

**City University of Hong Kong  
Research Centre for Sustainable Hong Kong<sup>1</sup>**

**Policy Paper No. 25  
Accelerating green finance development in Hong Kong: Improving the estimation on  
greenhouse gas emissions in the financial sector<sup>2</sup>**

**Linda Chelan Li, Liang Dong, Phyllis Lai Lan Mo, Kin On Li<sup>3</sup>**

**This policy paper is the first of a 3-part series on studying the greenhouse gas (GHG) emissions of Hong Kong’s financial sector. It aims to discuss the development background, reasons and the scope of investigation for GHG emissions in this sector.**

**In the next part of this series, we shall report our estimation of the GHG emissions of Hong Kong’s financial sector using business loans, mortgage loans and asset management data in Hong Kong. The results reveal that the estimated GHG emissions from Hong Kong’s financial sector is 13 times more than the total emissions in all sectors in Hong Kong as reported in government figures.**

**In the third part of this policy paper series, and leveraging on findings in the first two parts, we formulate policy recommendations to step up Hong Kong’s green finance development and transition to carbon neutrality.**

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<sup>1</sup> Established in June 2017 by a cross-disciplinary research team, the Research Centre for Sustainable Hong Kong (CSHK) is an Applied Strategic Development Centre of City University of Hong Kong (CityU). The CSHK conducts impactful applied research with the mission to facilitate and enhance collaborations among the academic, industrial and professional service sectors, the community and the government for sustainable development in Hong Kong and the rest of the region.

<sup>2</sup> This policy paper is the first chapter of our Centre’s research series on Hong Kong’s Financed Emission. If you have any comments on our policy paper, please email to [sushkhub@cityu.edu.hk](mailto:sushkhub@cityu.edu.hk). The research project is funded by The Sunrise Project and The Research Matching Grant Scheme of the University Grants Committee, Hong Kong.

<sup>3</sup> Linda Chelan Li is Professor of the Department of Public and International Affairs and Director of CSHK at City University of Hong Kong (CityU); Liang Dong is an Assistant Professor of the Department of Public and International Affairs and Member of CSHK at CityU; Phyllis Lai Lan Mo is Professor of the Department of Accountancy and the Associate Director of CSHK at CityU; and Kin On Li is a member of the Hong Kong Sustainable Development Research Hub.

- **Background**

In 2015, 195 members (194 states plus the European Union) of the United Nations joined the Paris Agreement to substantially reduce global greenhouse gas (GHG) emissions to achieve the goals of net-zero emissions on or before 2050 and limit the increase in average temperature to 1.5 °C above pre-industrial levels by the end of this century. GHG emission reduction has become a global consensus to achieve sustainable economic development that goes beyond nations. Meanwhile, the financial industry is the ‘foundation of all industries’ as it plays the crucial role of providing financial support to other industries. Therefore, the financial industry is the primary driver of economic development and plays an important role in the transition pathway to carbon neutrality. The investment and financing activities of financial institutions (e.g. commercial loans, investments and asset project management) provide an important impetus to promote the development of emerging low-carbon businesses and drive the decoupling from the existing high-carbon-intensity economic model in the long term. In this context, arriving a good measure of the GHG emissions of financial institutions is crucial for achieving carbon neutrality and implementing climate-related initiatives.

The international community is working hard to formulate and improve standards for measuring and disclosing the GHG emissions of financial institutions. Such emissions include not only the direct emissions generated by their own operations (operational emissions), but also the indirect emissions associated with their lending and investment activities (financed emissions). The objective is to measure and analyse the lending and investment practices of the financial sector and its associated GHG emissions to ensure that they are consistent with climate action goals.

In 2020, Hong Kong Monetary Authority (HKMA) and the Securities and Futures Commission (SFC) jointly established a cross-agency steering group on green finance development. The Hong Kong government has subsequently launched multiple rounds of green bonds to support the green transformation of its bond market. Major financial institutions and stakeholders have actively expanded green finance certification, green loans and environmental, social and governance (ESG)-related investment products in recent years. However, Hong Kong has mostly focused on the scale of green bonds and other debt products as a key indicator to measure its green finance achievements. There is relatively less attention on how these products have, in effect, helped reduce the GHG emissions.

Quantifying GHG emissions from financial institutions’ lending and investing activities is a significant step to further develop Hong Kong’s green finance and strengthen the function of the local financial sector in the roadmap to achieve net-zero emissions by 2050. The measurement and disclosure of financed emissions provide a scientific basis for the government and regulators to better assess the effectiveness of green finance policies and formulate standards and guidelines towards net-zero transition

of the financial institutions. In the following sections, we shall elaborate on the measurement of the scope of the GHG emissions of Hong Kong’s financial institutions and identify the gaps in measuring such emissions.

## 2. The scope of GHGs accounting for the financial sector

As early as 1998, the World Business Council Sustainable Development (WBCSD) and the World Resources Institute (WRI) jointly released the **GHG Protocol**, widely recognised as the accounting methodology to measure GHG emissions.

According to the **GHG Protocol**, an organisation must measure and account for three scopes of GHG emissions. Scope 1 emissions refer to GHG emissions directly caused by production activities, such as offices operated by the organisation and transportation vehicles used by staff. Scope 2 emissions mainly target those caused by the energy products purchased by organisations, including the emissions of energy products, such as electricity and water consumed when sewing clothes in garment factories. As for Scope 3, the boundaries cover both the upstream and downstream of the value chain in the industry. Taking a garment factory as an example, from its upstream procurement of raw materials, transportation and warehousing of materials and finished products, to the sale of ready-made garments at retail outlets, the GHGs generated by the garment factory in each link of its value chain are measured and accounted for.

*Table 1. Definition of GHG emissions in The Greenhouse Gas Protocol*

	<b>Definition</b>	<b>Examples</b>
Scope 1	Direct carbon emissions	Company office facilities, transportation vehicles
Scope 2	Indirect carbon emissions related to purchased energy	Purchased energy consumption, such as electricity, carbon supply and refrigeration
Scope 3	Carbon emissions involved in the entire value chain	Logistics, transportation, distribution, product sales Franchise, leasehold assets and investments

Source: WRI and WBCSD Greenhouse Gas Protocol

Under Appendix 27 of the ‘Listing Rules and Guidelines’ of the Hong Kong Stock Exchange (HKEX) - the ‘Environmental, Social and Governance Reporting Guide’ --- all companies listed in HKEX are required to report their Scope 1 and Scope 2 emissions of GHGs; otherwise they will be considered non-compliant. Scope 3 emissions, however, are not a mandatory reporting requirement. In April 2023, the HKEX started a consultation to include Scope 3 emissions as a mandatory reporting category. The Carbon Disclosure Project (CDP), the world’s leading environmental data disclosure agency, estimated in 2021

that Scope 3 emissions from financial institutions would be 700 times the total of Scope 1 and Scope 2 emissions.<sup>4</sup>

This result is not difficult to understand. Unlike the first (e.g. fisheries and agriculture), second (e.g. manufacturing) or third (e.g. retail) sectors, financial institutions do not produce or sell physical products themselves. Therefore, the GHG emissions directly arising from operations (operational emissions) are usually of relatively small amount. Instead, the indirect GHG emissions (financed emissions) derived from a series of financing activities of financial institutions (e.g. commercial loans, mortgages, corporate listings, and project financing) are large, especially when the funding pool is deep. In 2015, several Dutch financial institutions launched the Partnership for Carbon Accounting Financials (PCAF), which advises financial institutions classify their financing activities into seven categories and calculate emissions using different formulas based on their circulating balance (see Table 2).

*Table.2 GHG emissions linked to the financial sector*

Direct emission	Indirect emission		
Operational Emission	Financed Emission		
Scope 1	Scope 2	Scope 3	
Institutional facilities and transportation vehicles	Consumption of purchased energy products	Product sales employee commuting business trip Corporate waste disposal Others etc.	Emissions related to investment and financing activities include the following: 1. Commercial loans and unlisted equity 2. Mortgage 3. Listed stocks and corporate bonds 4. Commercial properties 5. Motor vehicle loans 6. Project financing 7. Sovereign debt

Source: Compiled by authors with reference to WRI and WBCSD ‘Greenhouse Gas Protocol’ and PCAF ‘Financial Carbon Emission Standards’

The GHG emissions of the financial sector listed in Table 2 are based on the standards issued by the three major organisations, namely, WRI, WBCSD and PCAF. Many institutions hold different views on how to define investment and financing emissions.<sup>5</sup> However, the global direction is clear regarding the need to account for and unify international standards for investment and financing emissions. In recent years, the international community has been vigorously promoting the disclosure of climate-related information

<sup>4</sup> *Finance sectors funded emissions over 700 times greater than its own*: November 1, 2023: <https://www.cdp.net/en/articles/media/finance-sectors-funded-emissions-over-700-times-greater-than-its-own>  
<sup>5</sup> e.g. SBTi · PACTA · EBA, etc.

and carbon emissions in financial institutions, gradually improving the guidelines for related accounting methods. The G20, which brings together the 20 major economies of the world, had asked its Financial Stability Board (FSB) to set up the Task Force on Climate-related Financial Disclosures (TCFD) eight years ago. Under the guidance of the TCFD, the International Financial Reporting Standards Foundation (IFRS), which is responsible for formulating global audit standards, and its International Sustainability Standards Board (ISSB) are integrating the opinions of major non-profit international organisations, such as the Sustainability Accounting Standards Board (SASB), to seek opinions on climate-related disclosures in different industries, with a special focus on the accounting and disclosure of financed emissions in the financial industry.

Following these important measures, the international community is also steadily advancing its efforts in constructing data publishing platforms and databases. Apart from providing expert guidance on GHG emissions and serving as a research repository, the CDP also established GHG checklists at the city- and corporate (mainly financial institutions)- level to help companies report their Scope 1, 2 and 3 emissions and comply with existing carbon market policies (e.g. carbon pricing) in their respective jurisdictions. When the PCAF was officially launched in 2019, it aimed to develop guidelines for measuring and disclosing financing emissions, which clearly cover the GHG emissions of investment and financing businesses.

However, whilst the carbon accounting guidelines and standards formulated by international organisations can theoretically account for and report corporate-level GHG emissions, practical constraints have severely limited the actual advances in GHG emissions accounting and reporting, including issues of data availability, method and data compatibility, and lack of clarity in the accounting scope. Financed emissions have thus so far been excluded in the disclosure of Scope 3 emissions in ESG or TCFD reports of many financial institutions. It is paramount that the academic community should develop science-based methods to improve the existing accounting and disclosure of investment and financing emissions.

In recent years, ‘Impact Investing’ has been on the rise globally. It means that investors or institutions controlling capital should influence the behaviours of invested companies through resource allocation, thus creating positive and measurable results for society and the environment. The accounting of GHG emissions by financial institutions is precisely an objective indicator for outsiders to measure whether they—as capital controllers—have used various means of capital allocation to promote emission reduction.

### 3. GHG accounting in Hong Kong still needs improvement

The latest announcement from the Hong Kong Environment and Ecology Bureau shows that Hong Kong’s GHG emissions in 2021 comprise 34.7 million tonnes of carbon dioxide equivalent (CO<sub>2</sub>e), equivalent to 60% of Singapore’s emissions (57.7 million tonnes) in the same period. Not only is Hong Kong’s total emissions lower, but its emission intensity per billion dollars of GDP is 9.3 tonnes, while Singapore’s is 14.5 tonnes.

*Table.3 Comparison of GHG emissions in Hong Kong and Singapore in 2021*

	<b>Hong Kong</b>	<b>Singapore</b>
GHGs emissions	3,470 metric tonnes CO <sub>2</sub> e	5,770 metric tonnes CO <sub>2</sub> e
GDP	369.2 billion USD	397.0 billion USD
Emission intensity	9.3 tonnes/billion USD	14.5 tonnes/billion USD

Source: Singapore 2021 greenhouse gas emissions hit record 57.7 million tonnes, November 1<sup>st</sup> 2023, published in The Straits Times; Singapore Ministry of Trade and Industry, *Economic Performance 2021*.

However, the above comparison has not considered the impact of differences in the economic composition of Hong Kong and Singapore.<sup>6</sup> In addition, according to the classification of GHG emissions by the Hong Kong Environment and Ecology Bureau, power generation and other energy industries still account for the majority of local emissions (as high as 62.7%), followed by transportation (18.7%). The two together account for more than 80% of GHG emissions (Table 4).

*Table 4. Hong Kong’s greenhouse gas emissions in 2021*

	<b>Thousand metric tons CO<sub>2</sub>e</b>	<b>%</b>
1. Power generation and other energy industries	21,800	62.7%
2. Transportation	6,480	18.7%
3. Other fuel consumption	1,800	5.2%
4. Waste	2,910	8.4%
5. Industrial processes and product use	1,710	4.9%
6. Agriculture, forestry and other land uses	29	0.1%
<b>Sum</b>	<b>34,700</b>	<b>100%</b>

<sup>6</sup> For details, refer to the [CSHK Policy Paper No. 21: The Policy Framework To Achieve Emission Reduction Targets](#).

Source: Hong Kong Environment and Ecology Bureau, ‘2021 Greenhouse Gas Emission Inventory’, released in July 2023

Interestingly, comparing the ‘greenhouse gas emissions’ figures released by Environment and Ecology Bureau and ‘proportion of GDP by economic activity’ figures under the Census and Statistics Department, the sectors with the highest GHG, namely, ‘power generation and other energy industries’ (62.7%), ‘other fuel consumption’ (5.2%), ‘waste’ (8.4%), ‘industrial processes and product use’ (4.9%) and ‘agriculture, forestry and other land use’ (0.1%), all belong to the primary and secondary industries, which account for only 6.4% of the local economy, while their share of GHG emissions reaches a stunning 81.3%.

*Table 5. Hong Kong’s GDP in 2021 by industries*

	<b>Industries</b>	<b>%</b>
First industry	Agriculture, fishing, mining and quarrying	0.1%
Second industry	Manufacture	1.0%
	Construction	4.0%
	Electricity, gas and water supply and waste management	1.3%
Third industry	<b>Import and export trade, wholesale and retail</b>	<b>19.4%</b>
	Accommodation and food services	1.7%
	Transport, warehouse, postal and courier services	7.3%
	Information and Communications	3.6%
	<b>Finance and Insurance</b>	<b>21.3%</b>
	Real estate, professional and business services	9.1%
	Public administration, social and personal services	20.4%
	Property service	10.9%

Source: ‘Gross Domestic Product (Annual) 2022 Edition’ by the Census and Statistics Department

If we go by the three scopes defined by the GHG Protocol for carbon emission accounting, Hong Kong is still mainly focused on Scopes 1 and 2, i.e., GHG emissions directly or indirectly related to production activities. Upon reviewing the annual reports of several locally listed financial institutions, we find that most of them disclose the GHG emissions of Scopes 1 and 2 as required by the HKSE guidelines, but do not disclose those of Scope 3. For those including Scope 3 emissions, the reported Scope 3 emissions only involve operational emissions; financed emissions are rarely included.

Hong Kong is an open economy, and the value chain of its economic activities, including foreign trade, financial and insurance services, real estate sales, other professional and commercial services, may not have been fully considered in terms of their radiative impacts on local and surrounding areas' GHG emissions. However, these tertiary industry activities account for the absolute large share of local GDP, with financial and insurance services comprising the largest proportion at 21.3%. From this perspective, if we go by the broader GHG emission accounting standards of the GHG Protocol, then Hong Kong's GHG emissions may have been underestimated.

#### **4. Conclusion**

To consolidate its position as an international financial centre, Hong Kong has taken a strategic choice to develop green finance. The investment and financing activities of the financial institutions play a key role as important drivers pushing other industries to achieve low-carbon transition. In this process, accounting for the financed emissions is an important step to assess how the financial institutions have incorporated climate change in their action plans. This information also provides a benchmark to formulate science-based targets according to different emission reduction scenarios, and enables a higher level of transparency and improved disclosures in their ESG reports. At a broader, policy level, the emission information is also crucial for designing policies that can guide carbon-neutral business investments towards a decarbonised economy.

This article explains the three scopes of corporate GHG emissions and points out the salience of accounting for financed emissions as a critical infrastructure of the broader green finance policy development and future roadmap of a decarbonized economy. In the next article, we shall employ the estimation methodology contained in PCAF's 'Financial Carbon Emission Guidelines', supplemented by data collected from Hong Kong Monetary Authority and financial institutions, to estimate Hong Kong's financed emissions for commercial loans, mortgages and asset management.