Trade and Industrial Organisation Support Fund (TSF)

Final Report on Approved Project

Grantee	:	Hong Kong Electro-Plating Merchants Association Limited
Implementation Agent(s) (if any)	:	Hong Kong Productivity Council
Project reference no.	:	T22 002 004
Project title	:	To raise awareness of the electroplating industry on carbon footprint and enhance electroplating enterprises' standard of carbon footprint disclosure through a comprehensive study and the development of a carbon emissions calculation platform
Period covered in this report (whole project duration)	:	From 20/01/2023 (dd/mm/yyyy) to 19/12/2023 (dd/mm/yyyy)

1. Project Details

Project summary (in about 150 words)

The image of H. K. electro-plating merchants including their social responsibility, advanced electroplating technology and environmental friendly surface finishing process was promoted. Various electro-plating-related sectors were participated and demonstrated their products together in Hong Kong Pavilion of the exhibitions.

Showcase and video were presented in the H. K. Pavilion to demonstrate the high-quality electroplating products by using advanced electroplating technology. Professional technologist and technology partners of Hong Kong Electro-plating Merchants gave presentations about the advanced electroplating technology and environmental friendly surface finishing process in the seminars.

The Hong Kong Pavilion of the exhibitions provided the opportunities to participants for business networking, discussion and meeting with the technologist from H.K. Electro-plating Merchants Association and HKPC for technological and marketing exchange.

Project objectives (in about 50 words)

To conduct comprehensive study and develop carbon emission calculation platform to help local electroplating enterprises calculate carbon footprint of their electroplating processes in compliance with ISO 14067:2018 as well as to provide guidance on how to reduce and verify the carbon footprint of their electroplating processes, and thereby enhancing their competitiveness.

Collaborating Organisations (if any)

The Hong Kong Metals Manufacturers Association Limited

Hong Kong Watch Manufacturers Association Limited

Hong Kong Screw & Fastener Council Limited

Hong Kong Surface Finishing Society Limited

Hong Kong Optical Manufacturers Association Limited

Hong Kong Federation of Innovative Technologies and Manufacturing Industries Limited

Key personnel

		Name	Post title and name of organisation
Project Coordinator	:	Cheung Kwok Tim	Chairman, Hong Kong Electro-Plating Merchants Association Limited
Deputy Project Coordinator	:	Suen Kwok Wai, Samson	General Manager of Smart Manufacturing Division, Hong Kong Productivity Council

Project duration

	Commencement date (dd/mm/yyyy)	Completion date (dd/mm/yyyy)	Project duration (no. of months)
As stated in the project agreement	20/01/2023	19/11/2024	22
Revised (if applicable)	NA	NA	NA

2. Summary of Project Results

Governance

Please state the composition of the steering committee (or other committees) formed under the project.

(i) Mr Ho Koon Wan, Chairman of Hong Kong Electro-Plating Merchants Association Limited (HKEPMA)
(ii) Mr Simon Ho, Honorable Chairman & Director of HKEPMA
(iii) Mr Nickolas Chang, Chairman of Hong Kong Surface Finishing Society Limited
(iv) Ir Kenny Wong, Head of Carbon & Environmental Excellence Unit of HKPC
(v) Mr Tsui Ping Fai, Chairman of Hong Kong Screw & Fastener Council Limited
(vi) Mr Evan Tse, President of Hong Kong Optical Manufacturers Association Limited
(vii) Mr Gary Lau, President of Hong Kong Watch Manufacturers Association Limited
(viii) Mr Alan Suen, Chairman of The Hong Kong Metals Manufacturers Association Limited
(ix) Mr Lee Yuen Fa, Chairman of Hong Kong Federation of Innovative Technologies and Manufacturing Industries Limited

Role: The steering committee is responsible for:
(i) monitoring project implementation;
(ii) selecting five representative electroplating enterprises for case studies;
(iii) deciding the scope and boundary of the electroplating processes to be included in the calculation platform;
(iv) providing advice on the content of the guidebook.

Project deliverables

Please list out the project deliverables carried out during the project duration in accordance with the approved project proposal and provide details on the actual result achieved for each deliverable.

Details of the deliverable conducted	Quantifiable target (as stated in the approved project proposal)	Actual result achieved	Reasons for not achieving the target (if applicable)
1. Study			
Stage 1: A desktop research on two most used categories of electroplating technologies in the Hong Kong electroplating industry, i.e. copper and nickel electroplating (according to HKEPMA) was conducted to understand the emissions activities in the electroplating processes. The desktop research was completed on 17/03/2023. Stage 2: Case studies on five Hong Kong electroplating enterprises were conducted through site visits to identify the exact activities involved in the copper or nickel electroplating processes and collect the relevant activity data for the calculation of carbon emissions. 5 electroplating enterprises out of 98 enterprises being enrolled for the studies were selected by the steering committee based on the following criteria: (1) The enterprises must use either copper or nickel electroplating	Target: 1 study including: -1 desktop research, -5 cases studies, -1 literature review, and 1 study report	Actual: 1 study including: -1 desktop research, -5 cases studies, -1 literature review, and 1 study report	NA

Details of the deliverable conducted	Quantifiable target (as stated in the approved project proposal)	Actual result achieved	Reasons for not achieving the target (if applicable)
technologies; (2) The enterprises with long history in the electroplating industry are preferred; (3) The enterprises must be engaged in products with a dominant market share in the electroplating industry which will be identified from the literature/desktop research and the five enterprises selected should engage in different product types; (4) The enterprises with factories in Guangdong are preferred; (5) The enterprises must possess the capability of upgrading the technologies used in the electroplating processes to ensure that the participating enterprises can develop strategic directions and plans to reduce their carbon footprints, which can be shared in the guidebook for other electroplating enterprises' reference; (6) The enterprises must be willing to disclose all necessary information for the in-depth study. Selection of the five companies for site visit was completed on 16/6/2023. Five selected enterprises, which fulfilled the above criteria, were : 1. 特佳電鍍有限公司:廣東省深圳市寶安區沙井街道大王山村第二工業區 18 號 (Dates of visit: 6 Sep 2023 and 16 Oct 2023 (2 days)) 2. 雅視光學有限公司:廣東省深圳市龍崗區園山街道蓮塘尾一路 28 號 (Dates of visit: 5 Sep 2023 and 20 Oct 2023 (1.5 days)) 3. 智聯表面廠有限公司:廣東省惠州市惠陽區秋長鎮鵬嶺工業區 (Dates of visit: 13 Sep 2023 and 20 Oct 2023 (1.5 days)) 4. 永業金屬配件製品有限公司:廣東省清遠市佛岡縣石角鎮 S292 (Dates of visit: 14 Sep 2023 and 25 Oct 2023 (2 days))			

Details of the deliverable conducted	Quantifiable target (as stated in the approved project proposal)	Actual result achieved	Reasons for not achieving the target (if applicable)
5. 永昌金屬製品廠有限公司:廣東省東莞市塘廈鎮石鼓塘天路 33 號 (Dates of visit: 7 Sep 2023 and 2 Nov 2023 (2 days)) These enterprises provided supporting documents, such as electricity consumption of equipment, usage of chemical, usage of consumables and water consumption to verify its activity data. Apart from the above visits, on 15 September 2023, the project team travelled to Technic (China – HK) Limited (in-kind sponsor of measurement devices for activity data collection for the case studies) in Jiangmen for measurement of sample for case studies. The raw data for studies and calculation was collected during the site visits on 5, 6, 7, 13, 14, and 15 September 2023 (6 days) and the case studies were completed on 19/09/2023. Upon conducting literature review for the conversion factors of relevant activities in case studies at stage 3, project team arranged re-visit of the five companies for evaluation of the findings and carbon footprint's calculation on 16, 20, 25 October and 2 November 2023 (4 days). Stage 3: Literature review was conducted and openLCA Nexus database was used to search for conversion factors of relevant activities, following the principles of ISO 14067:2018. Conversion factors provide the link that converts these quantities into the resulting carbon emissions: the amount of greenhouse gases (i.e. carbon dioxide) emitted per unit of activity data (e.g. kg greenhouse gas per kg input or per kWh energy used). The general conversion factors were obtained from shared free China database (http://lca.cityghg.com/#). In addition, HKPC has purchased one conversion factor database of openLCA Nexus for the calculation of carbon emissions. HKPC staff followed the guidance of ISO 14067:2018 to select suitable			

Details of the deliverable conducted	Quantifiable target (as stated in the approved project proposal)	Actual result achieved	Reasons for not achieving the target (if applicable)
conversion factors for the development of the calculation platform. The selection process of the emissions activities, conversion factors as well as the reporting of carbon footprint also followed the principles of ISO 14067:2018. The literature review was completed on 19/11/2023. Stage 4: A study report (e-version) that summaries the findings of the above desktop research, case studies and literature review (i.e. stages 1-3 above) including the carbon footprint (in terms of carbon dioxide equivalent of specific electroplating activities of the 5 enterprises and the key activities contributing to the carbon emissions of their manufacturing processes was produced. The completed study report was uploaded to the project website on 19/12/2023.			
2. Carbon emissions calculation platform			
Carbon emissions calculation platform (https://www.tsfhkepma-carbonemission.com/Description/platform/nav_id/6.html) was launched on 22/7/2024. -Languages: Traditional and Simplified Chinese and English - Methodology: The steering committee decided the scope, boundary and activities of the electroplating processes to be included in the calculation platform. The decision on the scope, boundary and activities of electroplating processes in the calculation platform by the steering committee will be based on the findings of the study. The calculation platform included inventory of activities in the electroplating processes and the corresponding conversion factors that searched from the literature for calculation of the carbon dioxide equivalent of the electroplating processes.	Target: 1 carbon emissions calculation platform • Target number of electroplating enterprises using the platform: 50 enterprises	Actual: 1 carbon emissions calculation platform • Actual number of electroplating enterprises using the platform: 65 enterprises	NA

Details of the deliverable conducted	Quantifiable target (as stated in the approved project proposal)	Actual result achieved	Reasons for not achieving the target (if applicable)
-The carbon emissions calculation platform has the following functions: (1) Registration The electroplating enterprises are required to set up an account and input their company information such as company names, Business Registration number and contact etc. Before registration, there is a disclaimer stating that the information collected will only be used for the statistics and ranking of carbon emissions of Hong Kong electroplating enterprises to be shown in the project website. (2) Carbon footprint report The electroplating enterprises will be able to generate their own carbon footprint reports for their electroplating processes by selecting the applicable technologies, processes and activities and inputting the corresponding activity data in the platform. The platform will convert the input activity data to carbon dioxide equivalent based on the specific conversion factor and generate a report with a pie-chart showing the emissions quantity, sources and percentages of different activities. Electroplating enterprises using this platform will therefore be able to calculate the carbon footprint of their electroplating processes and identify the key activities contributing to the carbon emissions, which could facilitate their carbon footprint reduction. -Distribution channels: Carbon emissions calculation platform was posted on project webpages and distributed through the network of collaborating organisations			
3. Seminars			
1st seminar Date: 23/08/2024 Time: 2-5 pm (__3__hours) Venue: 4/F,Yau Lee Centre, 45 Hoi Yuen Road, Kwun Tong Format: Physical	Target no. of participants: 60 participants for each seminar (25 on-site and 35 online participants)	Actual no. of participants: Target no. of participants: 60 participants for each seminar (25 on-site and 36 online participants)	NA

Details of the deliverable conducted	Quantifiable target (as stated in the approved project proposal)	Actual result achieved	Reasons for not achieving the target (if applicable)
Topics covered: -Topic: 全球環境政策介紹, speaker: Mr Edward Chow (Head, Carbon and Environmental Excellence, Hong Kong Productivity Council) -Topic: 實現可持續發展的 ESG 策略, speaker: Mr Ted Yip, Senior (Senior Consultant, Carbon and Environmental Excellence, Hong Kong Productivity Council) -Topic: 產品碳足跡標準及碳足跡量化, speaker: Mr Edward Chow (Head, Carbon and Environmental Excellence, Hong Kong Productivity Council) -Topic: 示範使用計算平臺計算電鍍製程碳排放, speaker: Mr Daniel Wong (Associate Principal Consultant, Nanofabrication and Surface Technology, Hong Kong Productivity Council) -Distribution channels: (1) E-leaflet for technical seminar was posted on project webpages and distributed through the network of collaborating organisations (2) Event highlights (including photos on speakers' sharing, presentations and materials) were uploaded to the project webpages.			
2nd seminar Date: 23/09/2024 Time: 10am-1pm (__3__hours) Venue: 4/F,Yau Lee Centre, 45 Hoi Yuen Road, Kwun Tong Format: Physical Topics covered: -Topic: 內地環境政策及發展動向介紹, speaker: 張亦校先生 (總經理助理, 新財富環保產業園) -Topic: 電鍍過程中產品碳足跡的量化與報告, speaker: Mr Edward Chow (Head, Carbon and	Target no. of participants: 60 participants for each seminar (25 on-site and 35 online participants)	Actual no. of participants: Target no. of participants: 61 participants for each seminar (25 on-site and 35 online participants)	NA

Details of the deliverable conducted	Quantifiable target (as stated in the approved project proposal)	Actual result achieved	Reasons for not achieving the target (if applicable)
Environmental Excellence, Hong Kong Productivity Council) -Topic: 代表性電鍍企業電鍍工序碳足跡活動資料案例研究 , speaker: Mr Daniel Wong (Associate Principal Consultant, Nanofabrication and Surface Technology, Hong Kong Productivity Council) -Topic: 示範使用計算平台計算電鍍製程碳排, speaker: Mr Daniel Wong (Associate Principal Consultant, Nanofabrication and Surface Technology, Hong Kong Productivity Council) -Distribution channels: (1) E-leaflet for technical seminar was posted on project webpages and distributed through the network of collaborating organisations (2) Event highlights (including photos on speakers' sharing, presentations and materials) were uploaded to the project webpages.			
3rd seminar Date: 23/09/2024 Time: 10am-1pm (__3__hours) Venue: 4/F,Yau Lee Centre, 45 Hoi Yuen Road, Kwun Tong Format: Physical Topics covered: -Topic: 綠色生產及環保電鍍工藝, speaker: 何俊文先生 (華南區總經理, 得力(中國-香港)有限公司) -Topic: 能源審計及節能減排的技術, speaker: 李再宗先生(工程師,廣東惠智通能源環保 發展有限公司) -Topic: 電鍍廢氣處理技術及應用, speaker: 王長海先生(研發部總監, 廣東逸膜科技有限公司) -Topic: 電鍍廢水處理技術及應用, speaker: 韓全 (總工程師,廣東尚宸環境科技有限公司)	Target no. of participants: 60 participants for each seminar (25 on-site and 35 online participants)	Actual no. of participants: Target no. of participants: 63 participants for each seminar (25 on-site and 38 online participants)	NA

Details of the deliverable conducted	Quantifiable target (as stated in the approved project proposal)	Actual result achieved	Reasons for not achieving the target (if applicable)
-Distribution channels: (1) E-leaflet for technical seminar was posted on project webpages and distributed through the network of collaborating organisations (2) Event highlights (including photos on speakers' sharing, presentations and materials) were uploaded to the project webpages.			
4. Guidebook			
Publishing date: 19/07/2024 -Topics covered: (1) Understanding Carbon Footprint in Electroplating Industry (2) Overview of ISO/TS14067, Methodology for carbon footprint quantification and Communication (3) Identification of common carbon footprint activities in Electroplating Industry (4) Assessing Carbon Footprint in copper and nickel electroplating processes with industrial experience (5) Demonstration of carbon footprint calculation platform for electroplating process (6) Verification No. of pages: 53pages - Distribution channels: Guidebook was posted on project webpages and distributed through the network of collaborating organisations	Target: 1 guidebook (e-version)	Actual: 1 guidebook (e-version)	NA
5. e.g. Website / webpages			
The project website (https://www.tsfhkepma-carbonemission.com/Index/index/lang/zh-tw) was launched on 17/3/2023. During the reporting period, the content of the project website has been updated to include the following information: (i) Introduction of international policies related to carbon emissions. (ii) E-version of the study report. (iii) E-version Guidebook (iv) E- Leaflets (v) The carbon footprint results from the case studies of the 5 electroplating enterprises. (vi) The common carbon emissions pain points in electroplating processes and examples of mitigation actions. The electroplating enterprises can have better understanding on the	Target: 1 project website	Actual: 1 project website	NA

Details of the deliverable conducted	Quantifiable target (as stated in the approved project proposal)	Actual result achieved	Reasons for not achieving the target (if applicable)
key areas for carbon reduction (i.e. the inputs or processes which impact the carbon emissions the most in the life cycle of a product), such that the electroplating industry could focus on those areas. (vii) Seminar highlights and handouts of the seminars will be uploaded to the project website.			
6. Leaflets			
Contents: Rundown of the technical seminar, introduction of the TSF project background and objectives, Carbon emissions calculation platform Language: Chinese Distribution channels: E-leaflet has been posted on project webpages, and shared by collaborating organisations	Target no. of designs: 1 design of E-leaflet	Actual no. of designs: 1 design of E-leaflet	NA

Key implementation stages

Please indicate in the status below if the deliverable is completed according to schedule (C), completed but delayed (D) or not achieved (N). If it is delayed or not achieved, please indicate the actual completion date (if applicable) and provide the reasons.

Project deliverable (all deliverables as set out in the approved project proposal)	Original target completion date [1]	Actual completion date (if applicable)	Status (C/D/N)	Reasons for not meeting the original target completion date
(a) _____	_____	_____	_____	e.g. Note (i)
(b) _____	_____	_____	_____	e.g. Note (ii)
(c) _____	_____	_____	_____	_____
(d) _____	_____	_____	_____	_____
(e) _____	_____	_____	_____	_____
(f) _____	_____	_____	_____	_____
(g) _____	_____	_____	_____	_____

Note:
(i)
(ii)

[1] As stated in the approved project proposal.