Brazilian`s public policies that nurture emerging solutions for sustainable operations

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Abstract

The environmental control management study by the result of eco-efficiency by multimodal integration strategy proposes the construction of new railways in Brazilian ports. However, the monitoring in terms of control air emissions quality are facultative for both sectors public and private which should have shared responsibility for protecting the environment.

Keywords: Ports. Environmental Indicators. Management.

INTRODUCTION

The systematic monitoring by Brazilian public service regulatory agencies has established forms of environmental control for the legal materiality, above all, to the tenants of port areas and cargo transportation. To develop the most guardianships mitigation of negative externalities to the environment, the biggest challenge lies in the port environment.

The main focus of this statement is to develop an organizational model of environmental management, especially to improve the quality of services provided from the environmental point of view.

To legitimate eco-efficiency are needed environmental performance indicators in order to assess mediatory results by better impact control methods or environmental damage of port activity.

To already classified risk society by diversity of multilateral deleterious effects of freight transportation activity, the solution involves constant technological change in a port economic activity.

If the time factor is correlated with ideological remuneration of port space, these can be ephemeral factors, however, predominant in changing the organizational culture, interdependence of physical and bureaucratic resources to meet a network of logistics processes. The port eco-efficiency proposals must be related to the economic reality of the multimodal practice development in the country otherwise cannot hold organizational behavior change through environment interventions.

In Brazil, these environmental indicators were classified into four categories (economic, operational, social and cultural, physical-chemical and biological-ecological) and fourteen global indicators. The sum of the amounts corresponding to the service levels for specific indicators is

those that provide the overall result of environmental performance of the port facility (CNT, 2015).

As the Brazilian's study case by CNT- National Confederation of Transport (2015) based on specialized technical literature, environmental legislation and best practices observed in the global port sector can assess whether is sustainable management results should be appropriate to the standards of the main environmental indicators.

In this Brazilian indicators study case about efficacy of the Environmental Performance Indicator - IDA, created in 2012, in practice of the regulatory agency has used thirty eight indicators chosen to become a way functional to contribute in environmental management for the port activity with new studies from universities for stakeholders as better results by environmental behavior of this sector.

In regarding a continuum study by Soares (2014) that tries to identify the relationship between the environmental drivers and the multimodal environmental strategies. For contributing on scientific one way by new matrix about sustainable transport this paper proposes to create on index specific for analyzing demand per terminal after increase in cargo transportation by railways inside of organized ports.

METHODOLOGY

Malhotra (2001) defines as exploratory research that explores a problem or situation to adopt understanding criteria: "…A type of research that aims to provide criteria for the problem situation faced by the researcher and his understanding…" The author believes that it is an empirical research studying a contemporary phenomenon in its context of reality, especially when the phenomenon and context are not clearly defined.

Yin (2005) highlights the case study as a comprehensive research strategy that can be used for the search process as planning, data collection and analysis.

In this study case aims to investigate a new tool environmental indicator, in order to align results to the other major ports governance model.

The triggering events of high environmental indexes such as carbon dioxide level or CO2 generated by transport activities already being done within the organized port in terms of emissions control correlated to the port services charged to more eco-efficient modes of transportation.

REFERENCE THEORETICAL

Corporative Metrics and Environmental Management

Rodrigue, Comtois and Slack (2006) understand that the analysis factors for Modal Shift suggest a systemic analysis in the decision-making process, what means analyzing the distance and the logistics cost of the operation in the process, when the options for examining transportation modes.

Tinoco et al. (2009) has showed in the management accountability system that recently is possible to incorporate sustainability metrics with software tool that offers a variety of metrics for measuring sustainability performance.

For contributing at cientific way of a new matrix about sustainable transport, in regarding to extend the relationship between the environmental drivers and the multimodal practice environmental.

Although it exists risk by greenwashing corporative, it is possible for creating some corporative marketing strategies, adding positives attributes in the value chain of such firms (Corrêa, 2010).

Nowadays, in case to stablish environmental governance global, the concept of Compliance law has being associated in this direction where has investigated inserted around the code of conduct and ethics of a company that has corporate social responsibility - CSR and intend to work with sustainable indicators by transport system to manage on actually sustainable form.

Compliance Law

The concept of Compliance covers corporate organizational behavior guidelines mandatory form focusing on fourteen areas that impact in any business: Anticorruption, Free Competition, Anti-money laundering, Consumer Protection, Environment, Food Security, Health and Safety Labour, Health and Wellness, Licenses and Permits, Labor and Employment, Privacy, Product Safety, Responsible Purchasing and Foreign Trade (Walmart Brasil,2015).

In every country in which any company operates, with stakeholders of your network or supply chain, suppliers receive information on the Ethics Policy on Supply Chain (Responsible Purchasing) and a Supplier Agreement which provides standards and procedures to ensure good practices in relation to the current legislation in all its units, both in the social field and the environment.

To such suppliers should receive the Commitment Agreement FCPA (American Law of the Foreign Corrupt Practices). The aim is to ensure that third party intermediaries, who are in contact with public authorities on behalf of corporations, certify or will comply with the guidelines laid down in environmental legislation compliance.

The importance of Environmental Performance Indicators – IDA

The IDA Environmental Performance Indicator index proves to be an important instrument of port management extracted from organizational practices applied in the Environmental Management System that simplifies information of environmental legislation in order to facilitate the public and decision-makers understanding mainly on environmental and educational partners about responsibilities of port environmental issues.

According to ANTAQ-National Waterway Transport Agency (2015), port environmental planning should not only cover the port internal space, now bounded by polygonal organized port area, but also its surroundings.

Then port-city relationship is one of the port planning crucial points because of the conflict usually associated with transit cargo in those densely populated. Similarly, the implementation of port complexes in rural areas promotes a considerable change in the profile of those occupying swathes of territory, creating conflicts of supply and displacement to meet those port complexes.

Additionally planning functions is to deal comprehensively this "extended" port space discussing with other territorial authorities concerning environmental degradation control issues caused by the activity and related externalities. For port environmental planning is necessary to know environmental conditions that will interact within activity after its implementation, thus

seeking to manage these interventions in order to eliminate or minimize these impacts (ANTAQ, 2015).

The chose IDA indicators were based on specialized technical literature, relevant environmental legislation and global port sector best practices. The indicators were then classified and weighted each other in the degree of importance of each.

The weight distribution among indicators was based on the perception of the GMA technicians which to develop it has adopted AHP - Analytic Hierarchy Process methodology. These technicians are responsible for environmental sectors thirty organized ports as following classification and distribution of weights of indicators (ANTAQ, 2015).

The first category of indicators is the Economic-called operational, which has a set of seven global indicators and twenty-four following specific indicators, Table - I:

Table I - Economic and Operational Category

GLOBAL INDICATORS	WEIGHT	SPECIFIC INDICATORS	WEIGHT
ENVIRONMENTAL GOVERNANCE	0,217	Port Environmental licensing	0,117
		Number and qualification of professionals in the environmental core	0,033
		Environmental training	0,016
		Environmental audit	0,050
SAFETY	0,160	Oceanographic / hydrological and meteorological / climatological data base	0,016
		Risk prevention and emergency assistance	0,108
		Occurrence of environmental accidents	0,036
PORT OPERATIONS MANAGEMENT	0,098	Withdrawal of ships waste shares	0,065
		Container operations with dangerous goods	0,033
ENERGY MANAGEMENT	0,028	Reducing energy consumption	0,019
		Generating clean and renewable energy through the port	0,006
		Power supply for ships	0,002

COSTS AND BENEFITS OF ENVIRONMENTAL ACTION	0,068	Internalization of environmental costs in the budget	0,068
ENVIRONMENTAL AGENDA	0,039	Port Environmental information disclosure	0,004
		Local environmental agenda	0,018
		Institucional environmental agenda	0,010
		Voluntary Certification	0,007
CONDOMINIUM ORGANIZED PORT MANAGEMENT	0,110	Environmental Control performance of the leases and operators by the Port Authority	0,038
		Environmental licensing companies	0,026
		Terminals of the Individual Emergency Plan	0,015
		Environmental audit of terminals	0,008
		Terminal Solid Waste Management Plans	0,011
		Enterprises Voluntary certification	0,004
		Terminal Environmental education program	0,008

Source: ANTT (2015)

Then the first category seeks to deal with the organization's actions in terms of structure and responsiveness, both aimed at environmental management, always in harmony with their port operations.

The Table II – It is showing the second category is so-called socio-cultural seeks to assess methods and social action inserted in the environmental logic. Environmental management should be understood and treated as an integrated process in which all aspects of environmental quality are considered. In this sense health issues are as important as the protection of port resources.

Table II – Socio Cultural Category

GLOBAL INDICATORS	WEIGHT	SPECIFIC INDICATORS	WEIGHT
ENVIRONMENTAL EDUCATION	0,050	Promotion of environmental education	0,050
PUBLIC HEALTH	0,025	Health promotion actions	0,008
		Port Health contingency plan	0,017

Source: ANTT (2015)

Currently this category proposes to port stakeholders an environmental education which has become an act of corporate social responsibility inherent to any port facility licensing process. Perhaps this is one of the most important categories as part of the organizational culture we have to encourage a port facility in terms of executing a plan aggregation and dissemination of a minimum knowledge of good environmental practices.

According to ANTAQ (2015) the third category encompasses Physical-chemical indicators can be noticed in Table III. It involves the management actions related to possible types of pollution resulting from port activities.

Table III – Physical and Chemical Category

GLOBAL INDICATORS	WEIGHT	SPECIFIC INDICATORS	WEIGHT
ENVIRONMENTAL EDUCATION	0,050	Promotion of environmental education	0,050
PUBLIC HEALTH	0,025	Health promotion actions	0,008
		Health contingency plan in port	0,017

Source: ANTT (2015)

Within this category, follows the example of the relevance of the indicators with respect to the Contingency Health, a plan originally set up to contain a potential pandemic, bird flu, etc.

According to ANTAQ (2015) the fourth and final category encompasses Biological and ecological indicators, which, in turn, evaluate the issues more directly related to organisms in the port areas, as Table IV below.

Table IV – Biological – Ecological Category

GLOBAL INDICATORS	WEIGHT	SPECIFIC INDICATORS	WEIGHT
BIODIVERSITY	0,049	Monitoring Fauna and Flora	0,010
		Synanthropic animals	0,029
		Exotic aquatic species / invasive	0,010

Source: ANTT (2015)

Then, first in quality environmental management was port of São Sebastião (SP) which achieved an overall score of 95.73%. Next is Port of Itajaí (SC) with 92.81% followed by Itaqui (MA) with 82.26% and Paranaguá (PR), with 81.07% (ANTAQ, 2015).

Currently, the environmental program can be expanded to meet contingencies for Public Health Emergency of International Importance. Actions related to health worker and the specific contingencies arising from residues of the vessels are evaluated in this category (ANTAQ, 2015).

To evaluate port organizational control practices according to the Port Environmental Performance Index is reflected in the evaluation of the activities of the second half of 2014 of some ports based on applied IDA.

STUDY CASE

Analysis applicability of the Environmental Performance

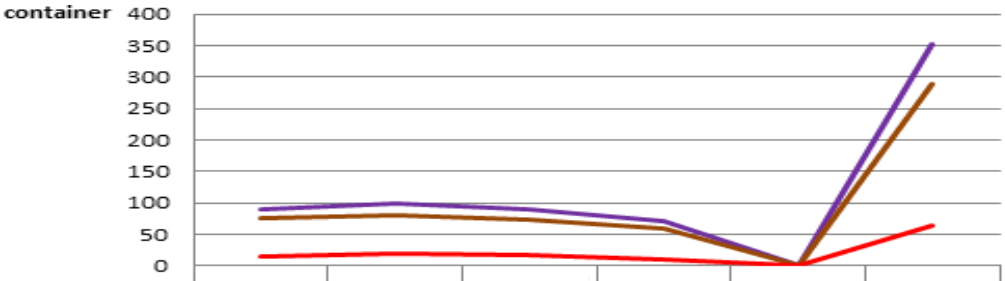
In this paper proposes is analyzing demand per terminal after increase in cargo transportation by railways inside of organized ports.

As CNT (2015), IDA proposes for each indicator a set of care settings that determine where functional stage environmental management is in that category, specific environmental criteria, continuous review for a sustainable port.

For these reasons it is necessary to include into Port environmental planning the waterway sustainable transportation design and land practices, particularly through practices of more eco-efficient port operations multimodal transport of cargo and passengers usually not environmentally recorded.

It is possible to create one kind of IDA indicator for instance to control the percentage by participation appropriate multimodal land transport per each terminal activity can also serve as a research base for other technical regulation of environmental control organs of state.

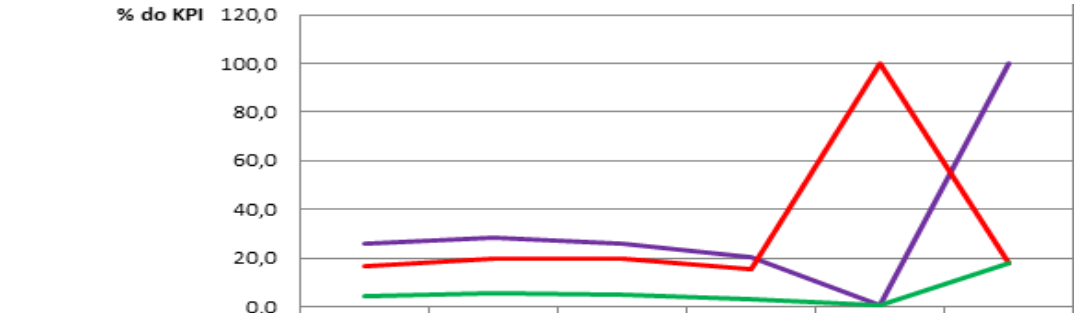
For instance, ANTT to measure the railway's participation in containerized general cargo, at the drive in the organized port, to index figures with environmental agencies and supervision of port activities, especially by providing innovative ways to control port costs related data eco-efficiency, to measure sustainable transport practices in a more collaborative way to the environment within the organized port, see figure graphics in situations: I, II and III below:



	PORT 1	PORT 2	PORT 3	PORT 4	PORT 5	TOTAL
Demand	91	100	91	71	2	353
MULTIMODAL FERRO	76	80	73	60	0	289
UNIMODAL RODO	15	20	18	11	2	64

Figure - Graphic I - Assessment of multimodal process PORT TERMINALS
Source: CBC – Adapted by Authors (2015)

In the port of Santos It is possible for understanding of sustainable development by transport that the competition increases when there are environmental indicators arising from the transportation matrix. However it depends on the capacity of installed infra structure of railway sidings, especially in terms of eco-efficiency calculation by mode of transport used in the analysis of the port area logistics. To assess the environmental performance of each port and terminal, we can infer that in terms of perception mitigation of CO2 emissions indexes decrease when the operation of the highway modal logistics increases in participation in the port area Figure Graphic II – as follow:



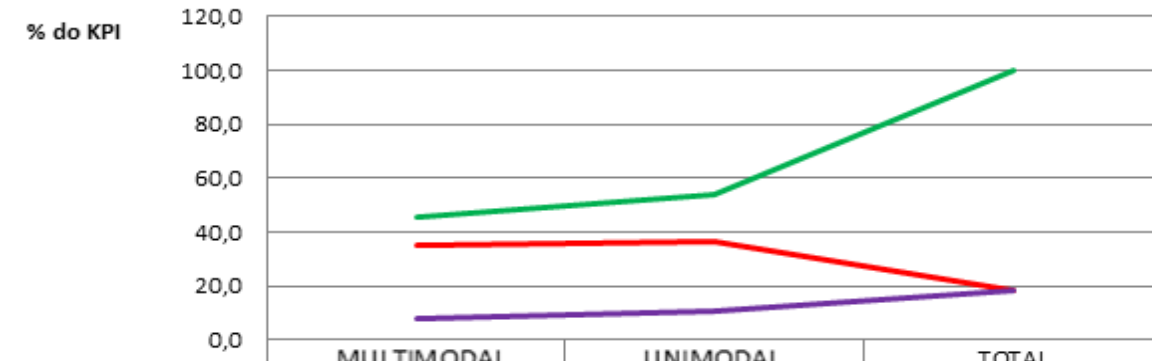
	PORT 1	PORT 2	PORT 3	PORT 4	PORT 5	TOTAL
Market Share	25,8	28,3	25,8	20,1	0,6	100,0
% Split Rodov	16,5	20,0	19,8	15,5	100,0	18,1
tx. Evasão_Mitig_eCO2	4,2	5,7	5,1	3,1	0,6	18,1

Figure - Graphic II - % Assessment customs multimodal process in Santos Port
Source: CBC – Adapted by Authors (2015)

In this respect, it is clear that there is no legal for bringing price control by the Port Authority, Law 12,815 / 2013, which can make the unsatisfactory practice of Multimodality considering the analysis of the high port costs generators of eco-efficiency.

In public ports, the percentage of demand by multimodal as indicator of sustainable transport by eco-efficiency modes.

It would be an important tool for port environmental management to propose the inclusion of port land transport segment with the best methods to assess control of the impact or environmental damage which engages multilateral risks, in constant economic activity the port, always vulnerable transport modes used in a given network of logistics processes through interventions associated with better outcomes for the environment.



	MULTIMODAL	UNIMODAL	TOTAL
Demanda	45,9	54,1	100,0
% Split Rodov	35,3	36,5	18,6
% KPI AMB<eCO2	8,1	10,5	18,6

Figure - Graphic III - Assessment Environmental KPI < % Emissions
Source: CBC – Adapted by Authors (2015)

In Brazilian public ports, the percentage of demand by multimodal as indicator of sustainable transport by eco-efficiency modes still is rule discretionary.

Although ANTAQ depends on as inherent part environmental agenda for create an indicator of multimodality. The private port investment will be necessary in technology for each kind of operation on the development specific way, on innovation the Multimodal Port Index.

Considerations

The Criticism of the article is presented in constructivist way through of the fact that the sustainability in area by ports should provide the balance of port prices applied by eco-efficiency modes to increase eco-efficient operations.

In public ports, the percentage of demand by multimodal as indicator of sustainable transport by eco-efficiency modes still is rule discretionary.

However it would be an important tool for port environmental management to propose the inclusion of market share of modes of transport as port segment with the best methods to assess control of the impact or environmental damage which engages multilateral risks, in constant economic activity the port.

In regarding a continuum study by Soares (2014) that tries to identify the relationship between the environmental drivers and the multimodal environmental strategies incorporated in the value chain strategies incorporated in the value chain of such firms. The paper proposes to create on Index specific for analyzing demand per terminal after increase in cargo transportation by railways inside of organized ports.

Finally, it is inferred it will be necessary new Brazilian politic in regarding of development of sanctions in regarding of the eco-efficiency modes it has being used by companies in a given network of logistics mainly when it has processed one kind of planning through interventions associated with better outcomes for the environment.

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