Title: The management of international environmental law in logistics processes - The case study: Modal Shift to transport containers by railway

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Abstract
The sustainable management of multimodality depends on public policies which in Brazil are not associated with the international legislation to transport practices with the environmental protection. The lack of infrastructure and bureaucracy of the inter ministries structure prevents the Ministry of Environment developing a railway model by Modal Shift with containers.

Keywords: Sustainable Transport, Environment Law, Management.

Introduction

The containerization phenomenon is important for multimodal operation, which starts from high investments in the purchase of new vessels and ships from major ship-owners, which depend on waterway infrastructure better defined for maintaining deeper draft in estuaries or ocean depth for better productivity in shipping, which is crucial for competitiveness to the nation to every scale of long haul from or arising out of international ports.

In case the planning of the environmental impact for transport activities and cargo handling at ports. The Ministry of Environment action it is still strategic to understand the need for more legislative force that specifically, it only occurs to introduce new public policies.

The Brazilian inland logistics for many years presents public investments directed exclusively to the trucking industry. This effect has justified the progressive effect of this modal, due to the fact that the State has acted in a way tacitly in favor of these unsustainable practices, to direct resources more quickly with road transport.

However, the transportation multimodal depends of experience by operators to reach new directions in the Brazilian port access, where the modal with appropriate infrastructure can dispute territories and slices of cargo and passenger.

Although the recurrent problems of the lack of public infrastructure in ports has justified, in terms of growth in comparing what is happening in other ports with better infrastructures and niches loads.

As structures improvements and operation options examples as constructing of railways or new docks for mooring barges inside ports seems to be a main lack of public policies for development of multimodal transport and the waterway mode to minimize the index of atmospheric emissions.

For other hand, more and more there is greater participation of highways in transport activities in economic development.
This observation is important because of the growing expansion of the road fleet is constant, and, above all, by the unbridled consumption behavior of large cities.

The Law on sustainable procurement contract logistics services does not establish guidelines that require the hiring of sustainable transport services by the public sector. In this sense, the article describes the legal responsibility of the state and private companies, in terms of eco-efficiency in production logistics processes. The article aims to promote environmental awareness, according to sustainable port of legitimacy with a view to current normative precepts of international environmental law in the fight against global warming.

Justification of the relevance of the research in terms of similarity

In regarding by Soares et al (2015) the objective of review the paper by 2011 POMS was demonstrated that there is not the pragmatic effect of Brazilian environmental legislation, because the management needs to face procurement process to reach availability of logistics services in public ports.

By the way, where the supervisory regulatory agencies in the Brazilian reality are usually the least profitable in terms of legitimizing new standards for sustainable practices or stimulate organizational innovations in port logistics.

We believe modestly that this research can to contribute for inducing about what will be expected as management result how the case of the legitimacy by sustainable transport management.

Besides of the habitual failure effectiveness of the criminal model of the "status quo" legal by Brazilian law for constructing efficacy rules which configure the risk society. This new point of view, we characterize the imminent change of focal perspective of research, although we know that Brazilian law is in constant evolution.

However, once verified the differentiation of the initial conceptual perspective - which from now on there is not similarity about what was showed by POMS 2011 for this others researchers. Finally, for developing the International Environmental Law is necessary understanding by new rules that will add knowledge to the sustainable management model to adapt the Modal Shift benefits in Brazilian reality.

We are noticing that it will be necessary coercive force specific from Brazilian`s Act to lead with environmental impact control management in choice of transport mode.

Environmental Law searching new rules from Scenario Politic

The reason of the federal government have not given more emphasis on the analysis of public and private investment can be justified in the past but not right now with the lack of infrastructure in other transport modes necessities which always been the triggering event of these postures of politics green.

However, the delay of this resources news in application of eco-efficient modal coming from the State could be decreasing negative effects or inhibiting externalities which historically were proven technically.

To the predominance of the participation of road transport in cargo transportation statistically, one can see the sovereignty of the shares and their participation of this modal given the current matrix of Brazil's transport.
On the other hand, the other modes of transport remained in the political wilderness of public investment.

The maritime shipping of cabotage has not strengthened the multimodal transport system in coastal or otherwise more integrated to railways and or barges. Whatever alternative in the geography or existing opportunity to waterways by public ports. In order to

operate other maritime waterways and roads in the domestic scenario which are not explored, due to the absence of public policies without legislative imposition especially in to offer benefits about friendly practices to the environment, in right way to sustainable transport.

This kind of public posture to estimulate investments could be the main management of investors and multimodal operator's loads based on what determines the Law 12,815 / 2013. However, in this law there is no new guidance on the current infrastructure of railway sidings installed on leased areas from public ports even when in favor of the development of cabotage in the implementation of strategies shipping by "feeders services".

Theory by Modal Shift in Management Logistic Process

The concept of Modal Shift can infer more holistically to assess the full impact of air emissions by organizational practices in integrated logistics services network, which to be sustainable, it should involve a change of management paradigm by the advent of SCCM (Sustainable Supply Chain Management) where competition tends to increasingly occur between networks (open) services that work integrating supply chains (closed), but green and not just between companies operating in isolated forms.

In multimodal transport, sustainable solution needs in most cases of the application of the concept of Modal Shift that will also depend on port technological knowledge in choosing the modal port by the user.

To Jolic and Strk Lesic (2007), the distance is the most influential factor in this making decision process, rather than calculating the environmental impact of each modal applied in logistics.

This organizational management mode from ports has been a form of corporate strategic planning more comprehensive and complex, requiring from the executives an interdisciplinary knowledge of international environmental law practice, which involves analyzing different types of transactions being developed by these:

- ✓ Number, location, capacity, types of plant and distribution centers;
- ✓ set of suppliers to meet their demands for raw materials, components and services;
- ✓ distribution channels;
- ✓ transportation to be used;
- ✓ flow of raw materials and components needed to feed its factories;
- ✓ flows of finished products between plants of the production chain and consumer markets;
- ✓ policy stocks of raw materials, components and finished products.

Strategically, for public policies it is necessary to increase the participation of cabotage to the country, and consequently air emissions even when resulting from road transport will be small. On the other hand, due to the Law of the Sea, in international organizations to the better measure of accessibility in ports it aims of more eco-efficient as possible, keeping suitable vessels and ships for better navigability of access to ports channel. The sea, from earliest times of universal history, proves to be, undoubtedly, as the space that stands out in the world economic development.

Technological developments unveiled other perspectives of exploitation of the seabed and marine subsoil, revealing the nations that the sea has a relevant source of wealth and key strategic importance as a supplier of raw materials, further enshrining the maritime space as one of the bastions of the globalized international economy.

For developing by Modal Shift Organizational Philosophy

At first, the concept of Modal Shift means the modal exchange with lower energy consumption where environmental law can be observed in the transport process, for protection of each mode, and when public service object in hiring specialized sector of transport services private, provided with such technical condition granted by the grantor.

In Konami's research (2010), Modal Shift is a pragmatic concept that allows preserving the environment in transportation activities, with lower emissions of environmental burden on the planet. The multimodality strategy depends on of the study case as following:

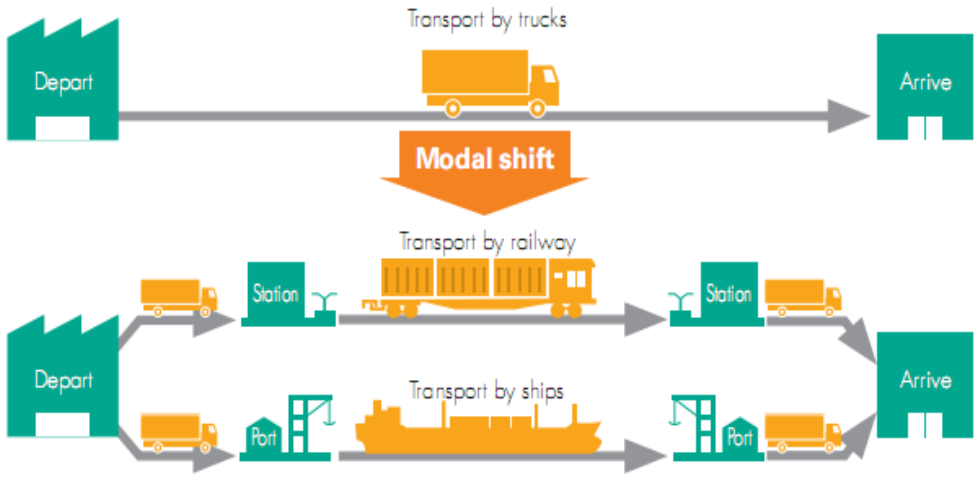

Figure 1- Model by Sustainable Transport with Modal Shift Strategy (KONAMI, 2010)

As Ogawa (2004) Application of Modal Shift depends on the interest of organizations to exchange a modal with high CO2 emissions by a mode of transport that impairs the environment less.

To Ogawa (2004), Modal Shift concept is an organizational innovation that has a perspective centered by a particular organization; minimize environmental impact in the sector in transport, based on the concern about global warming (GHS).

To Geerts (2002) Modal Shift is an organizational model of transport which determines the index Potential Intermodal (IPI) of a region, from the form of local modal decision, which occurs in a cultural way and therefore ultimately lead the predominant modal model in a given territorial transportation network.

Geography Model Comparison for Ecoefficiency by Multimodal transport

According to Rodrigue, Comtois and Slack (1999) Modal Shift depends on a geographical study of regional characteristics that suggest a systemic analysis in the process of multimodality decision making.

Geerts (2002) proposes the adoption of Intermodal Potential Index (IPI), which analyzes the potential of intermodality is another way, that is, from the relationship between the market and the current market potential and cargo transport in which analysis can depend on various factors such as transfer pricing; delivery time door to door; frequency; tracking information (delays); reliability and distance.

One must consider the distance to calculate the environmental impact in the strategic planning of a particular supply chain, should be included options more eco-efficient transport modes by analyzing the distance, where the modal may depend on the multimodality by transhipment infrastructure and location closer to the hinterland.

Brazilian Politic Policies – PROCONVE deployment strategy for trucks and heavy vehicles and Environmental Law (Phases: L / P)

Thus, since the 80's the increasing numbers of the fleet in the country and the poor state of maintenance showed that, in the last decade, it became crucial to reduce the emission levels of the main vehicle pollutants, including carbon monoxide (CO), nitrogen oxides (NOx), hydrocarbons (HC), particulate matter (PM), aldehydes (CHO), sulfur oxides (SOx) and lead compounds (Pb).

These include therein carbon dioxide (CO2) which, although not considered a pollutant due to its low toxicity, it composes gases contributing to the greenhouse effect.

Historically, for best environmental practices, CONAMA Resolution No. 18/86 thus gave the first referrals to control the emission of diesel vehicles.

Table 1 - Green House Gas Emissions by Modal of Transport

Modal of Transport	**Fuel Consumption (g/t km)**	**CO_2 Emission (g/t km)**	**Kind of Fuel**
Airplane	100 - 200	315 – 630	Kerosene
Truck	24	70	Diesel
Train		25 – 50	Electricity / Diesel
Ship – Conventional refrigerated	7.5	24	Bunker oil
Ship – Full container (4,500 TEU)	6.2	20	Bunker oil
Ship – Full container (8,500 TEU)	3	10	Bunker oil

Search: Soares, 2014 - Adapted by Authors

According to the National Land Transportation Agency - ANTT (2010), interstate and international road transport of passengers in Brazil is an essential public service responsible for a top drive a hundred and forty million users / year.

As CONAMA, 2014), Resolution No. 18 of CONAMA of May 6, 1986 created the Program for Air Pollution Control by Motor Vehicles - PROCONVE, coordinated by IBAMA, and that has come to define the first emission limits for light vehicles and contribute to the fulfillment of Air Quality Standards established by PRONAR.

On October 28, 1993 Law No. 8723 established the obligation to reduce pollutant emission levels of vehicular origin, contributing to induce the technological development of fuel manufacturers, engines and parts, and allowing domestic and imported vehicles, turned out to meet the established limits, as following:

> "…CONAMA Resolution No. 018/1986 - "Provides for the creation of the Air Pollution Control Program by Motor Vehicles - PROCONVE". - Date of legislation: 06/05/1986 - Publication Gazette of 06.17.1986, p. 8792-8795
> Status: Amended by Resolution No. 15 of 1995, No. 315, 2002, and No. 414, 2009. Complemented by Resolutions No. 08 of 1993 and No. 282, 2001..."

> "... CONAMA Nº 018/1986 - "Dispõe sobre a criação do Programa de Controle de Poluição do Ar por Veículos Automotores - PROCONVE". - Data da legislação: 06/05/1986 - Publicação DOU, de 17/06/1986, págs. 8792-8795
> Status: Alterada pelas Resoluções nº 15, de 1995, nº 315, de 2002, e nº 414, de 2009. Complementada pelas Resoluções nº 08, de 1993, e nº 282, de 2001…"

In respect to the technical measurement methodology, which is determined by law, the obligation of compliance with these requirements is measured through standardized testing dynamometer and "reference fuels."

Another important point to emphasize is that control of the program starts from the classification of vehicles because of their Total Gross Weight - PBT, and the phases characterized by "L" for light vehicles and "P" for truck comes being implemented seconds differentiated schedules.

The automotive industries have demanded continuous improvement of fuel quality and vehicle technology, and urban mobility solutions, which are a set of measures necessary to achieve and maintain air quality standards compatible with protecting the health of populations exposed.

Good Practice guidance for Land Use, Land Use Change and Forestry

The National Inventory of Emissions and Removals of Greenhouse Gases Anthropogenic not controlled by the Montreal Protocol (Inventory) is part of the National Communication to the United Nations Framework Convention on Climate Change (Climate Change Convention). The National Communication is one of the main commitments of all signatories to the Climate Change Convention.

The responsibility for drawing up the National Communication is the Ministry of Science and Technology, Ministry responsible for coordinating the implementation of the Climate Change Convention in Brazil, as division of labor in the government that was established in 1992.

The Second Brazilian National Communication has been produced according to the Guidelines for development of country National Communications not Listed in Annex I to the Convention (developing countries) (Decision 17 / CP.8 of the Convention) and the methodological guidelines of the Intergovernmental Panel on Climate Change (IPCC).Some estimates already take into account information published in the "2006 IPCC Guidelines for National Greenhouse Gas Inventories", published in 2006.

According to the guidelines, the inventory must be complete, accurate, transparent, comparable, consistent and be subjected to quality control process.

The preparation of this included the broad participation of governmental and non-governmental entities, including ministries, institutes, universities, research centers and industry sector entities. Elaborate studies resulted in a set of Background Reports, of which this report is part containing the information used, description of methodology and criteria.

It has been usually detected from the burning of liquid, solid fossil fuels and gas as example are reported in Table II, in Gg. Figure II shows the CO2 emissions from fossil fuels for the years 1990, 1994, 2000 and 2005, in millions of tons.

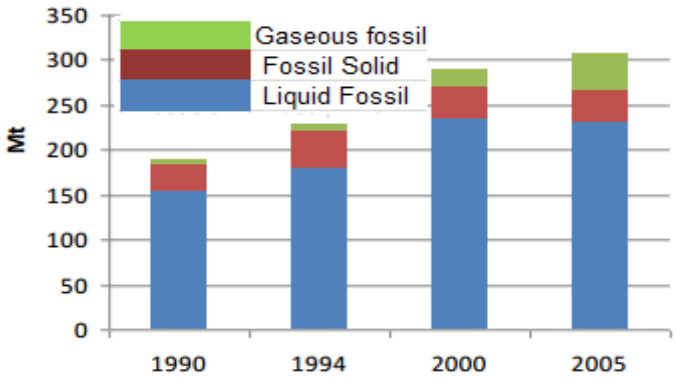

Figure II - Fossil Fuel CO2 Emissions (BRASIL,2014)

Emissions from fossil fuels increased by 63.5% between 1990-2005, to 189 635 to 309 978 GgCO2. Over this period, there was an annual average of emissions growth of

3.4%. Over the period, emissions from liquid fossil remain predominant, although its share in total emissions, reduced from 79.9% to 71.4%.

No terrestrial absence of rail infrastructure and lack of adequate draft in the public maritime shipping ports, there is no other way for sustainable transportation management, but decrease the amount of trucks circulating in adjacent urban land access area around the ports.

In leased public ports, the environmental management is uncertainly because public service is measured by the own lessee or representative of the private sector. Henceforth due to the current inventories global need for control in atmospheric management ECO2 in the port area to be detected by environmental audit to be transparently report the inventory of greenhouse gas emissions.

From now on the constitutional public interest has been preserving the environment to create hard public policies in case of ensure railroad investments in the country, from the port areas to improve air and to promote good conditions environmental.

Brazilian Regulation – Multimodal Legislation and Environmental Law

In part, an organizational innovation of the management collaborative logistics processes in shipping. In alignment for an integrated logistics with new attitude towards the environment, this depends on the commercial and operational success of multimodality. As the European Conference of Transport Ministers by (ECMT), cited by Bravo (2000) and Nazario (2008):

1. Combined Transport: Transport which main route is by air, rail or sea, supported by road transport.
2. Intermodal transport: system using at least two different modes of transport, through the transfer of responsibilities from one mode to another, from one load unit.
3. Multimodal Transport: Transport governed by a single contract CTMC - Multimodal Transport Knowledge Loads, which has the following definition: a system that uses two or more modes of transport from the source to the load destination - according to the Brazilian Law No. 9611/98 which provides for the Multimodal Transport charges and other provisions (BRAZIL 1998).

In Brazil, the unimodal maritime transport system as a rule, the jurisdiction and the incidence of Brazilian law in maritime areas comply with the principle of territoriality.

Exegesis emanating from the general rule of the principle of territoriality shows the consecration of civil jurisdiction, criminal and administrative respected Brazil to the extent of restrictions and limits and regulations unless exceptions beyond the cases of extraterritoriality.

In order concurrent environmental public control, there is the concern with the productivity of backyard to the consequent environmental improvement resulting from the tenants tenure, which have not committed or effective in order to corroborate the government's eco-efficiency target federal, from preserving operational and pricing strategies to better use of eco-efficient modes to encourage users of the port.

The normative unification of maritime spaces

Inexorably, the sea fundamentally stands out for the development and survival of nations. And in this scenario, it highlights the need to delimit the maritime spaces and the sovereignty and jurisdiction of coastal States.

The extent and limits of maritime areas and the exercise of sovereignty and jurisdiction of Brazil are regulated by Law 8.617 / 93.

The area including the extension of the Brazilian territorial waters (12 miles), added to the EEZ (188 miles) and the extension of the continental shelf, due to its vastness and wealth is called "Blue Amazon".

Brazilian ports are considered obsolete, and Brazil, for decades, is considered a country "carried" and not a country carrier. Unfortunately, they are spending on sea freight approximately $7 billion, of which only 3% are transported in Brazilian flag vessels. (MARTINS, E. O.; 2010).

In fact it is not required any metric of the port terminal, for environmental performance - modal transport by regulatory agencies - or directly by ANTAQ; especially as regards the handling metrics for charging and discharging modes by terrestrial Eco2.

From a corporate point of view, the environmental law requires sustainable practices of the users of the port in terms of modal choice, which are actions that could be verified as legal standards required in the ISPS CODE, by port authority, at least within the organized port (public port).

The port security process should point inherently the appropriate parameters of the management of environmental impact. Therefore, the environmental impact is not only related to emissions but especially to the control of time of the vehicle control process excessively which extends the port lead time of customs procedures and therefore generates externalities.

In this respect the desirable method should find the appropriate customs control, without generating bureaucracy to more eco-efficient modes, especially through exploring the methodological diversity of environmental audits, every transport operation carried out in the harbor.

For lack of specific regulations, the movement of productivity of the port terminal in terms of loading and unloading on the railroad is not adequate, especially when the main indicator is the control of time / number of containers handled per hour (MPH) in Brazilian ports.

The result of the productivity of port operator in cargo delivery by carrier vehicle can edit the minimum targets for the operator who does not act in a timely manner in the loading and unloading of the vehicle, which according to port management may be penalized in the absence of adequate resources transshipment in the profile of the polluter who is paying in case one does not minimize emissions of greenhouse gases.

Proper environmental goal for port management depends on the flow of user information in a single format, in order to measure patterns that can establish lasting gains in a sustainable way for all the logistics of the public port network, bringing the right products to the right places at the right time and with the desired service level of atmospheric emissions, mainly, the economic premise of the lowest cost possible for the port to become competitive in the global market.

Considerations

We are noticing that it will be necessary coercive force specific from Brazilian`s Act to lead with environmental impact control management in choice of transport mode.

In this article, the legitimacy is linked to the problem of constant implementation of environmental audit, especially where it is expected to ask. The Ministry of Science and Technology, is responsible for coordinating the implementation by inventories with methods appropriated of the Climate Change Convention in Brazil.

The International law does not have a single basic norm in global terms to control environmental impact. Unlike what happens within the sovereignty of the State for legitimizes the federal constitution of the country with fundamental standard patent for the protection effect. In this case we have in the Federal Constitution of Brazil internal to protect

the legal interests for needing to improve the environment through new public policies presented in this article. So, the state is the main responsible an objective rules way with regarding to preserving the quality of air because is main responsible to control environmental law.

Therefore, it is possible to create the rule with new public politics from a huge list of environmental priorities ranging from maritime security, port productivity and social environmental.

The focus in this study was reveal the importance of port with railway and waterway infrastructure, which can limit the impact environmental, especially where the jurisdiction decisions are diplomatic situation as predetermined for each limit by nation, based on the Global Sea Constitution. For inducing about what will be expected as management result how the case of the legitimacy by sustainable transport management.

Besides of the habitual failure effectiveness of the criminal model of the "status quo" legal by Brazilian law for constructing efficacy rules which configure the risk society.

This new point of view, we characterize the imminent change of focal perspective of research, although we know that Brazilian law is in constant evolution.

It needs to promote de benchmarking of models from other countries where it is possible to grant benefits or tax rebates to regulate the strict liability of damages for public policies that protect the environmental impact and the emission control of greenhouse gases effect.

Finally, the maximization of resources for services contracted in integrated supply network within the SCM vision (Supply Chain Management), can promote the ecoefficiency when linking the colaborative transport to reach sustainability in ports public.

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