



Mandatory reporting of greenhouse gas emissions from buildings: Stakeholders' opinions in Hong Kong

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HIGHLIGHTS

- Majority supported mandatory reporting for office and hotel/hostel buildings.
- More support was given for reporting of scopes 1 and 2 of the GHG Protocol.
- Reporting for paper waste disposal received the weakest support.
- Main hurdles were resource constraint and financial and knowledge barriers.

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ABSTRACT

Mandatory reporting of greenhouse gas (GHG) emissions, which is intended to help combat global warming, has been increasingly implemented across the world. For buildings in Hong Kong, however, GHG reporting remains entirely voluntary even though the government has issued a set of guidelines to facilitate building owners and managers to quantify GHG emissions from buildings. Aimed at understanding stakeholders' opinions on whether, and to what extent, the GHG reporting should be made mandatory, a study involving a questionnaire survey was carried out. Analysis of the opinions revealed that the majority supported making the reporting mandatory for office, hotel/hostel, and industrial buildings. Generally more support was received from those who were highly experienced, employees of non-government public organisations, academics/researchers, or qualified carbon/energy auditors. Their agreement on requiring reporting of activities under scopes 1 and 2 of the GHG Protocol was stronger than that for the scope 3 activities. Reporting of paper waste disposal attracted the weakest support. The reasons for not supporting the mandatory policy, including resource constraint and financial and knowledge barriers that confront the stakeholders, were identified. The findings of this study serve as reference for energy policy makers.

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1. Introduction

Climate change, an escalating environmental problem, is attributed to the increasing greenhouse gas (GHG) emissions across the globe. Man-made activities that give rise to the emissions include combustion of fossil fuel for energy generation, release of refrigerants from mechanical equipment, landfill waste decomposition, and so on. While most of the emissions are inevitable by-products of various economic activities nowadays, more and more stakeholders have started to find ways for reducing their generation. This is not only a social responsibility but also key to sustainable development.

Quantification of the GHG emissions associated with resource-consuming activities, such as building operations, is essential to understanding the impacts they impose on the environment. Proper documentation of the quantified amounts of GHG emissions, also known as GHG reporting, has been increasingly implemented by local governments as well as large organisations since the late 1990s (Kauffmann et al., 2012). For instance, over 80 company GHG reporting methods and initiatives were identified as being in use around the world, among them some are prescribed by the law and some are taken on a voluntary basis (EuroC, 2010).

In many developed places, more and more studies on environmental reporting have been carried out. In the United States, Brewer (2004) analysed the results of various public opinion surveys, showing that a majority of the public prefers mandatory, instead of voluntary, reduction of GHGs. In Australia, a study was conducted by Bubna-Litic (2008) to examine, in the context of corporate accountability, the effect of mandatory corporate

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environmental reporting. It was found that the less-than-optimal quality of the reporting was a result of the lack of regulatory enforcement. In the United Kingdom where there was a public consultation to the Climate Change Act 2008, [Scheer and Höppner \(2010\)](#) completed a critical analysis and recommended that it is necessary to have a closer match between the government's normative rationale, citizen's substantive intent and the consultation design.

Among the metropolises around the world, Hong Kong has a remarkably high density of buildings. A review study ([Leung and Lee, 2000](#)) showed that carbon dioxide accounts for 90% of the GHG emissions in Hong Kong. The past effort on curbing the emissions, however, appeared to be lax; even the publication of Hong Kong's emission data was found lagging behind the other modern cities ([Kennedy et al., 2012](#)). Until recently, people in Hong Kong have become progressively aware of the mounting demand for GHG reductions. In 2008, the Hong Kong Government first issued a set of guidelines to facilitate building owners and managers to quantify and report the GHGs emitted/removed from their buildings. To date, the guidelines remain as a voluntary initiative and it is entirely up to individuals to decide whether to adopt the guidelines.

Hong Kong is a community governed by the rule of law ([Wesley-Smith, 1998](#)). Whenever it is necessary to introduce a new policy or some amendments to the existing legislation, the government would seek the opinions of society, typically by means of consultation ([DOJ, 2012](#)). The introduction of amendments to the Lifts and Escalators (Safety) Ordinance, which was intended to enhance the safe use and operation of the lifts and escalators in numerous high-rise buildings in Hong Kong, serves as an example. In an attempt to collect the views of the stakeholders on the proposed amendments to that Ordinance ([Lai, 2013a](#)), a survey was conducted and the result matched well with that of the public consultation organised by the government.

Drawing upon the experience of the above survey, a study was initiated to investigate whether the stakeholders of GHG reporting for buildings in Hong Kong agree to make it mandatory and, if so, the extent to which it should cover. At the initial stage of the study, an extensive search and review of literature and website information was carried out in order to understand the development of the GHG reporting schemes of various developed countries; identify the characteristics and scopes of applications of such schemes; and find out any precedents of regulating GHG reporting that can be taken as reference for the current study.

Shown in the ensuing section is a review of the major overseas GHG reporting schemes, followed by an overview of the situation of GHG emissions, carbon reduction initiatives and reporting guidelines in Hong Kong. Then the design of the questionnaire used for a stakeholder survey under the study and the demography of the respondents are reported. The responses collected, including the various stakeholder groups of supports to making the reporting mandatory for buildings and their opinions on the coverage of the reporting scheme, are analysed and discussed. At the end, the conclusions drawn from the study are given.

1.1. Overseas reporting schemes

Earlier the Royal Institution of Chartered Surveyors has commissioned the Global Zero Carbon Index to gauge the performance of various countries in making progress towards zero carbon built environments ([RICS, 2011](#)). The Index, determined by using robust data from the International Energy Agency and World Bank, comprises three sets of indicators, including one that takes into account the policy frameworks that individual countries have established to promote carbon reductions. Meanwhile, the Organisation for Economic Co-operation and Development has conducted a stocktaking of government schemes on corporate GHG

reporting. The result, as reported in [Kauffmann et al. \(2012\)](#), revealed that a number of governments had established voluntary or mandatory GHG measurement and reporting schemes over the past decade. Such mandatory schemes include: GHG Emission Reporting Scheme (Canada), Mandatory GHG Accounting and Reporting System (Japan), National Greenhouse and Energy Reporting System (Australia), the UK GHG Reporting System (United Kingdom), and Greenhouse Gas Reporting Program (United States). The key features of these schemes were reviewed, as reported in the following.

1.1.1. Canada

In March 2004, the Government of Canada adopted a phased approach to launch the GHG Emissions Reporting Program (GHGRP). Under the authority of the Canadian Environmental Protection Act 1999 a Gazette notice is published every year, outlining the GHG reporting requirements for the year specified in the notice. The Program, enforced by the Government (specifically Environment Canada), is to: provide Canadians with information on GHG emissions; validate estimates presented in the National Greenhouse Gas Inventory; support provincial and territorial requirements for GHG emissions information; and support the development of regulations ([EC, 2014](#)).

The GHGRP provides that a facility is subject to the reporting requirements if its total direct emissions of GHGs meet or exceed the reporting threshold. In order to determine whether a facility is subject to the requirements, it is necessary to calculate its total emissions for the relevant year for the GHGs and emission sources covered. At the time of this writing, the reporting threshold was 50 kt of CO₂ equivalent, which was reduced from the threshold of 100 kt in 2009. For facilities not meeting the reporting threshold, they are encouraged to report their emissions on a voluntary basis.

1.1.2. Japan

According to the Industrial Efficiency Policy Database (2013), Japan introduced in 2005 the Mandatory Greenhouse Gas Accounting and Reporting System based on the revised Act on Promotion of Global Warming Countermeasures (Act No. 117 of 1998). Aimed at promoting voluntary emissions-reduction efforts of emitters through assessment of the current GHG emission levels, the system became effective on 1 April 2006 ([KMIP, 2013](#)). It requires specified entities (which emit GHG emissions above a defined threshold) to calculate their GHG emissions and report the results to the Government.

Under the system, “specified establishment emitters” are those that consume more than 1500 kl energy per year by crude oil equivalent; conduct business activities with each establishment emitting 3000 t or more CO₂ by type of greenhouse emission gas; and employ 21 or more staff in total. Another category, referred to as “specified transportation emitters”, are those that fall in the transportation sector. Such emitters include specified freight carriers, specified consigners, specified passenger carriers, and specified air carriers under the Act on the Rational Use of Energy. At the end of fiscal year 2010, there were 11,034 operators (12,846 establishments) the specified establishment emitter category and 1399 operators in the specified transportation emitter category ([IEPD, 2013](#)).

1.1.3. Australia

The legislative framework for the National Greenhouse and Energy Reporting (NGER) system in Australia was established under the National Greenhouse and Energy Reporting Act 2007, the Regulations under that Act and the National Greenhouse and Energy Reporting (Measurement) Determination 2008. There are two sets of objectives of the NGER system, with the first set comprising: (a) informing government policy formulation and the

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