

# **INTERNATIONAL CONVENTION FOR THE CONTROL AND MANAGEMENT OF SHIPS' BALLAST WATER AND SEDIMENTS, 2004**

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Mariflex.net, FPSO deballasting in action

# Will harmonization of legislation relating to the management of ships' ballast water be achieved, once IMOs' 2004 Convention enters into force?

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*« The thing that is important is the thing that is not seen »  
The little prince, Saint-Exupéry*

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# ABBREVIATIONS AND ACRONYMS

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ABS	American Bureau of Shipping
CJUE	Court of Justice of the European Union
DNV	Det Norske Veritas
FPSO	Floating Production Storage and Off-loading
FSU	Floating Storage Units
GEF	Global Environment Facility
GESAMP	(Joint) Group of Experts on the Scientific Aspects of Marine Pollution
ILO	International Labour Organisation
IOPC	International Oil Pollution Compensation (Funds)
IMO	International Maritime Organisation
MARPOL	International Convention for the prevention of pollution from ships
MEPC	Maritime Environment Protection Committee
nm	nautical miles
SBSTTA	Subsidiary Body on Scientific, Technical, and Technological Advice
UN	United Nations
UNCED	United Nations Conference on Environment and Development
UNCLOS	United Nations Convention on the Law of the Sea
UNDP	United Nations Development Program
VLCC	Very Large Crude Carrier

# INTRODUCTION

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Invasive species are considered one of the four greatest threats to world's oceans, besides over fishing, marine pollution and climate change.<sup>1</sup> Of these four, invasive species are considered to be the most challenging. This dissertation is intended to discern how we proceed to reduce or eliminate such an environmental threat, by the establishment of common legal rules and notably the International IMO Convention adopted the 13<sup>th</sup> of February 2004, for the control and management of ship's ballast water and sediments<sup>2</sup>. Moreover, this dissertation tends to evaluate and judge the effectiveness of such a legal solution.

Environmental law tends to become more and more important in contemporary politics. It has become a common trend for worldwide companies to evoke their commitment towards the environment and sustainable development<sup>3</sup>. If France had to wait until 1971 for the first minister of the environment to be created<sup>4</sup>, by President Georges Pompidou, this area of law is today expanding greatly and is always bind with other areas of law, such as maritime law. The 2004 Convention for the control and management of ships' ballast water and sediments is a good example. The purpose of this convention is to prevent, minimize and ultimately eliminate the risk that lies within the living aquatic species and biodiversity imprisoned in ballast water and ships' sediments, on marine environment, health and property. Indeed, this transfer of species from one coastal area to another by ships' ballast has already proven its potential danger on the majority of the world's continents.<sup>5</sup>

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<sup>1</sup> "The problem", GloBallast Partnerships, [found at] <http://globallast.imo.org/index.asp>, accessed in 2011.

<sup>2</sup> Hereafter mentioned as « 2004 Convention », « Convention » et « IMO Convention of 2004 ».

<sup>3</sup> For example, see home pages of websites : [www.total.com](http://www.total.com); [www.edf.com](http://www.edf.com); [www.cma-cgm.com](http://www.cma-cgm.com); [www.maersk.com](http://www.maersk.com); [www.bp.com](http://www.bp.com); [www.bourbon-online.com](http://www.bourbon-online.com); they all contain tabs for environment and sustainability and all declare aiming in this direction.

<sup>4</sup> As of today named « Ministère de l'écologie, du développement durable, des transports et du logement » *Ministry of ecology, sustainable development, transport and housing*.

<sup>5</sup> Indeed all continents are concerned by the transfer of alien species, as they have been noticed even between the Arctic and the Antarctic.

Historically, the 2004 Convention is not the first of its kind to relate to the discharge of ships' ballast water. One of the first documents that can be found relating the management of ships' ballast water goes back further than one might imagine. In the 18<sup>th</sup> Century<sup>6</sup> exactly, the Spanish marine authorities had established the "Ordenanzas Generales de la Armada Naval de 1793"<sup>7</sup> in which ships' ballast tanks were already dealt with. These rules were also introduced in Argentinean legislation due to colonisation, which emphasises the international importance of such rules. Following these rules of the King of Spain, two sections are of our interest: sections 138 and 142<sup>8</sup>.

Section 138 provides that no ship can neither ballast nor de-ballast any water without a permit or license given by the port authority and only within an area predetermined by the Governor. Taking on sand ballast should only be carried out in ultimate urgency cases and all ballasting and de-ballasting operations should be carried out with the appropriate precaution. As for section 142, it provides that any port damage due to discharge of waste or ballasts and without prejudice to the immediate application of other fines, will result in the port authority's rapid examination of the circumstances, to measure the damage done and determine whether it was voluntary, in order to punish the authors according to the applicable law.

Analysis of these two sections demonstrates how marine and port environment was already in the 18<sup>th</sup> Century considered by Spanish authorities and their law a vulnerable environment which needed to be protected. Moreover the presence of legal sanctions reflects the importance and the willingness of these authorities to enforce these rules. We can now notice that national rules are blooming.

To understand what type of threat lies within merchant ships', coastal ballasting and de-ballasting, and therefore what IMOs' 2004 Convention seeks to prevent and eliminate,

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<sup>6</sup> Some refer to as « Ordenanzas Generales de las Capitanias de Puerto de 1783 », but an online copy of the 1793 book is proven to be original source, *see* Annex 2, p. 72.

<sup>7</sup> « General Admiralty Ordinances 1793 », Ordenanzas generales de la armada naval: Parte primera. Sobre la gobernacion militar y marinera de la armada en general, y uso de sus fuerzas en la mar. Impr. de la viuda de Don J. Ibarra, 1793. *See* Annex 2 p. 72.

<sup>8</sup> *See* Annex 2, p. 73.

we will need to define what ballast is. Ballast is a material used to weigh down and/or stabilise an object. A classic example is the use of sandbags on a hot air balloon.

During many years sand and other materials, like rocks<sup>9</sup>, were used on ships' in order to assure their stability, until the Industrial Revolution where the construction of steel and metal holds replaced the wooden ones, making it possible for mass volumes of water to be carried in the ships' hull. This reduced time and cost of traditional ballasting, and in ports water was on tap!<sup>10</sup>

Notice that depending on the type of ship, the use of the ballast may be different. Indeed sea ballast water will be used for a submarine to completely immerge or come back up. On sailing boats one can use fresh water for ballast, which will enable not only a better list<sup>11</sup> but will also serve as water necessary for the crew on board. Ballast is also sometimes used as a concealment compartment for smugglers. Some nave vessels<sup>12</sup> use ballast to conduct operational beaching. Finally "fuel ballasts" also called "bunkers" are used in merchant ships to carry the necessary fuel for the trip. So many examples show how necessary and important these compartments are, at least for those which are legal. However following the subject of this dissertation, we will focus on merchant ships and sea water. Therefore we should understand ballast as a "watertight compartment in the hull of a ship intended for sea water serving as a weight, for the transport of cargo"<sup>13</sup>.

Following article 1.2 of the 2004 Convention, "*Ballast water means water with its suspended matter taken on board a ship to control trim, list, draught, stability or stresses of the ship.*"<sup>14</sup>". By reading this article, we can see that today ballast water plays an important role in maritime navigation. Certainly the master of a ship may adjust the distribution of water in holds as a result of weather or appropriately to assure a better performance and or speed at sea, and finally to ensure ensure ships' stability during port discharge. In addition and according to article 1.11 of the same convention "*Sediments means matter settled out of Ballast Water within a ship*". The accumulation of such sediments obviously

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<sup>9</sup> This is proved by the Nautical Glossary where no reference to water is made concerning ballast; See Annex 5

<sup>10</sup> "Invaders from the Sea", vidéo, A BBC Worldwide – IMO Production, 2007, [available online]

<http://video.google.com/videoplay?docid=-446742053199454516&hl=en#>

<sup>11</sup> Inclination

<sup>12</sup> Landing ship

<sup>13</sup> Dictionnary Le Petit Robert

<sup>14</sup> See Annex 1, Article 1.2, p. 2.

messes with the ships' balance, so these ballast tanks also need to be appropriately cleaned<sup>15</sup>, without posing a threat to the environment<sup>16</sup>.

We must now eliminate the many years of confusion relating to the term de-ballasting. This origin of this confusion may be found in the fact that ballasts did not always possess solely dedicated compartments, therefore empty cargo holds were also used. Frequently the term "de-ballasting" has been used for "degassing" or even for "oil pollution". However these three terms distinguish different maneuvers. Degassing is an operation consisting in ventilating the tanks of an oil tanker in order to remove the noxious gases they contain and avoid the risk of an explosion<sup>17</sup>. This operation is risky and necessary for the ships' security. Today inerting is used to disperse such dangerous petroleum gases accumulated in a tank. The operation consisting in oil dumping is now a strictly regulated operation and sometimes sanctioned by the international convention for the prevention of pollution by ships, named « MARPOL »<sup>18</sup>, and is really nothing more than marine pollution, more or less consequent when the discharge is not carried out in the appropriate port reception facilities. Finally peculiar tanks fit for ballast water are now used and so de-ballasting should not in itself be considered as a marine pollution<sup>19</sup>. However, we could consider that invasive species are a type of pollution to the marine environment, through reading the definition given by the 1982 Convention on the Law of the Sea<sup>20</sup> at its article 1.4. The latter provides that "pollution of the marine environment means the introduction by man, directly or indirectly, of substances or energy into the marine environment, including estuaries, which results or is likely to result in such deleterious effects as harm to living resources and marine life, hazards to human health, hindrance to marine activities, including fishing and other legitimate uses of the sea,

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<sup>15</sup> Acces to tanks and their cleaning is difficult due to the size of ballast tanks.

<sup>16</sup> Why port reception facilities are necessary.

<sup>17</sup> « Signification des termes dégazage et déballastage », Union Professionnelle des Experts Maritimes, [available online] <http://www.upem.org/documents/degazage.html>

<sup>18</sup> IMO Convention signed in London in 1973 (protocol in 1978) and entered into force in 1983. Named MARPOL from the abbreviation of « Marine Pollution ». This Convention was drafted following the Torrey Canyon disaster and with the aim to minimise accidental pollution and eliminate operational pollution.

<sup>19</sup> Although there exists cases where ballasting water in a port and discharging it elsewhere can be considered as a pollution.

<sup>20</sup> UN Convention on the law of the Sea signed at Montego Bay in 1982 and often referred to under "LOS" [available online] [http://www.un.org/Depts/los/convention\\_agreements/texts/unclos/closindx.htm](http://www.un.org/Depts/los/convention_agreements/texts/unclos/closindx.htm)



impairment of quality for use of sea water and reduction of amenities”<sup>21</sup>. This definition of marine pollution can be looked at from two angles. First of all it is human oriented, thereby omitting all natural activities that could potentially have damaging effects on the ocean ecosystem. For example volcanic eruptions which emanate from the ocean floor and subsequently damage or change already existing ocean ecosystems. Second, the definition is amenable to measurement. Scientists can also readily identify various toxic substances found in the marine environment, measure their quantities, and provide estimates of their potential danger for the health of both marine life and humans. Oil spills, for example, are usually discussed in terms of the amount of oil spilled, along with estimates of the damage to bird life, marine life and the economic well being of the surrounding communities.<sup>22</sup> We can therefore confirm that the introduction of invasive species by ballast water, and so by human activity is a form of marine pollution according to the 1982 LOS Convention.

What is an invasive species? In three words it is a species which is introduced, intrusive and disruptive. It is introduced either voluntarily or involuntarily. In the case of this study, we will mostly see cases of involuntary introduction of species, often invisible to the naked eye<sup>23</sup>. Furthermore, such a species is intrusive for the sole reason that it is not in its natural habitat, more precisely surrounded by predators and preys. Indeed, for it to be intrusive and so harmful, it is introduced in an environment which presents enough prey for its survival and usual reproduction but no predators. The species will then become disruptive due to the disturbance of the ecosystems natural balance and the threat of extinction it bears over the autochthonous<sup>24</sup> species. We may conclude that the introduction of a species in an environment other than its natural habitat does not necessarily make this species an invasive one, as multiple factors, as certain mentioned above, or furthermore for example the transit conditions<sup>25</sup>, are to be taken into account.

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<sup>21</sup> This definition is given by the GESAMP - Group of experts sponsored by 9 UN agencies all having responsibilities and interests in the marine environment and which since 1969 gives recommendations on scientific aspects of marine pollution.

<sup>22</sup> « definition of ocean pollution », Patricia A. Michaels, 2001-2008, Green Nature.

<sup>23</sup> Although this absence of willingness is today debatable considering world press relating to the risks of coastal ballasting.

<sup>24</sup> Native species.

<sup>25</sup> « Les chances de survie sont considérablement accrue chez les espèces qui ont un cycle de vie incluant soit des œufs, soit des formes de repos (kystes ou spores), soit des stades larvaires n'exigeant pas de nourriture, soit des

Another important factor to know is that the transferred species is a native species of a coastal area. As on the coast a large amount of biodiversity can be found due to the penetration of sun light through to the seabed, enabling massive growth of vegetative and aquatic species.

Invasive, alien or harmful, all these terms will designate throughout this dissertation the ability of a species to survive outside of its natural habitat. The 2004 Convention refers to “Harmful Aquatic Organisms and Pathogens” which means “aquatic organisms or pathogens which, if introduced into the sea including estuaries, or into fresh water courses, may create hazards to the environment, human health, property or resources, impair biological diversity or interfere with other legitimate uses of such areas”<sup>26</sup>. This can be seen as a large but specific definition.

Ships’ ballast water is considered to be the means and reason for invasive species introduction<sup>27</sup> and in a smaller proportion, but unfortunately just as effectively ship’s hulls, on which some species cling onto and also infiltrate countries through inland waterways. The use of anti-fouling<sup>28</sup> paints has allowed to lute against such infiltration even though the main objective of these paints was more financial than environmental (speed, anti-corrosion, fuel and dry-dock interval). Like any procedure aiming towards environment protection, prior assurance that the goal is not reached by involuntarily harming another element of the environment is needed. In this direction rules had to be enforced to eliminate toxicity of anti-fouling paints.<sup>29</sup>

In the 80’s the international maritime community noticed the great negligence in ships’ management including the practices of ballasting and de-ballasting, when Scientifics’

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stades capables de s’adapter à une diminution de la nourriture ou prêts à retarder le moment de la métamorphose », Lamyline 541-30 Contamination des eaux de ballast par des organismes allogènes.

<sup>26</sup> See Annex 2, Article 1.8, p. 3.

<sup>27</sup> Rien qu’aux ports de la France métropolitaine, 16,5 millions de tonnes d’eaux de ballast auraient été rejetées en 2009, See Annex 6

<sup>28</sup> Les « systèmes anti-fouling », sont définis par la Convention internationale sur le contrôle des systèmes antisalissure nuisibles sur les navires de 2008 comme « revêtement, peinture, traitement de surface, surface ou dispositif qui est utilisé sur un navire pour contrôler ou empêcher le dépôt d’organismes indésirables ».

<sup>29</sup> International Convention on the Control of Harmful Anti-fouling Systems on Ships, (la convention internationale sur le contrôle des systèmes antisalissure nuisibles sur les navires) adopté le 5 octobre 2001 et entrée en vigueur le 17 septembre 2008

in 1903 had already identified the first signs of an alien species introduction, following a mass appearance of Asian algae's in the North Sea<sup>30</sup>. The task of drafting rules was given to the international maritime organization, known also as the IMO. This organization created by the United Nations in 1948 and with its headquarters since based in London, United Kingdom, is the only worldwide organization to establish maritime rules through international consensus, favoring member states' consistent involvement and the quality of their representatives' technical input and not their respective economic leverage<sup>31</sup>

IMO established its strategic plan for years 2010 to 2015 in Resolution A.1011(26), and notably its mission : *"The mission of the International Maritime Organization (IMO) as a United Nations specialized agency is to promote safe, secure, environmentally sound, efficient and sustainable shipping through cooperation. This will be accomplished by adopting the highest practicable standards of maritime safety and security, efficiency of navigation and prevention and control of pollution from ships, as well as through consideration of the related legal matters and effective implementation of IMO's instruments with a view to their universal and uniform application."*<sup>32</sup>

We can note through this statement that IMO, after having recalled its mission, points out its willingness to unite under common norms, by adopting the best practicable standards, the largest number of States. We will see further on the difficulty IMO is faced with to meet this last point, due to rapid evolving technology. However, this difficulty does not matter much when one knows that since its first meeting in 1959, IMO has become the source of over 70 worldwide recognised conventions and continually modified according to technological evolutions and/or lessons learnt from maritime accidents. 90% of world trade is conveyed by sea, effectively IMO has been able to promote stronger cooperation between states and concord standards and practices.<sup>33</sup>. It is in this objective of harmonization, but most of all through crucial necessity, to eliminate world threats due to

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<sup>30</sup> « Background » [available online]

[http://www.imo.org/About/Conventions/ListOfConventions/Pages/International-Convention-for-the-Control-and-Management-of-Ships%27-Ballast-Water-and-Sediments-\(BWM\).aspx](http://www.imo.org/About/Conventions/ListOfConventions/Pages/International-Convention-for-the-Control-and-Management-of-Ships%27-Ballast-Water-and-Sediments-(BWM).aspx)

<sup>31</sup> IMO in 50 lessons Armateurs de France

<sup>32</sup> «Brief History of IMO» [available online] <http://www.imo.org/About/Pages/Default.aspx#2> –

<sup>33</sup> L'OMI en 50 Leçons, Armateurs de France, [available online]

[http://www.armateursdefrance.org/05\\_carnet/04\\_publication/OMI\\_en\\_50\\_lecons\\_www.pdf](http://www.armateursdefrance.org/05_carnet/04_publication/OMI_en_50_lecons_www.pdf)

ships' coastal de-ballasting, that IMO undertook<sup>34</sup> to elaborate an international convention relating to this subject and adopted on February 13<sup>th</sup>, 2004 the Convention for the control and management of ships' ballast water and sediments. If at this time, this convention is edging closer to enter into force<sup>35</sup>, this goes without noting that it was written already seven years ago<sup>36</sup>.

The result and success of an international maritime norm on ships' ballast water management has not yet come. Many cases of invasive species have been identified throughout the world and unfortunately their propagation and proportions continue to increase. IMO continues to urge States to rapidly ratify the Convention<sup>37</sup>, however the problem persists to be unrecognized or simply ignored.

One might ask if an ecosystem disruption requires legal intervention, and in particular if it requires the intervention of international, maritime and environmental law. Would national law not suffice? Furthermore, once the Convention for the control and management of ships' ballast water and sediments enters into force, will it fulfill its objective? If so, at what price and how long will it take for this Convention to become effective?

Through this dissertation we will attempt to understand why an international norm adopted by IMO is a necessary solution for such a global problem. Indeed we will see that the implementation of a common rule is not only in the interest of coastal countries or countries with commercial waterway access, but also in the interest of landlocked countries whose dependency on their rivers and lakes resources could be disturbed by ballast water discharges<sup>38</sup>. And if ballast water is not the only means for the introduction of

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<sup>34</sup> L'OMI s'est aussi fait prier lors de la Conférence de 1992 des Nations Unies sur l'environnement et le développement (CNUED) pour qu'elle envisage d'adopter des règles appropriées concernant le rejet des eaux de ballast.

<sup>35</sup> Entrée en vigueur 12 mois après sa ratification par 30 Etats représentant 35% du tonnage commercial mondial (Au 30 juin 2011 : 28 Etats 25.43%)

<sup>36</sup> A contrario l'Anti Fouling Convention de 2001 a pris 7 années pour entrer en vigueur

<sup>37</sup> "IMO urges speedy ratification of new ballast rules", Steve Mathews, 7 février 2011, Lloyd's List Intelligence. Il reste 3 pays représentant un peu moins de 5% du tonnage mondial pour l'entrée en vigueur de la Convention 2004 lors de la publication de cet article.

<sup>38</sup> Exemple de la propagation de la moule chinoise en Amazonie s'enfonçant plus de 240 km par an et gênant les centrales d'électricités. Ou de la moule zébrée aux Etats-Unis, *See Annex 7*

alien species, the importance of maritime traffic and especially the amount of water<sup>39</sup> that ships ballast tanks can carry, is a great factor increasing a ships' threat due to coastal de-ballasting<sup>40</sup>, a risk that is known to have irreversible consequences.

We will therefore view how the 2004 IMO Convention lutes against one of the greatest threats to global biodiversity by law and the consequences of the entry into force of the same convention, after the prior study of the complex actual state of rules and regulations relating to the management of ships' ballast water and sediments.

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<sup>39</sup> Les navires de commerce peuvent prendre jusqu'à 100 000 tonnes d'eau de mer.

<sup>40</sup> « Sur sa façade Manche Atlantique française, 40% des introductions se font par ballast ou fouling sur les bateaux et 60% par l'aquaculture. Ces proportions sont une spécificité de la zone Manche Atlantique française puisqu'elles sont inversées à l'échelle mondiale : 40% pour l'aquaculture et 60% pour le ballast ou le fouling des bateaux » : Les espèces marines invasives en Bretagne, Les spécificités du phénomène de l'invasion biologique en milieu marin, Mai 2010, Le GIP Bretagne Environnement, p.2.

## **PART ONE. The intricacy of legal standards in terms of management of ships' ballast water and sediments**

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Rome was not built in a day, neither was the 2004 Convention. The pernicious nature of ballast water was scientifically recognised in the 70's. The 1967 Torrey Canyon disaster urged IMO to address the issue of marine pollution regulations. Resolution 18 of the 1973 International Conference on marine pollution, held in London<sup>41</sup>, referred to the environmental threat caused by ballast water. The marine environment protection committee (MEPC)<sup>42</sup> was created during this same conference. However at this time, priority was given to "visible" marine pollution, meaning oil tankers pollution. It was not until the late 80's, that Canada and Australia reported invasive species difficulties to the MEPC. This brought along the first Guidelines adopted by the MEPC in 1991<sup>43</sup> for preventing the introduction of unwanted organisms and pathogens from ships' ballast water and sediment discharges<sup>44</sup>. The United Nations Conference on Environment and Development (UNCED), held in Rio de Janeiro in 1992, recognized the issue as a major international concern<sup>45</sup>. This Conference urged States to evaluate additional necessary measures for combating marine environment damage by maritime transport, through twelve different means, including considering the adoption of appropriate rules relating to de-ballasting in order to prevent alien species propagation<sup>46</sup>.

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<sup>41</sup> Donne lieu à l'adoption de la convention MARPOL 1973/1978.

<sup>42</sup> Marine environment protection committee: Groupe créée en 1990 afin d'étudier le problème que posait les eaux de ballast et qui donnent lieu à l'adoption de ces lignes directrices à l'intention des Etats afin de prévenir ou minimiser le risque d'introduction d'espèces non autochtones dans leurs eaux territoriales : IMO Guidelines

<sup>43</sup> MEPC Résolution 50(31).

<sup>44</sup> En novembre 1993, l'Assemblée de l'OMI a adopté la résolution A.774 (18) : Lignes directrices pour prévenir l'introduction d'organismes indésirables et pathogènes des eaux de ballast des navires et des déversements de sédiments, sur la base des lignes directrices adoptées en 1991 par le MEPC. Ensuite en novembre 1997, l'Assemblée de l'OMI a adopté la résolution A.868(20) : Lignes directrices pour le contrôle et la gestion des eaux de ballast des navires afin de minimiser le transfert d'organismes aquatiques nuisibles et pathogènes.

<sup>45</sup> [available online] <http://www.imo.org/OurWork/Environment/BallastWaterManagement/Pages/Default.aspx>

<sup>46</sup> Notes of the United Nations Conference held in Rio de Janeiro in 1992.

The problem with ballast water has steadily become a priority for IMO<sup>47</sup>. As of today, IMO recommends mid-ocean ballast water exchange<sup>48</sup>, where species survival is minimal.

We can now see that this problem has received international recognition. However without the implementation of a common norm, we end up with a complex situation of legal norms, national and regional, relating to the management of ships' ballast water and sediments. To address this situation in the most appropriate and satisfying way for the whole maritime world, IMO acknowledged the need for prior in-depth study. The « GloBallast » Program was created and established in six distinct world regions. An international norm was therefore drafted based on this need for a common norm and this prior study.

## **Chapter 1. The need for a common international standard in terms of management of ships' ballast water and sediments**

The need for an international convention was recognised by IMO several years before the actual adoption in 2004, thus due simply to lack of international convention for this matter, contrarily to the threat that lies within coastal ballasting, and also due to the disparity in legal standards of ballast water management. This need is increased by the kaleidoscopic dimension of the problem.

### **Section 1 – The legal standards disparity:**

Through such a disparity in legal standards relating to the management of ships' ballast water and sediments, one can realize that there exists a multitude of national, regional or even federal rules, which frustrates achieving a consistent adequate solution to a global problem.

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<sup>47</sup> Reconnu au rang des priorités des travaux de l'OMI dans la résolution A.744(18) du 4 novembre 1993. Puis ces directives furent mises à jour dans la Résolution A.868(20) du 27 novembre 1997.

<sup>48</sup> Cette recommandation minimise le risque du fait de l'absence totale de chance de survie d'une espèce littorale dans les eaux océaniques.

## **1§ Heterogeneity of legal standards:**

Countries having already enforced national laws relating to ballast water management include Australia, Argentina, Brazil, Canada, Chili, Georgia, Israel, Lithuania, New-Zealand, Panama, Peru, Russia, Ukraine and the United States<sup>49</sup>, however this is not an exhaustive list. The latter illustrates how disparate actual legal standards are. As a first approach it seems interesting to analyze the French legal situation relating to ballast water management.

### ***French legislative situation concerning ships' ballast water management:***

In 2006, France introduced technical and criminal legal provisions aimed to "prevent, reduce and eventually eliminate the transfer of harmful and pathogen aquatic organisms through the control and management of ships' ballast water and sediments", through article 39 of the statute n° 2006-1772 dated 30 December 2006<sup>50</sup>, which adopted articles L.218-82 to L.218-86 of the Code of the environment<sup>51</sup>. Therefore according to article L. 218-83 of the Code of the environment, the master of the ship must present on board documentation of the exchange in international waters of at least 95% of ballast water; or biological neutralization of such ballast water, by onboard equipment approved by the competent administrative authority (on technical and environmental grounds); or finally, certify that no de-ballasting operations are needed to be carried out in French territorial waters.<sup>52</sup> This article applies to ships of a gross tonnage equal to, or over, 300 units of the universal measurement, excluding navy ships and ships in difficulty<sup>53</sup>, penetrating into French territorial or internal waters from an area beyond the international coastal shipping zone or a zone expressly designated by a competent administrative authority. Any contravening to these provisions constitutes an offense and is punishable by fine of 300 000 Euros. Notice that this fine was set proportionately to the

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<sup>49</sup> "A safer and more efficient management of ballast water", Jaqueline Tan, Legal briefing UK P&I Club, mars 2011.

<sup>50</sup> JO 31 décembre 2006, [available online] [www.legifrance.fr](http://www.legifrance.fr)

<sup>51</sup> 541-39 « Dispositions prises par la France » du Lamyline.

<sup>52</sup> 576-17 « non traitement des eaux de ballast » du Lamyline.

<sup>53</sup> Il faut savoir que dans toutes normes maritimes, la sécurité du navire et de son équipage prévaut sur tout autre fait. Il en est ainsi en matière de sureté, là aussi la sécurité prévaut sur la sureté.



fine fixed in the case of marine pollution by oil, which is set at 1 million Euros. This seems to be contrary to the consequences of these two marine pollutions. Indeed the introduction in an ecosystem of an invasive species is known to be irreversible, when oil pollution is very harmful for the ecosystem but it is also known to dissipate, albeit after many years. Thus one would have thought that the Legislator would set the fine in proportion but contrary to what he did. We can therefore note that this article proves the ignorance of the extent rendered by an introduction of harmful aquatic organisms and pathogens in a marine ecosystem.

Furthermore, it should be noted that there is no provision in the event of coastal navigation<sup>54</sup>, when we know that aquatic species vary greatly depending on the French coast alone. For example, a coastal navigation which has been much discussed recently, taking place between Brittany (France) and Spain, such coasters would be legally able to introduce alien species from one port to another. This possibility increases the potential risk and contributes to the propagation of a previously introduced species. Finally, regular monitoring of ships' ballast water entering French ports is carried out enough to verify the effective implementation of this legislation. Thus we can conclude that the present situation of French legislation for the management of ships' ballast water is far from satisfactory. In addition, this legislation only contributes to the disparity of global standards in this area of law.

***The problem with norm disparity:***

The multitude of standards for the management of ships' ballast water and sediments is a real problem for the maritime industry. Indeed, carriers are forced to adapt to regulations according to each trip and to the territorial waters entered or transited during such voyage, while the introduction of invasive species through the discharge of ballast water, is a global problem. That is to say, a phenomenon that is susceptible of occurring on any coast and within any proportions, wherever it occurs.

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<sup>54</sup> Le cabotage intérieur se réfère ici à un navire se déplaçant de port à port sans sortir des eaux territoriales françaises.

Such an abundance of diverse regulations appears to be less prejudicial for some carriers, such as liner companies<sup>55</sup>, then for others. Effectively, the former would just need to undertake a regulations review of each country (origin, destination or transited), in order to comply with the regulations of those countries. However this can be just as difficult for such carriers when national regulations differ between themselves greatly, or if the liner transits<sup>56</sup> through multiple territorial water jurisdictions.

This constraint leads to constant adaptation costs. First, we may remark that an analysis of standards would be studied prior to travel. Then, adaptation to standards may not always be possible from one country to another, thus meaning that respect of the strictest global standards would be necessary to make sure to never be at fault. Yet then, we would be entitled to ask whether such a variety of national or regional standards would play in disfavor of certain ports. It is true that shipping, like other means of global trade, is always in search of gaining in speed and in cost. Some carriers could then conclude that a port with no restrictions or less stringent limitations is more suitable to their commercial needs. The State of New York adopted in December 2010, measures 100 times more stringent than the 2004 IMO Convention. According to some, the New York standards aim towards the discharge of ballast water comparable to drinking water. Such standards are impracticable according to ship-owners due to lack of such high-performing technology, so the State has postponed for a year their entry into force<sup>57</sup>, again according to the ship-owners the latter does not improve in any way the situation. Others state that these measures may cause ship-owners to avoid the ports of this State. Is this really conceivable in international trade? Moreover, if technology succeeds in implementing adaptable systems of ballast water management; such systems will most likely be more expensive and require a longer training process.

Additionally, in the case of a charter-party, which party would be held for non-compliance with rules relating to the management of ballast water? The answer is simple in the case of

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<sup>55</sup> Navires qui font toujours la même route allée et retour.

<sup>56</sup> Le mot transit est ici employé comme une entrée effective dans un port avec chargement ou déchargement de marchandises.

<sup>57</sup> From August 2012 to August 2013

bareboat chartering<sup>58</sup> and voyage chartering<sup>59</sup>. In fact in these cases, respectively, the charterer or the lessor would be in charge of the "gestion nautique"<sup>60</sup> (ships' operational management) and the "gestion commercial"<sup>61</sup> (commercial management) of the chartered vessel. Any dispute in these scenarios would be determined by the type of charter-party. However in case of a time charter<sup>62</sup>, we would have to ask ourselves whether the traditional separation of the operational and commercial management would apply and easily determine that either the lessor or charterer is responsible for ballast water management. Certainly ballast water management relates to operational management of the ship, but a lessor could argue that proper handling of the ballast tanks is mainly required during loading and unloading of goods. Would new charter party clauses excluding ship-owners' liability due to non-compliance with the chosen ports' regulations for ballast water management be needed?

Finally, heterogeneity of standards also demonstrates the issue of bringing particular and specific solutions according to the laws of each country. For a concrete example, following the Fukushima disaster, China banned coastal de-ballasting for reasons of safety. Indeed, the probable radiation of waters coming from Japan threatened the Chinese populations' health according to its government. While this type of measure is very specific and limited in time, it illustrates the fact that an international standard would cover the entire problem and not just one facet of it.

## **2§ A contradiction within the legal systems themselves:**

There is not only a disparity of standards between countries but also within the same country. Indeed, invasive species is an issue which concerns maritime law and

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<sup>58</sup> Location d'un navire qui n'est ni armé, ni équipé : Pierre Bonassies et Christian Scapel, *Traité de droit maritime*, L.G.D.J, 2010, 2<sup>e</sup> édition, p. 510.

<sup>59</sup> Contrat par lequel le fréteur met un navire à la disposition de l'affréteur en vue d'accomplir un ou plusieurs voyages : Pierre Bonassies et Christian Scapel, *Traité de droit maritime*, L.G.D.J, 2010, 2<sup>e</sup> édition, p. 509.

<sup>60</sup> La gestion nautique se réfère à tout contrôle technique du navire.

<sup>61</sup> La gestion commerciale se réfère à tout ce qui concerne la marchandise transportée.

<sup>62</sup> Contrat par lequel le fréteur met un navire armé avec son équipage, à la disposition de l'affréteur pour un temps défini : Pierre Bonassies et Christian Scapel, *Traité de droit maritime*, L.G.D.J, 2010, 2<sup>e</sup> édition, p. 510.

environmental law. These areas of law are in some countries governed by different agencies. Moreover, in federal states<sup>63</sup> one can remark that different federate and/or federal entities tackle at the same time regulation of ballast water management, thus creating discrepancies and irregularities of standards within the same legal system.

National regulatory confusion has already been proven in the United States. Between EPA<sup>64</sup> measures and US Coast Guard measures, the State of New York itself adopted in December 2010, measures relating to the management and discharge of ballast water within waters under their jurisdiction. In all ship-owners just need to know which of these three rules takes precedence? At first glance, carriers' predictability of standards seems to be denied. However we may also be led to believe that through this, carriers have the ability to choose the regulation which is most favorable to them. Nevertheless, as we will see further on, the unpredictability of such regulations worsens the situation economically by increasing the hazard of a fine and thus the insurance premium in the long term, and environmentally by opening the choice to the simplest and in the same way least environmental rule of management and discharge of ballast water. This matter becomes financial when there exists in the same country two separate institutions with different budgets, sometimes even with budgets in competition, one managing the shipping industry and the other environmental issues. Such cases are common in federal systems, where two legal systems overlap, and sometimes multiply the rules governing the same subject.

The situation is also complicated in certain places of the world as the Great Lakes<sup>65</sup>, where not only two countries have different legal rules but the states of one of these countries also do. Moreover, which law shall prevail when the waters crossed are considered territorial waters for two countries with different regulations? A current example is the territorial waters dispute in South China Sea. In the case of difference, one could believe that the applicable law is that of the port of destination. Still if such law

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<sup>63</sup> Dont les Etats-Unis, le Canada, le Brésil, l'Argentine, l'Inde, la Russie, l'Allemagne, la Malaisie, le Nigeria, les Emirats Arabes Unis, le Venezuela et l'Australie : des Etats côtiers dont la réglementation sur la gestion des eaux de ballast touchent particulièrement.

<sup>64</sup> Environmental Protection Agency : Agence de protection de l'environnement des Etats-Unis, Agence fédérale créée en 1970.

<sup>65</sup> Dans les Grands Lacs (Great Lakes) nous pouvons relever les règles du Minnesota, du Michigan et de l'Ontario, non seulement deux pays différents mais deux Etats des Etats-Unis.

provides less stringent standards than the other countries claiming jurisdiction, this seems unfair. In the end, one would think to apply the highest standards, or choose the most stringent law enforced in each country. Maritime industry could do without such complication and absurdity, in particular through the enforcement of a common international standard.

Even at a supra-national level there is need to ensure the homogeneity of texts. The general problem of the introduction of invasive species in Mediterranean waters was addressed by the Protocol concerning Specially Protected Areas and Biodiversity in the Mediterranean, annexed on June 10, 1995, to the Barcelona Convention for the protection of the marine and coastal environment of the Mediterranean. The parties shall take all appropriate measures to regulate the intentional or accidental introduction of non-native species or genetically modified and prohibit those that may have harmful impacts on ecosystems, habitats or species in the area of application of the said protocol. It is undeniable that, if not through its purpose, at least through the methods of implementing the plan of action for the Mediterranean, similarities are visible with IMO's GloBallast Partnership project. This is why emphasis was given to the need for greater harmonization of work in both international fora, in order to avoid duplication<sup>66</sup>.

The multitude and disparity of standards demonstrates a legal inconsistency towards a multifaceted and global problem.

## **Section 2 – A multi-factor need:**

It seems essential to define the factors of the necessity of a common international norm. For these factors, ecological, economic and sanitary, all put forward the importance of an enforced and widely ratified international convention.

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<sup>66</sup> 541-37 « dispositions prises au niveau méditerranéen », Lamyline

## **1§ The ecological factor:**

The result of an invasive species is primarily an overwhelming impact on the environment. Because of their irreversible effect and the increase in severity through time, aquatic invasions are considered the second greatest threat to global biodiversity after habitat loss<sup>67</sup>. When a species succeeds in invading a new marine environment, it is mainly because it has no predators and a sufficient amount of prey.

The ecological impact affects native species. Moreover, several species of different levels of the food chain (producers, consumers, decomposers) can be affected by the introduction of invasive species. The fortuitous introduction in the Caspian Sea of the North Atlantic comb jellyfish has virtually destroyed the possibility of fishermen to live from their catch. The sectors grieved by this ecological disruption are diverse and include, but are not limited to the fishermen, the industries with fish products as main source, Iranian fishing fleet and Iranian shipyards<sup>68</sup>. However, some scientists believe that such a disruption was not solely caused by the comb jellyfish introduced through ballast water. Indeed, they state that the origin goes back to the overfishing in the 70's of predators on plankton, such as dolphin, bluefin tuna and mackerel<sup>69</sup>. This raises the question of the efficiency of separate regulations dealing with ballast water or overfishing.

The most affected native species become endangered species. If one often refers to tomorrow's world and the possibility for our children to be able to see as many creatures as we were able, in order to raise awareness on environmental problems, it is significant to understand that the loss of species is also a problem for human lives. Many Inca civilizations have lived for hundreds of years of native species solely from their area of habitat. It is a matter of survival for these populations. In the early 90's the Golden mussel<sup>70</sup> native to southern Asia waters was introduced in South America. The species was then transported to the estuary of the Rio Plata by ballast, before reaching Porto Alegre attached to ships' hulls. This species has managed to penetrate through several South American

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<sup>67</sup> "Invasive Species : Ballast water battles", Dandu Pughiuc, Seaways, Mars 2010

<sup>68</sup> "Invaders from the Sea", vidéo, A BBC Worldwide – IMO Production, 2007, [available online] <http://video.google.com/videoplay?docid=-446742053199454516&hl=en#>

<sup>69</sup> "Fishing 'destabilises Black Sea'", BBC News, science and environment, 5 juin 2007 [available online] <http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/6719965.stm>

<sup>70</sup> Golden Mussel - *Limnoperna fortunei*

countries and is said to be spreading at the speed of over 240 Km per year<sup>71</sup>. This mussel disrupts the ecosystem by attaching itself on any hard substrate and forming clusters stifling any other organism or preventing their access to nourishment. Scientists fear that such species infiltrates the largest wetland in the world<sup>72</sup>, home to thousands of species. This ecological factor of the problem of invasive species underlines the importance and the need for natural environments to be protected from human activities, hence the application of environmental law.

Nevertheless, the recognition of biodiversity disruption is really acknowledged when it harms directly man and so focuses on the economic factor of the need for a common standard.

## **2§ The economic factor:**

All is not about money however money is a unquestionable mean of weight in many debates. One tends to react to events quicker when there are economic stakes. If oil pollution disasters engendered solely the death of marine animals, the IOPC<sup>73</sup> Funds may still be in the phase of discussion. Effectively, it is also an economic matter for people living from the marine environment, including fishermen, restaurants, and municipalities due to coastal tourism.

The economic impact of the invasion of zebra mussels (native to the Caspian Sea) in the Great Lakes in 1988 was estimated at 1 billion Dollars over a decade. Indeed, these species embed in water circuits of hydroelectric or nuclear power plants or on drinking water systems, and therefore generate regular costly cleaning operations<sup>74</sup>. Not only do these cleaning operations which usually need to be done twice a year, must now be done every month but they require the training of qualified personnel and the costs of procuring system parts which are worn faster than usual. The mussels carried from Asia to South America have shown to produce the same financial burden for industries.

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<sup>71</sup> “Invaders from the Sea”, vidéo, A BBC Worldwide – IMO Production, 2007, précité note 72, p.24

<sup>72</sup> Pantanal wetland

<sup>73</sup> See Abbreviations et acronyms, p. 4

<sup>74</sup> « Eau de ballast : la lenteur de l’OMI suscite des règles locales drastiques », Marie Cailleries, Le Marin, numéro 3327, 15 avril 2011.

In the first paragraph of this section we have noted that once upset the sectors affected are diverse and varied. It is important to note that all professions of the fishing industry are affected. Economically, the industry provided by the fishermen, the latter, shipyards and fleets of these big fishing countries are affected. In contrast, the entry into force of regulations relating to the management of ships' ballast water and sediments would be a major economic upheaval for the shipping industry<sup>75</sup>.

It will be therefore be necessary to constantly weigh this economic factor with other factors and also between the financial factors themselves following an enactment of new regulations. Finally, one may suggest that the sanitary factor should prevail in all cases.

### **3§ The sanitary and humain factor:**

The sanitary issue is increased more or less depending on the location. It becomes important when a civilization living off local biodiversity is prevented to do so through a disruption to their ecosystem. However, this is only part of the sanitary factor the introduction of an invasive species can cause. Indeed, epidemic diseases such as cholera<sup>76</sup>, or *E. coli*<sup>77</sup>, have been transferred between continents. In 1991, ballast water from Bangladesh imported cholera in Peru, causing over 10,000 deaths in three years<sup>78</sup>. Such pathogens are invisible to the naked eye and prove their potential danger only after their devastating consequences.

Furthermore, events of red tides<sup>79</sup> have long been known by their existence and by their consequences, that is to say, the death of many marine species by a lack of oxygen or simply toxicity. The red tide phenomenon is fairly well known and therefore health risk to humans is reduced. Still, there remains a certain risk that ships' ballast water carries such toxic molecules. Through de-ballasting of the latter, shellfish may be rendered toxic without transpiring it. Indeed shellfish are renowned to remain intact to human eye whilst

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<sup>75</sup> *Infra*, p. 64

<sup>76</sup> By the bacteria *Vibrio cholerae*

<sup>77</sup> *Escherichia coli*

<sup>78</sup> "Living Beyond Our Means: Natural Assets and Human Well-being", Invasive species around the world, Millennium Ecosystem Assessment, March 2005, p.13

<sup>79</sup> « What is red tide », Tracey Smith, Ocean Power Magazine, 2009, [available online]  
<http://www.oceanpowermagazine.net/2009/08/13/what-is-red-tide/>



toxicity builds up inside them. Such a threat to human life has proved itself after coastal residents deceased after dinning on the shellfish they collected that day<sup>80</sup>.

We can see that the scope of this sanitary and human factor leads some States to take necessary preventive measures to avoid the introduction of pathogens that threaten its population.

The debate on ships' ballast water management finds its origin in all these factors. Due to the global nature of this multifactor problem, it appears that a common standard with a uniform interpretation is the only way to reduce on the long-term any risk of introduction of harmful species from ships' ballast water and sediments. IMO's intervention, as a worldwide organization recognized for its expertise and effectiveness in this area, seems to be most appropriate. We could then ask ourselves how a common standard would suit each national characteristic. The answer is provided by the prior study of systems of law, which should now be analyzed through the project of implementation of the 2004Convention.

## **Chapter 2. The making of a common international norm by the 2004, IMO Convention for the control and management of ships' ballast water and sediments**

At first glance, the possibility of introducing new provisions for the management of ships' ballast water and sediments in a preexisting and in force IMO convention was studied. Indeed, adopting an annex to a preexisting convention had the advantage of being a quick and efficient. However it turned out that this option would not solve the problem given its scale. And in order to adopt an appropriate convention, one had to understand the issues associated with invasive species transfers through ships' ballast tanks and especially study the various legal systems and matters arisen in these systems. This is what the international community engaged in doing when implementing the GloBallast program in 2000. Once the possible disadvantages identified, the drafters were able to reach a

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<sup>80</sup> "Invaders from the Sea", vidéo, A BBC Worldwide – IMO Production, 2007, précité note 72, p.24

consensus and the adoption of a text while also establishing the legitimacy of the convention.

## **Section 1 – The GloBallast program**

Part of the success of an international convention is based on its overall effectiveness and therefore a solution taking into accounts the different levels and aspects of the issue. To accomplish the latter, the "GloBallast" project, global ballast water management program, was created in March 2000 by IMO, UNDP<sup>81</sup> and the GEF<sup>82</sup>, under the direction of IMO and implemented in six pilot countries, including China, Iran, India, Ukraine, South Africa and Brazil. Without this a priori observational and research process, the drafters of the Convention would simply not have been able to define concepts such as "ballast water"<sup>83</sup>. The program's mission was "to assist States in implementing the 1997 Guidelines<sup>84</sup> for the control and management of ships' ballast water" <sup>85</sup>. Another task of this program was to establish a report on the legal system of their pilot country; this was the "Legislative review project"<sup>86</sup>. The latter was used to assess the actual status of legislation, the necessary resolutions and which institutions to approach to give effect to a convention. This analysis is of particular interest hereafter.

### **1§ The observation of six pilot countries:**

The GloBallast program concentrates on the study of six pilot countries. Several steps were taken whilst drafting the report on the different legislations and administrations.

First of all, assembling legally based data and providing an analysis of strategic regulatory options for the six pilot countries to enact the various aspects of Resolution

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<sup>81</sup> See Abréviations et Acronymes, p.4.

<sup>82</sup> See Abréviations et Acronymes, p.4.

<sup>83</sup> See Annex 1, p.2.

<sup>84</sup> Résolution A.868 (20) : Lignes directrices pour le contrôle et la gestion de l'eau de ballast des navires afin de minimiser le transfert d'organismes aquatiques nuisibles et pathogènes

<sup>85</sup> 541-36 Projets « Globallast » et « Partenariats-Globallast », Lamyline

<sup>86</sup> « GloBallast Legislative Review », Moira L. McConnell, Final Report, GloBallast Monograph Series n°1, 2002.

A.868 (20) concerning guidelines for the control and management of ships' ballast water in order to minimize the transfer of harmful aquatic organisms and pathogens<sup>87</sup>. Let's not forget that these guidelines are referred to as "soft law" reflecting their non-binding nature. Nevertheless, some provisions may be taken into account in subsequent agreements making them mandatory<sup>88</sup>.

Moreover, in each country a local legal consultant<sup>89</sup> was to establish a legislative report in a period of one month and a half<sup>90</sup>. This report included a descriptive response of the research areas, as well as opinions and recommendations based on the analysis of the legislative and administrative systems of their State. The majority of consultants had never been faced with legal issues specific to harmful aquatic organisms and pathogens before. However, all of them had expertise in international and national maritime law and/or environmental law. They were also to provide suggestions for draft legislation that could be adopted in each country to implement the Guidelines and lay a foundation for the future IMO Convention<sup>91</sup>. Furthermore, government officials of these countries were able to comment both orally and review these drafts and recommendations provided by the legal consultants they had taken care of choosing.

All of the consultants' reports point out that despite the vast disparity of the six countries histories and administrative and legislative systems, their recommendations and analysis present a uniformity that is due to the encouragement of traditional practices and international standards in international shipping. While the environmental and resource management practices of a country affect in-depth the socio-economic policy of a country which internationalization is relatively recent.

The study of legal systems took into account the Constitution or other Supreme Law of the country, the institution with the power and authority to legislate in matters of

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<sup>87</sup> Résolution adopté par l'Assemblée de l'OMI en 1997 (modifiant les lignes directrices établies en 1991), pour éviter l'abstention d'action des concernés, et notamment les Etats, les armateurs, les capitaines, pendant l'attente de solution juridique par la rédaction d'une convention nouvelle.

<sup>88</sup> « Guide pour l'élaboration d'un cadre juridique et institutionnel relatif aux espèces exotiques envahissantes », 2.1 L'évolution du droit international des espèces exotiques, Exemple 10 : Nature des instruments internationaux, Clare Shine, Nattley Williams, Lothar Gündling, Centre du droit de l'environnement de l'UICN, 2000

<sup>89</sup> LLC : legal local consultant

<sup>90</sup> Débutant le 15 avril 2001

<sup>91</sup> "5.1 Introduction: the six legislative reviews", « GloBallast Legislative Review », Moira L. McConnell, Final Report, GloBallast Monograph Series n°1, 2002, p.47.

maritime law<sup>92</sup>, or inland waterways, lakes, civil law, criminal and interstate commerce, or finally in environmental law. It was important to understand these issues in order to avoid the above mentioned contradictions within legal systems. Also, after having identified the decisional entity<sup>93</sup> concerning regulations on invasive species, it was necessary to study the extent of this entity's power.

A country's history in maritime and environmental legislation also interested IMO. Indeed, this not only shows whether the country is involved in this direction but also it allows to emulate the methods and measures which have had positive or negative results. In addition, the review of the laws or regulations in effect, attested of the present state (at the time of study) of the country's regulatory situation for the management of ships' ballast water and sediments<sup>94</sup>.

Finally the identification of state institutions responsible for health, safety and environment issues<sup>95</sup>, enabled having a global view of the people concerned by the implementation of a new international convention.

As well as generating a wide comparison of research on the legal and administrative systems, facilitating the continuity of international research relations, the advantage of prior studying legal systems demonstrates its interest through the recommendations and conclusions that the GloBallast program presents in its final report concerning the legislative review.

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<sup>92</sup> Par exemple au Brésil c'est le gouvernement fédéral qui détient le pouvoir législatif exclusif en matière de droit maritime, c'est-à-dire aucun autre pouvoir au niveau inférieur des Etats du Brésil ne peut légiférer sur ce sujet. Cependant le gouvernement fédéral détient des pouvoirs concurrents avec le gouvernement fédéré en matière de droit environnemental.

<sup>93</sup> Encore un exemple du Brésil, c'est au pouvoir exécutif de prendre de telles décisions car elles touchent des problèmes techniques et scientifiques relevant de leur autorité.

<sup>94</sup> Au Brésil aucune législation pour la gestion des eaux de ballast n'était en vigueur, seul des rapports demandés par les autorités portuaires étaient mises en place.

<sup>95</sup> Au Brésil le rapport a relevé que malgré l'implication d'un grand nombre de ministères à un certain niveau ou un autre, le ministère de l'environnement, le ministère de la santé et la marine nationale du Brésil étaient ceux primordialement considérés responsables en matière de développement d'une politique nationale effective en la matière.

## **2§ GloBallast programs' conclusions of the legislative review:**

The GloBallast program was meant to provide countries with advice and prepare the implementation of effective legislation in line with a new convention, and also to evaluate the feasibility of applying IMO recommendations.

The final report of the GloBallast legislative review firstly presents the consulted countries recommendations. According to the latter we may note the need for a management system which is nationally integrated between various government agencies; a need for agencies' cooperation in order to establish of non-conflicting rules; the establishment of a federal law setting out the major concerns and the principles of legal harmonization in this area; and direct polluter's responsibility, strictly applicable and an indirect responsibility for the flag State.

Then, the final report provides its own findings and recommendations, firstly by confirming States' legal obligation to address the matter and prevent invasive species propagations. The report notes that States' response should take into account its international, national and regional obligations. Thereafter it shall follow the principles established in earlier conventions. Moreover, the existence of different levels of governance should not be at the center of attention whilst drafting, as this depends on the autonomy of each State. However, success must be found in harmonizing and standardizing the rules that are enforced, in order to lay down foundations for an international convention.

In this way several options are identified in order to direct the pilot countries:

- Option 1: establish new regulations under, or amendments to, existing ship source pollution prevention legislation.
- Option 2: take administrative action without legislative
- Option 3: adopt comprehensive environmental/biodiversity protection legislation.<sup>96</sup>

These three options are not really innovative. Drawing up such a report was not a necessity to get the idea of these three options. Still all these options offer positive action to improve prevention and is based on the obligation of States to act.

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<sup>96</sup> « 3 : Conclusions and Recommendations », « GloBallast Legislative Review », Moira L. McConnell, Final Report, GloBallast Monograph Series n°1, 2002, p. 100 and seq.

Finally, this report defines words which could be helpful for national legislation. The GloBallast program covers every aspect necessary for implementation of effective legislation.

"Having ended in 2004, the GEF is funding a new multi-year project called GloBallast-Partnership."<sup>97</sup> The purpose is the continuation to promote coordinated and common measures through these partnerships and so also the establishment of a worldwide center for data exchange and global cooperation in research and surveillance. The latter should prove to be interesting not only for monitoring the evolution of ecosystems but also for suppressing recalcitrant ship-owners.

There seems to have been no equal observation process for any previous conventions. The assistance provided to countries to implement IMO recommendations served also as paving the way for the implementation of an international convention that would succeed in accomplishing minimum harmonization of standards for ships' ballast water management. The drafting of a new convention was therefore always kept in mind.

## **Section 2 – The drafting of a common international norm:**

"States shall take all measures necessary to prevent, reduce and control pollution of the marine environment resulting from the use of technologies under their jurisdiction or control, or the intentional or accidental introduction of species, alien or new, to a particular part of the marine environment, which may cause significant and harmful changes thereto"<sup>98</sup>. This is provided by article 196 1) of the 1982 United Nations Convention of the Law of the Sea<sup>99</sup>. By this article States have the considerable ability to take "all necessary measures". The scope is deliberately broad enabling States to punish wrongdoers. UNCLOS

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<sup>97</sup> 541-36 Projets « Globallast » et « Partenariats-Globallast », Lamyline

<sup>98</sup> See Annex 1, p. 1.

<sup>99</sup> United Nations Convention on the Law of the Sea (UNCLOS), adopted in 1982, signed at Montego Bay.

is frequently used as legal basis for state action in this area and demonstrates the perpetual use of this convention<sup>100</sup>.

IMO constitutes its action on this legal state obligation by drafting the 2007 Convention because, as any law, the foundation is the basis the texts legitimacy. Nevertheless, what advantage brings an international convention? For sure, IMO has an unprecedented experience in international conventions concerning to maritime matters, thus can use it while incorporating key environmental principles.

### **1§ The benefit of an international convention in comparison with national rules:**

Before looking at the interest a common international standard for the management of ballast water can have, one should define "common international standard" means in this paper. It means a unique international standard followed by a majority of countries (mostly not land-locked) and can therefore be compared to other IMO conventions. An international agreement not only demonstrates the benefit of having an important place in the hierarchy of norms of a country, but also shows that such a minimum legal standard would impose a uniform international interpretation on the same subject and therefore would bring a professionally necessary predictability.

#### ***Pre-eminence in the hierarchy of norms:***

In Hans Kelsen's "Pure Theory of Law"<sup>101</sup>, legal systems are organized following the principle of pyramid of norms, otherwise known as the "hierarchy of norms", devoting a supreme law, which under French law is the French Constitution, dated October 4, 1958. The latter and more specifically article 55<sup>102</sup>, considers international conventions

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<sup>100</sup> A titre d'exemple la convention sur le droit de la mer est aussi la base légale d'articles du code de l'environnement en matière de conteneurs perdus en mer et permet à l'Etat de prendre toutes mesures nécessaires c'est-à-dire les sanctions également nécessaire à dissuader les contrevenants, notamment son article 194.

« Conteneurs à la mer et action en recouvrement des frais engagés par l'Etat pour leur récupération », Martine Le Bihan Guénolé, Article du Droit Maritime Français, Spécial « sécurité des mers », DMF 726, juin 2011.

<sup>101</sup> Hans Kelsen, « Théorie Pure du Droit », 2e traduction par Ch. EISENMANN, Dalloz, Paris, 1962.

<sup>102</sup> « *Les traités ou accords régulièrement ratifiés ou approuvés ont, dès leur publication, une autorité supérieure à celle des lois, sous réserve, pour chaque accord ou traité, de son application par l'autre partie.* ».

hierarchically superior to French national laws<sup>103</sup>. This article also raises the post-signature ratification requirement by act of law, enabling it to come into effect and be enforceable. The article also sets out the principle of reciprocity. This principle is very important for the general application of international rules and requires that each State which has ratified the convention ensures it is properly applied and followed. Such hierarchy of norms can be comparable to the application of an international convention in the United Kingdom. Indeed strictly speaking there is no Constitution in the British legal system. Yet the principle of "Parliamentary Supremacy", meaning the British Parliament is the supreme law, implies that an Act of Parliament is required for ratifying an international convention, thus placing such norm at the top of the pyramid. In both cases, both States should ensure that no other existing law contradicts the ratified Convention. One may argue that such a hierarchy of norms is basically established everywhere, mainly because the world can be quasi divided into civil law systems and common-law systems<sup>104</sup>, but also for the fact that without such pre-eminence, the interest of an international convention would be null.

We may therefore conclude that the benefit of an international convention will be its effectiveness due to the place it occupies in the hierarchy of norms once ratified in a legal system.

***Minimum standard and uniform interpretation:***

The interest of an international convention is to gather a majority of concerned States under a panel of common standards, subject to interpretation and therefore a uniform application. This kind of rule of law requires ongoing cooperation between States, so offenders are punished proportionately and so no State-choice is left for ship-owners to prefer countries more or less strict on points of law. This "minimum requirement" or standard is recalled by the text of the 2004 Convention in article 2.3, party States may take "more stringent measures with respect to the prevention, reduction or elimination of the

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<sup>103</sup> Rappelons les arrêts de la Cour de cassation en date du 24 mai 1975, Jacques Vabre, puis du Conseil d'État du 20 octobre 1989, Nicolò, qui pose le principe que le traité international est supérieur à la loi, même postérieure.

<sup>104</sup> Unless they are mixed systems of common-law and civil law or Fiqh (based on Islamic beliefs).



transfer". We may note the desire to establish a minimum legal standard which will be uniformly applied, yet without imposing a limitation on parties wishing be more stringent, for example the State of New York<sup>105</sup>. This is a principle often used in international conventions due to national sovereignty. In this way, States actions are minimally limited without being restricted to such standards if they require more in-depth measures. This also allows States to not have to denounce the Convention as soon as they want to become stricter on a certain points.

It is in this objective of harmonizing rules on ballast water management that IMO drafted the 2004 Convention. As changes in technology evolve rapidly in the maritime world, any convention with a technical twist must be able to evolve quickly and easily in order to keep pace and especially always be legally beneficial.

***Amendments to the convention:***

Concerning the amendment of the 2004 Convention once in force, the procedure of modification is similar to other agreements, by the insertion of tacit acceptance procedure. According to which any amendment to a convention shall be deemed to be accepted when a pre-defined number of contracting States have not actively objected to the said amendment. With regard to the 2004 Convention, the tacit acceptance procedure is provided for an amendment to the Annex and in the absence of a notified objection by one-third of the contracting parties<sup>106</sup>. This type of process has already proven itself useful in previous agreements, including MARPOL. Furthermore, an amendment shall be deemed accepted when two-thirds of the contracting States notify their acceptance. In any case, note that it will be necessary to notify the Secretary-General of any objection to an amendment if the State does not wish to be submitted to it.

There remains to determine whether the cost bore by ship-owners should frighten them, having to adapt mechanisms or systems in place to comply with amendments to the 2004 Convention. Have manufacturers of ballast water treatment systems thought about such

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<sup>105</sup> Notons toutefois que les Etats-Unis n'ont pas vraiment l'intention de ratifier la Convention de 2004, se soumettant très rarement aux conventions internationales.

<sup>106</sup> See Annex 1, Article 19 e), p. 12.

possible amendments? The ability of their systems to adapt easily without requiring heavy reinvestment should weigh in the balance of their international sales.

To some extent we can confirm that the interest of an international convention focuses on its legal status in the hierarchy of norms and its uniform interpretation. In addition, the benefit of the 2004 Convention will continue to be pertinent over time due to tacit acceptance procedure. Henceforth, the main purpose of this convention is to prevent, minimize and eliminate the risk of invasive species and pathogens transfer from one ecosystem to another. To accomplish this objective the drafters have relied on the environmental precautionary approach and take care to recall the principle in the annex.

## **2§ The environmental precautionary approach:**

The annex of the 2004 Convention takes into account the principles recommended by the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA)<sup>107</sup>, and listed at the Conference of Parties to the Convention on Biological Diversity. These 15 principles were also recalled in the final report of the GloBallast legislative review. First on the list is the precautionary principle.

Nonetheless it is interesting to review other principles first of all, including the three-stage hierarchical approach according to which "prevention is generally far more cost effective and environmentally desirable than measures taken following introduction of an alien invasive species."

Then the principle of exchange of information has a preventive goal by requiring States to conduct research and monitoring of invasive species as the later is the key to an early detection of new alien species. The exchange of information should include incident lists, information on taxonomy and ecology of invasive species and will thereafter lead to the principle of cooperation between States. Still, these principles could reveal themselves difficult to follow, as they may appear unfavorable to a country's appeal. In addition,

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<sup>107</sup> Subsidiary Body on Scientific, Technical, and Technological Advice, organe consultatif établi par l'article 25 de la Convention de l'ONU sur la diversité biologique de 1992.

surveillance requires a fairly substantial budget and qualified personnel. All countries may not be able to afford such research.

Finally, the guiding principle of “mitigation of impacts” implies States should take steps such as eradication, containment and control as a result of inadvertent introduction of species and mitigation measures should also be applied regularly to be effective, which again requires another budget.<sup>108</sup>

We must conclude that implementing these guidelines is not so simple, the budget being as sustainable as the development.

More emphasis is made in the 2004 Convention, being “mindful” of the precautionary approach set out in Principle 15 of the Rio Declaration on Environment and Development.<sup>109</sup> “In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation”. This precautionary approach was also recalled in Resolution MEPC.67 (37) adopted in 1995 by the MEPC. We can therefore note that it is not necessary to have the most suitable technologies to the problem for a measure to be adopted. For it is an excuse States often use. Indeed before ratifying the 2004 Convention, many States called on the lack of appropriate technology to the provisions of the Convention; generally they preferred that technology be available before accessing it. Unfortunately this remains to this day, even though appropriate technology has been developed, as States which had previously promised to ratify the Convention once the technology available have not<sup>110</sup>.

This precautionary approach was taken by French law and in particular the *loi Barnier*<sup>111</sup> n°95-101 dated February 2, 1995 and concerning the strengthening of environment protection. This law incorporates “the precautionary principle, according to which the

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<sup>108</sup> Alien species: guiding principles for the prevention, introduction and mitigation of impacts, SBSTTA 5 Recommendation V/4, [available online] <http://www.cbd.int/recommendation/sbstta/?id=7021>

<sup>109</sup> See Annex 1, p. 1.

<sup>110</sup> « Eaux de ballast : des normes plus dures mais sans cadre », Marie Caillerie, Le Marin, 15 avril 2011, numéro 3327, p.4.

<sup>111</sup> Loi n°95-101 du 2 février 1995 relative au renforcement de la protection de l'environnement, [available online] [www.legifrance.gouv.fr](http://www.legifrance.gouv.fr)

absence of certainty in the light of scientific and technical knowledge, should not delay the adoption of effective and proportionate measures to prevent a risk of serious and irreversible damage to the environment at an economically acceptable cost", while limiting State measures in proportion to risk and an economically acceptable cost. This 1995 law also referred to the principles "polluter pays" and "preventive and corrective." The "polluter pays" principle has a limited use here because once a species is introduced into an ecosystem, it is irreversible. There is very little chance money can provide a solution and unless a disease outburst, specific to the alien species and which exterminates them, there are no (known) other possible remedies which do not threaten the entire marine environment.

We may conclude this part by confirming that drafting an international standard in the form of a convention has the benefit of harmonizing rules for the management of ships' ballast water and sediments. The GloBallast program enabled the drafters to identify practical solutions to prevent or eliminate the risk of introduction of harmful species through ships' ballast water and sediments and therefore to provide legal solutions to a global problem, which we now need to view in the second part concerning the harmonization of legal rules through the implementation of IMO's 2004 Convention. Note the use of "implementation" instead of "enforcement" as the latter it is still pending. Nevertheless, we will attempt to view what the drafters of the 2004 Convention wished to enforce.

## **PART TWO. The harmonization of legal rules relating to the control and management of ship's ballast water and sediments through the implementation of IMO's 2004 Convention**

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The current status, as of May 12, 2011, of the Convention of 2004, is its ratification by 28 States representing 25.43% of the world merchant fleet<sup>112</sup>. There remains the need for at least two countries representing together just under 10% of the world merchant fleet to ratify the Convention for it to enter into force<sup>113</sup>. Ratification by Panama and Greece would be primarily sought, as they present very substantial merchant fleet<sup>114</sup>. If IMO is trying to gather such countries, today their absence of ratification is becoming more and more mysterious, given the current status of technology in this area. One might ask whether the conventions' state obligations are too restrictive; if there exists' a risk of commercial traffic loss; or if in their opinion, an entry into force of the Convention is economically infeasible. Maybe some States prefer to wait and see how parties to the Convention do, once it enters into force. Some States already follow IMO recommendations in this field, including mid-ocean ballast water exchange. With respect to Ship-owners it appears clear they do not want to invest in ballast water treatment systems if they are not sure of the legal requirement or their legal effectiveness in future<sup>115</sup>. What can one can be sure of, is that once the 2004 Convention enters into force it will provide unprecedented legal solutions for the management of ships' ballast water and sediments, becoming the uniformly interpreted common international standard.

This second part will be dedicated to the study of the legal contributions brought by the 2004 Convention, including the legal solutions it implements, whether traditional or innovative, but also a critical analysis of the effectiveness of these same legal solutions.

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<sup>112</sup> La France a ratifié la Convention de 2004 par loi n°2008-476 du 22 mai 2008, JO 23 mai 2008.

<sup>113</sup> "The Ballast Water Convention is edging closer to enter into force", Sea4safety, 12 mai 2011.

<sup>114</sup> See annex 4 Liste des 20 premières flottes marchande du monde.

<sup>115</sup> Rien n'interdit aux Etats de prendre des mesures plus restrictives et donc de rendre les systèmes de gestion et traitement des eaux de ballast inefficaces selon leurs dispositions.

## **Chapitre 1. The contribution of uniform legal solutions relating to the management of ships' ballast water and sediments**

The 2004 Conventions' scope is defined in its article 3<sup>116</sup>. The provisions of the Convention apply to any ship able to carry ballast water; entitled to fly the flag of a Party or not entitled to fly the flag of a Party but which operate under the authority of a Party<sup>117</sup>. Conversely, the provisions do not apply to warships, nor to ships with sealed ballast tanks<sup>118</sup>, and neither to ships navigating the waters under the jurisdiction of one State only. The latter case is presented in different forms and the Convention allows States to grant ships of other flag States permission to navigate their waters, without environmental damage. Furthermore, note the principle to apply no less favorable treatment in the case of a ship of a flag State not party to the Convention. This principle requires the State Party to apply the same measures to all vessels regardless of flag State.

It is now necessary to see the legal interest of the 2004 Convention. Indeed, what legal solutions does the 2004 Convention bring to the problems endured by ballast water and which cannot be settled by national laws? It is therefore necessary to consider the ship-owners and contracting parties' obligations when the 2004 Convention is enforced.

### **Section 1 – Classic legal solutions**

It goes without saying that traditional legal solutions can be divided into two sections on the one side obligations and on the other sanctions for non-compliance.

#### **1§ Obligations:**

One may be led to believe that obligations in the 2004 Convention only concern the contracting parties, the States. However this is not the case and very few international

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<sup>116</sup> See annex 1, p.4

<sup>117</sup> C'est-à-dire aux navires se trouvant dans les eaux juridictionnelles d'un Etat partie à la Convention

<sup>118</sup> Ces navires ont des citernes d'eaux de ballast scellés et ne peuvent pas procéder à un rejet.

conventions lead to only State repercussions. Indeed we may notice that while the text always refers to the "Parties", the obligations induce obligations on transport professionals, including ship-owners and captains.

***Contracting parties' obligations to the 2004 Convention:***

The parties, signatory States which have ratified the 2004 Convention, are very concerned by its entry into force. Their general obligations are fairly comparable to any other convention, such as assuring the practical application standards to ships flying their flag or under its jurisdiction<sup>119</sup>, or the duty to ensure that the implementation of this convention does not cause any direct or indirect damage to environment other than that it is trying to prevent. Besides they are also obligations which generate financial consequences. We can distinguish several types of obligation according to their execution time.

First of all, following the Convention's entry into force, States are required to "develop national policies, strategies or programmes for ballast water management<sup>120</sup>". Since the entry into force is effective 12 months after the required number of ratifications is obtained, it seems fair to consider that States will have twelve months to reflect and implement such a program, if not already started.

We can assume that during this same period and following article 8<sup>121</sup> of the Convention, the parties will implement appropriate legislation to punish violations<sup>122</sup>. Note here that the sanction is given by the administration under which ship at fault lies. We could then believe that a State which severely punishes any breach of the Convention might scare away ship-owners sailing their flag. However, the penalty is double with the possibility that the geographically competent sanctions the offending vessel. The ability to strike the perpetrator with two penalties is uncertain according to the text. Indeed, the above mentioned article separates the two cases by firstly, providing that any violation is prohibited and sanctioned wherever committed by the administration of the ships' flag

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<sup>119</sup> See Annex 1, Article 4.1, p.5.

<sup>120</sup> See Annex 1, Article 4.2, p.5.

<sup>121</sup> See Annex 1, p. 6.

<sup>122</sup> Notons que certains pays ont déjà commencé à défricher un terrain législatif pour la Convention, telle la France par les articles insérés dans le code de l'environnement, *supra* p.17.

State and then, providing that any offense committed within the jurisdiction of a party is prohibited and sanctioned by this State. “Or” is only referred to in article 8.2 a). This leads to believe that the penalty could be double, but the prosecution by the ship's flag State administration should be undertaken<sup>123</sup>, while the prosecution by the State where the offense is committed is optional. In fact, we are likely to expect one sanction or the other. It is true that many ship-owners ask to be heard, tried and sanctioned by their flag state, especially hoping for leniency due to the fact they sail the flag of this State. This last point reveals the need for heavy penalties thereby having a sufficient financial dissuasive effect. Indeed, the Convention seeks to prevent the introduction of invasive species. Unfortunately financial dissuasion is really the only effective way<sup>124</sup>. And in order to be effective these sanctions must not only be a heavy burden to offenders, but also the same amount for each party. It is unfortunate that the 2004 Convention does not specify an amount or at least a minimum.

Finally, parties must ensure to set up port reception facilities for ships' sediments and to “provide for the safe disposal of such sediments that does not impair or damage their environment, human health, property or resources or those of other States”<sup>125</sup>. Following the above, the faster such reception facilities are set up, the sooner the provisions of the Convention may be legitimately applied. Note foremost that the Convention encourages States to denounce others for inadequate installations<sup>126</sup>. Note then, that the cost of using these port facilities must be economically profitable for ship-owners, with comparison to the reward of a fine.

Additionally, contracting States are subject to enduring obligations. Therefore States' Port authorities must undertake ships' control. Article 7 of the Convention refers to this case and provides survey<sup>127</sup> and the issuance of certificates<sup>128</sup> to be undertaken States administration. This could include coastal monitoring with ballast water analysis prior to

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<sup>123</sup> Et si rien n'est effectué par l'Etat de pavillon du navire après un an à compter de l'information de l'infraction, ce même Etat doit en informer l'Etat ayant subit et signalé l'infraction.

<sup>124</sup> Ainsi un risque d'amende de USD 5.000 est irrationnel : « *A vessel that discharges improperly exchanged or treated ballast without a valid exemption is liable for a civil penalty of up to \$5,000* », Ballast Water News, Global Ballast Water Management Programme, janvier – mars 2004.

<sup>125</sup> See Annex 1, Article 5, p.5.

<sup>126</sup> See Annex 1, Article 5.2, p.5.

<sup>127</sup> Plusieurs visites sont imposées par la Convention, See Annex 1, Règle E-1, p.26.

<sup>128</sup> La validité des certificats ne doit pas dépasser 5 ans, See Annex 1, Règle E-5, p.29.



entry into port, as some US Coast Guards<sup>129</sup> have already engaged in. The State will delegate all these tasks to administrative bodies/agencies or classification societies. They most likely will be added to the list of controls that are already generally made in the ports, still this requires a monitoring plan to be established and for the appropriate trained personnel to perform these checks. In case of further measures taken by a party pursuant to article 2.3 of the Convention, this party is sole responsible for the control of such additional measures and their application. The party must also notify neighboring States that may be affected by such measures<sup>130</sup>. The Convention reaffirms the need for parties to engage all efforts to avoid any undue delay to ships<sup>131</sup>. This begs to remind how difficulty it may be to find the balance between ships' inspection and ships' unfounded retention, as the entity undertaking the control is not always certain of the actual basis of retention. It seems that there is no choice but to punish the entity for undue delay due to the economic impact that results from such<sup>132</sup>.

Parties are also requested to promote and facilitate scientific and technical research and monitoring. This consists in exchanging data between parties after one applies for such information. This States' co-operation has several facets. Indeed, active co-operation in the transfer of technology and regional co-operation are principles laid down in the general obligations in Article 13 of the Convention in 2004. The latter provides for the implementation of technical assistance between parties. Such support consists in staff training assistance and technology availability. This means that the technology developed for ballast water management systems should not be financially inaccessible to ship-owners, as well as the entities responsible for checks and controls. And finally, States are required to report back to IMO, by supplying any information about any requirements and procedures relating to the implementation of the Convention, the location and availability of any reception facilities and any non-compliance to the Convention for ship's safety<sup>133</sup>. Another facet to this co-operation obligation will be described in the following paragraph.

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<sup>129</sup> Equivalent des « Affaires Maritimes » en France.

<sup>130</sup> See Annex 1, Règle C-1 .2, p.22.

<sup>131</sup> See Annex 1, Article 12, p.9.

<sup>132</sup> Notons déjà que cet impact économique peut être relatif à une pénalité pour inexécution du contrat, des dommages et intérêts à la marchandise, une perte d'un futur contrat ou d'un client, des surestaries.

<sup>133</sup> See Annex 1, Article 14, p. 9 et 10.

Finally, States are subject to other obligations following an offense. In case of infringement, the 2004 Convention provides the notification procedure to be followed<sup>134</sup>. The State must prepare a report with the relevant evidence. Then it must inform any relevant matter to the administration responsible for the ship<sup>135</sup> (the flag state), the agency responsible for issuing the certificate<sup>136</sup> and the next port of call. This provision is consistent with article 8 of the Convention relating to violations.

Then, article 10 imposes a duty of co-operation between States, for violation research and ships' control. A party must not be more lenient than another, simply by virtue of the principle of reciprocity<sup>137</sup>. In addition, data exchange enables offenders' prosecution and punishment. The more the latter is actually undertaken, the more it deters offenders.

Parties' general obligations are set out in articles 2 and following of the 2004 Convention. It seems important to note that the Convention leaves considerable room for states to implement measures according to their own means and powers, which could be unfavorable to the success of the texts' original objective, notably the amount of a fine in case of violation. Also note the various co-operation obligations provided to ensure the implementation and enforcement of this Convention, even though this really requires parties willingness and positive action. Finally, we can affirm the financial budget necessary to suit all these requirements and obligations and which burden professional carriers and ship-owners

### ***Obligations of the international maritime merchant industry:***

Maritime industry means mainly ship-owners, disponent owners<sup>138</sup> and captains. At first glance and quite logically, the vessel must submit to an inspection<sup>139</sup>, that it is simply a verification of on board records and certificates or an analysis of samples of ships' ballast water, or further inspection as long it does not cause undue delay<sup>140</sup>. In addition,

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<sup>134</sup> See Annex 1, Article 11, p.8.

<sup>135</sup> Sinon le Consul ou le représentant diplomatique.

<sup>136</sup> Souvent les sociétés de classifications.

<sup>137</sup> *Supra* p.34.

<sup>138</sup> Il faut faire attention dans les affrètements aux obligations de chaque partie, *Supra* p.20.

<sup>139</sup> See Annex 1, Article 9, p. 7.

<sup>140</sup> See Annex 1, Article 12, p. 9.

professional carriers must follow all regulations enforced by the contracting State to the 2004 Convention, in accordance with its provisions or any additional flag State provisions. Otherwise, their obligations are defined in the Annex entitled "Regulations for the Control and Management of Ships' Ballast Water and Sediments."<sup>141</sup>

Let's start with Section B<sup>142</sup> and in particular Regulation B-1, which refers to a "ballast water management plan" specific to a ship and requiring the accomplishment of a minimum of pre-defined criteria approved by the Administration<sup>143</sup>. This management plan will mainly describe the different procedures for managing the ships' ballast water and sediments and thus is somewhat similar in shape, to ships' safety plan.

Section E<sup>144</sup> of the annex is dedicated to "survey and certification requirements for ships' ballast water management". This section applies to ships of 400 gross tonnage and above. To sum up, the ship will need to obtain an international ballast water management certificate attesting compliance, stamped and delivered by Administration. Beforehand, note that Administration assumes full responsibility for certificate deliverance. Therefore if this issuance is delegated to a classification society, the latter will be held responsible in the event of improper certificate issuance.

Officers and crew members' familiarity to tasks related to the management of ballast water and to the management plan, is referred to in Regulation B-6<sup>145</sup>. Thus, demonstrates the staff training requirement set out by the Convention and therefore the extra financial cost required for its implementation<sup>146</sup>.

Thereafter, the ship must possess an on board ballast water record book, which must be accessible for a minimum of three years. Thus, if after three years<sup>147</sup> the ship is not pursued, proving mismanagement would be difficult. Any operation relating to ballast water management must be entered in the book and then signed by the Master. The latter will set grounds for the Masters' liability in the case of fraud. Moreover, it is interesting to

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<sup>141</sup> See Annex 1, p.15.

<sup>142</sup> See Annex 1, p. 18.

<sup>143</sup> « Administration » désigne selon l'article 1.1 de la Convention « Gouvernement de l'Etat sous l'autorité duquel le navire est exploité », par exemple l'Etat pavillon, ou encore l'Etat côtier pour les plates formes flottantes.

<sup>144</sup> See Annex 1, p. 26.

<sup>145</sup> See Annex 1, p. 21.

<sup>146</sup> *Infra*, p. 64.

<sup>147</sup> See Annex 1, Règle B-2 .2, p. 19.

note that the record book is to be kept in the working language of the ship<sup>148</sup>, but if this language is not Spanish, French or English, the entries shall contain a translation into one of these three languages. Thus, we may suggest this requires one of these three languages to be mastered on board (which is often the case) in order to avoid duplicates. Nevertheless, in case of dispute between the original text and the translation, prevails the language of the flag the ship sails<sup>149</sup>.

We can therefore conclude that although the text of the Convention itself sets out parties obligations, the text also sets out in the Annex to this Convention a number of obligations that affect particularly the maritime merchant industry, and ballast water management mechanism manufacturers. Before viewing what legal solution the Convention provides in the case of sanctions, we can note ships' exception to any violation. Indeed, Regulation B-4, requires ships to conduct "whenever possible" ballast water exchange at least 200 nautical miles from the nearest land<sup>150</sup> and in water at least 200 meters deep. However, the Master can violate these rules if such ballast water exchange would compromise the stability or safety of the ship. Thus, note the primacy of safety over any other measure even environmental, and comparable to international provisions for the security of ships. This exception identified we should now proceed to view the Conventions' provided sanctions.

## **2§ Sanctions:**

The danger of invasive species is also present on land; hence the existence of quarantines, however this danger is more prominent in the marine environment because of the difficulty of sequestering introduced species and the prior ignorance of the consequences of the introduction of an alien species. Indeed one does not really notice any

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<sup>148</sup> « Langue de travail du navire » Notion qui selon les dispositions de la convention du travail maritime de 2006 de l'OIT veut qu'il soit fixé et consigné une langue de travail commune que tout membre de l'équipage comprenne et puisse communiquer en retour. Reprise dans la Directive 2001/25/CE du Parlement européen et du Conseil du 4 avril 2001 concernant le niveau minimal de formation des gens de mer, JO L 136, 18 mai 2001, p. 17.

<sup>149</sup> See Annex 1, Règle B-2 .5, p. 19.

<sup>150</sup> Ou encore si ce n'est pas possible à 50 miles au moins de la terre la plus proche et par 200 mètre de fond au moins. Ce qui importe est la profondeur des eaux, en effet on peut considérer que la possibilité de survie d'une espèce est diminuée s'il se retrouve dans un fond marin obscur.

transfer during de-ballasting, one only sees sea water and this is a crucial fact for the implementation of surveillance and also sanctions in the 2004 Convention.

Coming back to article 7 of the Convention and the ability of parties to set penalties for non-compliance and as mentioned above<sup>151</sup>, the State where the violation was committed can pursue and sanction the ship itself, and/or the flag state of the vessel may do so. This last point is quite critical, not only the State must fix the sanction, which is mostly a monetary fine, but also the State must apply the sanction, leaving it possible to omit the implementation of the Convention twice. In addition we might ask whether a flag State is actually the best solution to appropriately sanction contravening ships. Indeed it seems that a conflict of interest could proliferate. Why would a State want to sanction appropriately and heavily a ship-owner, when the latter could be likely to withdraw its fleet of this flag State? While there is recognition of a certain status of flag States, is such recognition enough? Especially once one heavy financial impact to comply with the Convention has already burdened their vessels. These are questions that require discussion which will be developed hereafter<sup>152</sup>.

We must assume that the objective of a sanction in the case of non-compliance with the provisions for ships' ballast water or sediments discharge is not a remedial sanction. The introduction of invasive species or pathogens in an ecosystem is a posteriori uncontrollable and the consequences are found to be irreversible. The fine has therefore a dissuasive function and it is important to note, because if it does not fulfill this function it will be worthless. In addition, the sanction must be applied as soon as the risk of a potential introduction has taken place. In other words the sanction must not only serve to punish for a proven introduction of alien species, because there too the fine would not be dissuasive. Another very important point that was mentioned earlier is the amount of the fine and should be carefully considered by parties when determining it. The fine must be greater than the cost of setting up a management system, training personnel, record keeping, adopting a management plan, and finally the operation of ballast water management

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<sup>151</sup> *Supra* p. 42.

<sup>152</sup> *Infra* p. 64.

itself<sup>153</sup>. That said nothing prevents parties from establishing criminal offenses as imprisonment of ships' Master. In this way any sanction will be alleged as sufficiently severe, discouraging any violations to the Convention.

Effectiveness of this legal solution to prevent pollution is low if it cannot prevent it. We may wonder to whom the fine is awarded in the case of violating the 2004 Convention. Is it used for the governments' budget? Are the professionally grieved, such as fishermen for example, repaired after the introduction of invasive species? It seems that there is no provision in the 2004 Convention and it will be down to States to introduce in their legislation such additional measures. This point may not have been given much importance due to the greater technical issues the Convention has preferred to bring legal solutions to.

## **Section 2 – The contribution of innovative legal solutions**

The innovative aspect of the 2004 Convention is its technical and technological provisions. Indeed, while IMO resolutions were based on existing control methods, the Convention was drafted before the appropriate technology was made available. As previously seen<sup>154</sup> the drafters of the Convention incorporated the precautionary principle, according to which the lack of efficient technology was not a sufficient excuse to legally deal with the situation of coastal ballasting and de-ballasting. These material technical inputs first establish a goal for manufacturers, but also have implications on the harmonization of standards for ballast water management.

### **1§ Providing a technical and technological input:**

The drafting of the 2004 Convention needed to provide ways to prevent the transfer of invasive species which could be performed within a short period of time, while

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<sup>153</sup> Et même de la possible répercussion financière sur le prix de fret.

<sup>154</sup> *Supra* p.36

remaining environmentally safe<sup>155</sup>. The 2004 Convention distinguishes the standard of ballast water exchange and the standard of ballast water performance.

***Technical regulations provided in the 2004 Convention:***

Under the provisions of the Convention and notably Section D regulations<sup>156</sup> of the Annex, a time limit to comply with the standards is given to ship-owners. This time limit will depend on the year the ship was built and its ballast water capacity and will respectively require a certain criterion of management. According to regulation D-1, ships have to exchange at least 95% of ballast water<sup>157</sup>. According to regulation D-2, the ship's ballast water must present a certain quality of water (a minimal amount of living organisms)<sup>158</sup>. The following table reproduces the provided chronology.

<b>Ship built</b>	<b>Ballast Water Capacity</b>			
	<b>Inferior to 1500 m3</b>	<b>Between 1500 and 5000 m3</b>	<b>Inferior to 5000 m3</b>	<b>Superior to 5000 m3</b>
<b>before 2009</b>	Regulation D-1 or D-2 upto 2016/ then D-2	Regulation D-1 or D-2 upto 2014/ then D-2	-	Regulation D-1 or D-2 upto 2016/ then D-2
<b>in 2009 or after</b>	-	-	Regulatio D-2	-
<b>in 2009 or after and before 2012</b>	-	-	-	Regulation D-1 or D-2 upto 2016/ then D-2
<b>in 2012 or after</b>	-	-	-	Regulation D-2

As the 2004 Convention is not yet in force, one could believe that a time extension may be granted. However, it seems clear that IMO does not wish to further delay the Conventions' entry into force. Note therefore, that aiming towards eliminating alien species transfers all together, after 2016 only regulation D-2 will be applicable. This rule will also apply to any ship built in 2012 or later.

<sup>155</sup> Pour toute nouvelle mesure protectrice de l'environnement il faut s'assurer que les moyens mis en œuvre pour se conformer à cette mesure ne portent pas eux-mêmes atteinte à l'environnement. Cela s'avère n'être pas toujours aussi facile qu'il n'y paraît, car il faut penser à tout les niveaux de vie du produit et/ou moyen utilisé.

<sup>156</sup> See Annex 1, p.23.

<sup>157</sup> A une certaine distance des côtes par renvoi à la règle B-4, See Annex 1, p.20.

<sup>158</sup> Cette règle est très scientifique et intéressera surtout les industries, fabricants de systèmes de gestion des eaux de ballast.

The renewal of ballast water in international waters, proposed regulation D-1 provides a cost-effective solution. Nevertheless, such solution is not always a choice a Master may take, for example when crossing the Mediterranean or the Channel. The transfer of harmful aquatic species is potential even in these areas<sup>159</sup>. This last point demonstrates the different difficulties encountered by European States and the States of North America for example<sup>160</sup>. Additionally, the exchange method is neither environmentally efficient nor efficient in terms of security. Not only it is difficult to remove all residual water and sediment from the bottom of ballast tanks by simple exchange, some organisms cling to ships' tanks inner walls and structures and would not be removed. But also, the practice of ballast water exchange during bad weather is very risky for the stability and thus the safety of the ship<sup>161</sup>.

***Selection criteria of water ballast treatment system:***

Once in force, maritime merchant industry will need to consider several factors when choosing a ballast water management mechanism. Firstly, that they are guaranteed that the chosen system complies with the requisitions of the 2004 Convention. The size of the emplacement needed for the installation of the system compared to the available space on board. The amount of energy used for operating the system. The pumping capacity and the effect on output flow. Then not only the costs of installing the system but also the costs incurred for maintenance, parts replacement, active substances, the necessary training for its operation or repair in case of system failure<sup>162</sup>.

Different proposed techniques have been put to the test, including thermal or ultraviolet treatment, physical separation of organisms by filtration and the use of chemical biocides. Chemical biocides include the use of ozone molecules, oxidizing and non-oxidizing agents. But as the name suggests the use of chemicals can be detrimental to the marine

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<sup>159</sup> A titre d'exemple lors du débarquement sur les côtes normandes, les navires britanniques ont introduit la crépidule, espèce invasive qui est toujours présente aujourd'hui.

<sup>160</sup> Si un pays européen décide seul d'instaurer des mesures strictes en matière de gestion des eaux de ballast, le risque d'un détournement du trafic maritime est énorme. *See* l'article : Convention de gestion des eaux de ballast, 21 juin 2005, Armateurs de France

<sup>161</sup> "Marine Bioinvasions Fact Sheet: Ballast Water Treatment Options", Corrina Chase, Christine Reilly et Judith Pederson, Ph.D, décembre 2002, Massachusetts Institute of Technology Sea Grant, [available online] <http://massbay.mit.edu/resources/pdf/ballast-treat.pdf>.

<sup>162</sup> "Feature : Ballast Water Treatment", p. 10 et 12, février 2010, Solutions Magazine



environment and dangerous to the safety of the crew handling these products. Also, rust is a reaction due to oxidation. Filtration is seen as quite expensive, time consuming and ineffective for the elimination of microorganisms. It requires to be combined with an ultraviolet treatment system which is renowned to be most effective with microorganisms<sup>163</sup>.

These techniques must always take into account environmental risks and ensure they avoid replacing one potential harm by another potential harm to the marine environment. This does not solely concern chemical treatment but also the materials used to manufacture ballast water management systems, which could be for example non-recyclable waste and be harmful to the environment in future. Many parameters are therefore to be taken into account.

Finally, we can observe that the desire to find a solution adapted to shipping without causing perpetual severe constraints, was used to push technology research and development and enabled to put out a compact, efficient, cheaper, and above all environmentally safe mechanism. It is now time to reflect on the consequences such technical solutions bring.

## **2§ Consequences of technical input:**

Before studying the consequences of the technical contribution of the 2004 Convention, one should note regulation D-4's exception concerning "prototype ballast water treatment technologies<sup>164</sup>". Under this rule, any vessel that participates in a program approved by the Administration, in order to test and evaluate promising ballast water treatment technology prior to the date on which the standard in regulation D-2 would otherwise become effective<sup>165</sup>, will not be required to apply such standard for a period of five years from the date on which it would otherwise be required to comply. Moreover, if such participation for ballast water treatment technology has the potential to result in

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<sup>163</sup> "Marine Bioinvasions Fact Sheet: Ballast Water Treatment Options", Corrina Chase, Christine Reilly et Judith Pederson, Ph.D, décembre 2002, Massachusetts Institute of Technology Sea Grant

<sup>164</sup> See Annex 1, p. 24.

<sup>165</sup> Dans tous les cas ce sera 2016 au dernier délai.

achieving a higher standard than that of regulation D-2 and the ship is involved even after the date on which the D-2 standard becomes applicable, the latter will not be applicable either for a period of five years after the date on which the ship is equipped with such prototype technology.

We may now view the consequences of technical contribution of the Convention which can be divided in legal and practical consequences.

***Legal consequences:***

One of the legal consequences to the technical solutions brought by the 2004 Convention is the shipping industry's obligation to comply with these provisions. According to regulation D-3.2<sup>166</sup>, this compliance must be met through the approval of the ballast water management by the administration and in accordance with IMO guidelines. This regulation provides in its point 2 that ballast water management systems using active substances or preparations containing one or more active substances, must not only meet the requirements of that text, but also receive IMO's prior approval. The term "active substance" is carefully defined in the Annex at regulation A-1 .7 as "a substance or organism including a virus or a fungus that has a general or specific action against harmful aquatic organisms and pathogens"<sup>167</sup>. In order to harmonize, IMO takes care of the approval of active substances, surely in order to keep control over the means taken to combat invasive species, and especially to keep an eye on processes that could harm the environment.

To each requirement should apply a sanction. The sanction for non compliance with the Conventions' criterions may be found in article 8<sup>168</sup> and consists in a series of administrative procedures and a predetermined penalty.

These legal consequences lead to important practical consequences it is now time to study.

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<sup>166</sup> See Annex 1, Règle D-3, p. 24.

<sup>167</sup> See, Annex 1, p. 16.

<sup>168</sup> See, Annex 1, p. 6.

***Practical consequences:***

The first practical consequence to the technical contribution of the 2004 Convention is the time it requires for compliance. Indeed, the series of surveys, approvals and certification of ballast water treatment systems will logically lead to an administrative delay. To this more delay may be added because of the number of applications for certification. The following year of the Conventions' entry into force may clog administration, not yet ready itself. Also the ship-owners will suffer financial consequences due to installation, approval, training and maintenance of a ballast water treatment system.

Moreover, differences in supervisory practices can be identified. When undertaking their surveys, port authorities will seek, with respect to regulation D-1, a certain salinity, whereas with respect to regulation D-2 they will seek the presence of microbes such as "Vibrio cholerae, Escherichia coli, Intestinal Enterococci ".

Technical ways for indicating the date and time of activation of a ballast water treatment system, with reference to the machine used and which could be transmitted without possible modification to the port authorities before port entry, could help save valuable time and prevention concerning ballast water performance standards. It seems that such a technical addition would help port authorities carry out verifications and attest actual use of installed treatment system, although this depends on whether it is actually possible.

Finally, note that as a result of the legal technical contributions, we are faced with a situation of ship-owners stand-by. In February 2010, the few treatment systems installed on board ships were installed as prototype tests and were part of the mechanisms approval process<sup>169</sup>. Nevertheless, the manufacturer "Wilhelmsen Technical Solutions' managed to sell five copies of Unitor Ballast Water Treatment Systems in Chinese shipyards just over a year after<sup>170</sup>. Note that this type of ballast water treatment system is adaptable to any type of ship, which benefits being fairly recognized worldwide and will obtain buyers trust. Yet some remain septic to shippers' autonomy in installing ballast water mechanisms. *"Until the proposed international, regional and local regulations are ratified and/or finalized,*

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<sup>169</sup> "Feature : Ballast Water Treatment", p. 12, février 2010, Solutions Magazine.

<sup>170</sup> "First Chinese Orders Received for Unitor Ballast Water Treatment Systems", Maritime Executive, 31 mars 2011, [available online] [www.maritime-executive.com/article/first-chinese-orders-received-for-unitor-ballast-water-treatment-systems](http://www.maritime-executive.com/article/first-chinese-orders-received-for-unitor-ballast-water-treatment-systems)

*there is a great deal of uncertainty among ship operators as to how they should proceed with their system selections<sup>171</sup>.*”, Kirsi Tikka, Vice President of Global Technology and Business Development at ABS<sup>172</sup> confirms by this phrase that until an international standard or other regulation is finalized and implemented, carriers will be uncertain about their choice of ballast water treatment system.

While many mechanisms have been approved, the Conventions’ required number of ratifications has not yet been reached, suggesting that there is an underlying problem with the initial excuse of lack of adequate technology and which brings us to analyze the effectiveness of the 2004 Convention provisions.

## **Chapter 2. Moderate efficacy of the 2004 Convention**

From the choice of title, this chapter seems to state that it does not matter whether the Convention enters into force or not. However this is not the case. The terms "moderate efficacy" of the 2004 Convention which will be developed in the later sections of this paper establishes a critical analysis of a conventional standard’s limits and of the limits imposed in particular by the Convention on the management of ships’ ballast water and sediments. Such criticisms are quite simple to make once the text is written, but we must not forget that this Convention is the result of many years of debate, an international consensus, it is the first of its kind and it provides a necessary legal solution and a fundamental basis for the prevention of introductions of harmful aquatic species and pathogens around the world.

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<sup>171</sup> “The Practical Realities of Ballast Water Treatment Systems”, Maritime Executive, 23 mai 2011, [available online] <http://www.maritime-executive.com/article/the-practical-realities-of-ballast-water-treatment-systems>

<sup>172</sup> ABS est la société de classification des Etats-Unis, [www.eagle.org](http://www.eagle.org), équivalent du Bureau Veritas en France

## **Section 1 – Classic limits to international conventional norms**

Any international agreement can be criticized following the classic limits of an international conventional standard. By classic limits we may first see State sanctions. Then we can pursue to other characteristics of a conventional standard, which, despite the fact some are surmountable, the current status of the 2004 Convention does beg to differ.

### **1§ Limits to State sanctions:**

Parties to the 2004 Convention are the States. It is they who must implement the provisions of the Convention and ensure checking the effectiveness of its application in their jurisdiction. However, if a state fails to implement required measures, to practice ships' controls, to provide IMO with the required information on its practices relating to management, to have adequate port reception facilities and to accordingly sanction ship-owners, which institution has the power to uphold States' responsibility for breach of the Conventions' provision?

Following the international public law principle of "State sovereignty", each state has full and exclusive jurisdiction within its territory. So no other State or institution can interfere in its internal affairs. Indeed, a State is always regarded as supreme entity or institution that cannot be forced to do something. In modern times, this thesis is limited in some aspects and in particular with regards to human rights. This principle founds States liberty to access or not an international convention. And from there we can assume that this free choice of access to the convention establishes the will of a State to enforce the provisions thereof and will therefore generally in practice be followed by the State.

In addition, every state has the ability to make reservations whilst ratifying a convention, or even to denounce it. In the case of the 2004 Convention, article 20 provides that denunciation can take place "at any time after the expiry of a period of two years from the date on which it enters into force for that party<sup>173</sup>". That is to say three years from

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<sup>173</sup> See Annex 1, Article 20, p. 13.

obtaining the required ratifications, or if ratified after the Convention entered into force therefore directly after its ratification. Such denunciation shall take effect one year after depositary's<sup>174</sup> receipt of written notification.

Moreover, although the principle of reciprocity, according to which the State is obliged to apply the standards of a convention based on the application of these standards by the other parties to this agreement, establishes States willingness to comply. However, this principle may also prove to be an escape route by which a State will oppose their non-compliance with an agreement to the non-compliance of another State.

Understand that the absence of a supra-State norm prevents States' responsibility to come into play. For without a supranational entity, States are not under the risk of any real sanction, a part from formal notices from IMO. In the European Union, for example, the Commission has the power to sanction States for non-compliance to European treaties.

The 2004 Convention provides in article 15<sup>175</sup> for dispute settlement, arising between the parties regarding the interpretation or application thereof by pacific and amicable methods of resolution, including "negotiation, enquiry, mediation, conciliation, arbitration, judicial settlement, resort to regional agencies or arrangements or other peaceful means of their own choice". The problem with all these means of settlement is that they require the States willingness to follow through and comply.

The settlement of a dispute by the International Court of Justice presents the same defect. Its competence depends on States willingness to submit to its jurisdiction. As for the recent creation of the "International Tribunal for the Law of the Sea<sup>176</sup>" its jurisdiction is limited to disputes submitted by States again, and created by the rules of the Convention on the Law of the Sea. So again, there is no supranational institution that could jeopardize States' responsibility for breach of the 2004 Convention.

Real limits are found through the lack of contracting States' sanctions; still they are not the only ones that contradict the interests of a conventional standard.

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<sup>174</sup> C'est-à-dire le Secrétaire Général de l'OMI.

<sup>175</sup> *See*, Annex 1 p. 10

<sup>176</sup> Créée par la Convention UNCLOS de 1982, siégeant à Hambourg.

## **2§ Other causes of convention ineffectiveness:**

Although, the place in the hierarchy of an international convention is supra-legislative, the Convention must actually be in force to become effective. There are eight original signatory States which have not yet ratified the 2004 Convention, including Argentina and Brazil, yet great supporters of the need for standards in ballast water management. Is it due to the long wait to reach an international consensus and therefore some States' decision to adopt domestic law to prevent the introduction of invasive species in their waters?

The application of an international convention in French law requires several procedural steps. First of all, the signature of an international convention is a sort of States' prior commitment, but this does not generate any mandatory action in line with the provisions of the convention<sup>177</sup>. Note that the United Nations Convention on the carriage of goods by sea<sup>178</sup>, commonly named the "Hamburg Rules", was adopted by the signing a certain number of countries on March 31, 1978, nevertheless all these countries have ratified and implemented it to this date.

Secondly, as regards ratification. A similarity can be noticed in comparison to other IMO conventions relating to ratification rules<sup>179</sup>. Indeed, the articles 17 and following of the 2004 Convention<sup>180</sup> recall that ratification is required by "at least 30 states, the combined merchant fleets<sup>181</sup> of which constitute not less than 35% of the gross tonnage of the world's merchant shipping<sup>182</sup>" for an entry into force 12 months after. Thus States with a merest gross tonnage or even nonexistent will weigh accordingly less for the Conventions' entry into force. It is an intelligent rule and ensures the legitimacy and strength of the text later on by proving the common will to solve a global problem. But it also helps ensure that

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<sup>177</sup> A moins que ce ne soit un traité en forme simplifiée, ce qui n'est pas possible dans le cas d'une convention de l'OMI.

<sup>178</sup> Convention adoptée en 1978 par le CNUDCI.

<sup>179</sup> Ce même procédé a été mis en œuvre pour la mise en vigueur de la convention MARPOL, cependant requérant la ratification par au moins 15 Etats représentant au moins 50% du tonnage de la flotte marchande.

<sup>180</sup> *See*, Annex 1, p. 10 et 11.

<sup>181</sup> Notons la focalisation sur les navires de commerce.

<sup>182</sup> *See*, Annex 1, Article 18 p. 11.

States and the shipping industry, most affected by the implementation of the text, will have a vote of greater weight than other States, often landlocked, which have no real interest in the Convention anyway. But is this really the case with the 2004 Convention? That is to say, do countries without a significant tonnage of merchant fleet, or even without any merchant fleet, have no real interest in an early entry into force of this Convention? It seems that in the case of the introduction of invasive species, many more people than only States with access to shipping routes and shipping companies have an overriding interest in the implementation of this Convention. By simply observing a map<sup>183</sup> concerning the spread of an alien species by way of ships' ballast water and sediments, we can see that the problem is much more than solely a coastal matter.

For an example among many, the propagation of the Golden mussel native to South China Sea, is over 240 Km per year in the Amazon. Over 100 km from a country's coast should not be literally considered a coastal matter. We can therefore regret IMO's choice to implement such a strict entry into force, when all world populations are affected<sup>184</sup>. Today there is concern that, despite IMO's continued willingness and its urging States to take the necessary steps to ratify the Convention to finally see its implementation, States which have not yet ratified this text no longer have "the excuse of lack of technology"<sup>185</sup> and therefore do not seem to really have the will to implement the Convention in the future. The ratification process is quite strict and can demonstrate a global reluctance even when consensus was reached. Maybe is it due to the lack of technological support at the time of adoption? It is rather unfortunate because the procedure of tacit acceptance<sup>186</sup> demonstrates the flexible nature of the standards established by the 2004 Convention.

Although we have previously discussed the benefit of an international convention by its uniform interpretation<sup>187</sup>, the contrary view reflects the moderate efficacy of such an international standard. Indeed, Professor Pierre Bonassies notes in the first part of the Treaty of maritime law, the absence in international maritime law of "international

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<sup>183</sup> See Annex 7

<sup>184</sup> On peut croire que le tonnage de flotte marchande importe beaucoup car ce sont eux qui doivent financer tout changement suite à l'entrée en vigueur de réglementation en matière de gestion des eaux de ballast, il faut donc voir que le facteur économique a pris le dessus sur le facteur humain et sanitaire.

<sup>185</sup> « Eaux de ballast : des normes plus dures mais sans cadre », Marie Caillerie, *Le Marin*, 15 avril 2011, numéro 3327, p.4.

<sup>186</sup> *Supra* p.35

<sup>187</sup> *Supra* p.34



mechanism to unify the interpretation of texts, unlike European law, where the ECJ , Court of Justice of the European Union<sup>188</sup>, may be seized by a court of a Member State of the European Union for the interpretation of any European text. As a result, State courts having ratified an international convention are likely to interpret the convention from their own legal tradition<sup>189</sup>". This thesis contradicts the thesis of the interest of an international convention which harmonizes legal systems on a particular subject of law. Because, if the interpretation of conventional standards is not uniform according to contracting States, the uniformity sought is heterogeneous. Despite this, however, IMO takes care in adopting guidelines and recommendations including advice on how to implement their conventions. These recommendations are not binding but it is hoped that their incorporation into domestic law by some States and their use during debates of interpretation of a convention, will ensure a uniform interpretation and application of the provisions of conventions.

The inability to sanction States which do not respect the Convention, once ratified, is a limit to the effectiveness of the Conventions' provisions. However, while the 2004 Convention is not yet in force, we observe that the ratification procedure is quite rigid compared to the amendments to the convention once implemented. And this is the main limitation of this Convention which to date is not in force. Still this major limitation and actual absence of sufficient ratifications could be explained by the technological and financial limits set out in the 2004 Convention.

## **Section 2 – Technological and financial limits to the 2004 Convention:**

Both technological and financial limits can be respectively seen as an uncertainty and as a barrier to the willingness of States to engage in the 2004 Convention.

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<sup>188</sup> Anciennement dénommé « Cour de justice des Communautés européennes » CJCE

<sup>189</sup> Les institutions générales du droit maritime, les normes du droit maritime, p.17, Pierre Bonassies et Christian Scapel, Traité de droit maritime, L.G.D.J, 2010, 2<sup>e</sup> édition

## **1§ Technological limits:**

If the 2004 Convention is today obviously still necessary, one wonders if it will always be or if not for how long it will be required. Indeed technological progress is fast enough, considering the fact that when the Convention was drafted treatment mechanisms did not yet exist.

Ship-owners are facing uncertainty, firstly concerning ballast water treatment mechanisms to install aboard their ship, and on the legislation stipulating the required standards. Indeed, regulation D-5 of the Annex<sup>190</sup> to the 2004 Convention introduced IMO's review of standards for ballast water management, "will take effect no later than three years before the earliest effective date of the standard set forth in regulation D-2". Considering that in 2016 (deadline), regulation D-2 is supposed to take effect, the Committee should begin to address this issue already in 2012. It would be interesting to see if the Committee will do so, as the Convention is not yet in force but it could also reassure ship-owners by resetting standards with respect to available technology.

We may also wonder whether some States prefer to simply wait for the ballast water problem to be resolved by technology. An article published by DNV<sup>191</sup> on the "Triality concept VLCC"<sup>192</sup>, launches the idea of a "VLCC fueled by liquefied natural gas, with a shell form eliminating the need for ballast water and almost removing all air pollution locally." This ship of the future was developed as DNV's innovative project and accomplishes three main goals: being the most environmentally friendly tanker, offering new solutions feasible by relying on known technology, being financially attractive in comparison to a conventional tanker. Compared with the conventional VLCC, the Triality concept VLCC totally eliminates the need for ballast water because of its V-shaped hull. Other types of tankers, such as Aframax and Suezmax, will also require a reduced amount of ballast water. Because of a new hull shape, the surface submerged will be lesser and its capacity of propulsion will be more efficient. This concept provides an example of the

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<sup>190</sup> See Annex1, p.25

<sup>191</sup> Société de classification norvégienne et équivalent du Bureau Veritas français

<sup>192</sup> « A major step towards the new environmental era for tanker shipping », DNV press release, 27 décembre 2010 (Avancée majeure vers une nouvelle ère environnemental pour le transport en navire-citerne.)

possibility of producing a more environmentally friendly ship while having operations and maintenance cost lower than the current state.

Knowing that an empty conventional VLCC must carry between 80 000 and 100 000 tons of ballast water to completely immerse the propeller, to have a draft forward and ensure sufficient stability of the ship, and knowing the potential danger of invasive species found therein, the amount of fuel necessary for the transport of water and the cost of maintaining ballast compartments, this concept has a good chance of success in the shipping world. But how long will it take before the shipping world is completely revolved and the problem of ballast water is completely eliminated by their absence in need? It seems that this vision is still quite distant from the near future, and so we focus on feasible solutions of tomorrow.

By focusing on tomorrow, another technical problem may arise after the entry into force of the 2004 Convention being the boom of shipyards. Indeed, after waiting for ship-owners to be sure of the type of management mechanism and also probably to wait until prices fall and the first technological flaws emerge, once the Convention implemented they must comply with its provisions. According to a recent DNV article<sup>193</sup> dated June 2011, the risk after the entry into force of this Convention will be the boom in shipbuilding, for the installment of ships' ballast water and sediment management systems. While it remains simple to add a record book and a pen for the record there will probably lack valuable places for ship-owners to comply their fleet with the standards.

We can conclude that if the 2004 Convention provides legal solutions for new ballast water treatment technologies, these solutions bring consequences that may be adverse to its entry into force.

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<sup>193</sup> “Controlling ballast water convention risks”, DNV press release, 15 juin 2011.

## **2§ Financial limits:**

Although article 4.2 of the Convention provides that "policies and resources of each Party in the establishment of policies, strategies and programs management"<sup>194</sup> are considered, each party is required to comply with the objectives of the Convention. That is to say, there must be a minimum of capital injection to meet the many obligations of the 2004 Convention. The factors to consider in estimating the costs of implementation of the Convention and those affected by these economic consequences are discussed hereafter.

Costs can be separated into several phases, a preparatory phase, a phase associated with the obligation to comply with the provisions of the Convention. The preparatory phase would be to prepare legislatively a country and any reform that could happen there, while the second phase is to achieve compliance on a daily basis<sup>195</sup>. In addition, we could include the cost of training at various levels, meaning legislative, administrative and industrial. However the costs incurred due to the implementation of the Convention appear to be more interesting, distinguishing those, such costs burden. Several entities are involved in the Conventions' entry into force, due to the financial consequences imposed on them after it. These are the industries, including ship-owners, flag States and coastal States and ports. Two major entities are thus distinguished: party States and the ship-owners of such states.

First of all, ship-owners will bear the costs of setting up their ships' ballast water and sediments treatment system, training all crews, with perhaps the need for hiring new staff, establishing a ballast water management plan and its administrative approval and ships' certification<sup>196</sup>. In addition, ship-owners will have to pay the cost of maintaining ballast water treatment systems and of using port reception facilities and the cost generated by the simple use of the mechanism.

Then the State or delegated institution, such as classification societies, will have the burden of financial costs of an introductory course on ballast water management for

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<sup>194</sup> See Annex 1, p. 5.

<sup>195</sup> "Economic Assessment for Ballast Water Management : A Guideline", GloBallast Partnerships Programme Coordination Unit, [available online] [http://globallast.imo.org/Monograph\\_19\\_Economic\\_Assesment\\_web.pdf](http://globallast.imo.org/Monograph_19_Economic_Assesment_web.pdf) 4. Assessing and valuating costs of enacting the Convention, p. 10 à 18.

<sup>196</sup> *Ibid.*

personnel intervening in the matter, the compliance of their legislation and regulations with the provisions of the Convention, the construction of port reception facilities, the establishment of a monitoring plan and therefore the training of port officers, issuing the certificates, the communication of their regulations and procedures to IMO, the ship surveys and samples analysis, approval of exemption requests, management plan and the types of ballast water treatment systems. Regarding the ports, if part of their obligations can be integrated into existing controls, all ports worldwide do not have the same ability and success. And financial needs can vary greatly between countries. Other indirect costs are the costs of scientific monitoring of coastal data recovery and sharing<sup>197</sup>.

While the list of costs can be longer for contracting States to the Convention, it should be noted that most of these costs will be passed on to ship-owners. The latter have the burden of the majority of the responsibility and through the requirements of ballast water treatment system installations on board, they support the majority of the costs of preventing the introduction of invasive species. This is very important when considering the impact a lobby can have, such as ship-owners. Moreover when the economy of a country depends on the existence of the latter, the more weight their opinion takes. This fact may therefore explain the absence of ratification by some states, such as Greece. The cost of implementing the 2004 Convention becomes a limit to its ratification and therefore its overall effectiveness.

We then understand that this Convention appears to be very expensive to enforce and these costs affect different heads, especially the contracting States and ship-owners of these States. While the financial estimate of implementing the 2004 Convention is proved consequent, thus should not discourage it because the economic impact of introduction of invasive species can be just as, if not more consequent too. The introduction in the early 80's in Black Sea of the comb jellyfish native to North America has caused, in the space of ten years, an annual loss due to reduced fishing, estimated at USD 240 million at least. This jellyfish is supposed to have eaten in large quantities: fish eggs, larvae and zooplankton

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<sup>197</sup> “Economic Assessment for Ballast Water Management : A Guideline”, GloBallast Partnerships Programme Coordination Unit, [available online] [http://globallast.imo.org/Monograph\\_19\\_Economic\\_Assesment\\_web.pdf](http://globallast.imo.org/Monograph_19_Economic_Assesment_web.pdf) 4. Assessing and valuating costs of enacting the Convention, p. 10 à 18.

which commercially-important fish fed on. This example retains only one aspect of the direct economic impact of an alien species introduction, to correctly estimate the total impact of this introduction one should assess other direct or indirect damages it has caused. But it is conclusive that the benefits of the implementation thus outweigh the costs of implementing the Convention.

## CONCLUSION

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"Shipping is one of the safest and most environmentally benign modes of transport"<sup>198</sup>, and there is nothing more true. However, when shipping threatens marine environment or human health, the potential consequences are severe. It is somewhat comparable to air transport, the risk of accidents of travelling by air is much lower than by car, but the consequences are more drastic. Therefore it is up to the shipping industry and the States to reduce the risk such consequences arise. Harmonization of legislation relating to ballast water management has the advantage of setting a global minimum standard, when as of now there is a legal disparity in ballast water management standards. Remember that, as shipping has no frontiers, an international standard is seen as necessary, regional standards may help fight against the introduction of invasive species but it seems essential that the lute takes a global scale

IMO's objectives for the prevention of the introduction of invasive species had been achieved by half through the adoption of the 2004 Convention for the management of ships' ballast water and sediments. With a prior study of legal systems and extensive research on the problem of introduction of invasive species, the GloBallast program has allowed IMO to draft the proper justified, necessary and expected standard.

However, the Convention auto-limits itself through its ratifications criteria and while the financial consequences of its implementation are heavy, the latter are the only preventive ways available, to date, to combat alien species and their estimate can only be less than the financial impact resulting from an introduction of harmful aquatic species or pathogens. Moreover, not only the economic factor but also the important health factor should push states to react.

After a thorough study, it appears that the 2004 Convention only provides a legal basis, that said necessary, but insufficient to respond effectively in the aim of eliminating any risk of transfer of aquatic species. The GloBallast program, itself, indicates the need of States to regulate the management of ballast water in waterways within their territorial waters and

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<sup>198</sup> "Shipping Industry guidelines on Flag state Performance", Maritime International Secretariat Services Limited, 2e edition, 2006

to establish appropriate administrative control. A standard international treaty cannot solely solve the issue.

On the other hand, it appears that finding the balance between maintaining a safe environment and thriving merchant shipping appears to be very complicated, especially as those affected are not those who must comply with new regulations. This explains the fact of some States ship-owners' possible reluctance to the application of the 2004 Convention standards and perhaps even lobbying against ratification.

Four scenarios of regulation regarding ballast water management may arise after the entry into force of the 2004 Convention:

- A: 2004 Convention
- B: 2004 Convention and additional measures
- C: particular laws
- D: No legislative measure

In any case, the contracting State to the Convention may apply its provisions. What interest is there not to be part of the Convention? The disadvantage of having to submit to time limits, according to which certain technical criterions must be met, does not really arise as national standards may be much more demanding<sup>199</sup>. The advantage of not having to cooperate with other States or to report to IMO is questionable since such obligations help fight the introduction of invasive species, and the objective is the same regardless of the law. Finally, a country without measures relating to ballast water management is and puts their ship-owners in an inferior position compared to other countries that have implemented such standards. Indeed their ship-owners will be subject to at least international standards available in the 2004 Convention, while carriers doing business in the waters and under its jurisdiction will not be subject to any control or sanction, while being able to affect their ecosystem.

From the above analysis, the absence of the Convention's ratification by the United States is extremely critical. All the more so when the United States have shown their interest in combating the introduction of invasive species since the adoption of the Convention and even before, nevertheless they have chosen to propose a specific regulation. This most

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<sup>199</sup> Les mesures adoptées par l'Etat de New-York sont considérées par les armateurs comme inapplicables techniquement, cela même avec une extension de temps d'une année



certainly can be seen as the international practice of the United States<sup>200</sup>. By sorting the pros and cons of such a method of action, it seems clear that nothing supports abstinence to the IMO Convention. Indeed, it leaves countries legislation fully open to implement stricter legislation on the management of ships' ballast water and sediments. In addition, the United States ratification would edge the 2004 Convention closer to an effective entry into force, establishing global positive action to combat the transfer of invasive species and harmonizing regulations by establishing a minimum standard applicable by an undisputed majority of shippers.

Furthermore we may ask whether States have already lost patience. The enforcement of specific laws concerning ballast water management has indeed already proven to be necessary in most countries. And concerning transport through the polar front, movements of species from the Arctic to the Antarctic by ships sailing between the two areas, were identified by the Committee for environmental protection under the Treaty Antarctica. The latter agreed to hold a meeting in Stockholm in June 2005, to put into practice within the Treaty's zone, the principles governing the Convention on ballast water management before this Convention enters into force. More specifically each vessel equipped with ballast tanks entering Antarctic waters should not only be equipped with a ballast water management plan, but also hold a register of ballast water exchange. In addition, it is forbidden to discharge into these waters ballast tanks' sediments. It is finally expected that vessels which have spent a long time in the Arctic, clean their ballast tanks and discharge sediments from these operations prior to entering Antarctic waters (60°S)<sup>201</sup>. In all, the problem persists, so States do what they can. But it seems that at present, the ratification of the 2004 Convention is not a priority for some them.

Environmental compliance is now receiving higher success through commercial and social pressure besides safety and security. Indeed for many organizations the rules established by IMO are considered a minimum standard and ship-owners want to present their ships as environmentally safe<sup>202</sup>. However, even though the phenomenon has affected

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<sup>200</sup> "The United States should ratify the IMO ballast water treaty" dit l'association des autorités portuaires meme des Etats Unis dans "Federal action should prevent the introduction of Non-indigenous Aquatic Species from Ballast Water", American Association of Port Authorities, Legislative Priorities, mars 2008

<sup>201</sup> 541-38 Initiatives prises dans le cadre du Traité de l'Antarctique – Lamyline

<sup>202</sup> "Shipping is increasingly subject to environmental pressure", Sea4safety, 12 mai 2011

various parts of the world both rich and poor countries, this has not prompted States to unite under a single standard. Despite the many articles concerning this subject, the media drive may not be as strong enough or convincing as necessary

Finally we might ask whether the recent reform of French ports has raised any thoughts to future international treaty standards or if it simply took into account the need to preserve ecosystems French. Moreover, while its entry into force seems close to some, others are more skeptical and wonder what States are waiting for. So without being convinced of one or the other, we understand ship-owners possible reluctance. If it comes into force, we await to see how States develop their policies on the matter whether party countries are able to fulfill their conventional obligations and address the financial consequences they impose. On the technical side, we will always await mechanisms' evolution relating to ballast water management, including better performance and lower maintenance costs. MEPC's final approval has been granted to two treatments with active substances. It has also adopted the approval procedure for new treatment methods.

At present it seems again that problems of overfishing, or piracy security are of main focus.

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# ANNEXS

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**Annex 1**: 2004 International Convention for the control and management of ships' ballast water and sediments

*Pages of this annex are distinct from the pages of this dissertation, this is taken into account in the footnotes.*

**Annex 2:** 1793 General Admiralty Ordinances, *Ordenanzas generales de la armada naval: Parte primera. Sobre la gobernacion militar y marinera de la armada en general, y uso de sus fuerzas en la mar. Impr. de la viuda de Don J. Ibarra, 1793*

**ORDENANZAS GENERALES  
DE LA ARMADA NAVAL.**

**PARTE PRIMERA.**

SOBRE LA GOBERNACION MILITAR Y MARINERA  
DE LA ARMADA EN GENERAL,  
Y USO DE SUS FUERZAS EN LA MAR.

TOMO II.



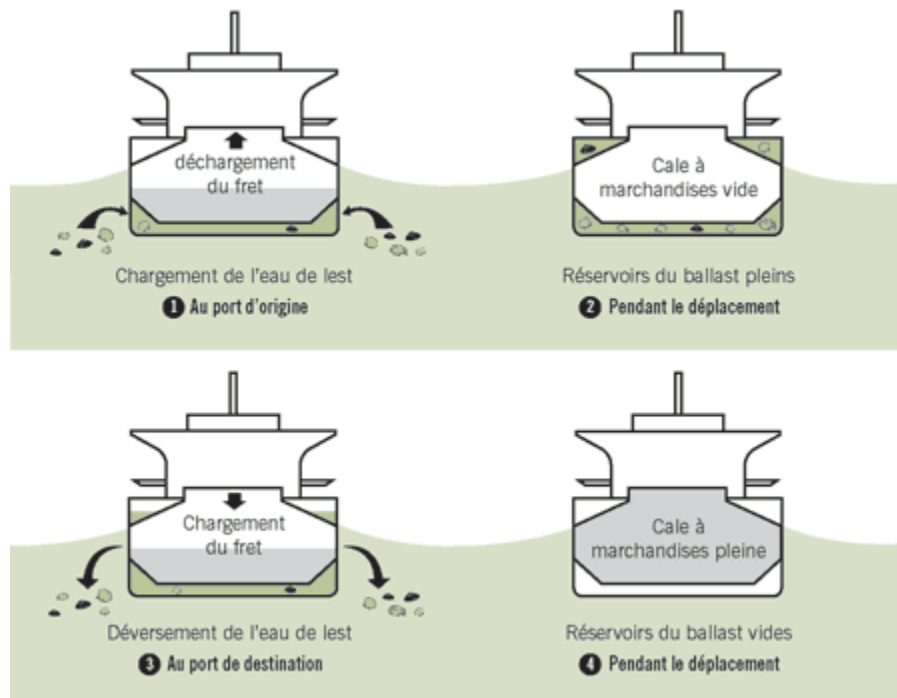
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Mucho menos podra embarcacion alguna lanzar su lastre al agua, ni lastrar ni deslastrar sino con conocimiento y licencia del Capitan de Puerto, y en el sitio que la señaláre, ya establecido con la aprobacion del Gobernador. No se tomará lastre de arena, sino en absoluta urgencia, y las faenas de lastre y deslastré se haran con las precauciones maríneras de encerrados ó velas, que impidan la caida de piedras á la mar, y con la carga del jornal ordinario á un Guarda celador, que ha de ponerse por el Director del Gremio, nombrandole por escala entre los pobres impossibilitados de asistir con parte entera á los trabajos de las quadrillas, y exclúyendose para siempre por el Capitan de Puerto de la opcion á éste beneficio al que sea cogido una vez en omision ó tolerancia contra lo que debe celar.

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En los puntos de lanzar lastre al agua ó vaciar en ella las tinas de basura, sin perjuicio de la inmediata aplicacion de la multa, procedera el Capitan de Puerto al exámen sumario conveniente de las circunstancias, para graduar si ha habido malicia determinada de daño al puertó: en cuyo caso oficiará oportunamente con el Gobernador para los extrángereros y con el Ministro para los nacionales, á fin de que se substancien autos para las mayores penas que correspondan á los reos conforme á Derecho.

**Annex 3:** Descriptive diagram of ships' ballasting and de-ballasting operations.



Source : Fonds mondial privé pour l'environnement, Programme des Nations Unies pour l'environnement, Organisation maritime internationale, Programme mondial de gestion de l'eau de lest (programme GloBallast), 2007.

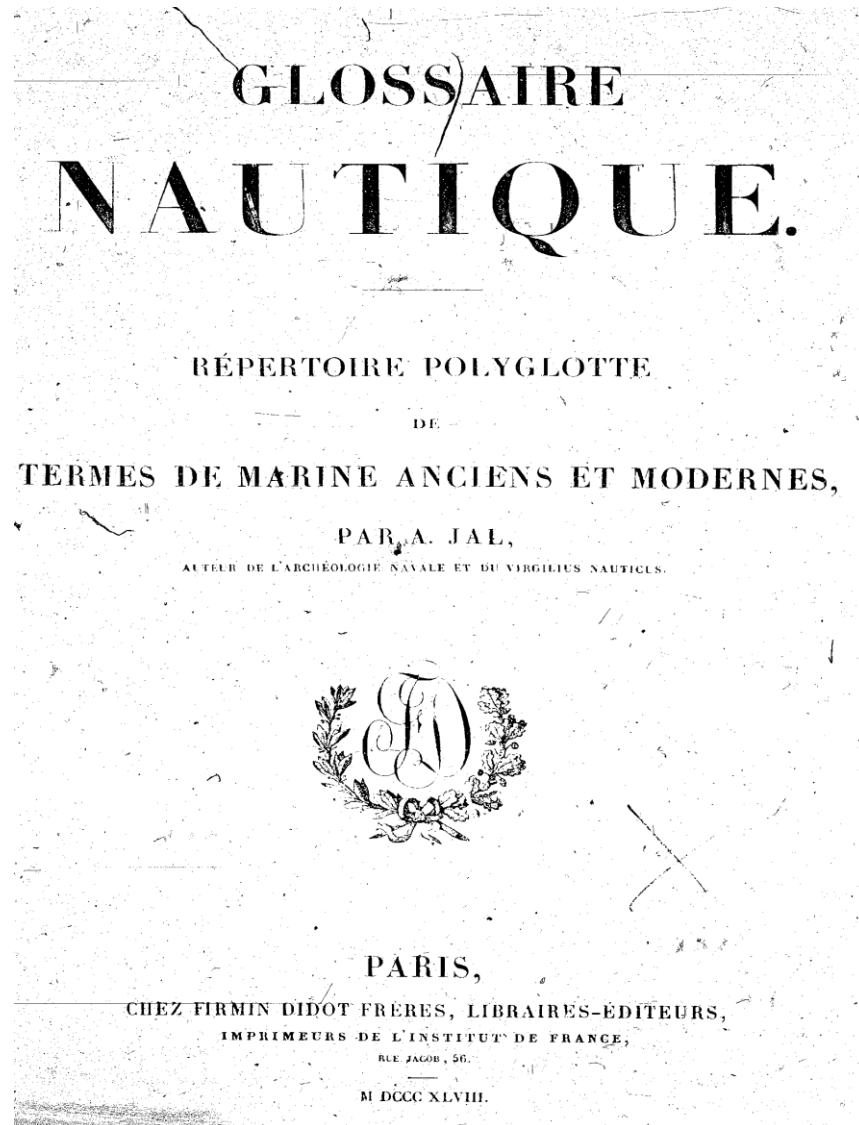
**Annex 4:** List of the worlds' top 20 merchant fleet.

Les chiffres entre parenthèses sont en tonnes brut des navires enregistrés dans les pays listés.

1. Panama (201,264,453)
2. Liberia (106,708,344)
3. Marshall Islands (62,011,182)
4. Hong Kong, China (55,543,246)
5. Bahamas (50,369,836)
6. Singapore (44,869,918)
7. Greece (40,795,358)
8. Malta (38,737,657)
9. China (34,705,141)
10. Cyprus (20,732,488)
11. Italy (17,044,319)
12. Japan (16,857,860)
13. United Kingdom (16,477,909)
14. Germany (15,282,545)
15. Norway NIS (13,828,168)
16. Republic of Korea (12,512,549)
17. United States (11,941,087)
19. Isle of Man (11,620,778)
18. Denmark DIS (11,530,364)
20. Antigua and Barbuda (10,737,659)

Source : "World Fleet Statistics 2010", IHS Fairplay, données en date du 31 décembre 2010.

**Annex 5:** Polyglot Glossary of Ancient and Modern Nautical and Marine Terms, Auguste Jal, 1848.



**BALAST**, vieux fr. et pol. s. m. (Emprunté au holl. ou à l'angl. *Ballast*. [V.] Lest.—« Le Balast ou l'est... est le sable, arène, cailloux ou Quintelage, pour tenir par la pesanteur et contre-poids le vaisseau sous bout. » Et. Cleirac, *Termes de mar.* (1634). — Le P. Fournier n'admit pas ce mot, qui fut repris par Guillet, t. III, p. 224 des *Arts de l'homme d'épée* (1683) : « Lest, Balast, Quintillage, est un amas de cailloux ou de sable qu'on met à fond de cale dans un vaisseau, etc. » — Desroches (1687) rejeta le mot Balast, qu'on retrouve dans Aubin (1702). — Vial de Clairbois, dans l'*Encyclop.* (1783), dit : « *Balast*, lest : je ne crois pas que ce mot soit français. » Assurément il n'est pas français par l'origine, mais il l'est tout autant que Lest (V.), qui a prévalu. Il est hors d'usage aujourd'hui, et il ne l'était pas tout à fait encore il y a soixante ans, puisque Vial du Clairbois prenait la peine de le recueillir. En 1777, Lescalier s'était refusé à l'admettre dans son *Vocabulaire*. Il n'est pas dans le dictionn. de Romme (1792). — On trouve le mot *Ballast* dans le *Gazophylage de la lang. franç. et flam.* de Casparus Van den Ende (Rotterdam, 1656, in-4<sup>o</sup>), partie flam.-franç. — Nous n'avons pas besoin de dire que l'*Est* est une faute de l'imprimeur d'Ét. Cleirac, car nous ne pouvons supposer qu'un homme qui s'occupait de marine ignorât la véritable orthographe d'un des termes les plus connus du vocabulaire nautique.

**BALLAST**, angl. holl. dan. all. (De l'angl.-sax. *Bat* et *Hlaest* (lest du bateau), qui, selon Wehtser, réunis et corrompus, ont fait *Ballast*. Cette étymologie ingénieuse paraît très-plausible.) Lest. — « *Guter Ballast* (all.); *goed Ballast* (holl.); *god Ballast* (dan.), Bon lest. — *Schlechter Ballast* (all.); *siegt Ballast* (holl.); *slet Balast* (dan.), Mauvais lest. — *Heavy Ballast* (angl.); *grober Ballast* (all.); *grof Ballast* (holl.); *grov Ballast* (dan.), Gros lest. — *Old Ballast* (angl.); *ondt Ballast* (holl.); *alter Ballast* (all.); *gammel Ballast* (dan.), Vieux lest, etc.

**BALLAST (to)**, angl. v. (De *Ballast*. [V.] Lester.

**BALLASTAGE**, angl. s. (De *Ballast*. [V.] Lest.—Webster ne donne pas ce mot, qu'on lit p. 17 du *Dict. de la Mar. angl.* de Romme (1804), et qui ne fut recueilli ni par Lescalier, ni par Röding. — *Ballasted*, angl., part. de *to Ballast*, Lesté, muni de lest.

**BALLASTEINLADEN**, all. s. (*Laden*, l'action de charger; *Ballast*, le lest; *ein*, un.) Lestage.

**BALLASTEVER**, all. s. Bateau lesteur. (Röding.)—V. *Ballastschute*.

**BALLASTING**, angl. s. Lest, Lestage; Lesté.

**BALLASTKAAG**, **BALLAST-LIGTER**, **BALLASTSCHUIT**, holl. s. m. Bateau lesteur. — V. *Kaag*, *Ligter*, *Schuit*.

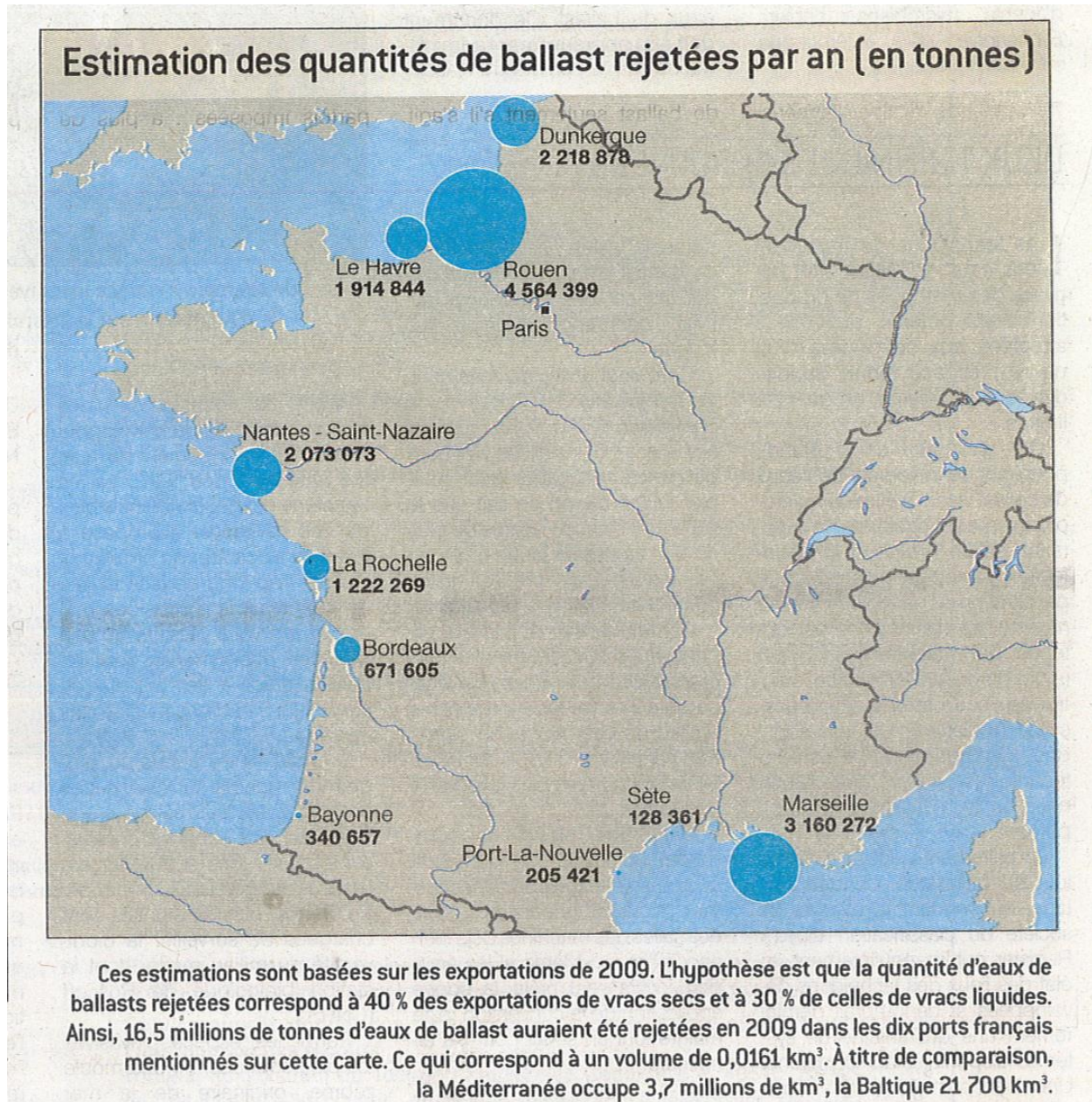
**BALLAST-LIGHTER**, angl. s. m. Bateau lesteur. — V. *Lighter*. — Romme, dans son *Dict. de la Mar. angl.* (1804), contrairement au sentiment de Lescalier et de Röding, donne, p. 17 et 199, le sens de Barquée de lest à *Ballast-Lighter*.

**BALLASTSCHUTE**, all. s. m. Bateau lesteur. — V. *Ballastever*, *Schute*.

**BALLASTEN**, all. holl. v. a. (De *Ballast*. [V.] Lester.—V. *Verballasten*.

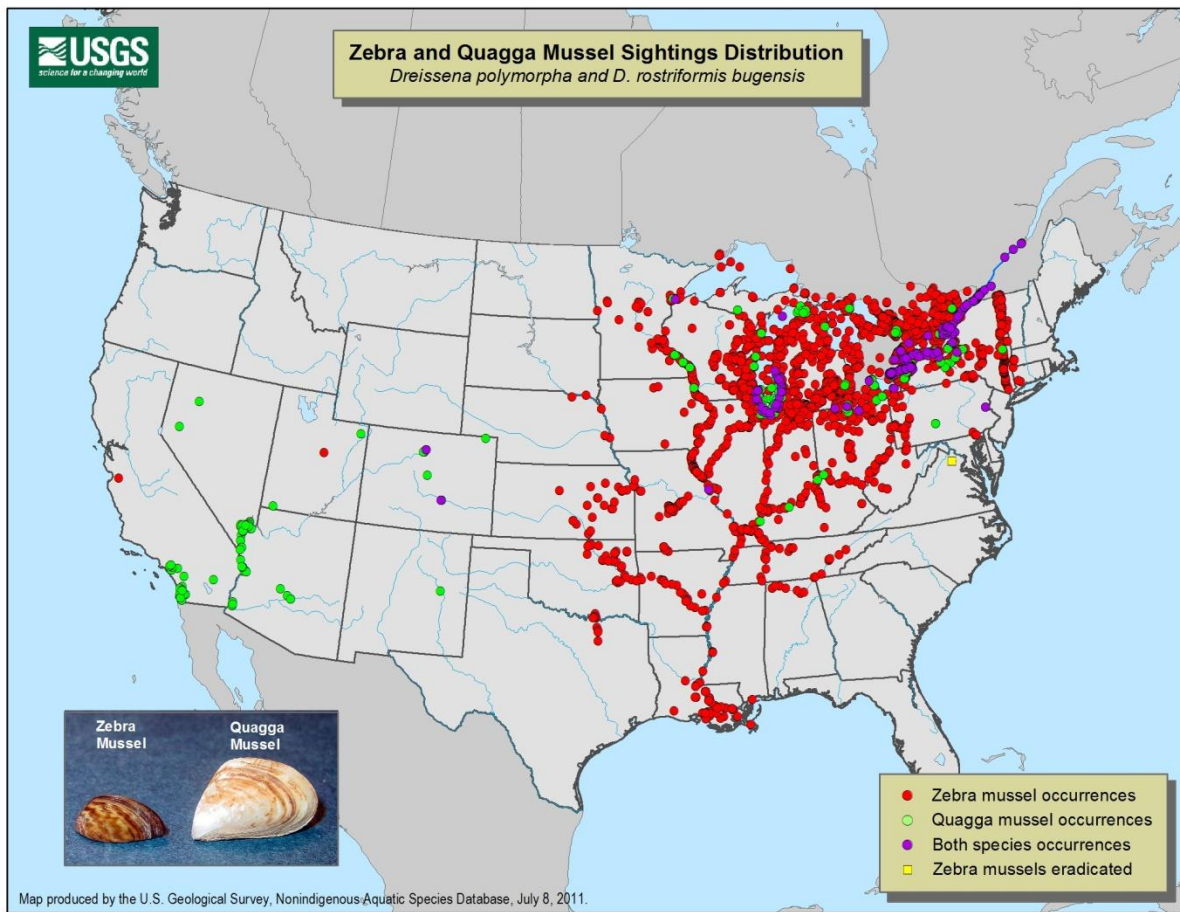


**Annex 6** : Map of France with the estimation of ballast water discharged per year (in tons).



Source : Le Marin du 15 avril 2011, p. 3.

**Annex 7** : Map of the United States with the status of invasive species propagation.



Source : US Geological Survey, Nonindigenous Aquatic Species Database, 8 juillet 2011, [en ligne]

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<a href="http://www.gesamp.org">www.gesamp.org</a>	Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection
<a href="http://www.imo.org">www.imo.org</a>	International Maritime Organisation
<a href="http://www.lamyline.lamy.fr">www.lamyline.lamy.fr</a>	Lamy fonds de documentation légal en ligne
<a href="http://www.legifrance.gouv.fr">www.legifrance.gouv.fr</a>	Légifrance
<a href="http://www.marisec.org">www.marisec.org</a>	International Chamber of Shipping, International Shipping Federation
<a href="http://www.Safety4sea.com">www.Safety4sea.com</a>	Safety4Sea
<a href="http://www.un.org">www.un.org</a>	Organisation des Nations Unies
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**« Lorsque l'homme aura coupé le dernier arbre  
Pollué la dernière goutte d'eau  
Tué le dernier animal et pêché le dernier poisson  
Alors il se rendra compte que l'argent n'est pas comestible »  
Proverbe Indien**

