscape Characterization (draft) 2010. Listed Buildings register. Conservation Area Designations. English Heritage registers of Parks and Gardens of Historic Interest, Historic Battlefields. English Heritage register of heritage assets at risk, 2010. County Durham Historic Landscape Characterization (draft) 2010.</p>	
<p>24. Variable water quality.</p> <p>25. Pockets of contaminated land.</p> <p>26. Pockets of high quality agricultural land.</p>	<p>Human health. Water. Soil. Material assets. Landscape.</p>	<p>Northumbria River Basin Management Plan 2009. County Durham Plan Core Evidence Base: Technical Paper on Contamination and Pollution 2009. County Durham Landscape Assessment and Strategy 2008.</p>	
<p>27. Impact of waste management operations on communities and the environment.</p> <p>28. Richness of minerals resources.</p> <p>29. Impact of minerals operations on communities and the environment.</p>	<p>Material assets. Climate factors. Population. Landscape. Greenhouse gases.</p>	<p>County Durham Plan Core Evidence Base: Technical Paper 19 – Waste 2009. County Durham Plan Core Evidence Base: Technical Paper 20 – Minerals 2009. County Durham Plan Core Evidence Base: Technical Paper 20 – Minerals 2009.</p>	

**HIA:** Health Impact Assessment; **EqlA:** Equalities Impact Assessment; **HRA:** Habitats Regulation Assessment; **LTP2:** Local Transport Plan 2 in Durham.

The assessment of the variable guidelines, allows identifying other plans, programs and relevant objectives for environmental protection in transportation plans, allowing the establishment of synergies to develop alternatives.

Regarding consultation/ public participation, a well-performed SEA effectively informs and involves interested and affected stakeholders throughout the evaluation process, in addition, discusses the entry of the general public, making it explicit in reports, and supporting their considerations in making decisions. The observations of this variable in the plans, show a difference regarding the consultation period, but both have taken into account the considerations made by the participants in the final reports; these results highlight the type of stakeholders who participate in public consultations for transport plans based on ED.

## **Conclusions**

Bringing the approach of SEA transport plans from countries that have good practices and are guided by the European Directive 2001/42/CE can exercise the rationality of interpretation to apply a model in the context of countries that need sustainability principles for their plans and programs in the transport sector as is the case in Brazil.

The structure of this document permitted the analysis of criteria related with the framework of strategic environmental assessment in the formulation of TPs. Therefore, with these results it can be interpretive that these indicators of environmental protection are the most relevant ones for this context and have more interaction with the social variables and little dynamic with the economic factor. This fact allowed fulfill with the objective of these SEAs at the moment of presenting alternatives aimed at sustainable development related to environmental protection. Also, it was possible to interpret how a plan can be influenced by external factors when it identifies other plans, programs and documents that have environmental protection objectives relevant (Guidelines).

This scenario of environmental assessment at developed countries brings an evolution in the understanding of the tool, for, the analysis of the criteria allowed contribute with suggestions to a better appreciation of a model that can be applied in future formulations of National Plans of Logistics and Transport Brazilian that aim environmental principles of greater equity.

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