

# PUBLIC POLICY RESEARCH FUNDING SCHEME

## 公共政策研究資助計劃

**Project Number :**

項目編號 :

2013.A6.022.13A

**Project Title :**

項目名稱 :

**Is the Polluter Paying? Assessing the Application of the "Polluter Pays" Principle to Ship-Source Pollution in Hong Kong**

污染者是否付費？對"污染者自付原則"在香港船舶污染運用的評估

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**Project Duration (Month):**

推行期 (月) :

12

**Funding (HK\$) :**

總金額 (HK\$) :

258,750.00

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**CENTRAL POLICY UNIT**  
**THE GOVERNMENT OF THE HONG KONG**  
**SPECIAL ADMINISTRATIVE REGION**

**IS THE POLLUTER PAYING? ASSESSING THE APPLICATION OF THE**  
**“POLLUTER PAYS” PRINCIPLE TO SHIP-SOURCE POLLUTION IN HONG**  
**KONG**

**FINAL REPORT**

**THE HONG KONG POLYTECHNIC UNIVERSITY**

**FEBRUARY 2015**

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污染者是否付費？對“污染者自付原則”在香港船舶污染運用的評估

**February 2015**

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## **Abstract of Research**

In Hong Kong, the “Polluter Pays” Principle (PPP) is well-known in such fields as sewage charges as a means to reduce pollution. Basically, the principle requires that the polluter shall pay for the pollution costs. The principle provides important guidance and is incorporated within many international and regional environmental instruments. Therefore, it is beneficial to carefully examine and consider the extent to which PPP is applied in the existing legal and policy framework in Hong Kong for combating ship-source pollution.

Hong Kong’s legal and policy framework for ship-source pollution is primarily an implementation of the relevant international conventions, since Hong Kong has ratified almost all international conventions related to ship-source pollution. Seemingly, there is already adequate law to deal with different types of ship-source pollution, and for this reason very little literature can be found criticizing Hong Kong’s legal and policy framework for ship-source marine pollution. However, our previous studies have revealed that the general perception about the adequacy of Hong Kong laws in combating marine pollution is flawed, as some pollution incidents may be left uncompensated or inadequately regulated. Therefore, there is a need to have a legal and policy system in Hong Kong under which a) the potential polluter is well aware of his possible liability if any pollution accident occurs; b) he is motivated to take pollution abatement action; and c) once any pollution damage occurs, he actually does pay for the costs.

This policy research aims to assess the application of PPP to ship-source pollution in Hong Kong. It was divided into five interrelated parts over a twelve-month period, including a literature review, a conceptual analysis, a questionnaire survey, a comparative study and a seminar. It was designed to firstly reveal the scope of problems in the area of ship-source pollution law and policy in Hong Kong; and secondly, to assess in a comparative manner the application of and role played by the PPP in combating ship-source pollution in Hong Kong. The expected findings will apprise the Hong Kong Government of the due consideration that needs to be given to the formation of policies in Hong Kong under which the polluter, in all cases, actually pays for ship-source pollution.

## 摘要

在香港,“污染者自付原則”(“原則”)用於香港污水費徵收等。大體上它要求污染者承擔污染費。它指導法律法規且被併入很多國際及區域環境保護機制中。因此值得思考究竟該“原則”多大程度上作用於香港當下船舶污染的法律政策。

由於香港批准了近全部船舶污染國際公約,其法規政策是履行公約義務。似乎香港法律能應對各類船舶污染。很少人批評相關法律政策。但我們先前研究揭示了香港沒有充分打擊海洋污染的法律。污染未得充分規範或賠償。因此,需建立一個法律政策系統以實現: 1 污染者及潛在污染者了解污染事故發生時將負的責任; 2 污染減排措施得到激勵; 3 有污染損失時,污染者付費。

該研究旨在評估“原則”在香港船舶污染的運用。它分為五部份,包括文獻綜述,概念明晰,問卷調查,比較研究和研討會。它將揭露目前香港船舶污染法規政策的不足;用對比研究法考量“原則”的適用及作用。目的是奉告政府制定相關政策實現污染者在所有情況下都真正負擔為船舶污染負責。

## **Policy Implications and Recommendations**

“Environmental Protection and Conservation” is invariably a key issue that has been included in the annual “Policy Address” given over recent years by the Hong Kong SAR Chief Executive. Hong Kong in particular, being a very important maritime centre, is keen to protect and preserve its marine environment from ship-source pollution. This policy research will therefore have explicit policy implications on ship-source pollution law and policy in Hong Kong.

First of all, shipping is one of the major industries in Hong Kong’s economy. This requires that the shipping industry makes a positive contribution to the economic and social wellbeing of society, without having any detrimental impact on the environment. This policy research, by studying PPP alongside ship-source marine pollution, can provide support for policy recommendations that meet the challenges of environmental protection in Hong Kong.

Secondly, the high volume of vessel traffic presents Hong Kong with a significant challenge in regard to its marine environment. The ship-source pollution law and policy that this policy research suggests takes into account the PPP, since the implementation of this principle can to a great extent motivate polluters and potential polluters to reduce their pollution activity. In the long run, this could make a significant contribution to Hong Kong’s overall environmental protection and conservation regime.

From the results of the survey conducted with select members of the Hong Kong shipping industry, it is evident that the majority of respondents in the survey support the idea of proposing innovative policies that take into account the PPP for better control of and compensation for ship-source pollution. Based upon the studies in this policy research, the following two specific policy measures may deserve further consideration by the Hong Kong government:

1. To increase waste disposal charges for MARPOL wastes to cover all the operating costs generated. In this way pollution costs will be borne mainly by the polluter.
2. To increase requirements and conditions for vessels entering Hong Kong waters. More stringent conditions required for vessels entering Hong Kong waters could, for instance, vary from technical ones that contribute to reducing the risk of marine pollution accidents, to specific insurance requirements that can provide reliable sources of pollution compensation.

Such legal and policy instruments would not only promote better prevention and control measures to avoid the occurrence of marine pollution accidents, but would also provide reliable compensation in the event of any ship-source pollution incident.

## 政策啓示及建

“環保和保育”是近幾年來香港行政長官每年“施政報告”不可避免的關鍵議題之一。特別地是，香港作為一個非常重要的海事中心強烈希望保護其海洋環境免於船舶污染。因此，該政策研究會對香港船舶污染法律和政策有明確的政策影響。

首先，航運業是香港經濟的支柱產業之一。這要求香港航運業對香港經濟及社會福利應發揮積極作用，而非對香港環境產生有害影響。該項政策研究通過對污染者自付原則與船舶污染的探究能夠為相關的政策建議提供支持以應對香港環境保護所面臨的挑戰。

其次，大量船舶通勤使香港海域環境面臨嚴峻挑戰，該項政策研究所建議的船舶污染法律及政策引入了污染者自付這一原則，因為這一原則的實施能夠大大激勵污染者及潛在污染者減少其污染活動。長期來看，這將為香港整體環境保護制度做出重大貢獻。

根據一份針對香港航運業從業者的問卷調查的結果來看，大部分的被調查者支持將污染者自付原則融入未來政府政策，以更好的控制船舶污染及為船舶污染提供賠償。根據上的研究，以下兩方面具體的政策措施尤其值得香港政府進一步加以考慮：

第一，針對 MARPOL 公約下規定的船舶廢物，政府可以考慮提高其廢物處理費以彌補因此產生的所有環境維護成本。如此以來，污染成本將主要由污染者負擔。

第二，政府可以考慮提高進入香港水域的船舶的要求及條件。例如，提高船舶的技術類要求與條件以降低海事污染事故發生的風險；抑或提高船舶保險要求以提供可靠的污染賠償。

以上法律及政策措施不僅有利於促進預防與控制措施以避免海事污染事故的發生，也將在海事船舶污染事故發生后提供可靠的賠償。

## **1. Introduction**

### **1.1. Background of Research**

#### **1.1.1. Ship-Source Pollution Concerns in Hong Kong**

Hong Kong suffers from the typical marine pollution problems associated with shipping activities. The waters of Hong Kong are a particularly vulnerable sea area, its narrow waters being faced with an ever-increasing growth in shipping traffic to meet the growing transport demand. Hong Kong is a party to almost all the marine pollution conventions; hence, Hong Kong's ship-source pollution laws are primarily an implementation of the relevant international conventions.<sup>1</sup> This has been accomplished using appropriate legislative measures to put in place various provisions of international conventions to regulate and protect against marine pollution from ships. These domestic laws then provide the legal basis for various measures taken by Hong Kong authorities to tackle ship-source pollutants.

Very little literature can be found criticizing the legal and policy framework covering ship-source marine pollution in Hong Kong, so it seems to be generally assumed that Hong Kong already has adequate laws in place to combat the challenges of ship-source pollution. However, there are indications that the general perception about the adequacy of such Hong Kong marine laws is flawed.<sup>2</sup> There are new legal issues that have not been fully addressed at a domestic level. It has also been recognized that the laws do not adequately take account of the operational nuances of the shipping industry, or of local issues involving the need to mitigate marine pollution in the broader Pearl River Delta (PRD) region.<sup>3</sup> There are around 55 small spills, varying in size from a few litres to a few tonnes, occurring annually in Hong Kong's waters.

The issues mentioned above may be addressed by complying with International Maritime Organization (IMO) regulations or other international or regional treaties. However, the regulations in those conventions might not be adequate to solve all emerging issues, as for instance when a certain kind of pollution does not fall within the realm of those conventions, or perhaps when complications arise due to domestic characteristics. On the other hand, for any pollution in Hong Kong's waters, the liable parties can be challenged by pollution victims under statutes or common law liability rules. However, due to the protracted litigation system, the pollution, although having been caused, might be ignored because of not being considered to be serious under certain circumstances. However, the accumulation of pollution damage from these small and non-serious pollution incidents may eventually have serious consequences for Hong Kong's marine waters. Therefore, there is a need to have a legal and policy system in place under which a) the potential polluter is well aware of his possible liability if any pollution accident occurs; b) he is motivated to take pollution abatement action; and c) once any pollution damage occurs, he does actually pay for the costs.

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<sup>1</sup> Ling Zhu and Sunil Kumar Agarwal, 'A Review of the Legal and Policy Framework for Vessel Source Pollution in Hong Kong' (2011) 42 *Ocean Development & International Law* 264, p.269-272.

<sup>2</sup> *Ibid.*

<sup>3</sup> *Ibid.*

### 1.1.2. Polluter-Pays Principle

The Polluter-Pays Principle (PPP) is not a new idea,<sup>4</sup> but to enforce the PPP in Hong Kong requires governmental action in both a legislative and non-legislative sphere. In actual fact, there are a number of environmental laws in Hong Kong that are closely related to PPP, these laws mainly covering areas such as waste management and water quality management. Also, we occasionally see in the news or official documents information such as in the following example: In the 2013 “Policy Address” by the Hong Kong Chief Executive, it expressly states the importance of progressively implementing the PPP for waste management control.<sup>5</sup> However, the PPP has rarely, if ever, been explicitly recognized in any legal or policy documents concerned with ship-source pollution in Hong Kong.

The Organisation for Economic Co-operation and Development (OECD)<sup>6</sup> receives credit for the first formal articulation of the PPP in 1972.<sup>7</sup> However, the precise meaning of the PPP remains open to interpretation, as it can vary according to different situations.<sup>8</sup> Nevertheless, the PPP provides important guidance for formulating environmental laws and policies. It was in 1990 that the PPP was for the first time explicitly recognized in an international convention related to marine pollution,<sup>9</sup> but it has now been adopted as a management mechanism and incorporated into many international and regional marine environmental instruments. On an international level, these include, for example: The Agenda 21, the Rio Declaration on Environment and Development, the International Convention on Oil Pollution Preparedness, Response and Co-operation 1990, to name just a few. However, these conventions have failed to add any more significant details as to the definition and specific elements of this principle.<sup>10</sup> Despite this, at a regional and domestic level, for example, a number of EU Acts, secondary legislations, Programmes of Action on the Environment, and EEC Treaties, refer to, or incorporate, the PPP.<sup>11</sup>

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<sup>4</sup> David Hunter, James Salzman and Durwood Zaelke, *International Environmental Law and Policy* (3rd edn, Foundation Press 2007) p.516.

<sup>5</sup> The Hong Kong Chief Executive, The 2013 Policy Address, available at <http://www.policyaddress.gov.hk/2013/eng/> (accessed on 16 December, 2014).

<sup>6</sup> OECD is an international economic organization founded in 1961 which consists of 34 member countries. It aims to promote economic and social well-being among its members. More information is available at <http://www.oecd.org> (accessed on 09 August, 2014).

<sup>7</sup> OECD, *Recommendation on Guiding Principles Concerning International Economic Aspects of Environmental Policies* C(72)128, para A (a) 4, available at <http://webnet.oecd.org/OECDACTS/Instruments/ShowInstrumentView.aspx?InstrumentID=4&InstrumentPID=255&Lang=en&Book> (accessed on 16 December, 2014).

<sup>8</sup> Philippe Sands, Jacqueline Peel with Adriana Fabra, Ruth MacKenzie, *Principles of International Environment Law* (3rd edn, Cambridge University Press 2012) p.228-233.

<sup>9</sup> International Convention on Oil Pollution Preparedness, Response and Co-operation 1990, Preamble.

<sup>10</sup> Chen-Ju Chen, ‘The Liability and Compensation Mechanism under International Marine Environmental Law: Adopting the Polluter Pays Principle to Control Marine Pollution under International Law from the Aspect of International Cooperation’ (the Law of the Sea Institute, UC Berkeley–Korea Institute of Ocean Science and Technology Conference, Seoul, May 2012) p.14 available at <http://www.law.berkeley.edu/files/Chen-final.pdf> (accessed on 16 December, 2014).

<sup>11</sup> OECD (n 7 above); see also E. Larson, ‘Why Environmental Liability Regimes in the United States, the European Community, and Japan Have Grown Synonymous with the Polluter Pays Principle’ (2005) 38 *Vanderbilt Journal of Transnational Law* 541, p.555-559.

Arguably, PPP is now reflected in ship-source pollution law in several ways, both at an international and national level. That is, some laws take a preventive approach—permits, prevention, limitations and charges—with consequences for failure to comply.<sup>12</sup> Other laws, using a curative approach, impose civil liability and compensation for environmental damage.<sup>13</sup> It has been observed that the implementation of the PPP has evolved,

“...first, as an economic principle for allocating to potential polluters and polluters the costs of pollution control by governments; second, to requiring polluters pay for emergency response and clean-up costs, and third, to having polluters pay compensation to victims of pollution...”<sup>14</sup>

Based upon this observation, it has been further pointed out that the most effective regime for preventing marine pollution might include not only effective liability laws, compensation or other relief, and consistent enforcement of regulations aimed at protecting and preserving the marine environment, but also application of the PPP to its fullest extent.<sup>15</sup>

## **1.2. Objectives of the Research**

This policy research aims to assess the application of PPP to ship-source pollution in Hong Kong. To achieve this aim, it has the following four objectives:

- (a) To uncover the scope of problems in ship-source pollution law and policy;
- (b) To identify where the PPP is used in existing ship-source pollution law and policy, and to conduct an in-depth theoretical study of the PPP itself;
- (c) To reveal the current understanding of the PPP held by the maritime industry, and the practical implications of its application to ship-source pollution in Hong Kong;
- (d) To develop recommendations for introducing such a policy that requires the polluter to actually pay for ship-source pollution in all pollution cases.

## **1.3. The Scope of the Research**

Since its creation in the 1970s, there have been continuous developments in the meaning and application of PPP. In Hong Kong, PPP is implied in various environmental legal and policy documents, although it never actually manifests itself as a legal principle or shows up as such in any legislation. After this introductory section, Part 2 of this policy report aims to be a survey of laws and policies, in order to identify how the PPP has been applied in Hong Kong, and to make recommendations for its future application. Accordingly, after discussing the development of PPP in both the OECD and EU, it conducts a detailed discussion of all relevant policy reports concerning environmental affairs issued by the Hong Kong government, as well as a number of domestic legislations. Based on these observations, Part 2 concludes by suggesting that PPP

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<sup>12</sup> Margaret Rosso Grossman, ‘Agriculture and the Polluter Pays Principle’ (2007) 11 Electronic Journal of Comparative Law p.42 available at <http://www.ejcl.org/113/article113-15.pdf> (accessed on December 16, 2014).

<sup>13</sup> *Ibid.*

<sup>14</sup> Kenneth A. MacInnis, ‘The Polluter Pays Principle: Preventing Ship-Source Pollution in the Arctic’, in Aldo Chircop, Norman Letalik, Ted L. McDorman and Susan J. Rolsyon (eds), *The Regulation of International Shipping: International and Comparative Perspectives: Essays in Honor of Edgar Gold* (Martinus Hijhoff Publishers 2012), p.148.

<sup>15</sup> *Ibid.*

should play a more proactive role in Hong Kong's environmental protection policies.

Ship-source pollution is of chief concern for Hong Kong's marine environmental protection, and a comprehensive legal and policy framework has already been established to control and remedy ship-source pollution. Nevertheless, there are emerging legal issues that have not been fully addressed at a domestic level; in particular, the actual costs of implementing measures under this framework are largely undertaken either by the government or through the avenue of the public, leading to an inconsistency with the PPP. Part 3 of this report aims to assess the feasibility of applying the PPP to its fullest measure in counteracting ship-source pollution in Hong Kong. Through a questionnaire survey and in-depth analysis, the results reveal that the adequacy and/or effectiveness of the existing legal and policy framework for controlling and remedying ship-source pollution are questionable. In addition, despite varied understandings of PPP, the industry also supports the adoption of innovative legal and policy measures to apply PPP to its fullest extent in order to better control and remedy ship-source pollution. These findings provide useful evidence, and enable meaningful reflection on the existing legal and policy framework covering ship-source pollution.

Part 4 further considers the intrinsic limitations of the existing legal and policy framework for combating ship-source pollution, and the extent of influence of the PPP and the role it has played or could play in preventing, controlling and compensating marine pollution in relation to vessels that pose a threat to the marine environment. In conclusion, the expected findings will also apprise the Hong Kong Government of what consideration needs to be given to forming policies in Hong Kong under which the polluter actually pays in all cases for ship-source pollution.

#### **1.4. Research Methods**

This policy research is designed to acquire an in-depth understanding of the impact of PPP on ship-source pollution control and compensation, with the purpose of creating a functioning policy framework reflecting the dynamics of such interrelations. The policy research was carried out over a 12-month period.

This policy research firstly involves a theoretical study aiming to: 1) Reveal the scope of problems existing within Hong Kong's current legal and policy framework relative to ship-source marine pollution; and 2) identify the application of the PPP within the realm of existing law and policy concerning ship-source pollution in Hong Kong. For this purpose, a comprehensive literature review is carried out initially, mainly in the following two aspects: Firstly, it is carried out with the aim of gaining an in-depth understanding of the PPP; secondly, a literature review of the legal and policy framework affecting ship-source pollution law in Hong Kong is carried out, paying particular attention to the application of the PPP. The review sources include academic journals, monographs, legislation, policy reports from the government and/or administrative bodies, and industry publications. This forms a good basis for designing a questionnaire and data analysis of the policy research.

It is important and necessary to explore the understanding of the PPP as held by the relevant

stakeholders. This is because, where there is lack of proper understanding, people will rely on their own understanding when practicing what they believe is right. This policy research thus also involves data collection, and the data collection is mainly by questionnaire. The questionnaire is directed toward the marine industry's views on the existing legal framework and policies for controlling and compensating ship-source pollution, as well as their understanding of the PPP and attitude towards the idea of applying it. Participants particularly targeted for completing the questionnaire fall mainly into the following three categories: 1) Shipowners, ship manager and ship operators; 2) cargo owners and charterers; and 3) marine insurers, especially P&I clubs. Also, companies of different sizes and different origins are chosen, since there are large companies, middle-size companies and small companies; also, there are local companies, international companies and companies from the Mainland of China. Due to the various interests involved, these companies may have varied interests, as well as a different understanding of the PPP. This selection is expected to result in a full understanding of the concerns held by all such shipping-related industries. Gathering together a list of potential participants depends mainly on information gleaned from other sources. This part of the research was carried out using a combination of secondary sources and referrals from professional organizations and governmental officials. Since there are a huge number of parties that could be involved, in total 127 companies (or organisations) from among these three categories of participants were eventually selected. After having gathered together a list of possible participants, we then contacted them to request their participation. The questionnaires were intended as a means to generate responses from the stakeholders. The questionnaire is not long, having an expected completion time of between 20-30 minutes (see Appendix 1). Those who responded to the questionnaires were also asked if they wished to attend the seminar (see Appendix 2) at a later stage.

### **1.5. Limitation of the Research**

This policy research mainly focuses on a study of the PPP itself; whether or not the polluter is paying for ship-source pollution within Hong Kong's existing legal and policy framework; and the feasibility of applying the PPP to ship-source pollution in Hong Kong. Although it is known that there are many other still emerging issues, such as emissions from ships, which also deserve an in-depth study as far as ship-source pollution is concerned, to also give each of those issues a detailed analysis is beyond the scope of this particular policy research.

## 2. The PPP and Its Application in Hong Kong

As mentioned, the PPP was originally introduced by the OECD. It can be viewed as “a principle of international harmonisation of national environmental policy” and “a principle of allocation of costs between states in international law”.<sup>16</sup> At the international level, since its inclusion in the Rio Declaration on Environment and Development,<sup>17</sup> PPP has received broad recognition in international environmental law.<sup>18</sup> In particular, PPP has had a great influence on environmental policies adopted by the EU member states, where there have been attempts to include PPP in various domestic legislations or regional treaties.<sup>19</sup> However, there are mixed attitudes towards the application of PPP worldwide, and the compromised language used in the Rio Declaration regarding PPP deems it to be only a “very soft law”.<sup>20</sup>

Hong Kong, as an observer of the OECD, has since the late 1980s also included PPP into its environmental protection policy, with the aim of becoming a greener and cleaner city. This part of the policy report surveys the existing laws and policies to identify how the PPP has been applied thus far in Hong Kong, and to make recommendations for its further application in the future. To achieve this research aim, it is necessary to first understand how the PPP has been developed in the OECD.

### 2.1. PPP in OECD Documents

The PPP officially appeared for the first time in the “Recommendation on Guiding Principles Concerning International Economic Aspects of Environmental Policies”, which was adopted by the OECD Council in 1972 (the 1972 OECD Recommendation).<sup>21</sup> Under the sub-title “Cost allocation: the Polluter-Pays Principle” in the 1972 OECD Recommendation, there are four paragraphs. Under Paragraph A(a)(4), it reads:

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<sup>16</sup> Bugge H. C., ‘The Principles of “Polluter-Pays” in Economics and Law’ in E. Eide and R. Van den Bergh (eds) *Law and Economics of the Environment* (Juridisk Forlag 1996), p.57.

<sup>17</sup> The Rio Declaration on Environment and Development, which is often shortened to Rio Declaration, is a document put forward at the 1992 United Nations “Conference on Environment and Development” (UNCED). The Rio Declaration consists of 27 non-legally binding principles that are intended to establish a new and equitable global partnership among States to protect the integrity of the global environmental and developmental system. A full text of the Rio Declaration is available at <http://www.un.org/documents/ga/conf151/aconf15126-1annex1.htm> (accessed on 09 August, 2014).

<sup>18</sup> Jonathan R. Nash, ‘Too Much Market? Conflict between Tradable Pollution Allowances and the “Polluter Pays” Principle’ (2000) 24 *Harvard Environmental Law Review* 465, p.471. *See also* Tarcísio Hardman Reis, *Compensation for Environmental Damages under International Law: the Role of the International Judge* (Kluwer Law International 2011), p.162. *See also* Sharon Beder, *Environmental Principles and Policies: An Interdisciplinary Introduction* (Earthscan 2006), p.34.

<sup>19</sup> For example, PPP is enshrined in the Canadian Environmental Protection Act, *see* Canadian Environmental Protection Act 1999, Preamble. In Australia, the State of New South Wales has included PPP, together with the other principles of ecologically sustainable development, in the objectives of the Environment Protection Authority, *see* “Protection of the Environment Administration Act 1991”, Section 6(2)(d)(i)[1].

<sup>20</sup> Nanda Ved P. and Pring George, *International Environmental Law and Policy for the 21st Century* (2nd edn, Martinus Nijhoff Publisher 2013), p.45.

<sup>21</sup> Some scholars opine that the Polluter Pays Principle derived from the early civil liability conventions. However, this opinion obviously ignores the historic development of PPP, and that the incorporation of PPP in a liability regime takes place much later in the 1990s. *See* Philippe Sands, Jacqueline Peel with Adriana Fabra, Ruth MacKenzie (n 8 above), p.229.

“The principle to be used for allocating costs of pollution prevention and control measures to encourage rational use of scarce environmental resources and to avoid distortions in international trade and investment is the so-called “Polluter-Pays Principle”. This principle means that the polluter should bear the expenses of carrying out the above-mentioned measures decided by public authorities to ensure that the environment is in an acceptable state. In other words, the cost of these measures should be reflected in the cost of goods and services which cause pollution in production and/or consumption. Such measures should not be accompanied by subsidies that would create significant distortions in international trade and investment.”

Obviously, this paragraph is intended to clarify two aspects: namely, 1) the meaning of PPP; and 2) the function of PPP.

Under the 1972 OECD Recommendation, PPP means that the polluter should bear the expenses of pollution prevention and control measures. PPP is later described as merely “an efficiency principle for allocating cost”,<sup>22</sup> which implies that PPP is concerned more with who should pay for environmental protection rather than for what and how much the polluter should pay. It is the polluters, rather than the governments, or the victims or the public, who should bear the costs of pollution prevention and control measures. However, a closer look at the 1972 OECD Recommendation shows that the OECD did not define the meaning of “polluter”. The cost that the polluter should pay is confined to the expenses of “pollution prevention and control measures”, and is subject to the understanding of national regulators with regard to “an acceptable state” of the environment.<sup>23</sup> The decisive role of regulators and “public authorities” indicates, on the one hand, the possibility that the measures and related expenses borne by the polluter may be varied, and potentially can even be extended to a certain extent. Therefore, although the words “preventive” and “control” seem to show that PPP is limited to *ex ante* pollution costs,<sup>24</sup> it would not be going against the principle if the government decides the polluter should compensate for the damage, namely, expenses that could be generated *ex post*.<sup>25</sup> On the other hand, the decisive role of public authorities also means that the polluter could be exempted from the pollution cost, i.e., none or only a part of the pollution cost may be required to be paid by the polluter. It may therefore be concluded that the application of the principle only means a partial internalization of pollution cost. Interference from the public authority is regarded as a weakness of the principle, since PPP does not in itself imply a strict pollution control policy; which, from the perspective of global environmental justice, may lead to a “race to the bottom”.<sup>26</sup>

The 1972 OECD Recommendation also attempts to design the function of the principle. It is

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<sup>22</sup> OECD, *The Polluter-Pays Principle: OECD Analyses and Recommendations OCDE/GD(92)81*, p.9.

<sup>23</sup> OECD (n 7 above).

<sup>24</sup> See Sanford E. Gaines, ‘The Polluter-Pays Principle: From Economic Equity to Environmental Ethos’ (1991) 26 Texas International Law Journal 463, p.483. See also Lucas Bergkamp, *Liability and Environment: Private and Public Law Aspects of Civil Liability for Environmental Harm in an International Context* (Kluwer Law International 2001), p.15.

<sup>25</sup> OECD, *The Polluter Pays Principle: Definition, Analysis and Implementation* (OECD Publishing, 1975), p.6.

<sup>26</sup> Bugge H.C., ‘The Polluter Pays Principle: Dilemmas of Justice in National and International Contexts’, in Jonas Ebbesson and Phoebe Okowa (eds), *Environmental Law and Justice in Contexts* (Cambridge University Press 2009), p.415.

indicated that PPP aims to first “avoid distortions in international trade and investment” and second to “encourage rational use of scarce environmental resources”;<sup>27</sup> these are recognized as “the function of economic integration” and “the preventive function”.<sup>28</sup> The background to this Recommendation indicates that the first function of the PPP seems to be what the OECD directly intends to accomplish. In the early 1970s, with strict environmental regulations enacted, the resulting financial distress forced the domestic industries in OECD countries to keep pressing their governments for assistance, which aroused concern for the negative trade effect “brought about by differences in national cost allocation decisions” and the moral hazard “that countries would deliberately exploit these effects to gain advantages in the international market”.<sup>29</sup> Accordingly, the 1972 OECD Recommendation responded to such concerns by actually preventing governments from bearing the environmental cost. The second function intends to be achieved by using a price mechanism to alter the choices of consumers. Once the polluter bears the pollution cost, the environmental costs can be reflected in the price and in the market. Goods and/or services that pose less of a pollution risk and seek to protect natural resources will be more competitive and have a corresponding price advantage.

In 1974, the OECD Council adopted another Recommendation on the Implementation of the Polluter-Pays Principle.<sup>30</sup> This document reaffirmed that “[t]he Polluter-Pays Principle constitutes for Member countries a fundamental principle for allocating costs of pollution prevention and control measures introduced by the public authorities.”<sup>31</sup> It urged adoption by all member countries to “encourage the rational use and better allocations of international trade and investment.”<sup>32</sup> Therefore, it was evident that the earlier documentations adopted by the OECD focused on chronic pollution; no accidental pollution had been explicitly addressed.

In 1989, an expansion of the meaning of PPP was codified by the OECD “Recommendation of the Council concerning the Application of the Polluter-Pays Principle to Accidental Pollution” (the 1989 Recommendation), which stresses the application of the PPP to hazardous installations for protecting against accidental pollution.<sup>33</sup> The 1989 Recommendation explicitly extends “what the polluter should pay” to include the reasonable cost of controlling actions after the

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<sup>27</sup> OECD (n 7 above).

<sup>28</sup> Nicolas de Sadeleer, *Environmental Principles: from Political Slogans to Legal Principle* (Oxford University Press 2005), p.34-37.

<sup>29</sup> Sanford E. Gaines (n 24 above), p.469.

<sup>30</sup> OECD (1974), *Recommendation of the Council on the Implementation of the Polluter-Pays Principle*, C(74)223.

<sup>31</sup> *Ibid.*

<sup>32</sup> *Ibid.*

<sup>33</sup> OECD, *Recommendation of the Council concerning the Application of the Polluter-Pays Principle to Accidental Pollution C(89)88/FINAL*, paras 4 and 5. A full text is available at <http://acts.oecd.org/Instruments/ShowInstrumentView.aspx?InstrumentID=38&InstrumentPID=305&Lang=en&Book=False> (accessed on 12 August, 2014). The Recommendation provides that “...in matters of accidental pollution risks, the Polluter-Pays Principle implies that the operator of a hazardous installation should bear the cost of reasonable measures to prevent and control accidental pollution from that installation which are introduced by public authorities in Member countries in conformity with domestic law prior to the occurrence of an accident in order to protect human health or the environment. Domestic law which provides that the cost of reasonable measures to control accidental pollution after an accident should be collected as expeditiously as possible from the legal or natural person who is at the origin of the accident, is consistent with the Polluter-Pays Principle.”

occurrence of pollution events.<sup>34</sup> Under the 1989 Recommendation, the *ex post* costs include “the cost of clean-up operations” and “the cost of the measures minimizing without undue delay the ecological effects of accidental pollution”.<sup>35</sup> However, the cost of measures to compensate victims for the economic consequences of an accident was not included,<sup>36</sup> which reflects that PPP is not considered as a principle governing compensation for damage caused by pollution, or as a restatement of the liability principle.<sup>37</sup> Nevertheless, the 1989 Recommendation is regarded as a milestone in the development of PPP, since for the first time it is advocated that PPP should move towards a full internalization of pollution costs.<sup>38</sup> This recommendation also stresses that the government should not assist polluters in bearing the pollution cost, but it does, however, place considerably more emphasis on environmental affairs. It seems, therefore, that “the function of economic integration”, as discussed above, is fading out.

However, the increasing awareness of environmental protection keeps pushing for full internalization of pollution costs under PPP. Accordingly, the OECD Council has addressed, in its Preamble to “Recommendation on the Uses of Economic Instruments in Environmental Policy”, that “a sustainable and economically efficient management of environmental resources requires, inter alia, the internalization of pollution prevention, control and damage costs”.<sup>39</sup> It is not difficult to speculate that the phrase “the internalization of pollution prevention, control and damage costs” means that PPP shall include more than a partial internalization of pollution costs. Later, in 2001, the OECD Joint Working Party on Agriculture and Environment stated that a new and expanded form of the PPP should provide that:

“...the polluter should be held responsible for environmental damage caused and bear the expenses of carrying out pollution prevention measures or paying for damaging the state of the environment where the consumptive or productive activities causing the environmental damage are not covered by property rights....”<sup>40</sup>

In 2002, the OECD Report on “The Polluter-Pays Principle as It Relates to International Trade” verified the above ambition.<sup>41</sup> It stated that PPP is evolving towards “encompassing all pollution-related expenditure”.<sup>42</sup>

All the above discussed recommendations are non-binding in nature; they merely provide policy

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<sup>34</sup> Sanford E. Gaines (n 24 above), p.482-483.

<sup>35</sup> OECD (n 33 above), para 8.

<sup>36</sup> *Ibid.*

<sup>37</sup> OECD (note 25 above), p.6.

<sup>38</sup> Sanford E. Gaines (n 24 above), p.483.

<sup>39</sup> OECD, *Recommendation of the Council on the Use of Economic Instruments in Environmental Policy C(90)177/FINAL*. A full text is available at

<http://acts.oecd.org/Instruments/ShowInstrumentView.aspx?InstrumentID=41&InstrumentPID=38&Lang=en&Book> (accessed on 15 August, 2014).

<sup>40</sup> OECD, *Improving the Environmental Performance of Agriculture: Policy Options and Market Approaches COM/AGR/ENV(2001)6 (2001)*, p.6.

<sup>41</sup> Joint Working Party on Trade and Environment of OECD, *The Polluter-Pays Principle as It Relates to International Trade Com/Env/Td(2001)44/Final*. The full text is available at

[http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?doclanguage=en&cote=com/env/td\(2001\)44/final](http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?doclanguage=en&cote=com/env/td(2001)44/final) (accessed on 16 August, 2014).

<sup>42</sup> *Ibid.*, p.6.

recommendations to its member countries. Thus, they are never formally incorporated by its member countries into their domestic legislation; neither are they formulated to in any way become effective as international law.<sup>43</sup> PPP is basically a method of cost distribution rooted in economics, and is therefore not intended to be a legal term embodying preciseness. The principle of PPP was thus born with a certain amount of ambiguity already built in that affects its further application. For example, questions may arise as to how to identify a polluter in a pollution case, how PPP should be applied, and are there any exceptions to the rule when applying PPP. Nevertheless, PPP provides a sound idea for environmental law, because the mode of pollution cost distribution under PPP is in accordance with the basic value of law - justice and fairness.<sup>44</sup>

## 2.2. Development of PPP in the EU

Taking into account the latest developments of PPP in the EU, in an attempt to achieve full internalization of pollution costs, PPP has gradually been deemed to cover three types of costs: First, the cost of complying with applicable standards and laws for pollution prevention; second, the cost of preventing, controlling, abating and mitigating damage to the environment caused by pollution;<sup>45</sup> and third, the cost of making good any resultant environmental damage, such as the costs of restoring the damaged environment.<sup>46</sup>

### 2.2.1. PPP before It was Legislated Into the EU Treaty

Owing to the fact that most of its Members were also members of the OECD, once PPP was written into the 1972 OECD Recommendation, PPP attracted intense attention from the European Community (“EC”). Very soon, the First Action Programme on the Environment (FAE) (1973-76) introduced PPP to the EC by stating that: “...the cost of preventing and eliminating nuisances must in principle be borne by the polluter” – but without further elaboration.<sup>47</sup> Due to the uncertainty of PPP left by the OECD, the EC published a recommendation in 1975 shortly after the First Action Programme which was intended to clarify PPP in a specific way.<sup>48</sup> The

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<sup>43</sup> Jonathan R. Nash (n 18 above), p.469.

<sup>44</sup> Bugge H.C. (n 26 above), p.427. Prof. Bugge in his article pointed out some potential unreasonable results arising from the implementation of PPP, but in any case he admitted that PPP is still a just principle with exemptions and modifications required.

<sup>45</sup> The Hon. Justice Brian J Preston, ‘Sustainable Development Law in the Courts: The Polluter Pays Principle’ at the 16th Commonwealth Law Conference (Hong Kong, 7 April 2009), available at [http://www.leg.justice.nsw.gov.au/agdbasev7wr/\\_assets/lec/m4203011721754/preston\\_the%20polluter%20pays%20principle.pdf](http://www.leg.justice.nsw.gov.au/agdbasev7wr/_assets/lec/m4203011721754/preston_the%20polluter%20pays%20principle.pdf) (accessed on 30 August, 2014).

<sup>46</sup> *Ibid.*

<sup>47</sup> The Council of the European Communities, *Declaration of the Council of the European Communities and of the Representatives of the Governments of the Member States Meeting in the Council of 22 November 1973 on the Programme of Action of the European Communities on the Environment*. The Action Programmes on Environment are documents setting “the priority objectives for the environment” and creating “an environmental strategy to sit alongside the Community’s economic aims”, see David Wooley QC, *Environmental Law* (2nd edn, Oxford University Press 2009) para 4.18. In addition to the First Action Programme on the Environment, the subsequent six Action Programmes have all mentioned PPP; for a brief review of PPP in EC/EU Action Programmes on the Environment, see Dr. Christian Hey, ‘EU Environmental Policies: A Short History of The Policy Strategies’, in Stefan Scheuer (ed) *EU Environmental Policy Handbook - A Critical Analysis of EU Environmental Legislation* (European Environmental Bureau 2005), see also Margaret Rosso Grossman (n 12 above), p.11-15.

<sup>48</sup> The Council of the European Community, *Council Recommendation 75/436 Euratom, ECSC, EEC of 3 March 1975* (the 1975 EC Recommendation). For the full text, see Sands Philippe and Galizzi Paolo (eds), *Documents in European Community Environmental Law* (2nd edn, Cambridge University Press 2006), p.195-201.

1975 EC Recommendation defined PPP as a principle that persons responsible for pollution should pay the costs of measures that are necessary to eliminate that pollution or to reduce it,<sup>49</sup> and it made efforts to explain “who is the polluter”, “what the polluter should pay”, “what are the instruments of applying PPP”, “the possible exceptions to the PPP”, and other matters.<sup>50</sup> Under the 1975 EC Recommendation, the payment paid by the polluter is defined as comprising of “all the expenditure necessary to achieve an environmental quality objective”, and includes “administrative costs directly linked to the implementation of anti-pollution measures”.<sup>51</sup> Considering the use of the word “eliminate” in the definitions of PPP under both the FAE and 1975 EC Recommendation, PPP may be applied more broadly than under the earlier OECD documents, because “eliminate” indicates that pollution has occurred and the cost for clean-up is necessarily required. However, some scholars believe that the EC adopted PPP with its OECD meaning *in extenso*.<sup>52</sup> This Recommendation particularly pointed out that the payment should be “without prejudice to any compensation due under national law or international law”, which means that the liability of compensation was not considered to be included in the meaning of PPP under the recommendation at that time.

During the same period, the EC started to take steps to enshrine the PPP in secondary law,<sup>53</sup> even though no legislative power over the environment was expressly conferred to the EC at the time.<sup>54</sup> The representative legislation in this regard is “Waste Framework Directive 75/442”.<sup>55</sup> The Directive states clearly that “Member States shall take the necessary measures to ensure that waste is disposed of without endangering human health and without harming the environment”, and the cost of disposing of waste shall be borne by the waste holder in accordance with the PPP.<sup>56</sup> The Directive expressly applies PPP to preventing chronic pollution generated by waste disposal, and it indicates that the application of PPP in the EU maintains its meaning in early OECD documents, namely, that PPP will cover the *ex ante* pollution cost at least.

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<sup>49</sup> *Ibid.*, p.197.

<sup>50</sup> *Ibid.*, p.197-200.

<sup>51</sup> *Ibid.*, p.199-200.

<sup>52</sup> See Per Kageson, ‘The Polluter Pays Principle’ - On the General Principles of Environment Protection (Swedish Government Official Report, 1994), p.73. See also Sanford E. Gaines (n 24 above), p.473. Prof. Gaines classified the expenditure paid by the polluter in the EC 1975 Recommendation to be in three categories: 1) the cost of pollution control at individual facilities; 2) the cost of collective measures on behalf of a group of polluters; and 3) associated administrative costs, which actually accorded with the original meaning of PPP in the OECD.

<sup>53</sup> The sources of European Union law include: Primary source (for example, Treaties), general principles of EU law, external sources (for example, international law), secondary sources (legal instruments based on the Treaties, like Regulations, Directives, Decisions etc.) and ECJ case law etc. See Alina Kaczorowska, *European Union Law* (3rd edn, Routledge 2013), p.110.

<sup>54</sup> It is possible for the Union to introduce secondary legislation when necessary, even without powers provided by the Treaty, by virtue of Article 235 of the Treaty of Rome (now Article 352 of The Treaty on the Functioning of the European Union), which states: “If action by the Community should prove necessary to attain, in the course of the operation of the common market, one of the objectives of the Community, and this Treaty has not provided the necessary powers, the Council shall, acting unanimously on a proposal from the Commission and after consulting the Assembly, take the appropriate measures”.

<sup>55</sup> Council Directive 75/442/EEC of 15 July 1975 on waste, a full text of the Directive is available at <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31975L0442> (accessed on 20 August, 2014). It should be noted that “Waste Framework Directive 75/442” was codified and now Waste Framework Directive (Directive 2006/12/EC) is the only legally valid version of the Waste Framework Directive.

<sup>56</sup> *Ibid.*, Article 4 and 11.

The PPP did not receive full recognition in the EC until 1987, when the “Single European Act” (SEA) was adopted, which amended the Treaty of Rome and for the first time granted the EC the express power to regulate environmental affairs.<sup>57</sup> The SEA provided that “...Community policy on the environment ... shall be based on the precautionary principle, and on the principles that preventive action should be taken, that environmental damage should as a priority be rectified at source, and that the polluter should pay”.<sup>58</sup> The SEA, as a treaty of the EC, was at the highest level of law, and provided a constitutional basis for the EC, its organizations and its functions.<sup>59</sup> The incorporation of PPP into the SEA means that PPP was codified as being one of the pillars of the Community’s environmental policy and legislation.<sup>60</sup> The provision concerning PPP remains almost the same in subsequent amendments to the SEA, and PPP is now stipulated under Article 191 of “The Treaty on the Functioning of the European Union”.<sup>61</sup> If an environmental legislation in a member state of the EU completely fails to have regard for PPP, the legislation might be annulled. However, PPP does not directly impose legal obligations on the polluters; it can only be said with certainty that the principle can be used to “uphold or challenge EU law, or in exceptional cases, justify national measures”.<sup>62</sup> However, it seems that the treaties only enshrine a slogan of PPP, without offering any solid answer as to its meaning or application, which forces other related documents, such as the action programmes and the recommendations, to be considered as a source of law and a guide for the interpretation of articles in the said Treaty.<sup>63</sup> That is why the action programmes and the recommendations will inevitably often be taken into consideration by the national courts when deciding on disputes in the area submitted to them;<sup>64</sup> they therefore remain as very important, even though the documents themselves are not legally binding on European Members.

### 2.2.2 Expansion of PPP after It was Legislated into the EU Treaty

After PPP was incorporated into the EC Treaty, as discussed above, the EC continued to apply PPP to prevent chronic pollution with the implementation of the “Water Framework Directive 2000/60/EC”.<sup>65</sup> However, unintentional pollution, which prior to this was seldom considered in the EC, was highlighted during the 1970s and 80s by a number of environmental disasters involving the release of harmful pollutants.<sup>66</sup> The European Council, following the accidental

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<sup>57</sup> Sanford E. Gaines (n 24 above), p.478.

<sup>58</sup> Article 130r of Treaty of Rome as amended by Article 25 of SEA.

<sup>59</sup> Paul Stookes, *A Practical Approach to Environmental Law* (2nd, Oxford University Press 2009), para 1.35.

<sup>60</sup> Nicolas de Sadeleer, ‘The Polluter-pays Principle in EU Law – Bold Case Law and Poor Harmonisation’, available at <http://www.tradeenvironment.eu/uploads/papers/de%20Sadeleer.pdf> (accessed on 21 August, 2014).

<sup>61</sup> The Treaty of Rome was renamed as the Treaty on the Functioning of the European Union (TFEU) by the Treaty of Lisbon, which was signed by the EU member states on 13 December 2007 and entered into force on 1 December 2009.

<sup>62</sup> Stuart Bell & Donald McGillivray, *Environmental Law* (7th edn, Oxford University Press 2008), p.189.

<sup>63</sup> David Wooley QC (n 45 above), para 4.09.

<sup>64</sup> Nicolas de Sadeleer (n 28 above), p.28.

<sup>65</sup> Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy, Article 9 of which states “...Member states shall take account of the principle of recovery of the costs of water services, including environmental and resource costs, having regard to the economic analysis conducted according to Annex III, and in accordance in particular with the polluter pays principle”.

<sup>66</sup> For example, the accident where TCDD (a type of dioxin) was released from a small chemical manufacturing plant in Seveso, Italy in 1982, and the release of toxic agrochemicals into the air and the Rhine river at Sandoz

environmental incidents, intended to take new measures that would ensure prompt clean-up and restoration, as well as equitable arrangements for liability and compensation after any unintentional pollution accident.<sup>67</sup> The 5th Environmental Action Programme speeded up the discussion of new measures, and set the environmental goal as being that “an integrated Community approach to environmental liability will be established”.<sup>68</sup> In May 1993, the European Commission published its “Green Paper on Remedying Environmental Damage”<sup>69</sup> in order to stimulate and collect together discussions on a possible wider civil liability regime for environmental damage.<sup>70</sup> Later, in 2000, based on the “Green Paper”, the European Parliament and the European Commission decided to launch a proposal for a directive on civil liability in respect of environmental damage, “the European Commission White Paper on Environmental Liability” (White Paper),<sup>71</sup> which sets out the structure of the planned Community liability regime. Finally, the “Environmental Liability Directive” was drafted and entered into force on 30 April 2004.<sup>72</sup> The environmental liability rules under the European Commission “White Paper”, as well as those under the “Environmental Liability Directive”, are asserted to be based on PPP.<sup>73</sup>

The Preamble to the “Environmental Liability Directive” explains PPP in this way: “An operator causing environmental damage or creating an imminent threat of such damage should, in principle, bear the cost of the necessary preventive or remedial measures”.<sup>74</sup> The principle re-confirms in these documents the obligation of the polluter to take the necessary preventive measures without delay when environmental damage has not yet occurred but there is an imminent threat of such damage occurring.<sup>75</sup> Also, the meaning of PPP is extended to include remedial costs arising out of pollution liability. The European Commission “White Paper” asserted that an environmental liability based on PPP should cover not only the traditional civil liability for damage to persons and goods and contamination of sites (referred to as traditional damage), but should also cover liability for damage to nature (referred to as environmental damage).<sup>76</sup> Even though the “Environmental Liability Directive” eventually only includes

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agrochemical storehouse, Switzerland in 1986. See Mark Wilde, *Civil Liability for Environmental Damage* (Kluwer Law International, 2002), p.172.

<sup>67</sup> *Ibid.*, p.173.

<sup>68</sup> The Council of the European Communities, ‘Towards Sustainability’ - *The European Community Programme of Policy and Action in Relation to the Environment and Sustainable Development (the Fifth EC Environmental Action Programme)*.

<sup>69</sup> The Commission of the European Communities, *Communication from the Commission to the Council and Parliament and the Economic and Social Committee: Green Paper on Remedying Environmental Damage*, available at [http://ec.europa.eu/green-papers/pdf/environmental\\_damage\\_gp\\_com\\_93\\_47.pdf](http://ec.europa.eu/green-papers/pdf/environmental_damage_gp_com_93_47.pdf) (accessed on 29 August, 2014).

<sup>70</sup> Mark Wilde (n 64 above), p.174.

<sup>71</sup> European Commission on the Environment, *White Paper on Environmental Liability COM(2000) final* (White Paper), available at [http://ec.europa.eu/environment/legal/liability/pdf/el\\_full.pdf](http://ec.europa.eu/environment/legal/liability/pdf/el_full.pdf) (accessed on 29 August, 2014).

<sup>72</sup> Directive 2004/35/CE of the European Parliament and of the Council of 21 April 2004 on Environmental Liability with Regard to the Prevention and Remedying of Environmental Damage (Environmental Liability Directive), available at <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32004L0035> (accessed on 29 August 2014).

<sup>73</sup> The White Paper states that the purpose of establishing an environmental liability regime is to explore “how the polluter pays principle can best serve the aims of the Community with regard to environmental policy”, see note 55 above, p.11. The Environmental Liability Directive provides that the framework of environmental liability is based on the “polluter-pays” principle, note 56 above, Article 1.

<sup>74</sup> Note 70 above, Preamble.

<sup>75</sup> Note 70 above, Article 5.

<sup>76</sup> Note 69 above, p.16-17.

liability for damage to nature<sup>77</sup> and leaves liability for traditional damage to persons and property subject to national laws, PPP is nevertheless recognized as being embodied in both types of liability. In this way, PPP is equipped with a so-called “curative function”, besides the above-discussed functions of “economic integration” and “pollution prevention”.<sup>78</sup>

Some scholars criticized that such an evolution is a political misinterpretation.<sup>79</sup> However, as discussed above, PPP is a concept with room for potential development, because PPP at its outset intends only to set a minimum requirement for a partial internalization.<sup>80</sup> The public authority of each State has the power to expand the scope of PPP to meet its understanding of “an acceptable state” in the earlier OECD document. With environmental problems becoming more serious, it is reasonable for the public authority of a state to raise the standard of “an acceptable state”; it also sounds reasonable to encompass the *ex post* pollution costs within those borne by polluters’ pockets. However, others asserted that the incorporation of civil liability is inconsistent with the basic EU objective for the environment, i.e., the prevention of environmental damage, and that it is difficult to see how the objective of prevention can be implemented through the imposition of environmental liability, because environmental liability necessarily relies on the existence of environmental damage.<sup>81</sup> However, the incorporation of liability does not run against the prevention of environmental damage. Having in mind the potential liability of paying for damage, a polluter will endeavour to reduce the pollution, provided the cost of abatement is less than the compensation avoided.<sup>82</sup> If PPP is not applied to cover the costs of restoration of environmental damages, “either the environment remains unrestored or the State, and ultimately the taxpayer, has to pay for it”.<sup>83</sup>

### 2.3. The Functions of PPP in General

In international law, as in other legal orders, the concept of liability may perform several functions that include: (1) a corrective function; (2) a preventive function; and (3) a reparative function.<sup>84</sup> PPP does not denote a civil liability. Notwithstanding its evolvement into a principle of international environmental law, it is in essence an economic rule. However, it may also function in a way that contributes to preventing, reducing and remedying pollution damage, since the main objective behind the principle is to ensure that full environmental and social costs are reflected in the ultimate market price for goods and services. In other words, environmentally harmful goods will cost more and, over time, consumers will switch to less polluting goods and services, this resulting in a more efficient and sustainable allocation of resources.<sup>85</sup>

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<sup>77</sup> Note 70 above, Article 3.

<sup>78</sup> Nicolas de Sadeleer (n 28 above), p.37.

<sup>79</sup> Bugge H. C. (n 16 above), p.54.

<sup>80</sup> See page 10, the discussion of the decisive role of public authorities under PPP.

<sup>81</sup> See Sumudu A. Atapattu, *Emerging Principles of International Environmental Law* (Transnational Publishers 2006), p.449.

<sup>82</sup> Note 69 above, p.14.

<sup>83</sup> *Ibid.*

<sup>84</sup> Lefeber, R., *Transboundary Environmental International Interference and the Origin of State Liability* (Kluwer Law International 1996), p.1.

<sup>85</sup> Sumudu A. Atapattu (n 79 above), p.438.

Moreover, the interpretation of PPP can be found both in a “strict sense” and in a “broad sense”. In its strict sense, the principle requires the polluter to pay the costs of pollution prevention and control; in its broad sense, the polluter’s responsibility also extends to other costs, including charges, taxes, clean-up costs and compensation.<sup>86</sup> With this gradual development in meaning, there has also been an expansion of the PPP’s functions. It is clear that the primary function of the PPP contributes to the avoidance of distortion in international trade and investment, this being analyzed in the earlier recommendations of the OECD Council, such as in the following example:

“... [A] uniform application of this principle, through the adoption of a common basis for member countries’ environmental policies, would encourage the rational use and better allocation of scarce environmental resources and prevent the appearance of distortions in international trade and investment.” [C (74) 223]

As analysed above, a predominant trend is to place further responsibility on the polluter so as to alleviate the economic burden that pollution places on both the public and the authorities. As a result, PPP can now be applied *ex-ante* (taking on a preventive function) or *ex-post* (providing a restorative function), as analysed above.<sup>87</sup> In theory, the implementation of PPP may require instituting a policy of pollution abatement by encouraging polluters to reduce pollution by adopting certain *ex-ante* or *ex-post* measures. The polluter thus becomes financially liable for meeting all the requirements in the field of environmental protection that apply in a particular context, these including both economic instruments, such as environmental taxes, and all the legal obligations such as full compliance with the system of liability for pollution.<sup>88</sup> As a result, it is possible that imposition of the burden of pollution costs on the polluters could become one of the most effective mechanisms for combating ship-source pollution.<sup>89</sup> This is why some scholars believe that the principle now has four functions: 1) a function of economic integration; 2) a redistribution function; 3) a preventive function; and 4) a curative function.<sup>90</sup> In particular, there is an increasing tendency in international circles to ascribe a curative dimension to PPP.<sup>91</sup> Therefore, by stressing the curative dimension, PPP can oblige polluters to pay for restoration

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<sup>86</sup> Margaret Rosso Grossman (n 12 above), p.8. See also Joint Working Party on Trade and Environment, OECD (n 41 above), p.12-14.

<sup>87</sup> Arne Bleeker, ‘Does the Polluter Pay? The Polluter-Pays Principle in the Case Law of the European Court of Justice’, (2009) 18 European Energy and Environmental Law Review, p.289-306 and p.294.

<sup>88</sup> *Ibid.*

<sup>89</sup> Schwartz, Priscilla, ‘The Polluter-Pays Principle’, in Fitzmaurice Malgosia Ong, David M. and Merkouris, Panos (eds), *Research Handbook on International Environmental Law* (Edward Elgar Publishing 2010), p.243-261, at p.246: “... In context of liability regimes which employ the principle, it functions to establish a framework for environmental liability to prevent and remedy environmental damage or serve as an alternative...”

<sup>90</sup> For more detailed analysis, see Nicolas de Sadeleer (n 28 above), p.34-37.

<sup>91</sup> In its 1991 Recommendation on the Use of Economic Instruments in Environment Policy, the OECD Council admitted that a “sustainable and economically efficient development of environmental resources” required internalizing the costs of preventing and controlling pollution as well as of the damage itself. See Nicolas de Sadeleer (n 28 above), p.37.

carried out by the public authorities and ensure that victims can obtain compensation for pollution.<sup>92</sup>

## 2.4. The Implementation of PPP in Hong Kong

The importance of protecting the environment was not fully realized until the 1980s, when Hong Kong was criticized for its poor environmental quality and weak environmental legislation.<sup>93</sup> Since then, there has been steady development in its legal and policy measures for protecting the environment, and PPP has also been gradually recognized. PPP is now often described as the viable option for long-term sustainability of the environment, and it is “widely recognized and appreciated” within the community.<sup>94</sup> PPP is thus frequently referred to or emphasized in various consultancy papers and policy reports as an important principle for environmental protection; for instance, in the latest published “Hong Kong Blueprint for Sustainable Use of Resources 2013–2022”.<sup>95</sup>

### 2.4.1. PPP in the Policy Reports

PPP was first introduced by the Hong Kong White Paper, “White Paper: Pollution in Hong Kong: A Time to Act” (White Paper),<sup>96</sup> which was published by the Hong Kong Environmental Protection Department (EPD) in 1989, when environmental protection was just starting to be realized in Hong Kong.<sup>97</sup> The White Paper is described as “an overarching statement of the work required to reduce Hong Kong’s pollution and make up for past neglect”.<sup>98</sup>

Without explicitly defining PPP, the White Paper states that the polluter should contribute to an environmental protection budget set for the next ten years.<sup>99</sup> The White Paper has been followed by four Reviews, among which the second Review<sup>100</sup> is recognized as the most comprehensive document shedding light on PPP. In general, the second Review believes PPP to be one of the foundation stones for building a cleaner and greener Hong Kong.<sup>101</sup> It also specifies the

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<sup>92</sup> Nicolas de Sadeleer, (n 28 above), p.37.

<sup>93</sup> Benjamin L. Liebman, ‘Autonomy through Separation? Environmental Law and the Basic Law of Hong Kong’ (1998) 39 Harvard International Law Journal 231, p.234.

<sup>94</sup> Hong Kong Advisory Council on Environment, *Proposal for Applying the Polluter-pays Principle in the Provision of Sewage Services and Progress Update on Harbour Area Treatment Scheme Stage 2A*, available at [http://www.epd.gov.hk/epd/english/boards/advisory\\_council/files/2007\\_5.pdf](http://www.epd.gov.hk/epd/english/boards/advisory_council/files/2007_5.pdf) (accessed on 02 September, 2014).

<sup>95</sup> Hong Kong Environment Bureau, *Hong Kong Blueprint for Sustainable Use of Resources 2013–2022*, available at <http://www.enb.gov.hk/sites/default/files/WastePlan-E.pdf> (accessed on 02 September, 2014).

<sup>96</sup> Hong Kong Government, *White Paper: Pollution in Hong Kong: A Time to Act*, available at [http://www.epd.gov.hk/epd/english/resources\\_pub/policy/files/White\\_Paper-A\\_time\\_to\\_act.pdf](http://www.epd.gov.hk/epd/english/resources_pub/policy/files/White_Paper-A_time_to_act.pdf) (accessed on 02 September, 2014).

<sup>97</sup> Ngok Ma, *Political Development in Hong Kong: State, Political Society and Civil Society* (Hong Kong University Press 2007), p.112.

<sup>98</sup> Hong Kong Environmental Protection Department, *Environment Hong Kong 1986 to 2011: A Time to Act, 1986-1989*, available at <http://www.epd.gov.hk/epd/misc/ehk11/en/chapter2a.html> (accessed on 02 September, 2014).

<sup>99</sup> Hong Kong Government (note 96 above), para. 1.6.

<sup>100</sup> Hong Kong Government (Planning, Environment and Lands Branch), *The Hong Kong Environment: A Green Challenge for the Community - Second Review of the 1989 White Paper Pollution in Hong Kong - A Time to Act*, available at [http://www.epd.gov.hk/epd/sites/default/files/epd/english/resources\\_pub/policy/files/White\\_Paper-A\\_time\\_to\\_act-2nd\\_review.pdf](http://www.epd.gov.hk/epd/sites/default/files/epd/english/resources_pub/policy/files/White_Paper-A_time_to_act-2nd_review.pdf) (accessed on 02 September, 2014).

<sup>101</sup> *Ibid*, para 4.11.

definition and application of scope of PPP, which is defined in this Review as being that “those who cause environmental damage should pay for the cost of that damage, without subsidy, and should seek to curtail such damage by internalizing the costs of pollution”.<sup>102</sup> Unlike the definition given in the earlier OECD documents or EU documents, it seems that the polluter shall pay for the costs of environmental damage; and thus PPP is limited to the remedial cost after environmental damage occurs. Apparently, the cost of measures for preventing pollution is not expressly mentioned here. In addition, it further states in the Review that PPP shall apply to such environmental protection measures as sewage charges, waste treatment charges and green tax.<sup>103</sup> The nature of these different types of charges tends to be an *ex ante* cost. Therefore, the definition and application scope of PPP in the second Review sounds contradictory and, regrettably, no further clarification has been made to such a contradiction. This contradiction may be due to the fact that the effect of PPP on a polluter’s behaviour is perhaps deemed to be more important.

#### **2.4.2. PPP in Hong Kong Legislations**

The Basic Law is Hong Kong’s constitutional document. The autonomy of domestic environmental law-making is authorized to the Hong Kong government under the Basic Law.<sup>104</sup> However, compared with the detailed provisions in the Basic Law regarding Hong Kong’s economic affairs and other aspects, the issue of environment is only mentioned three times,<sup>105</sup> and none of these instances is concerned with protection of the environment in any great detail.<sup>106</sup>

Although, as discussed, the government has realized that PPP should be recognized as a key tool in environmental policy making, Hong Kong environmental law does not solidify PPP as a principle in a general way. In fact, Hong Kong does not take a “consolidated approach to pollution in all forms”.<sup>107</sup> The lack of a comprehensive context of environmental protection law in Hong Kong means that legislation coping with environmental pollution continues to be “split up over a number of disparate pieces of legislation”.<sup>108</sup> It is thus only possible to find out how and to what extent PPP is actually included or applied in different legislations.

##### **A. Regulations on Water Pollution**

To recover the operating cost of sewage services and to improve its water quality, the “sewage services charging scheme” was launched in Hong Kong in 1995. For that purpose, the “Sewage Services Ordinance” (Cap. 463, Laws of Hong Kong) was enacted in 1994 and took effect in 1997 to provide the legal basis for this scheme. Under this Ordinance, sewage dischargers are

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<sup>102</sup> *Ibid.*

<sup>103</sup> *Ibid.* Related legislation will be discussed below.

<sup>104</sup> Article 119, Hong Kong Basic Law.

<sup>105</sup> Article 7, Article 97 and Article 119, Hong Kong Basic Law. Article 7 states that “the land and natural resources within the Hong Kong Special Administrative Region shall be State property”; Article 97 states that the SAR’s district organizations may be responsible for “environmental sanitation”; Article 119 states that the SAR government can “formulate appropriate policies to ... pay regard to the protection of the environment”.

<sup>106</sup> Benjamin L. Liebman (n 93 above), p.237.

<sup>107</sup> Antonio M. Da Roza, Jeffrey C.K. Tam, and William W.F. Khoo, *Butterworths Hong Kong Environmental Law Handbook* (LexisNexis 2011), p.2.

<sup>108</sup> *Ibid.*

required to pay the cost of sewage services according to the pollution level and the amount they produce. Prior to the introduction of the sewage services charging scheme, the cost of sewage collection and treatment had come entirely from public revenue.

According to this Ordinance, the charging scheme for sewage is comprised of two components: A Sewage Charge (SC) and a Trade Effluent Surcharge (TES). For the SC, if the premises of a consumer are connected to a communal drain or a communal sewer, directly or indirectly, in order to remove wastewater, the consumer is required to pay to the Government a sewage charge at a prescribed rate based on the volume of water supplied to the premises, subject to a few exemptions. Where the consumer produces trade effluent, TES needs to be paid by the consumer, because trade effluent has a higher pollution level than domestic sewage. The TES charging rates are determined by reference to the pollution levels of waste water generated by the respective trades.<sup>109</sup>

Therefore, the sewage discharger, rather than the government or the taxpayer, is obligated to pay for the cost of sewage treatment in order to avoid any potential water pollution arising from the sewage. However, the sewage discharger is not named as “polluter”, and PPP is not expressly stated in this Ordinance. The sewage charging scheme and the Ordinance are, however, deemed to be the earliest attempt to apply PPP in Hong Kong, as evidenced by the above discussed second Review.

The sewage charging scheme only aims to recover the operating and maintenance cost of sewage disposal facilities. However, the cost of constructing the facilities is still funded out of public revenue.<sup>110</sup> “The investment in anti-pollution installations” is actually admitted to be a type of pollution cost elsewhere, such as in the EC 1975 Recommendation.<sup>111</sup> It may thus be concluded that sewage dischargers regulated under the “Sewage Services Ordinance” do not pay for their pollution cost in full. Also, as shown below (chart 1), the current sewage charging scheme distributes sewage costs to the discharger in the form of a sewage charge, this forming a part of Hong Kong Drainage Service Department’s revenue. It has been observed, however, that the sewage charging scheme only partially realizes internalization of costs for wastewater collection and treatment, because the operating cost recovery rate, which represents the extent to which expenditure has been recovered from the revenue, has not even achieved 70% during the past few years.

**Chart 1: Sewage Treatment and Cost Recovery Rates for Sewage Charges in Hong Kong 2008–2013<sup>112</sup>**

	2008-	2009-	2010-	2011-	2012-
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<sup>109</sup> Hong Kong Sewage Services Ordinance, Sections 3 and 4.

<sup>110</sup> Hong Kong Drainage Services Department, *Sewage Services Charging Scheme*, available at [http://www.dsd.gov.hk/EN/Sewage\\_Services\\_Charging\\_Scheme/Polluter\\_Pays\\_Principle/index.html](http://www.dsd.gov.hk/EN/Sewage_Services_Charging_Scheme/Polluter_Pays_Principle/index.html) (accessed on 04 September, 2014).

<sup>111</sup> The EC 1975 Recommendation in Sands Philippe and Galizzi Paolo (n 46 above), p 197.

<sup>112</sup> Hong Kong Drainage Services Department, *Annual Reports 2008–2012*, available at [http://www.dsd.gov.hk/EN/Publicity\\_and\\_Publications/Publicity/DSD\\_Annual\\_Reports/index.html](http://www.dsd.gov.hk/EN/Publicity_and_Publications/Publicity/DSD_Annual_Reports/index.html) (accessed on 04 September, 2014); and *Sewage Services Operating Account 2008–2013*, available at [http://www.dsd.gov.hk/EN/Publicity\\_and\\_Publications/Publicity/Sewage\\_Services\\_Operating\\_Accounts/index.html](http://www.dsd.gov.hk/EN/Publicity_and_Publications/Publicity/Sewage_Services_Operating_Accounts/index.html) (accessed on 04 September, 2014).

	2009	2010	2011	2012	2013
<b>Sewage treated (\$M per m<sup>3</sup>)</b>	991	979	979	981	1,001
<b>Revenue (\$M)*</b>	721.1	775.3	839.8	907.2	982.7
<b>Expenditure (excluding depreciation) (\$M)**</b>	1,240.1	1,342.4	1,366.8	1,443.4	1,498.0
<b>Operating Cost Recovery Rate</b>	58.1%	57.8%	61.4%	62.9%	65.6%

\*Revenue includes sewage charges collected, supplies to Government establishments, trade effluent surcharge and other miscellaneous services

\*\*Expenditure includes staff costs, light and power, sludge disposal, chemicals, operation and maintenance expenses, rental and management charges and general operating expenses

## B. Regulations on Waste Management

“The Waste Disposal Ordinance” (Cap.354, Laws of Hong Kong) (WDO) provides a comprehensive framework for managing waste in Hong Kong, while construction waste, chemical waste, clinical waste and livestock waste are subject to various specific control measures under different subordinate legislations.<sup>113</sup> These specific regulations have provided different charging schemes for different kinds of waste disposal services. PPP does not appear in any of these regulations, although it can be construed from the “White Paper”, as discussed above, that all waste charging schemes in the regulations should be based upon PPP.

“The Construction Waste Disposal Charging Scheme” has been in operation since 2005. The legal basis for this type of charging scheme is “Waste Disposal (Charges for Disposal of Construction Waste) Regulation” (Sub leg N, Cap 354). According to this legislation, the main construction contractor is charged for all dumped construction waste. The main contractor (for high value construction work) or any person (for minor construction or renovation work) has a duty to open a billing account and the billing account is used for paying any prescribed charge payable in respect of construction waste generated from construction work undertaken under that contract.<sup>114</sup> As well as charging for dumping, the legislation also lays down a charging framework with price discrimination. This price discrimination is based on the differentiation between non-inert construction waste and inert construction waste.<sup>115</sup> Under the charging scheme, construction waste directly disposed of at landfills will be charged at HKD 125 per ton; it will cost only HKD 100 per ton if the construction waste is delivered to a sorting facility; while only HKD 27 per ton will be charged if the waste is disposed of at public filling facilities, namely, if

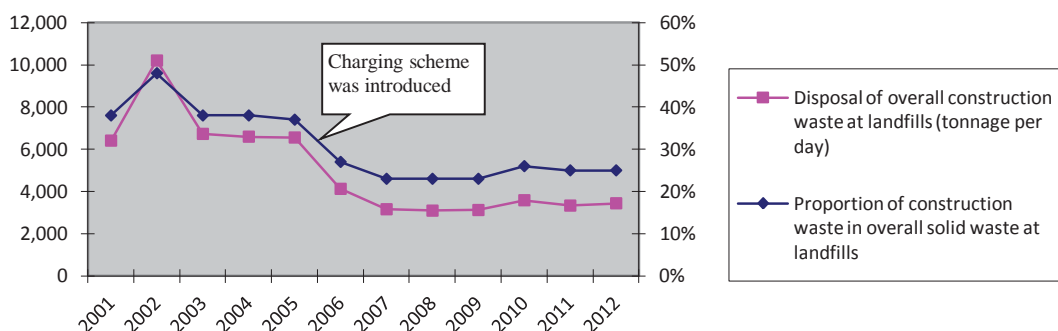
<sup>113</sup> The regulations include: Waste Disposal (Livestock Waste) Regulations (sub leg A, Cap 354); Waste Disposal (Chemical Waste) (General) Regulation (sub leg C, Cap 354) and Waste Disposal (Charges For Disposal of Chemical Waste) Regulation (sub leg J, Cap 354); Waste Disposal (Charges for Disposal of Construction Waste) Regulation (sub leg J, Cap 354); Waste Disposal (Clinical Waste) (General) Regulation (sub leg O, Cap 354); and Waste Disposal (Charges for Disposal of Clinical Waste) Regulation (sub leg P, Cap 354).

<sup>114</sup> Waste Disposal (Charges for Disposal of Construction Waste) Regulation, Section 9.

<sup>115</sup> Non-inert construction waste usually includes bamboo, timber, vegetation, packaging waste and other organic materials, some of which can be recycled, while others are disposed of at landfills. On the other hand, inert waste mainly includes construction debris, rubble, earth, bitumen and concrete, which can be used for land formation in public filling areas. See C.S. Poon, Ann T.W. Yu and L.H. Ng, ‘On-Site Sorting of Construction and Demolition Waste in Hong Kong’, (2011) 32 *Resources, Conservation & Recycling* 157, p.159.

the waste is inert.<sup>116</sup> This price difference leads to a reduction in the intake of mixed construction waste at landfills, and makes reuse and recycling of construction waste more efficient. As Chart 2 below suggests, the scheme has successfully resulted in a decline in the quantity of construction waste disposed of at landfills since 2006, when the charging scheme came into effect. By 2012, construction waste disposal had dropped to only 27% of the total solid waste. Also, waste tipping to landfills has dropped by some 60%, and public filling facilities currently receive over 90% of the total construction waste.<sup>117</sup>

**Chart 2: Quantities and Statistics of Disposal of Construction Waste at Landfills in Hong Kong 2001–2012<sup>118</sup>**



In Hong Kong, another major source of urban waste, municipal solid waste (MSW), is still not regulated by law.<sup>119</sup> The data shows that in Hong Kong the daily per capita MSW rate has risen from 0.97kg to 1.27kg over the past 30 years, and it is expected that the existing landfills will be exhausted by 2019 if waste levels continue to increase at current levels.<sup>120</sup> A proposed disposal plan for MSW is currently under discussion, and PPP is believed to play a core role in the Government’s comprehensive strategy for MSW Management.<sup>121</sup> Since collecting charges is the typical way of implementing PPP, a waste charging scheme for MSW is expected to also be employed.<sup>122</sup> According to the “Timeframe for The Action Blueprint”, as mentioned above, the stakeholder engagement and law drafting for MSW charging will be completed by 2015.<sup>123</sup>

<sup>116</sup> *Supra* note 114, Section 14–16 and Schedule 1–4.

<sup>117</sup> Hong Kong Environmental Protection Department, *Monitoring of Solid Waste in Hong Kong: Waste Statistic for 2012*, available at <https://www.wastereduction.gov.hk/en/materials/info/msw2012.pdf> (accessed on 10 September, 2014).

<sup>118</sup> Environment Protection Department of Hong Kong, *Waste Reduction Statistics and Data*, available at [https://www.wastereduction.gov.hk/en/assistancewizard/waste\\_red\\_sat.htm](https://www.wastereduction.gov.hk/en/assistancewizard/waste_red_sat.htm) (accessed on 10 September, 2014).

<sup>119</sup> Municipal solid waste (MSW) consists of domestic waste (waste from households and institutional premises); commercial waste (waste from shops, restaurants, hotels, offices, and markets in private housing estates etc.); and industrial waste from all industries except construction and chemical activities. See Hong Kong Environmental Protection Department, *A Policy Framework for the Management of Municipal Solid Waste (2005 - 2014)*, Executive Summary, available at [http://www.epd.gov.hk/epd/msw/htm\\_en/content.htm](http://www.epd.gov.hk/epd/msw/htm_en/content.htm) (accessed on 10 September, 2014).

<sup>120</sup> Hong Kong Environment Bureau (note 95 above), p.4 and 7.

<sup>121</sup> Hong Kong Environmental Protection Department (note 119 above), p.3.

<sup>122</sup> The Hong Kong Chief Executive, The 2014 Policy Address, para. 162, available at <http://www.policyaddress.gov.hk/2014/eng/pdf/PA2014.pdf> (accessed on 10 September, 2014).

<sup>123</sup> See note 95 above, p.14.

## 2.5. Discussion

It is not difficult to see that PPP is applied in a relatively conservative way in Hong Kong. This conservative application of PPP makes a limited contribution to enabling Hong Kong to become a greener and cleaner city. The drawbacks to its present application are in the following three aspects: 1) Its application is confined only to selected areas; 2) the cost is limited to only that in the nature of *ex ante* pollution cost; and 3) there is only a partial internalization of pollution costs.

Firstly, under Hong Kong law and policy, PPP is only applied in a few selected areas, such as sewage disposal and waste management, as discussed above. By way of contrast, PPP has influence over all areas of environmental legislation in the EU, because PPP has been confirmed as a general principle embodied in EU environmental law. PPP is applied in EU waste policy,<sup>124</sup> water policy,<sup>125</sup> under the EU Environmental Liability Directive, and in a series of “occupational activities”<sup>126</sup> that cover any imminent threat to or actual damage to protected species and their natural habitats, both in water and on the land.<sup>127</sup>

Secondly, the application of PPP in Hong Kong is largely limited to the *ex ante* stage, although its definition in the second Review of the Hong Kong “White Paper” brings about some contradiction. It is rarely, if ever, pointed out that PPP should also be used in justifying the cost of compensation to pollution victims, and in providing for restoration of the damaged environment. However, as discussed above, there is a trend in the OECD and EU documents to ascribe a curative dimension to PPP and expand the scope of PPP to include the costs incurred both *ex ante* and *ex post*.

Thirdly, the cost of pollution prevention is internalized only partially or inadequately. This is evidenced by the operating recovery rate for the sewage charging scheme, as shown above, because either the government or public taxpayers are still burdened with quite a large proportion of the pollution costs. Even though, according to the original meaning of the PPP, full internalization is not mandatory, but rather is subject to the decisions of the local government, the current environmental deterioration faced by Hong Kong shows that full internalization of pollution costs may now be necessary.

## 2.6. Conclusion

Since its creation in the 1970s, PPP has seen continuous development in its meaning and scope of application at domestic, regional and international levels. PPP is now basically recognized as an environmental law principle in the EU and OECD member countries, under which full internalization of pollution costs to polluters is expected. In Hong Kong, PPP is implied in various environmental policy documents, although it is never actually portrayed as a legal principle or expressly included in any legislation. It is also difficult, if not impossible, for domestic courts to invoke PPP in order to support a pollution damage claim based upon this principle. Considering the progress made as a result of the application of PPP in sewage and

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<sup>124</sup> See note 53 above.

<sup>125</sup> See note 63 above.

<sup>126</sup> Note 70 above, Article 2(7). “Occupational activity” means any activity carried out in the course of an economic activity, a business or an undertaking, irrespective of its being of a private or public, profit or non-profit character.

<sup>127</sup> Note 70 above, Article 3.

waste management, PPP has played and will continue to play an important role in environment protection in Hong Kong. The groundwork has already, therefore, been laid for Hong Kong to strengthen its application of PPP, and to consider the possibility of including it in a more explicit way in future legislation.

### 3. Feasibility Assessment of the Application of the PPP to Ship-Source Pollution in Hong Kong

#### 3.1. Existing Legal Framework for Controlling and Remediating Ship-Source Pollution

##### 3.1.1. Prevention and Control of Ship-Source Marine Pollution

The United Nations Convention on the Law of the Sea (UNCLOS), as a constitutional framework of international law of the sea, addresses the jurisdictional problems of ship-source pollution. First, it sets out the rules governing the jurisdiction of flag, coastal and port states.<sup>128</sup> Second, it provides the framework for developing and implementing the marine environmental standards. However, UNCLOS does not set any absolute standards for marine pollution prevention, but instead adopts the form of an international minimum harmonization standard based on an obligation of result.<sup>129</sup> Specific regulations and standards to prevent ship-source pollution have been adopted by the IMO, which is the competent international organization for the regulation of shipping activities for the preservation and protection of the marine environment.

The International Convention for the Prevention of Pollution from Ships (MARPOL 73/78), which is the principal international convention on the prevention of ship-source pollution, is adopted by the IMO.<sup>130</sup> The anti-pollution measures concerning different kinds of pollutant are specified in its six Annexes.<sup>131</sup> The Annexes of the MARPOL Convention closely rely on modern technology and operating methods, such as discharge standards and standards of vessel construction, vessel design, and vessel equipment, to prevent operational pollution from vessels at sea.<sup>132</sup> It should be noted that, whereas Annexes I and II, in which the carriage of oil and noxious liquid substances are regulated, are binding on all parties together with the Articles of the Convention, the other Annexes are left open for each state to ratify.

Compliance with the MARPOL Convention is guaranteed by flag states and port states through the so-called “prescriptive jurisdiction” and “enforcement jurisdiction”.<sup>133</sup> MARPOL

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<sup>128</sup> Most of the UNCLOS provisions on ship-source pollution are laid out in Part XII, entitled “Protection and Preservation of the Marine Environment.”

<sup>129</sup> Catherine Redgwell, ‘From Permission to Prohibition: The 1982 Convention on the Law of the Sea and Protection of the Marine Environment’, in David Freestone, Richard Barnes and David M. Ong (eds) *The Law of the Sea: Progress and Prospects* (Oxford University Press 2006), p.188–189.

<sup>130</sup> As of October 2014, 152 states, representing 99.2% of the world's shipping tonnage, are parties to the MARPOL Convention. See <http://www.imo.org/About/Conventions/StatusOfConventions/Documents/status-x.xls> (accessed on 14 October, 2014).

<sup>131</sup> The six Annexes includes Annex I Regulation for the prevention of pollution by oil, Annex II Regulation for the control of pollution by noxious liquid substances in bulk, Annex III Regulation for the prevention of pollution by harmful substances carried by sea in packaged form, Annex IV Regulation for the prevention of pollution by sewage from ships, Annex V Regulation for the prevention of pollution by garbage from ships, and Annex VI Regulation for the prevention of air pollution from ships.

<sup>132</sup> Patricia Birnie, Alan Boyle and Catherine Redgwell, *International Law and the Environment* (3rd edn, Oxford University Press 2009), p.404.

<sup>133</sup> The prescriptive jurisdiction refers to the jurisdiction of the state to enact substantive pollution control rules and standards; the enforcement jurisdiction refers to the jurisdiction of the state to prevent and punish violation of the enacted rules and standards. See Alan Khee-Jin Tan, *Vessel-Source Marine Pollution – the Law and Politics of International Regulation* (Cambridge University Press 2006), p.176. Some scholars also include the third kind of

Convention articles and the subsequent UNCLOS have comprehensively illustrated such mechanism. Flag states traditionally have jurisdiction over vessels flying their flags irrespective of a vessel's actual location.<sup>134</sup> The jurisdiction of flag states may stem from the theory of territorial jurisdiction or nationality jurisdiction, or it is simply justified on pragmatic grounds.<sup>135</sup> With respect to ship-source pollution prevention, flag states take primary responsibility for exercising both prescriptive and enforcement jurisdiction over vessels flying their flags universally. Flag states that ratify the MARPOL Convention are obligated to enact the MARPOL Convention into domestic legislations, and such domestic legislations shall have at least the same effect as the MARPOL Convention; in other words, flag states are empowered to make even stricter standards and rules governing pollution prevention.<sup>136</sup> Vessels flying their flags are subject to these regulations wherever they are. Flag states shall also ensure the enforcement of the Convention by conducting periodic inspections, issuing certificates to the registered ship, and taking appropriate action if a ship violates the requirements of the MARPOL Convention, even if the violation occurs outside the flag state's waters.<sup>137</sup> However, a weakness exists in that the flag state's pollution control measures may be ineffective in some circumstances; for example, some vessels are engaged in an industry with a trans-boundary nature, and their shipping activities are always beyond control of the relevant flag states. Also, because pollution always occurs far away from flag states, there is a lack of direct interest by most flag states in the prevention of ship-source pollution.<sup>138</sup> In addition, resources and infrastructure for pollution prevention are not available to all flag states so as to meet their obligation under international law.<sup>139</sup> The recent popularity of a "flag of convenience" in shipping practice even further aggravates such ineffectiveness.<sup>140</sup>

Port states act by way of a compromise over the conflicts between coastal states, which advocate extended jurisdiction over vessels passing by so as to protect their coastal marine environment, and flag states which want to maintain their freedom of navigation.<sup>141</sup> It is a form of redress for the ineffective implementation of the MARPOL Convention exclusively by flag states, because port states have geographical convenience and a stronger incentive for pollution prevention with their exposure to the high pollution risks from vessels. Also, actions taken by port states, rather than by coastal states, avoid any interference to freedom of navigation. The role of port states has been realized since 1929, when a degree of control of foreign-flagged vessels by port states was

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jurisdiction – adjudicate jurisdiction, which means the power of the court or the administrative tribunal to hear a case against a vessel or a person, *see* Daniel Bodansky, 'Protecting the Marine Environment from Vessel-source Pollution: UNCLOS III and Beyond' (1991) 18 Ecology Law Quarterly 719, p.731.

<sup>134</sup> For an overview of the historical development of the flag state, *see* John N. K. Mansell, *Flag State Responsibility – Historical Development and Contemporary Issues* (Springer 2009), Chapter 2.

<sup>135</sup> Daniel Bodansky (note 133 above), p.736.

<sup>136</sup> Article 211 (2), UNCLOS.

<sup>137</sup> Article 1, Article 4, Article 5 (1) and Article 6 (4), MARPOL Convention (73/78); Article 217 (3)(4), UNCLOS.

<sup>138</sup> Colin De La Rue and Charles B. Anderson, *Shipping and the Environment* (2nd edn, Informa 2009), p.1054.

<sup>139</sup> *Ibid.*

<sup>140</sup> Flag of convenience is the business practice of registering a merchant ship in a sovereign state different from that of the ship's owners, and flying that state's civil ensign on the ship. Ships are registered under flags of convenience to reduce operating costs or avoid the regulations of the owner's country.

<sup>141</sup> Cheng-Pang Wang, 'A Review of the Enforcement Regime for Vessel-Source Oil Pollution Control' (1986) 16 Ocean Development & International Law 305, p.328.

included in the 1929 International Convention for the Safety of Life at Sea (SOLAS).<sup>142</sup> For one thing, port states enjoy sovereignty over their own internal waters and territorial seas, and therefore they have the prescriptive and enforcement jurisdiction to establish and enforce particular rules and standards for vessels' entry and stay in their internal waters and territorial seas in order to prevent pollution to the marine environment.<sup>143</sup> In addition, port states are granted extra enforcement jurisdiction by MARPOL and UNCLOS with regard to investigations and inspections. However, irrespective of any actual damage, port states are empowered to conduct inspections of arrived vessels for a violation of the MARPOL Convention outside its waters and high seas or the territorial and EEZ waters of other states, only if they are formally requested to do so by the states or authorities concerned.<sup>144</sup> It should be noted that port states' jurisdiction over waters outside their own is limited to implementing the MARPOL Convention; in other words, port states are not allowed to apply their own rules and standards to outside violations.<sup>145</sup> If any violation occurs, however, sanctions are allowed to be established, and the vessel can be detained by the port state.<sup>146</sup> In addition, port states are obligated to furnish evidence and/or report any violation of the Convention to flag states,<sup>147</sup> as well as to establish reception facilities for the MARPOL Annex I and II wastes.<sup>148</sup>

However, the current framework supported by flag states and port states is not without its problems. Flag states still have the primary role in the prevention of ship-source pollution, and therefore the potential problems mentioned above still exist. The enforcement jurisdiction of port states is also sometimes limited. For example, an inspection taken by port states under MARPOL to verify the validity of the certificate on board is only perfunctory unless there are "clear grounds" that the condition of the vessel does not correspond substantially with the particulars of that certificate;<sup>149</sup> also, the institution of proceedings in port states against vessels violating the MARPOL Convention is limited by flag states.<sup>150</sup> In addition, problems may arise for port states if violations occur outside port states' own waters. Port state jurisdiction for this situation is permissive rather than mandatory, and port states usually lack the incentive to exercise the enforcement jurisdiction because of difficulties in detecting pollution outside their own waters, and the worry about loss of reputation as an attractive port for worldwide vessels due to its wide enforcement jurisdiction.<sup>151</sup> Therefore, despite the current regime, the number of sub-standard ships that still remain, along with the continuing occurrences of ship pollution accidents, may show the need to further improve compliance with the MARPOL Convention.

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<sup>142</sup> Oya Ozcayir, 'Impact of Port State Control on Pollution at Sea', in Baris Soyer and Andrew Tettenborn (eds) *Pollution at Sea* (Informa 2012), p.276.

<sup>143</sup> Article 2 (1), Article 25 and Article 211 (3), UNCLOS; Article 5 (3), MARPOL Convention 73/78; Regulation 13G(8)(b) and 13H(8)(b), Annex I MARPOL Convention.

<sup>144</sup> Article 6 (2) and 6 (5), MARPOL 73/78; Article 218 (1) (2), UNCLOS.

<sup>145</sup> The UNCLOS states that a port state may undertake investigations and proceedings in case of violation to "applicable international rules and standards established through the competent international organization or general diplomatic conference", which refers to the MARPOL Convention. See Article 218 (1), UNCLOS.

<sup>146</sup> Article 4 (2) and Article 5 (2), MARPOL 73/78.

<sup>147</sup> Article 4 (2) and Article 6 (2) (3) (4), MARPOL Convention 73/78.

<sup>148</sup> Annex I Regulation 12 (1) and Annex II Regulation 7 (1), MARPOL Convention 73/78.

<sup>149</sup> Article 5 (2), MARPOL Convention 73/78.

<sup>150</sup> Article 228, UNCLOS.

<sup>151</sup> Tan (note 133 above), p.220.

In addition to the MARPOL convention, the International Convention on the Control of Harmful Anti-Fouling Systems on Ships (AFS Convention),<sup>152</sup> and the International Convention for the Control and Management of Ship's Ballast Water and Sediments (BWM Convention)<sup>153</sup> are all conventions concerning the prevention of sea pollution. The implementation of these conventions is supported by both flag states and port states.

The MARPOL Convention and its Annexes were extended by the United Kingdom to British Hong Kong prior to its hand-over to the PRC, and the implementation of MARPOL has remained in force for Hong Kong since its return to China according to the Basic Law. Therefore, MARPOL has been applicable to the Hong Kong Special Administrative Region with effect from 1 July 1997.<sup>154</sup> As a flag state, Hong Kong has exercised its prescriptive jurisdiction by enacting the MARPOL Convention and all of its six Annexes into domestic legislation by way of the Merchant Shipping (Prevention and Control of Pollution) Ordinance (Cap.413, Laws of Hong Kong). The regulations are strictly enforced, with the requirement that all Hong Kong registered ocean-going ships, as well as locally licensed vessels, are compulsorily surveyed and certificated. The Flag State Quality Control (FSQC) System is used to monitor and maintain the quality of Hong Kong registered cargo vessels.<sup>155</sup> The FSQC System will assess all registered cargo vessels and pick up on ones that are subject to FSQC inspections by Hong Kong Marine Department's surveyors.<sup>156</sup> As a port state, Hong Kong government carries out inspections on board foreign vessels entering Hong Kong waters. If any violation of MARPOL is detected, the vessel may be detained until the deficiency is rectified. Vessels may even be denied entry to the waters of Hong Kong if contravention of MARPOL is believed to have occurred. If any detained ship proceeds or attempts to proceed to sea before having been released by a competent authority, a fine and/or imprisonment will be imposed. The Pollution Control Unit of Hong Kong Marine Department is responsible for pollution prevention and control. It regularly inspects vessels bunkering/transferring oil in Hong Kong waters, and advises the masters on the precautions to be taken. Hong Kong Government has also fulfilled its obligation under MARPOL to found the Chemical Waste Treatment Centre (CWTC), which serves as the reception facility in Hong Kong for MARPOL Annexes I and II wastes. The CWTC contractor is responsible for collecting the wastes from vessels for treatment at the CWTC. The charging scheme for the collection and disposal of MARPOL Annex I and II wastes at the CWTC was given effect through the enactment of the Merchant Shipping (Prevention and Control of Pollution)(Charges for Discharge of Polluting Waste) Regulation (Cap. 413I, Law of Hong Kong).

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<sup>152</sup> The AFS Convention was adopted on 5 October 2001 and entered into force on 17 September 2008. The Convention prohibits the use of harmful organotins in anti-fouling paints used on ships, and establishes a mechanism to prevent the potential future use of other harmful substances in anti-fouling systems.

<sup>153</sup> The BWM Convention was adopted on 13 February 2004 but has not yet entered into force. The Convention aims to prevent the spread of harmful aquatic organisms from one region to another by establishing standards and procedures for the management and control of ships' ballast water and sediments.

<sup>154</sup> Hong Kong Basic Law, Article 153.

<sup>155</sup> Richard Coles and Edward Watt, *Ship Registration: Law and Practice* (Informa 2013), para 13.25, at p.163. See also the Introduction of Quality Assurance Systems by Hong Kong Marine Department, available at [http://www.mardep.gov.hk/en/pub\\_services/qas.html](http://www.mardep.gov.hk/en/pub_services/qas.html) (accessed on 22 October, 2014).

<sup>156</sup> *Ibid.*

### 3.1.2. Civil Liability for Ship-Source Pollution

The international regime of civil liability for ship-source pollution stemmed from the *Torrey Canyon* disaster,<sup>157</sup> and has been developed by the IMO since then. Currently, there mainly exist three international conventions regulating the civil liability arising from ship-source pollution: Oil pollution damage from tankers is regulated by the 1969 Convention on Civil Liability for Oil Pollution Damage (CLC) with its Protocols<sup>158</sup> and the associated International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage (Fund Convention) with its Protocols;<sup>159</sup> bunker pollution damage from non-tankers is regulated by the International Convention on Civil Liability for Bunker Oil Pollution Damage (BCLC);<sup>160</sup> other hazardous and noxious substances (HNS) are regulated by the International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea (HNS Convention).<sup>161</sup> These conventions aim to provide victims with efficient and adequate compensation in case of an incident involving marine pollution from ships. A closer look at the civil liability rules shows that all the schemes function through a similar mechanism. The conventions impose the liable party with strict liability subject to limited defence,<sup>162</sup> and create a system of compulsory liability insurance, with victims being able to take direct action against the insurer,<sup>163</sup> and with the limitation of liability granted to the liable party being in accordance with the tradition of maritime law.<sup>164</sup> However, it should be noted that the BCLC differentiates itself from the CLC/Fund Convention and the HNS Convention by the fact that additional liable parties are identified, and that only a single compensation scheme is provided,<sup>165</sup> whereas the CLC/Fund Convention and HNS Convention both channel the claim for damage solely to the registered owner, and introduce a two-tier compensation scheme under which the cargo industry contributes to additional compensation in excess of the owner's limitation of liability.<sup>166</sup> Except for the HNS Convention, which has not yet entered into force,<sup>167</sup> the compensation schemes under the CLC/Fund Convention and the BCLC have in general worked well, with most claims for pollution damage having been settled effectively.<sup>168</sup>

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<sup>157</sup> The *Torrey Canyon* ran aground on the southwest coast of the UK on 18 March 1967, and 31,000 tons of crude oil escaped. It has been one of the world's most serious oil spills, and left an international legal and environmental legacy that lasted decades.

<sup>158</sup> The CLC Convention was adopted on 29 November 1969 and entered into force on 19 June 1975. The 1969 CLC was replaced by the 1992 Protocol.

<sup>159</sup> The Fund Convention was adopted on 18 December 1971 and entered into force on 16 October 1978. The 1971 Fund Convention was superseded by the 1992 Protocol, and there is also the 2003 Protocol. The Fund Convention establishes an international fund, subscribed to by the cargo interests, providing additional compensation to victims of pollution damage in cases where compensation under the CLC Convention is either inadequate or unobtainable.

<sup>160</sup> The BCLC Convention was adopted on 23 March 2001 and entered into force on 21 November 2008.

<sup>161</sup> The HNS Convention was adopted on 3 May 1996 and superseded by the 2010 Protocol, neither of which is in force yet.

<sup>162</sup> Article 3, CLC Convention 1992; Article 3, BCLC Convention; Article 7, HNS Convention.

<sup>163</sup> Article 7(8), CLC Convention 1992; Article 7 (10), BCLC Convention; Article 12 (8), HNS Convention.

<sup>164</sup> Article 5, CLC Convention 1992; Article 6, BCLC Convention; Article 9, HNS Convention.

<sup>165</sup> Article 3, BCLC Convention.

<sup>166</sup> Article 3(4), CLC 1992; Article 7(5), HNS Convention.

<sup>167</sup> Several difficulties, both technical and political, impede the ratification process of the HNS Convention, see Wang Hui, 'Prevention and Compensation for Marine Pollution', in Michael G. Faure, Han Lixin and Shan Hongjun (eds) *Maritime Pollution Liability and Policy — China, Europe and the US* (Wolters Kluwer 2010), p.30.

<sup>168</sup> Since their establishment, the 1992 Fund and the preceding 1971 Fund have been involved in 143 incidents of varying sizes all over the world. In the great majority of cases, all claims have been settled out of court. See IOPC,

The CLC Convention and the associated Fund Convention are enshrined in Hong Kong law under the Merchant Shipping (Liability and Compensation for Oil Pollution) Ordinance (Cap.414, Laws of Hong Kong). The Supplementary Fund Protocol is not yet ratified by Hong Kong. Therefore, there is a two-tier compensation system available for victims of oil pollution damage caused in Hong Kong. The BCLC is enacted in Hong Kong under the Bunker Oil Pollution (Liability and Compensation) Ordinance (Cap 605, Laws of Hong Kong). This Ordinance mirrors the provisions in the BCLC, except for additional regulations for local vessels.<sup>169</sup> For HNS pollution damage, due to the fact that the HNS Convention has not yet entered into force, if any HNS pollution accident occurs, the liability and compensation for victims are subject to Hong Kong domestic tort law. This means that, in the absence of such a mechanism of strict liability and compulsory insurance as in the other international conventions, Hong Kong domestic law will inevitably frustrate the effectiveness for victims in dealing with pollution damage arising from HNS.

In general, it is believed that any pollution issues in Hong Kong may be addressed by complying with the above international conventions; however, the regulations in those conventions might not be adequate to solve all emerging issues, as shown by the following survey and its further discussion. This, therefore, also prompts deliberation as to whether an effective regime for combating ship-source pollution should include not only consistent enforcement of regulations aimed at protecting and preserving the marine environment, and an effective liability and compensation framework, but also implementation of the PPP “to its full measure”.<sup>170</sup>

## **3.2. Feasibility Survey over the Application of PPP in Hong Kong**

### **3.2.1. Introduction**

This part of the research involved data collection, which was done by conducting a questionnaire survey of selected shipping and shipping-related companies. The participants particularly targeted for completing the questionnaire come mainly under the following three categories: 1) Shipowners, ship managers and ship operators (Group 1); 2) cargo owners and charterers (Group 2); and 3) marine insurers, especially P&I clubs (Group 3). Companies of various sizes and origins were selected, since it was assumed that each would have different interests and a different understanding of the existing legal and policy framework for controlling and remedying ship-source pollution, as well as different ideas about the application of PPP. This selection would result in a full understanding of the concerns held by all such shipping and shipping-related industries. In total, 127 participants were selected, including: 98 shipowners, ship managers and ship operators, based upon the membership directory of the Hong Kong Shipowner Association;<sup>171</sup> 10 cargo owners/charterers; and 19 general marine insurance underwriters or P&I clubs, especially those most likely involved in the business of shipowners’

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Brochure for the International Oil Pollution Compensation Funds, available at [http://www.iopcfunds.org/uploads/tx\\_iopcpublications/brochure\\_e.pdf](http://www.iopcfunds.org/uploads/tx_iopcpublications/brochure_e.pdf) (accessed on 14 October, 2014).

<sup>169</sup> Section 12, Bunker Oil Pollution (Liability and Compensation) Ordinance.

<sup>170</sup> Kenneth A. MacInnis (n 14 above), at p.144.

<sup>171</sup> The Hong Kong Shipowner Association, [http://www.hksoa.org/members\\_directory/shipmanagers.php](http://www.hksoa.org/members_directory/shipmanagers.php) (accessed on December 16, 2014).

pollution liability.

Key questions in the questionnaire included: 1) A set of 5-point Likert scales, with statements developed from the literature review on ship-source pollution and PPP, so as to measure participants' understanding and perceptions of the adequacy of the existing legal and policy framework and the PPP; and 2) a number of open-ended questions to allow participants to elaborate on their understanding and perceptions. The questionnaires were sent to the participants mainly by post; some were sent by e-mail. The responses were originally expected to be received back within two months; however, after some delay, the final completed ones were received within two and half months. During this time period, reminders were sent in order to achieve a reasonable response rate.

The participants' responses to the questionnaire survey were assessed and compared. The quantitative data (i.e. measurements using the Likert scale) were analyzed using the descriptive and correlational techniques provided in IBM SPSS Software. The qualitative data (i.e. answers to the open-ended questions) were handled following the thematic analysis approach,<sup>172</sup> which uses the constant comparative method to reveal similarities and differences between responses.

### 3.2.2. Survey

#### 1) *In general*

In total, 39 companies participated in the survey, yielding a 30.71% response rate. Among them, 35 replies were from Group 1, indicating the great interest and concern of parties in Group 1 regarding issues surrounding ship-source pollution. None of the invited participants from Group 2 replied to the questionnaire, which may indicate that cargo owners/charterers may have less interest in this matter. Four responses were received from Group 3, all being members of International P&I clubs.<sup>173</sup>

Taking into account the great differences in business and management between these three groups, there was a section in the questionnaire containing a number of different questions. Specifically, there were five questions for Group 1: 1) The number of vessels owned or operated; 2) their main business; 3) the frequency of calling at Hong Kong ports or passing through Hong Kong waters during the past year; 4) the frequency of calling at PRD ports or passing through PRD waters in the past year; and 5) measures taken to control/prevent and compensate ship-source pollution. For Group 2, there were three questions, these being about their main business and any possible emergency plans for potential oil/chemical spillage. For Group 3, there were four questions, mainly concerned with the type of marine underwriting and the provision of marine pollution liability insurance.

According to the responses received, it is clear that for Group 1, 54.3% of the respondents identified themselves as a middle-sized company having 10–50 vessels; 28.6% are small-sized

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<sup>172</sup> Greg Guest, Kathleen M. MacQueen, and Emily E. Namey, *Applied Thematic Analysis* (Sage Publications 2012) p.10.

<sup>173</sup> The International Group of P&I Clubs is the group which consists of the thirteen principal underwriting member clubs. The International Group of P&I Clubs provide liability cover (protection and indemnity) for approximately 90% of the world's ocean-going tonnage.

ones with less than 10 vessels, and 17.1% were large-sized companies having more than 50 vessels. The highest percentage of respondents (42.9%) are engaged in dry bulk shipping; 34.3% of the respondents have an integrated business model; the container shipping business accounts for 17.1%, and 5.7% are in tanker shipping; however, none of the respondents are in the cruise industry. As for the frequency of calling at Hong Kong, 45.7% of all respondents chose never (11.4%) or seldom (34.3%) calling at Hong Kong port or passing through its waters; while 54.3% regularly (20.0%) or frequently (34.3%) call at Hong Kong port or pass through its waters. As to the frequency of calling or passing through the PRD, 54.3% never (22.9%) or seldom (31.4%) come to the PRD, and 45.7% regularly (11.4%) or frequently (34.3%) come to the PRD. Since there was no response from Group 2, there was no data to be analysed. In Group 3, all the participating clubs provide pollution liability cover, and they also implied that pollution liability claims would sometimes be rejected.

One additional question for Group 1 participants (n=35, see above) was about measures already taken to control/prevent and compensate ship-source pollution. Suggested answers in the survey form included measures based upon various international conventions. As shown below (see Table 1), it is evident that 94.3% of the companies comply with the MARPOL Convention, 71.4% comply with the BWM Convention (despite the fact that this convention has not yet taken effect), and 65.7% of the companies comply with the AFS Convention (even though it does not have effect in Hong Kong). With regard to the liability and compensation conventions, 71.4% of the respondents in Group 1 comply with the CLC, and 77.1% comply with the BCLC. Two respondents mentioned that they have undertaken additional prevention measures, for example, in-house training for their staff.

**Table 1: Measures taken to prevent/control and compensate ship-source pollution**

	MARPOL	BWM	AFS	CLC	BCLC
Number*	35	35	35	35	35
Mode**	1	1	1	1	1
Percentage of Mode	94.3%	71.4%	65.7%	71.4%	77.1%

\* "Number" means the number of completed questionnaires received;

\*\* Mode was based on 0 representing "no" and 1 representing "yes".

2) *Evaluating effectiveness of the existing legal and policy framework for controlling ship-source pollution (SPC)*

The participants were invited to evaluate the effectiveness of the existing legal and policy framework for controlling ship-source pollution in Hong Kong. Responses were measured using a 5-point Likert scale, and were analyzed by coding 1 for "very effective", 2 for "effective", 3 for "neutral", 4 for "not very effective", and 5 for "very ineffective". As shown in the table below (see Table 2), 39 completed questionnaires were received, as discussed above; however, 2 respondents did not reply to this question. The average attitude evaluating SPC was between "effective" and "neutral", with the Mean being 2.62. The difference among all the responses is small, with the Std. Deviation being 0.828. Most respondents viewed the framework neutrally (with 51.4% thinking it "neutral"). Respondents who doubted the effectiveness of existing measures actually compared them to those in the EU and US, and pointed out flaws in the scope

of the law and policy application – for example, with regard to non-regulated small vessels and the geographical limits for application of particular measures.

**Table 2: Evaluation of the existing legal and policy framework for preventing and controlling ship-source pollution (SPC)**

	SPC
<b>Valid Number*</b>	37
<b>Missing Number**</b>	2
<b>Mean</b>	2.62
<b>Mode</b>	3
<b>Std. Deviation</b>	.828

	Frequency	Percentage	Valid Percentage	Cumulative Percentage
<b>Valid</b>				
<b>Very Effective</b>	4	10.3	10.8	10.8
<b>Effective</b>	10	25.6	27.0	37.8
<b>Neutral</b>	19	48.7	51.4	89.2
<b>Not Very Effective</b>	4	10.3	10.8	100.0
<b>Very Ineffective</b>	0	0	0	100.0
<b>Total</b>	37	94.9	100.0	
<b>Missing</b>				
<b>System</b>	2	5.1		
<b>Total</b>	39	100.0		

\* “Valid Number” means the number of completed questionnaires received;

\*\* “Missing Number” means the number of questionnaires received without answering that particular question;

Means were calculated based on the 5-point Likert scale, from 1 for “very effective”, 2 for “effective”, 3 for “neutral”, 4 for “not very effective”, and 5 for “very ineffective”.

### 3) *Evaluation of the existing legal and policy framework for compensating ship-source pollution (SLC)*

At the same time, participants were also invited to evaluate the adequacy of the existing legal and policy framework for compensating ship-source pollution in Hong Kong, and this was also measured using a 5-point Likert scale, and the responses were analyzed by coding 1 for “very adequate”, 2 for “adequate”, 3 for “neutral”, 4 for “not very adequate”, and 5 for “very inadequate”.

Among the 39 completed questionnaires, one respondent did not reply to this question. The average attitude for SLC is a little conservative compared to that towards the prevention and control framework, with the Mean being 2.84, closer to “neutral”; the difference among the responses is, however, also small. Most respondents viewed the framework neutrally (with 47.4% thinking it “neutral”). However, 18.4% of the participants chose “Not Very Adequate” and “Very Inadequate” (see Table 3), which may suggest that there is still room for improvement of the legal and policy framework for compensating ship-source pollution, as compared to the results for the framework of controlling ship-source pollution (with 10.8% choosing “Not Very

Effective” and “Very Ineffective”, see above). In addition, the participants were invited to provide a specific reason for their choice. However, 8 out of 18 respondents who expressed their opinions misunderstood “compensation” as being “subsidy from the government for anti-pollution measures”. This may mean that shipowners/managers/operators are less concerned with compensation for victims or for pollution damage caused.<sup>174</sup>

**Table 3: Evaluation of the existing legal and policy framework for liability and compensation for ship-source pollution (SLC)**

	SLC
<b>Valid Number*</b>	38
<b>Missing Number**</b>	1
<b>Mean</b>	2.84
<b>Mode</b>	3
<b>Std. Deviation</b>	.823

	Frequency	Percentage	Valid Percentage	Cumulative Percentage
<b>Valid</b>				
<b>Very Adequate</b>	1	2.6	2.6	2.6
<b>Adequate</b>	12	30.8	31.6	34.2
<b>Neutral</b>	18	46.2	47.4	81.6
<b>Not Very Adequate</b>	6	15.4	15.8	97.4
<b>Very Inadequate</b>	1	2.6	2.6	100.0
<b>Total</b>	38	97.4	100.0	
<b>Missing</b>				
<b>System</b>	1	2.6		
<b>Total</b>	39	100.0		

\* “Valid Number” means the number of completed questionnaires received;

\*\* “Missing Number” means the number of questionnaires received without answering that particular question;

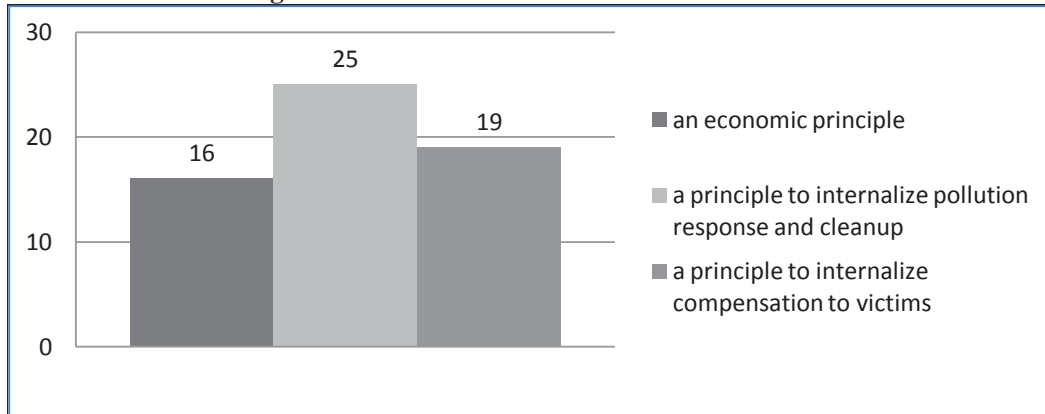
Means were calculated based on the 5-point Likert scale, from 1 for “very adequate”, 2 for “adequate”, 3 for “neutral”, 4 for “not very adequate”, and 5 for “very inadequate”.

#### 4) *Understanding of PPP*

To express their understanding of PPP, the participants could choose from: 1) It is an economic principle for internalizing pollution costs; 2) it requires polluters to pay for emergency response and clean-up costs; 3) it requires polluters to pay compensation to victims of pollution; and 4) others (please specify). They were able to choose more than one answer. It is interesting to find out that 25 out of 39 respondents believed that PPP is a principle to internalize pollution response and cleanup. 16 and 19 respondents, respectively, considered PPP as an economic principle and a principle to internalize compensation (see Table 4).

<sup>174</sup> This is understandable, as pollution damage is normally covered by the relevant insurance arrangement.

**Table 4: Understanding of PPP**



5) *Benefits and disadvantages of applying PPP to the regime for controlling and compensating ship-source pollution in Hong Kong*

Among the 39 completed questionnaires, 30 and 29 respondents, respectively, identified the benefits and disadvantages of applying PPP to the regime for controlling and compensating ship-source pollution in Hong Kong.

As far as the benefits go of applying PPP, 23 respondents contended that the implementation of PPP to the regime for controlling and compensating ship-source pollution in Hong Kong will favour the reduction and prevention of ship-source pollution, and will improve both the environmental quality and people's health. Five respondents thought PPP will contribute to figuring out the resources for cleanup costs and compensation for damages. Three respondents mentioned direct effects arising from the implementation of PPP, for example, an improvement in the pollution profile of ship equipment and contingency plans. It was also believed by one respondent that oil importers and carriers will pay more attention to avoiding pollution because the authorities can identify them as the polluter.

Regarding the disadvantages, one of the main concerns, shared by 20 respondents, was that, by applying policies based upon PPP, the costs to shipowners will increase, causing Hong Kong to lose its competitiveness and ability to attract vessels to call, especially if other ports in the PRD region do not implement the same policy. Five respondents asserted that in practice the PPP may not be applied fairly. Two asserted that the government's duty with respect to making compliance checks, and the inevitable costs involved, will be aggravated. There were also other concerns: One respondent worried that clean-up operations will be delayed if the polluter is not in a position to pay, and another thinks that PPP will not be applied fully because there still exists the regime of limitation of liability for the shipping industry.

6) *Suggested policies to which PPP could be applied to its fullest measure and the effects*

In the questionnaire, there were three proposed policies suggested to which PPP could be applied to its fullest measure: 1) Increase the waste disposal charge (WDC); 2) increase the port dues and fees (PDF); and 3) raise the requirements for vessels entering (REQ). The attitudes towards these three suggested measures were measured by a 5-point Likert scale, and the responses were

analyzed by coding 1 for “strongly disagree”, 2 for “disagree”, 3 for “neutral”, 4 for “agree” and 5 for “strongly agree”.

In total, 37 out of the 39 respondents expressed their views on WDC (see Table 5). 72.9% of them think that it would not be unacceptable (choosing “Neutral”, “Agree” or “Strongly Agree”) if the government increases the waste disposal charge in order to cover all the operating costs (among them, 43.2% chose “Agree”, being the most). However, the attitude in general towards this proposed policy seems a little conservative, the Mean being 3.03, which is very close to “Neutral”.

As for the proposed measure concerning PDF, there were 37 replies from the 39 respondents (see Table 5); 32.4% of the respondents agree or strongly agree with the proposed increase in PDF; but 45.9% of the respondents disagree or strongly disagree with it. The Mean is 2.76 indicating the average attitude is below “Neutral”. The difference among the responses is the largest of the three proposed policies, with the Std. Deviation being 1.188.

For REQ, 38 responses were received, with one respondent missing. More than half of the respondents think REQ would be acceptable, the option “Agree” being taken by 55.3% and “Strongly Agree” by 18.4%. Also, the Std. Deviation among the responses is only 0.998, which is the minimum among the three suggested policies.

The participants were also invited to evaluate the effects of carrying out the suggested policies, there being two proposed answers. For a positive one, prevention and controlling of ship-source pollution will be strengthened (PE); for a negative one, vessels may be prevented from calling at Hong Kong or passing through Hong Kong waters in order to avoid the policies (NE). In total, there were 36 and 37 replies out of the 39 completed questionnaires. Most respondents “agree” or “strongly agreed” (62.9%) that the above suggested policies would provide vessels with an incentive to strengthen their pollution prevention/control measures; whereas 14.3% held the opposite view, i.e. they “disagree” or “strongly disagree” with the possible positive effect. For the possible negative effect, 57.9% “disagree” or “strongly disagree” that the suggested policies would dissuade vessels from calling at Hong Kong or passing through Hong Kong waters; however, 31.6%, which is not a negligible portion of the respondents, “strongly agree” or “agree” that it would happen.

**Table 5: Evaluation of suggested policies and the possible effects**

	WDC	PDF	REQ	PE	NE
<b>Number</b> Valid*	37	37	38	36	38
Missing**	2	2	1	3	1
<b>Mean</b>	3.03	2.76	3.76	3.64	2.76
<b>Mode</b>	4	2	4	4	2
<b>Percentage of Mode</b>	43.2	29.7	55.3	50.0	52.6
<b>Std. Deviation</b>	1.067	1.188	.998	1.046	1.125

\* “Valid” means the number of completed questionnaires received;

\*\* “Missing” means the number of questionnaires received without answering that particular question;

Means were calculated based on the 5-point Likert scale, from 1 for “strongly disagree”, 2 for “disagree”, 3 for “neutral”, 4 for “agree”, and 5 for “strongly agree”.

In addition, through correlational analysis, it is revealed that since each sig. is more than 0.05 (see Table 6), the scale of the fleet or the frequency of calling at Hong Kong/PRD do not significantly impact on the willingness of the industry to accept the suggested policies.

**Table 6: Correlation between shipping characteristics and attitudes towards the suggested policies**

		WDC	PDF	REQ	PE	NE
<b>Scale of fleet</b>	Pearson Correlation	.163	.047	.095	.123	.187
	Sig. (2-tailed)	.364	.796	.599	.497	.298
	Number*	33	33	33	33	33
<b>Frequency of calling at Hong Kong</b>	Pearson Correlation	-.295	-.197	-.023	-.037	.184
	Sig. (2-tailed)	.096	.273	.897	.836	.305
	Number*	33	33	33	33	33
<b>Frequency of calling at PDR</b>	Pearson Correlation	.110	-.082	.087	.106	.331
	Sig. (2-tailed)	.542	.651	.631	.559	.060
	Number*	33	33	33	33	33

\* “Number” means the number of shipping companies (Group 1);

“Scale of fleet” was based on 1 representing “<10”, 2 representing “10-50”, and 3 representing “>50”;

“Frequency of calling at Hong Kong” was based on 1 representing “Never”, 2 representing “Seldom<5”, 3 representing “Regularly 5-10” and 4 representing “Frequently >10”;

“Frequency of calling at PDR” was based on 1 representing “Never”, 2 representing “Seldom<5”, 3 representing “Regularly 5-10” and 4 representing “Frequently >10”.

It is also of concern that the types of business (dry bulk shipping, container shipping, tanker shipping, ferry/cruise business and integrated business) may have some impact on the participants’ responses. By applying the ANOVA method, the homogeneity of variances was examined first; the result suggests that the variances of the data are similar for each dependent, i.e. the attitudes toward the suggested policies and the evaluation of possible effects have a sig. greater than 0.05 (see Table 7.1). ANOVA continued to be conducted thereafter, each sig. proving to be much beyond 0.05. This suggests that there is no statistically significant difference among respondents engaging in these differing types of business (see Table 7.2). This means that

there is little relation between the types of shipping business that respondents are engaged in and their attitudes toward the suggested policies and possible effects.

**Table 7: Attitudes toward the suggested policies**

**Table 7.1: Test of Homogeneity of Variances**

	Levene Statistic	df1	df2	Sig.
WDC	2.078	3	31	.123
PDF	2.175	3	31	.111
REQ	1.627	3	31	.203
PE	.621	3	31	.607
NE	.725	3	31	.545

**Table 7.2: Attitudes toward suggested policies by those in various shipping businesses**

		Sum of Squares	df	Mean Square	F	Sig.
WDC	Between Groups	.833	3	.278	.157	.924
	Within Groups	54.767	31	1.767		
	Total	55.600	34			
PDF	Between Groups	6.050	3	2.017	1.071	.375
	Within Groups	58.350	31	1.882		
	Total	64.400	34			
REQ	Between Groups	.988	3	.329	.216	.884
	Within Groups	47.183	31	1.522		
	Total	48.171	34			
PE	Between Groups	3.883	3	1.294	.710	.553
	Within Groups	56.517	31	1.823		
	Total	60.400	34			
NE	Between Groups	3.119	3	1.040	.707	.555
	Within Groups	45.567	31	1.470		
	Total	48.686	34			

Shipping businesses were grouped into five types, with 1 representing “Dry Bulk Shipping”, 2 representing “Container Shipping”, 3 representing “Tanker Shipping”, 4 representing “Ferry/cruise Business” and 5 representing “Integrated Business”.

### 3.3. Conclusion

From the survey results, it is important to note that: First, the adequacy and/or effectiveness of the existing legal and policy framework for controlling and remedying ship-source pollution in Hong Kong is questionable; second, there are varied understandings of what PPP is in the shipping industry; and thirdly, the majority of participants in the survey supported the idea of proposing new policies based upon PPP for better control and compensation of ship-source pollution.

## 4. Final Discussion and Policy Recommendations

### 4.1. Discussion

For a long time, ship-source marine pollution has been singled out for special attention,<sup>175</sup> although it is felt by the same author that this attention is hardly commensurate with its actual contribution to marine pollution.<sup>176</sup> However, environmental issues have never been higher on the shipping agenda.<sup>177</sup> In particular, with maritime transportation becoming more intensified, the marine environment may be faced with increasingly serious and sometimes irreversible pollution damage. As observed by one author, the environmental regulation of shipping has already moved beyond the traditional issues relating to oil and chemical pollution to concerns such as ship-generated air pollution, ocean dumping, ballast water organisms, anti-fouling paints and ship recycling.<sup>178</sup> The list of concerns is growing, and without any doubt at all the marine industry is under increasing pressure to comply with evolving regulations and thus become cleaner and greener.<sup>179</sup>

Despite the mist involved in defining the PPP, it has been developed in general environmental law that polluters are expected to bear all the costs arising from pollution;<sup>180</sup> meanwhile, as analysed in the above Parts 2 and 3, the groundwork has been laid for Hong Kong to strengthen its application of PPP. Were PPP to be applied in ship-source pollution law, it would require that both *ex ante* and *ex post* pollution costs of a ship-source pollution accident should be internalized. Therefore, the following discussion is divided into two aspects, namely: 1) The prevention and control of ship-source pollution (i.e. *ex ante* pollution costs) and 2) the liability and compensation for ship-source pollution (i.e. *ex post* pollution costs).

#### 1) *PPP and its application to the measures for prevention and control of ship-source pollution*

With respect to *ex ante* pollution costs, this refers mainly to those resulting from compliance with all relevant and applicable standards and laws for pollution prevention and control. In this respect, Hong Kong has mainly exercised its prescriptive jurisdiction by enacting the MARPOL Convention and all its Annexes into its domestic legislation via the Merchant Shipping (Prevention and Control of Pollution) Ordinance (Cap.413, Laws of Hong Kong). Hence, the applicable standards and laws for pollution prevention in Hong Kong mainly refer to those provided in the MARPOL Convention and its six Annexes.

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<sup>175</sup> Edgar Gold, 'Liability and Compensation for Ship-Source Marine Pollution: The International System', in The Fridtjof Nansen Institute, *Yearbook of International Co-operation on Environment and Development 1999-2000* (Earthscan Publications 1999), p.31.

<sup>176</sup> *Ibid.*

<sup>177</sup> Lloyd's Register, 'Shipping and the Environment', available at [http://www.lr.org/Images/COL4803\\_LR\\_marine\\_env\\_report\\_lo\\_tcm155-192788.pdf](http://www.lr.org/Images/COL4803_LR_marine_env_report_lo_tcm155-192788.pdf) (accessed on August 8, 2013).

<sup>178</sup> Tan (note 133 above), p.68.

<sup>179</sup> OECD (note 41 above).

<sup>180</sup> *Ibid.* See also Hans Christian Bugge, 'The Polluter Pays Principle: Dilemmas of Justice in National and International Contexts', in Jonas Ebbesson and Phoebe Okowa (eds) *Environmental Law and Justice in Context* (Cambridge University Press 2009), p. 413-414. See also Patricia Birnie, Alan Boyle and Catherine Redgwell (note 12 above), p.432.

According to the MARPOL Convention, “pollution” arising from vessels means any illegal release of oil and other harmful substances from ships, such as HNS, sewage, garbage and air pollution.<sup>181</sup> Since the risk of pollution arises from the daily operation of vessels, it is natural that the shipowner is deemed to be “the polluter”. This is consistent with the general concept of “polluter”, since a polluter under the PPP is one who contributes to the risk of pollution. MARPOL also lays down the technical standards and rules for vessels. For instance, expenditure incurred for the purpose of complying with the MARPOL Convention is borne by the shipowner through the purchase price of a vessel, such as for meeting the mandatory requirements for vessel design, construction and equipment.<sup>182</sup> Or it can be borne through operational costs, such as fees for initial or subsequent surveys and certification.<sup>183</sup> It is also noted that the MARPOL Convention has equipped itself with a tacit acceptance procedure for any amendments, that is to say, shipowners may incur higher prevention costs in the future so as to satisfy any amendments to the MARPOL Convention.<sup>184</sup>

Under the MARPOL Convention, the setting-up and operation of port reception facilities (PRFs) takes up a large proportion of the prevention investment. It is the Contracting States that should ensure adequate reception facilities at their ports or terminals.<sup>185</sup> Although the MARPOL Convention does not expressly refer to the government as the sole funding source for the establishment of port reception facilities, it is usual that the government undertakes this. Later on, the government will charge both users and polluters with fees for the service rendered, which is called a cost recovery mechanism.<sup>186</sup> Usually there are two ways to recover the reception facilities’ costs: Waste disposal charges (a direct charge to individuals) and port dues and fees (indirect charges, regardless of whether or not the vessels use the reception facilities).<sup>187</sup> A direct charge scheme is adopted at the CWTC in Hong Kong for MARPOL waste collection and disposal; it is, however, observed that the operating costs of the CWTC for MARPOL waste are not fully internalized to polluters, because the recovery rate of variable operating costs (VOC) for MARPOL waste is still at a modest level (see Table 9). In other words, instead of requiring the polluters to pay in full for all relevant fees and charges, a large portion has still been contributed by the government. It thus follows that the public still bears part of vessel waste disposal costs through tax revenues etc.

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<sup>181</sup> Preamble and Article 1, MARPOL Convention.

<sup>182</sup> See for example, Regulation 16 of Annex I of MARPOL Convention.

<sup>183</sup> See for example, Regulations 4, 5 and 6 of Annex I of MARPOL Convention.

<sup>184</sup> Art 16 (2)(g)(f), MARPOL Convention.

<sup>185</sup> See for example, Regulation 12 of Annex I of MARPOL Convention.

<sup>186</sup> For example, the European Union (EU) has implemented Directive 2000/59/EC on Port Reception Facilities for Ship-Generated Waste and Cargo Residues, the Preamble of which states that ‘in view of the “polluter pays” principle, the costs of port reception facilities...should be covered by ships. ...This can be facilitated by providing that all ships contribute to the costs for the reception and handling of ship-generated waste so as to reduce the economic incentives to discharge into the sea’.

<sup>187</sup> The indirect charge is to overcome the disincentive that vessels may conduct illegal discharge to avoid cost. Countries in the Baltic Sea area have adopted an indirect fee system that includes within the harbour fee the relevant cost of discharging ship-generated marine litter (garbage).

**Table 9: Recovery rate of VOC for MARPOL waste handled by CWTC**

<b>VOC recovery %</b>	20	25	31	54	66
<b>Effective date</b>	1.8.1995	20.12.1996	16.1.1998	31.3.2006	1.7.2008

\* Resource: Hong Kong Environmental Protection Department, Fees and charges for the disposal of chemical waste at the CWTC [http://www.epd.gov.Hong Kong/epd/english/environmentinHong Kong/waste/prob\\_solutions/chemical\\_fees.html](http://www.epd.gov.Hong Kong/epd/english/environmentinHong Kong/waste/prob_solutions/chemical_fees.html)

In this case, it is thus recommended that the Hong Kong government reconsiders ways to internalize these costs that are associated with the prevention investment. This is possible by increasing the waste disposal charges or the port dues and fees. On the basis of our survey results, it is evident that the shipping and shipping-related industry is more in agreement with the idea of increasing waste disposal charges than with increasing port dues and fees. Also, increasing the waste disposal charges is in accordance with the current mechanism adopted by Hong Kong CWTC, namely, a direct charge scheme for MARPOL waste collection and disposal. Therefore, it is feasible to propose that the Hong Kong government considers adopting the relevant policy to increase waste disposal charges to largely recover the operating costs for reception facilities under the existing direct charging scheme.

2) *PPP and its application in measures for civil liability and compensation for ship-source pollution*

From the survey result, it is clear that the existing legal and policy framework in Hong Kong for civil liability for ship-source pollution is not deemed to be a perfect one, since only 34.2% of the respondents believed that the current framework is an adequate or very adequate one. Despite the misunderstanding of the word “compensation” by some respondents, the result may, however, be true, since there are three obvious drawbacks to the current system:

First, Hong Kong has adopted all maritime liability conventions; however, the definition of “pollution damage” in the liability conventions is not a comprehensive one. The CLC 1992, BCLC and HNS Conventions limit liability for environmental damage to “...the costs of reasonable measures of reinstatement actually undertaken or to be undertaken”.<sup>188</sup> However, the general understanding of environmental damage is wider, and includes the damage done to water quality, marine resources, and coastal natural or recreational resources etc.<sup>189</sup> Therefore, this is claimed by environmentalists to be the principal deficiency in the convention regimes.<sup>190</sup> The ones who support the exclusion of a comprehensive definition of “pollution damage” in the

<sup>188</sup> The CLC 1969 defines “pollution damage” to be “loss or damage caused outside the ship carrying oil by contamination resulting from the escape or discharge of oil from the ship, wherever such escape or discharge may occur, and includes the costs of preventive measures and further loss or damage caused by preventive measures”. Even though the CLC 1969 itself does not address whether environmental damage is compensable, Resolution No.3 of the 1971 Fund Convention (International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage), and the report of a Working Group of the Fund, confirms that a claim for environmental damage is not admissible under the 1971 Fund Convention. See Proshanto K. Mukherjee, ‘Liability and Compensation for Environmental Damage Caused by Ship-source Oil Pollution: Actionability of Claims’ in Michael G. Faure, Lixin Han and Hongjun Shan (note 167 above), p.77-81.

<sup>189</sup> James Boyd, ‘Lost Ecosystem Goods and Services as a Measure of Marine Damages’ in Michael G. Faure, Lixin Han and Hongjun Shan (note 167 above), p.54.

<sup>190</sup> Proshanto K. Mukherjee (note 188 above), p.77-81.

conventions claim that the major difficulty in identifying “environmental damage” lies in the technical difficulty of quantifying the loss.<sup>191</sup> Even though theoretical models may now shed some light on this, the reasonableness and reliability of these theoretical models have not been widely recognized.<sup>192</sup> In addition, the “compensatory” nature of a payment for environmental damage is doubted in essence to be a “punitive” one.<sup>193</sup> However, by using the wider definition of environmental damage it would be likely that more pollution damage would be compensated.

Second, there are issues related to the liable parties. The principles of causation and proportion are applied in the identification of a polluter when applying PPP. For example, the requirement of causation is indicated by EC/EU documents and ECJ case law. The EC 1975 Recommendation expressly refers to a polluter as someone who directly or indirectly damages the environment or who creates conditions leading to such damage.<sup>194</sup> This means that one who contributes to the damage or the conditions for any damage should be defined as a polluter under PPP. The ECJ has also expressed its opinion in the *Van de Walle* case<sup>195</sup> and the *Erika* case<sup>196</sup> that the identification of a polluter is subject to a test of “causation or negligence”<sup>197</sup> or at least “contribution to risk that the pollution might occur”.<sup>198</sup> In addition, the requirement of proportion was developed and implied in the application of PPP in the leading case *R v. Secretary of State of the Environment, ex p Standley and Metson*.<sup>199</sup> It means that the polluter only pays for pollution that his activities actually cause; he is not required to bear the costs of pollution created by other polluters.

In contrast, the current mechanism in maritime liability conventions relies on a given priority in identifying the liable party for ship-source pollution rather than by a case by case analysis based on the above principles. For example, the liable party under the CLC Convention is primarily limited to the shipowner, with the intention of there being a more effective and convenient claim process for the victims. Other parties, like the pilot, the charterer, the salvor and others are not subject to any claim for compensation for pollution damage unless the damage resulted from their personal act or omission, was committed with the intent to cause such damage, or recklessly and with knowledge that such damage would probably result.<sup>200</sup> There is also a supplementary fund established by the Fund Convention that is contributed to by the oil industry in the event that the CLC protection is inadequate.<sup>201</sup> This format is largely followed by other maritime liability conventions, except for the BCLC.<sup>202</sup> The obvious benefit that the current arrangement brings is the efficiency for a quick compensation settlement. Victims are recovered in the first instance, and remaining problems are left to be justified at a later stage. However, in practice, a

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<sup>191</sup> Colin De La Rue and Charles B. Anderson (note 138 above), p.477 - 490.

<sup>192</sup> *Ibid.*

<sup>193</sup> *Ibid.*

<sup>194</sup> Note 46 above.

<sup>195</sup> Case 1/03, Criminal proceedings against Paul Van de Walle, Daniel Laurent, Thierry Mersch and Texaco Belgium SA, [2004] ECR I-07613.

<sup>196</sup> Case 188/07, *Commune de Mesquer v. Total France SA and Total International Ltd*, [2008] ECR I-04501.

<sup>197</sup> Arne Bleeker (note 87 above), p.296.

<sup>198</sup> Note 196 above.

<sup>199</sup> Case 239/97, *The Queen v Secretary of State for the Environment and Minister of Agriculture Fisheries and Food ex parte H.A. Standley and Others and D.G.D. Metson and Others*, [1999] ECR I-02603.

<sup>200</sup> Article 4(2), CLC Convention.

<sup>201</sup> Article 2, Fund Convention.

<sup>202</sup> Article 1 (3), BCLC Convention.

pollution accident may be caused by the negligence or fault of the registered owner, the charterer, the ship manager or other parties jointly or severally. It is argued that the channelling clause is justified to some extent because the actual liable party will be held liable in the end due to the right of recourse action of the shipowner to pursue further compensation.<sup>203</sup> The shipowner, however, may encounter difficulties in pursuing the damages. For example, the shipowner may not be reimbursed due to the fact that the charterer becomes insolvent. A recent judgment of the Canadian Supreme Court held that under Canadian law the costs associated with remediating the environment are treated as any other debt of the polluter,<sup>204</sup> so it seems that legislators prefer efficiency in dispute settlement rather than absolute justice.

Finally, there are express provisions for limitation of liability under maritime liability conventions. Under common law, pollution victims may be fully compensated for the actual damage. However, a shipowner's liability is traditionally limited, especially under international conventions. The compensation amount under the liability regime may be inadequate in the event of a serious accident, which often attracts extensive public attention. This is evidenced by the *Erika* accident in 1999<sup>205</sup> and the *Prestige* accident in 2002,<sup>206</sup> after which the IMO took action to pass the Supplementary Fund Protocol to further increase the fund ceiling.<sup>207</sup> This potential inadequacy may be even more evident with respect to the BCLC,<sup>208</sup> although information from the P&I Clubs show that only eight incidents since 2000 have given rise to pollution claims above the 1996 limitation figure.<sup>209</sup> The inadequacy may arise, for example, from the absence of a compensation fund available under the BCLC,<sup>210</sup> and from the application of a general limitation of liability under the LLMC, where the right of limitation for bunker pollution claims may not be brought entirely within the existing scope of LLMC.<sup>211</sup> The *Pacific Adventurer* in 2009 lost several containers overboard off the Queensland coast and, as a result, the vessel was holed and the bunker fuel was spilt. Compensation was settled by negotiation

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<sup>203</sup> Article 3 (5), CLC Convention.

<sup>204</sup> *Newfoundland and Labrador v. AbitibiBowater Inc.*, 2012 SCC 67, [2012] 3 S.C.R. 443.

<sup>205</sup> The tanker, *MV Erika*, ran into a heavy storm and sank on her voyage to Italy in December 1999 with around 31,000 tons of fuel oil on board. The accident resulted in the release of thousands of tons of oil into the sea, killing marine life and polluting shores around Brittany, France.

<sup>206</sup> *MV Prestige* split in half and sank off the Spanish and Portuguese coast in November 2002. The tanker released over 20 million US gallons (76,000 m<sup>3</sup>) of oil into the sea and the spill polluted thousands of kilometers of coastline and more than one thousand beaches on the Spanish, French and Portuguese coasts.

<sup>207</sup> The Supplementary Fund Protocol entered into force in 2005 to establish the International Oil Pollution Compensation Supplementary Fund (the Supplementary Fund) to provide additional compensation beyond the amount available under the 1992 Fund Convention.

<sup>208</sup> Ling Zhu, 'Can the Bunker Convention Ensure Adequate Compensation for Pollution Victims?' (2009) 40 *Journal of Maritime Law and Commerce* 203, p.213-217.

<sup>209</sup> Colin de la Rue, 'Liability for Pollution from Ship's Bunker' in Baris Soyer and Andrew Tettenborn (note 142 above), p. 22.

<sup>210</sup> During initial discussions in the Legal Committee of the IMO, some states suggested a separate free standing fund provided by shipowners to satisfy bunker pollution claims; however, the shipowning and insurance sectors resisted establishing the fund, see Griggs, P., 'International Convention on Civil Liability for Bunker Oil Pollution Damage 2001', available at <<http://www.bmla.org.uk/documents/imo-bunker-convention.htm>> (accessed on October 15, 2014) and Norman A. Martínez Gutiérrez, 'The Bunker Convention and the Shipowner's Right to Limit Liability' (2012) 43 *Journal of Maritime Law and Commerce* 235.

<sup>211</sup> Griggs, P., *ibid*; see also Chao Wu, 'Liability and Compensation for Bunker Pollution' (2002) 33 *Journal of Maritime Law and Commerce* 553, p.558-600; see also Ling Zhu, *Compulsory Insurance and Compensation for Bunker Oil Pollution Damage: Hamburg Studies on Maritime Affairs Volume 5* (Springer 2007), p.154-157, and Norman A. Martínez Gutiérrez *ibid*, p.247-253.

without much information being available to the public, but the compensation is well in excess of the LLMC limits due to commercial pressure from the government.<sup>212</sup> However, limitation of liability will not be knocked out in the foreseeable future since it is traditionally regarded as a natural right of shipping participants. Also, such limitation has been described as balancing the channelling clause, which imposes liability on the shipowner in the conventions. Accordingly, the above flaws force victims to keep finding ways around the international conventions in order to pursue further compensation to the extent possible, which is gradually resulting in cracks in the uniformity of international regimes. For example, in the *Erica* case, efforts were successfully made to have polluting oil treated as “waste” and the charterer treated as a producer or holder of waste, as a result of which the charterer was obligated to accept extra liability according to Article 15 of the EU Waste Framework Directive (75/442/EEC). This Directive was revised in 2008 (Directive 2006/12/EC) and expressly incorporates the PPP.

At the time when most of the maritime liability conventions were concluded and put into effect, the international community may well have not recognized the PPP. There has since, though, been awareness of implementing the PPP in ship-source pollution laws in various jurisdictions, such as in the ECJ’s judgments, although they only have effect in the EU. Based upon legislative trends over the years, and with the growing invocation of the PPP, greater costs will likely be progressively imposed on the maritime industry.<sup>213</sup> To be consistent with the PPP, shipowners can be regarded as the primary polluter in the maritime transport sector.<sup>214</sup> It is at the same time suggested that the PPP should be construed “...more widely to encompass not only the direct polluter but also other indirect agents contributing to the problem of vessel-source pollution”.<sup>215</sup> Also, the PPP can be implemented through policy initiatives and regulations in general, including a wider definition of pollution damage. However, it still has to be mentioned that Hong Kong is a party to all those marine liability conventions, and thus it is not in a position to change the liability and compensation rules in a discretionary way.

#### **4.2. Policy Implications and Recommendations**

“Environmental Protection and Conservation” is invariably a key issue that has been included in the annual “Policy Address” given over recent years by the Hong Kong SAR Chief Executive. In particular, Hong Kong, as a key maritime centre, is keen to protect and preserve its marine environment from ship-source pollution. This policy research will therefore have explicit policy implications on ship-source pollution law and policy in Hong Kong.

First of all, shipping is one of the major industries in Hong Kong’s economy. This requires that the shipping industry makes a positive contribution to the economic and social wellbeing of society, without having any detrimental impact on the environment. This policy research, by studying PPP alongside ship-source marine pollution, can provide support for policy recommendations that meet the challenges of environmental protection in Hong Kong.

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<sup>212</sup> Patrick Griggs CEB, ‘Torrey Canyon, 45 Years on: Have We Solved All the Problems?’ in Baris Soyer and Andrew Tettenborn (note 142 above), p.8.

<sup>213</sup> Tan (note 133 above), p.344.

<sup>214</sup> Tan (note 133 above), p.36.

<sup>215</sup> Tan (note 133 above), p.379.

Secondly, the high volume of vessel traffic presents Hong Kong with a significant challenge in regard to its marine environment. The ship-source pollution law and policy that this policy research suggests takes into account the PPP, since the implementation of this principle can to a great extent motivate polluters and potential polluters to reduce their pollution activity. In the long run, this could make a significant contribution to Hong Kong's overall environmental protection and conservation regime.

From the results of the survey conducted with select members of the Hong Kong shipping industry, it is evident that the majority of respondents in the survey support the idea of proposing innovative policies that take into account the PPP for better control of and compensation for ship-source pollution. Based upon the above studies, the following two specific policy measures may deserve further consideration by the Hong Kong government:

1. To increase waste disposal charges for MARPOL wastes to cover all the operating costs generated. In this way pollution costs will be borne mainly by the polluter.
2. To increase requirements and conditions for vessels entering Hong Kong waters.<sup>216</sup> More stringent conditions required for vessels entering Hong Kong waters could, for instance, vary from technical ones that contribute to reducing the risk of marine pollution accidents, to specific insurance requirements that can provide reliable sources of pollution compensation.

Such legal and policy instruments would not only promote better prevention and control measures to avoid the occurrence of marine pollution accidents, but would also provide reliable compensation in the event of any ship-source pollution incident.

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<sup>216</sup> Being a port state, Hong Kong has the jurisdictional power to establish and enforce particular rules and standards for vessels' entry and stay in its waters in order to prevent pollution to the marine environment. Article 2 (1), Article 25 and Article 211 (3), UNCLOS (United Nations Convention on the Law of the Sea); Article 5 (3), MARPOL Convention 73/78; Regulation 13G(8)(b) and 13H(8)(b), Annex I MARPOL Convention.

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**Appendix A: Invitation Letter for the Survey and the Questionnaire**

XXX  
Organisation  
Address

May 21, 2014

### **Invitation to Participate in the Research on the Application of the Polluter-pays Principle to Ship-Source Pollution in Hong Kong**

Dear Mr. or Ms. XXX,

I am Ling Zhu, Assistant Professor of Maritime Law at The Hong Kong Polytechnic University. I am conducting a research project entitled ‘Is the Polluter Paying? Assessing the Application of the “Polluter-pays Principle” to Ship-Source Pollution in Hong Kong’, which is funded by the **Central Policy Unit, Hong Kong**.

Given your expertise and experience with the legal and policy framework for controlling and compensating ship-source pollution, you are cordially invited to participate in a questionnaire survey. This survey aims to reveal the current understanding of the Polluter-pays Principle (PPP) in the maritime industry, and the practical implications of applying PPP to ship-source pollution in Hong Kong.

All information obtained will be used for research purposes only and the identities of the participants will not be revealed in any way. Participation is entirely voluntary and on a non-financial basis. **A summary report of the research findings** will be provided to the participants on request. Please feel free to contact me (email: [ling.zhu@polyu.edu.hk](mailto:ling.zhu@polyu.edu.hk)) should you require any further details of the research. If you have questions about your rights as a research participant, you may contact the Human Subjects Ethics Subcommittee of The Hong Kong Polytechnic University (tel.: +852 2766 5111).

It may only take around 10 minutes to complete the questionnaire. We would be grateful if you could participate in the survey; if so, please kindly send back the completed questionnaire using the enclosed self-addressed envelope no later than Friday 18 July 2014.

Your kind support of our research will be highly appreciated.

Yours sincerely

Dr Ling Zhu  
PhD LLM LLB  
Department of Logistics and Maritime Studies  
Faculty of Business  
The Hong Kong Polytechnic University  
Tel: +852 2766 4897  
Email: [ling.zhu@polyu.edu.hk](mailto:ling.zhu@polyu.edu.hk)

Encl.: (1) *The questionnaire;*  
(2) *A self-addressed envelope (no postage is required).*



## QUESTIONNAIRE SURVEY

### Assessing the Application of the Polluter-Pays Principle to Ship-Source Pollution in Hong Kong

#### AIM OF THE QUESTIONNAIRE SURVEY

This questionnaire survey forms part of the research project, funded by the **Central Policy Unit (中央政策組) Hong Kong**. This survey aims to reveal the current understanding of the **Polluter-Pays Principle (PPP)** in the maritime industry, and the practical implications of applying PPP to ship-source pollution in Hong Kong, and thus to develop recommendations for introducing such a policy that requires the polluters to actually pay for ship-source pollution in all pollution cases. Please pass the questionnaire on to anyone else if you think they may also be suitable to participate.

#### HOW TO COMPLETE THE QUESTIONNAIRE

This questionnaire is designed to be completed in about 10 minutes. We would be most grateful if we could have your response by **Friday 8 August 2014** by post using the envelope (postal fee paid) and address attached. Your insightful perspective would be greatly appreciated.

1. **Please provide your email if you would like to receive a summary report of the research findings**

\_\_\_\_\_

2. **Your area of practice is:**

- Ship owning/management/operating company
- P&I club/Insurance company
- Cargo owner
- Charterer
- Others (please specify): \_\_\_\_\_

3. **What are your main sources of information on controlling and compensating ship-source pollution? (You may select more than one answer)**

- Government    Legal professions    Insurance agents    Media/ News    Books/ Articles/ Papers
- Continuing education workshops/Seminars    Courses    Colleagues or friends    Conferences
- Others (please specify): \_\_\_\_\_

4. **If you are a ship owning /management/operating company, please answer the following five questions:**

1) **How many vessels do you own/manage/operate?**

- <10    10 – 50    >50

**2) What is your main business?**

- Dry bulk shipping       Container shipping       Tanker shipping  
 Ferry/Cruise ship business       Integrated

**3) How often do your vessel(s) call Hong Kong port or pass through Hong Kong waters in the past one year?**

- Never       Seldom <5       Regularly 5-10       Frequently >10

**4) How often do your vessel(s) call the port(s) in the Pearl River Delta (“PRD”) region or pass through PRD waters in the past one year?**

- Never       Seldom <5       Regularly 5-10       Frequently >10

**5) What measures do you take to prevent/control and compensate ship-source pollution? (You may select more than one answer)**

- Measures according to the MARPOL (International Convention for the Prevention of Pollution from Ships) requirements  
 Measures according to the BWM (International Convention for the Control and Management of Ship’s Ballast Water and Sediments) requirements  
 Measures according to the AFS (International Convention on the Control of Harmful Anti-fouling Systems on Ships) requirements  
 Measures according to the CLC (International Convention on Civil Liability for Oil Pollution Damage) requirements  
 Measures according to the Bunker Convention (International Convention on Civil Liability for Bunker Oil Pollution Damage) requirements  
 Others (please specify): \_\_\_\_\_

**5. If you are a P&I Club or an insurance company, please answer the following four questions:**

**1) What is your type as a marine underwriter?**

- P&I club       Marine liability insurance company       H&M insurance company  
 Marine cargo insurance company       Others (please specify) \_\_\_\_\_

**2) Do you cover marine pollution liability?**

- Yes       No

**3) If your answer to above 2) is “yes”, have you rejected any pollution claim from your member/client?**

- Yes       No

**4) If you have rejected any pollution claim, please specify the reasons(optional):**

**6. If you are a cargo owner or a charterer, please answer the following three questions:**

1) **What is your main business?**

- Dry bulk cargo     General cargo     Oil/Chemicals     Multi-purpose

2) **If you are engaged in any oil/chemicals trade, you shall make an emergency plan for potential oil/chemicals spillage.**

- Strongly disagree     Disagree     Neutral     Agree     Strongly agree

3) **When choosing a carrier, you take into account pollution prevention/control measures adopted by the shipowner.**

- Strongly disagree     Disagree     Neutral     Agree     Strongly agree

7. **How do you evaluate the existing legal and policy framework for controlling ship-source pollution in Hong Kong?**

- Very effective     Effective     Neutral     Not very effective     Very ineffective

**Please provide your reasons:**

8. **How do you evaluate the existing legal and policy framework for compensating ship-source pollution in Hong Kong?**

- Very adequate     Adequate     Neutral     Not very adequate     Very inadequate

**Please provide your reasons:**

9. **How do you think about the Polluter-Pays Principle (PPP)? (You may select more than one answer)**

- It is an economic principle for internalising pollution costs  
 It requires polluters to pay for emergency response and clean-up costs  
 It requires polluters to pay compensation to victims of pollution  
 Others (please specify): \_\_\_\_\_

10. **What benefits do you think there are from applying PPP to the regime for controlling and compensating ship-source pollution in Hong Kong?**

11. What disadvantages do you think there are from applying PPP to the regime for controlling and compensating ship-source pollution in Hong Kong?

12. How do you think about the below three suggested policies to which PPP is applied to its full measure in Hong Kong:

1) It would be acceptable for maritime industry that the government increases the waste disposal charge in order to cover all the operating costs.

Strongly disagree     Disagree     Neutral     Agree     Strongly agree

2) It would be acceptable for maritime industry that the government increases the port due and fees to include pollution prevention/control costs.

Strongly disagree     Disagree     Neutral     Agree     Strongly agree

3) It would be acceptable for maritime industry that the government raises the requirements for vessels entering Hong Kong waters (e.g., all vessels entering Hong Kong waters must hold insurance certificate or other financial security to cover all pollution liability).

Strongly disagree     Disagree     Neutral     Agree     Strongly agree

13. If the above suggested policies were carried out, they may have the following effects:

1) The policies will provide vessels with an incentive to strengthen the pollution prevention/control measures.

Strongly disagree     Disagree     Neutral     Agree     Strongly agree

2) The policies will prevent vessels from calling to Hong Kong/passing through Hong Kong waters.

Strongly disagree     Disagree     Neutral     Agree     Strongly agree

3) Others (please specify): \_\_\_\_\_

14. If you would like to participate in a follow-up workshop, please provide your contact details or suggest anyone that you think might have interest in this research:

(a) Title: \_\_\_\_\_ First Name: \_\_\_\_\_ Last Name: \_\_\_\_\_

(b) Organisation: \_\_\_\_\_

(c) Telephone: \_\_\_\_\_

(d) Email Address: \_\_\_\_\_

**-END OF THE QUESTIONNAIRE-**

**Many thanks for your participation!**

## **Appendix B: Public Policy Research Seminar and Its Rundown**

On January 20, 2015, a Public Policy Research Seminar entitled “Assessing the Legal and Policy Framework for Controlling and Remediating Ship-Source Pollution in Hong Kong” was held on the campus of The Hong Kong Polytechnic University. The seminar was co-organized with the IMC-Frank Tsao Maritime Library and Research & Development Centre (IMCC). As part of this research project, the seminar aimed at increasing public awareness of ship-source pollution in Hong Kong, understanding government efforts to control pollution from ships, and assessing the views of the shipping industries on these matters. Around 50 participants, including academic staff, industry practitioners, government officials, students and alumni, attended the seminar.

The seminar took place between 2pm and 4:30pm (see the attached programme rundown). Dr. Meifeng Luo, Director of the IMCC, gave the opening speech, and four speakers, including the Principal Investigator of this policy research, shared with the participants their insights on the legal and policy framework for controlling and remediating ship-source pollution in Hong Kong from the perspectives of scholar, port authority, shipowner and insurer. The seminar provided a platform for academics and industry practitioners to exchange views on this subject, as well as to enhance their understanding about the necessity of adopting additional measures such as those based upon the Polluter-Pays Principle.

## Public Policy Research Seminar

### *Assessing the Legal and Policy Framework for Controlling and Remediating Ship-Source Pollution in Hong Kong*

*Co-Organized by*

*Department of Logistics and Maritime Studies, The Hong Kong Polytechnic University  
IMC-Frank Tsao Maritime Library and Research & Development Centre*

Date: 20 January 2015 (Tuesday)  
Time: 2:00 pm – 4:30 pm  
Venue: V302, 3/F Jockey Club Innovation Tower, The Hong Kong Polytechnic University, Hung Hom  
Language: English  
Enquiry: Dr Ling Zhu via email [ling.zhu@polyu.edu.hk](mailto:ling.zhu@polyu.edu.hk) or (852) 2766 4897  
Registration: [imcc.centre@polyu.edu.hk](mailto:imcc.centre@polyu.edu.hk) or [yachao.zhao@polyu.edu.hk](mailto:yachao.zhao@polyu.edu.hk) by 15 Jan 2015  
(free of charge, seats are limited, first come first served)

#### **Background**

Hong Kong suffers from the typical marine pollution problems associated with shipping activities. Both control measures of marine pollution and principles behind marine pollution liability under the international conventions or domestic legislations are indispensable approaches to control and remedy ship-source pollution. This seminar aims to enhance the understanding of the legal and policy framework of controlling and remediating ship-source pollution in Hong Kong; and of the necessity to adopt such additional measures as those being based upon the polluter-pays principle. There will be distinguished speakers who will share with the audience the state-of-the-art of knowledge and practices in the area.

This seminar forms part of a research project entitled 'Is the Polluter Paying? Assessing the Application of the "Polluter-Pays" Principle to Ship-source Pollution in Hong Kong', funded by HKSAR Central Policy Unit (Project No.: 2013.A6.022.13A).

#### **Seminar Programme**

2:00 - 2:30 pm	<b>Registration</b>
2:30 - 2:40 pm	<b>Welcome and Introduction</b> Dr Meifeng Luo, Director, IMC-Frank Tsao Maritime Library and R&D Centre
2:40 - 3:00 pm	<b>Is the Polluter Paying for Ship-Source Pollution?</b> Dr Ling Zhu, Assistant Professor, The Hong Kong Polytechnic University
3:00 - 3:20 pm	<b>How does HKSAR Marine Department Control Ship-Source Pollution in Hong Kong?</b> Mr. C.C. Choi, Senior Surveyor of Ships, Multi-lateral Policy Branch, HKSAR Marine Department
3:20 - 3:40 pm	Refreshments
3:40 - 4:00 pm	<b>Ship Source Pollution Regulation – The Owners' Viewpoint</b> Mr. Arthur Bowring, Managing Director, Hong Kong Shipowners Association
4:00 - 4:20 pm	<b>Oil Pollution, Insurance, Claims and Case studies – From a P&amp;I Perspective</b> Dr Wei Fan, Vice President, Underwriting and Marketing, SKULD Far East Ltd, Hong Kong
4:20 - 4:30pm	<b>Q &amp; A; Summary</b>

## Appendix C: Publications

**Most of the contents in this final report have been reported in the following three journal articles:**

ZHU, Ling, “Is the Polluter Paying for Vessel-Source Pollution?” *Journal of Business Law*. Manuscript Accepted.

ZHU, Ling and ZHAO, Yachao, “Application of the Polluter-Pays Principle in Hong Kong”. *Environmental Policy and Law*. Manuscript Accepted.

ZHU, Ling and ZHAO, Yachao, “A feasibility assessment of the application of the polluter-pays principle to ship-source pollution in Hong Kong”. *Marine Policy*. Under Review.