

Critical Review on Legal Commitments for Implementing Environmental Management among Various Construction Practitioners in Hong Kong

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Abstract

This paper is to investigate the legal commitments for implementing environmental management among various construction practitioners in Hong Kong. The legal commitments are identified under four areas, namely, air pollution controlling policies, water pollution controlling policies, noise pollution controlling policies, and waste pollution controlling policies. The investigation suggests that there is an association between the limitation of improving construction environmental performance and the insufficiency of legal commitments allocated to construction practitioners in Hong Kong. The emphasis in these commitments allocations is largely focused on contractors' operation. The paper suggests that the unbalanced allocations of legal commitments among construction professionals present difficulties for fully implementing environmental management principles. The discussions in the paper can provide a useful reference to the local government department for formulating better policies in order to improve environmental performance in the local construction. The study also provides valuable reference for other governments to examine the effectiveness of implementing their environmental management policies in construction industry.

Keywords

Legal commitments, environmental performance, environmental management, construction, Hong Kong

1. Introduction

The impacts from construction activities on the environment have been well realized. The report by Environmental Protection Department (EPD) (2002) suggests that noise pollution, water pollution, air pollution and waste pollution from construction are among the major environmental pollution problems in Hong Kong; with 38% of the disposed solid wastes in 2001 being generated from construction and demolition activities. There have been great number of complains on environmental pollution, and EPD (2002) presents a typical example about the environmental pollution complaints in the year of 2001. It can be seen that a large number of complaints on environmental pollution come from construction activities, 1,098 complaints for air pollution, 2,285 for noise pollution (including 2,079 for general construction works and 206 for percussive piling), and 240 for liquid waste pollution. It is also reported that there were 273 prosecutions imposed upon contractors for the infringement against the Noise Control Ordinance, which is about 75% of overall prosecutions on noise pollution in 2001 (EPD, 2002).

The impacts of construction activities on the environment are multiple. The major environmental impacts of construction stems from its consumption of materials, many of which are non-renewable. The study by Lenssen and Roodman (1995) estimates that buildings account for about 40% of the materials entering the world's economy each year and for 25% of the world's usage of wood. Natural areas are irreversibly damaged by construction activities, which alters ecological integrity (Ofori, 1992). Responsibilities for environmental management are defined in these policies for various construction practitioners. The implementation of governmental policies in Hong Kong has made important contributions to the improvement of environmental performance in implementing construction activities in the local industry. In 1995, Hong Kong government launched the Green Manager Scheme, requiring every governmental department to appoint a Green Manager to take the lead in managing the environmental performance of individual organizations (EPD, 2002). Hong Kong Housing Authority (HKHA) (2002) committed to continually improving the environmental standards in the provision of public housing and related services.

However, the environmental problems in construction activities remain. Previous studies show that limited improvement has been achieved in implementing environmental management in the local construction (Shen and Tam, 2002). Tam et al. (2001) argued that governmental policies for implementing environmental management in Hong Kong are very comprehensive but not been properly implemented. This has led to an assumption that commitments and responsibilities may not be adequately allocated among various construction practitioners in the existing policies. There is little study examining how legal commitments and responsibilities are allocated among various practitioners for protecting the environment in implementing a construction project. It is the major objective of this paper to investigate the legal commitment allocation among various construction practitioners for protecting the environment in Hong Kong. Investigation will be undertaken mainly under four areas, namely, air pollution controlling policies, water pollution controlling policies, noise pollution controlling policies, and waste pollution controlling policies

2. Policies for Controlling Air Pollution

The policies for controlling air pollution in construction are made mainly under the Air Pollution Control Ordinance (Chapter 311) and the subsidiary regulations, summarized as follows:

- “The contractor shall ensure that any dusty materials which are used or intended to be used for the purpose of the excluded work; or produced as a result of the excluded work being carried out, are stored and handled in accordance with any relevant provisions of the schedule...” (Air Pollution Control (Construction Dust) Regulations, Chapter 311R Section 6(1), 30/06/1997)
- “A person who fails to comply with an air pollution abatement notice given to him under relevant term in Air Pollution Control Regulations (section 6(1) commits an offence and is liable: (a) if he fails to cease the operation of a polluting process as specified in the air pollution abatement notice, to a fine of \$500,000 and to imprisonment for 12 months and a further fine of \$100,000 for each day that the court is satisfied that the failure to cease the operation has continued. And (b) in any other case, to a fine of \$100,000 on first conviction and to a fine of \$200,000 and for imprisonment for 6 months on a second or subsequent conviction and, on a first or subsequent conviction, to a further fine of \$20,000 for each day that the court is satisfied that the failure to comply with the air pollution abatement notice has continued” (Air Pollution Control Ordinance, Chapter 311 Section 10(7), 01/01/2001)
- “An owner of any premises who operates any chimney or relevant plant in such a manner that any dark smoke is emitted for more than 6 minutes in any period of 4 hours or for more than 3 minutes continuously at any one time, commits an offence and is liable: (a) on first conviction, to a fine of \$20,000 and in addition to a fine of \$100 for every one quarter of an hour during the whole or any part of which such offence is knowingly and willfully continued. And (b) on any subsequent conviction, to a fine of \$20,000 and to imprisonment for 3 months and in addition to a fine of \$100 for every one quarter of an hour during the whole or any part of which such offence is knowingly and willfully continued” (Air Pollution Control (Smoke) Regulations, Chapter 311C Section 3, 30/06/1997)
- “Open burning for the following purposes is prohibited: 1) the disposal of construction waste; 2) the clearance of a site in preparation for construction work; 3) the disposal of tyres; and 4) the salvage of metal. Any person who carries out open burning which is prohibited by virtue of these purposes commits an offence and is liable: (a) on first conviction to a fine at level 5 and a further fine of \$500 for every 15 minutes during which the offence has continued; and (b) on subsequent conviction to a fine at level 5 and to imprisonment for 3 months and a further fine of \$500 for every 15 minutes during which the offence has continued” (Air Pollution Control (Open Burning) Regulations, Chapter 311O Section 4 (1), 30/06/1997)

- “No person shall use conventional liquid fuel in any relevant plant in Hong Kong, which has: (a) a sulphur content of more than 0.5% by weight; or (b) a viscosity of more than 6 centistokes at 40 degrees Celsius” (Air Pollution Control (Fuel Restriction) Regulations, Chapter 311I Regulation 4(2), 30/06/1997)
- “No person shall use conventional solid fuel in any relevant plant in Hong Kong, which has a sulphur content of more than 1% by weight” (Air Pollution Control (Fuel Restriction) Regulations, Chapter 311I Regulation 4(3), 30/06/1997)
- “Before commencing the demolition, the registered specialist contractor appointed in respect of the demolition works shall erect fans or catch platforms at the level of such other floors of the building as may be necessary to prevent any nuisance from dust or danger from debris or materials but so that such fans or catch platforms are sited at vertical intervals of not more than 10 metres with the uppermost fan or catch platform not more than 10 metres below the working level” (Building (Demolition Works) Regulations, Chapter 123C Regulation 3 (2)(ii), 01/04/1998)
- “Before commencing the demolition, the registered specialist contractor appointed in respect of the demolition works shall erect dust screens to cover the whole of the wall so as to prevent any nuisance from dust” (Building (Demolition Works) Regulations, Chapter 123C Regulation 3(2)(iii), 01/04/1998).

3. Policies for Controlling Water Pollution

The policies for controlling water pollution in construction are made mainly under the Water Pollution Control Ordinance (Chapter 358) and the subsidiary regulations, and examples are summarized as follows:

- “A person commits an offence who discharges: (a) any waste or polluting matter into the waters of Hong Kong in a water control zone; (b) any matter into any inland waters in a water control zone which tends (either directly or in combination with other matter which has entered those waters) to impede the proper flow of the water in a manner leading or likely to lead to a substantial aggravation of pollution” (Water Pollution Control Ordinance, Chapter 358 Section 8(1), 01/07/1997)
- “A person commits an offence who discharges any poisonous or noxious matter into the waters of Hong Kong” (Water Pollution Control Ordinance, Chapter 358 Section 8(1A), 01/07/1997)
- “For the purpose of enabling connection to a communal sewer the Authority may by service of a notice on the owner of any land or premises require the owner to: (a) construct works to convey wastewater from the land or premises to a place specified in the notice and to complete the construction within a time specified in the notice; and (b) comply with any additional requirement specified in the notice relating to the design and construction of the works, including the installation of pumping systems if the Authority considers it necessary” (Water Pollution Control (Sewerage) Regulation, Chapter 358AL Section 3, 30/06/1997)
- “The owner of any land or premises shall maintain any works constructed pursuant to this Regulation for the purpose of conveying wastewater from such land or premises to a place for connection to a communal sewer” (Water Pollution Control (Sewerage) Regulation, Chapter 358AL Section 4(1), 30/06/1997)
- “The Authority may by notice served on the owner of any land or premises require the owner to carry out any maintenance for which the owner is responsible pursuant to subsection (1), and to do so within a time specified in the notice” (Water Pollution Control (Sewerage) Regulation, Chapter 358AL Section 4(2), 30/06/1997).

4. Policies for Controlling Noise Pollution

The policies for controlling noise pollution in construction are made mainly under the Noise Pollution Control Ordinance (NCO) (Chapter 400) and the subsidiary regulations, and the follows are examples:

- “Any person who at any place between the hours of 7 p.m. and 7 a.m., or at any time on a general holiday, uses, or causes or permits to be used, any powered mechanical equipment for the purpose of carrying out any construction work other than percussive piling in respect of which a construction noise permit is not in force, or otherwise than in accordance with the conditions of a construction noise permit in force in respect thereof, commits an offence.” The use of mechanical equipment is restricted on any time including Sunday and weekdays between 7 p.m. and 7 a.m. If it is required to carry out construction work during restricted hours or to carry out percussive piling, a construction noise permit will be required for the works. In those cases, the noise impacts will be assessed by the noise pollution control authority to ensure compliance with relevant requirements (Noise Pollution Control Ordinance, Chapter 400 Section 6(1), 30/06/1997)

- “Any person who at any place between the hours of 7 p.m. and 7 a.m., or at any time on a general holiday, carries out, or causes or permits to be carried out, any percussive piling commits an offence” (Noise Pollution Control Ordinance, Chapter 400 Section 6(4), 30/06/1997)
- “The owner, tenant or occupier of domestic premises may perform construction work in those premises without a construction noise permit being in force in respect thereof provided that (a) the construction work is performed only by the owner, tenant or occupier; (b) the only powered mechanical equipment used for the construction work is portable and designed for operation while held by hand without any other form of support; and (c) only one item of powered mechanical equipment is in use in the premises at any one time” (Noise Pollution Control Ordinance, Chapter 400 Section 6(6), 30/06/1997)
- “Any person who at any place on any occasion carries out, or causes or permits to be carried out, any construction work contrary to any noise control regulations commits an offence” (Noise Pollution Control Ordinance, Chapter 400 Section 7(1), Enacted 1988)
- “The Authority may issue construction noise permits and may impose in relation to any construction noise permit any condition he thinks fit” (Noise Pollution Control Ordinance, Chapter 400 Section 8(1), 30/06/1997)
- “The Authority may refuse to issue a construction noise permit if the issue of a permit would be contrary to any principle, procedure, guideline, standard or limit set out in any Technical Memoranda issued from time to time” (Noise Pollution Control Ordinance, Chapter 400 Section 8(5), 30/06/1997)
- “The Authority may amend or vary the conditions of a construction noise permit including a construction noise permit deemed, to have been issued or impose new conditions in relation to a construction noise permit if the Authority is satisfied that (a) a condition of the construction noise permit has been contravened; (b) the construction noise permit was issued in consequence of misleading, false, wrong or incomplete information furnished by the applicant in connection with the application; or (c) except where the construction noise permit is in respect of any percussive piling, the public interest so requires” (Noise Pollution Control Ordinance, Chapter 400 Section 8(10), 30/06/1997)
- “The Authority may cancel a construction noise permit including a construction noise permit deemed to have been issued (a) if the person to whom the construction noise permit was issued requests the cancellation thereof; (b) if the Authority is satisfied that (i) a condition of the construction noise permit has been contravened; (ii) the construction noise permit was issued in consequence of misleading, false, wrong or incomplete information furnished by the applicant in connection with the application; or (iii) except where the construction noise permit is in respect of any percussive piling, the public interest so requires” (Noise Pollution Control Ordinance, Chapter 400 Section 8(11), 30/06/1997)
- “The Secretary may issue from time to time Technical Memoranda setting out principles, procedures, guidelines, standards and limits for (a) the prediction, measurement and assessment of noise emanating from a construction site; (b) the issuing of construction noise permits; (c) the imposition and variation of conditions in relation to construction noise permits;” (Noise Pollution Control Ordinance, Chapter 400 Section 9(1), 30/06/1997).

5. Policies for Controlling Waste Pollution

There are several legislations covering the handling, treatment and disposal of wastes, including Waste Disposal Ordinance (Chapter 354), Waste Disposal (Chemical Waste) (General) Regulation (Chapter 354), Dumping at Sea Ordinance (Chapter 466), Land (Miscellaneous Provisions) Ordinance (Chapter 28), and Public Health and Municipal Services Ordinance (Chapter 132) – Public Cleansing and Prevention of Nuisances Regulation. There is no separate legislation requirement on construction waste control. The follows are examples of relevant policies and regulations:

- “Dumping substances or articles within the waters of Hong Kong, either in the sea or under the sea-bed from a structure on land constructed or adapted wholly or mainly for the purpose of dumping solids in the sea” (Dumping at Sea Ordinance, Chapter 466 Section 8(1), 20/04/2000)
- “A person shall apply for a permit in the form that the Authority directs specifying: (a) the name and address of the waste producer; (b) the mode of transportation from the site of waste production to the point of incineration at sea; (c) a description of the substance or article to be incinerated; (d) the name of the transport operators carrying the waste from the site of waste production to the point of incineration at sea; (e) the loading point in Hong Kong; (f) the location of incineration at sea; (g) the name of the operator of the incinerator; and (h) such other information as the Authority may reasonably require to determine whether or not to issue a permit” (Dumping at Sea Ordinance, Chapter 466 Section 9(1), 30/06/1997)

- “Where the waste storage area is located inside a multi-storey building, be so located as not to obstruct or in any way prejudice the use of any means of escape or exit from the building; where the waste storage area is not within a building, be provided with a roof or a similar covering; and be kept clean and dry” (Waste Disposal (Chemical Waste) (General) Regulation, Chapter 354C Section 13(2), 30/06/1997)
- “A waste producer shall ensure that: (a) any container with chemical waste is not stored with other wastes, whether chemical or otherwise, if it is likely that there will be dangerous consequences to the health or safety of any person in the event of its contact with such other wastes; and (b) any stacks of containers of chemical waste are made secure so as to prevent their falling down” (Waste Disposal (Chemical Waste) (General) Regulation, Chapter 354C Section 15(1), 30/06/1997)
- “Any person who: (a) places or throws any solid matter, mud or waste (except such as is contained in ordinary house sewage) in or into any public sewer or drain or any sewer, drain, inlet or other drainage work communicating with any public sewer or drain, or over any grate communicating with any public sewer and drain; (b) causes or knowingly permits any such matter, mud or waste to be placed or thrown, or to fall, or to be carried, in or into any public sewer or drain or over any such grate; ... shall be guilty of an offence” (Public Health and Municipal Services Ordinance, Chapter 132 Section 6(1), 01/01/2000).

6. Discussion

The above discussions present the commitments and responsibilities defined in these legal ordinances related to the major four environmental pollutions. It can be seen that the contractors bear the most legal responsibilities in implementing construction activities. This responsibility allocation is considered skewed among various professionals. Insufficient commitments are imposed to other construction practitioners including client, designer and consultants. Such insufficiency contributes largely to the ineffective implementation of environmental management in the local construction industry. The skewed responsibility allocation also discourages contractors to comply regulations properly. Table 1 shows some examples that contractors commit pollution control on air, water, noise and waste through Environmental Impact Assessment (EIA) Reports approved (EPD, 2003).

Table 1: Samples of contractors’ compliance with legal commitments in Pollution Control Ordinance

Requirement	EIA-088/2002	EIA-085/2002	EIA-083/2002	EIA-082/2002	EIA-081/2002	EIA-079/2002	EIA-078/2002	EIA-077/2002	EIA-076/2002	EIA-075/2002	EIA-074/2002
Noise Pollution Control Ordinance											
Work procedure	N	Y	Y	Y	N	Y	Y	N	Y	N	Y
Work quality	N	Y	Y	N	N	Y	Y	Y	Y	N	Y
Liability and penalty	N	N	Y	Y	N	N	Y	Y	Y	Y	Y
Time and quantity	N	Y	Y	Y	N	Y	Y	Y	Y	Y	Y
Control of activity	N	Y	Y	Y	N	N	Y	N	Y	N	N
Limitation of emission	N	Y	Y	Y	N	Y	Y	Y	Y	Y	N
Water Pollution Control Ordinance											
Work procedure	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Work quality	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y
Liability and penalty	Y	Y	Y	Y	Y	N	Y	Y	N	Y	Y
Measurement	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y
Control of activity	Y	Y	N	Y	Y	Y	N	Y	Y	Y	Y
Noise Pollution Control Ordinance											
Time Control	Y	Y	Y	Y	N	N	Y	Y	Y	Y	Y
Noise Level	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y
Noise permit	Y	N	Y	N	N	N	Y	Y	Y	Y	Y
Liability and penalty	Y	N	N	N	N	N	N	N	N	N	N
Waste Pollution Control Ordinance											
Waste Disposal	Y	Y	N	Y	Y	Y	Y	Y	N	Y	Y
Dumping at Sea	Y	N	N	Y	Y	N	Y	Y	N	Y	N
Land filling	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y
Public places protection	Y	N	N	N	N	N	Y	Y	N	N	N
Bonus: Guidelines and references	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y

It can be found from Table 1 that over 50% of the contractor neglect to specify how they would control their activities on air pollution so as to protect the environment.

- In the EIA reports identified in Table 1, most of the contractor would specify the working procedures of their works, which could protect the environment with meeting the minimum requirements defined in the ordinances and subsidiary regulations. This basic commitment by contractors is also driven by the increasingly public appeals on environmental management. Nevertheless, it seems that contractors in the current practice emphasize more on the specifications of their working procedures in reports, with less efforts on action-taking for protecting the environment on site.
- For the contractors' commitments on water pollution control, it is discovered that most of the contractor would adopt the suitable measures to control water pollution produced from the construction work. For all of the selected contracts, contractor would specify the work procedure on controlling the water pollution from the works. They would follow the Ordinances and subsidiary regulations on how to measure the existing emission of the pollutant to water. Control of activities is comparatively paid less attention to by the contractor.
- In the contractor's commitments on noise pollution control, controlling noise level found to be the major objective measure, which will directly affect nearby environment. On the regulations of Noise Pollution Control Ordinance, construction activities carried out between 7 p.m. and 7 a.m, applications of noise permit are required. Although the construction activities normally will carry out between 7 p.m. and 7 a.m., comparatively less reports stating their requirements to apply for noise permit is omitted.
- Waste Disposal Ordinance, Dumping at Sea Ordinance and Land Filling Ordinance are found not focus deep to construction environment and its requirement. For good site practices, it is more stated in guidelines and references. There are general suggestions which aim to performance better waste management as well as resource usage. Once the suggested guides are achieved, the construction's waste management can be improved. It is found a lack of legislation requirement for construction waste. There should have a large room for improvement in legal regulations areas.

7. Conclusions

Among four major areas of environmental pollutions, air pollution, water, pollution, noise pollution and waste pollution, air pollution is the most serious pollution to Hong Kong, and large amount of the pollutants are come from the construction industry. Although the environmental performance requirements for construction activities are regulated by various policies and regulations, construction related environmental pollution remains as a major environmental pollution source. The critical review on the legal commitments for implementing environmental management among various construction practitioners in this paper found that there is a skewed commitment allocation in the existing regulation system among professionals in construction industry. Responsibilities are mainly imposed to contractors whilst little commitment specifications are available for other professionals including clients, engineers and consultants. Thus the association between the limitation of improving construction environmental performance and the insufficiency of legal commitments allocated among construction practitioners exists in Hong Kong. The discussion provides reference to the local government department for formulating better policies in order to improve environmental performance in the local construction. It also provides valuable reference for other governments to examine the effectiveness of implementing their environmental management policies in construction industry.

8. References

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