

For information

**LEGISLATIVE COUNCIL
PANEL ON ENVIRONMENTAL AFFAIRS**

**Report on the Completion of the First Five-Year Term
of the Cleaner Production Partnership Programme**

PURPOSE

This paper takes stock of the key activities and achievements of the Cleaner Production Partnership Programme (the Programme) upon the completion of its first five-year term on 20 January 2013.

BACKGROUND

2. The Environmental Protection Department (EPD) in collaboration with the Economic and Information Commission of Guangdong Province (GDEIC)¹ launched the Programme in April 2008. The Finance Committee of the Legislative Council (LegCo) approved \$93.06 million for the Programme.

3. The Programme started with an aim to encourage and facilitate Hong Kong-owned factories in both Hong Kong and the Pearl River Delta (PRD) region the adoption of cleaner production (CP) technologies and practices to reduce air pollutant emissions and energy consumption. In the light of feedback from the trades and with the support of this Panel, the coverage of the Programme has been subsequently widened to cover the treatment and reduction of effluent discharges from factories with a view to facilitating reduction, reuse, recycling and treatment of wastewater arising from their operations.

4. The Programme is implemented by the Hong Kong

¹ GDEIC is the lead department of the Guangdong Provincial Government for promoting voluntary cleaner production to enterprises in Guangdong.

Productivity Council (HKPC) and comprises four key initiatives, namely –

- (a) awareness promotion activities;
- (b) on-site improvement assessment for participating factories;
- (c) demonstration projects on CP technologies and practices; and
- (d) third party verification on improvement projects implemented by participating factories at their own cost.

Annex

Details of the key initiatives and the targets set for the Programme are at **Annex**.

5. In the light of the environmental benefits and positive feedback from the industry of the Programme, the EPD has extended the Programme for two years from 1 April 2013 to 31 March 2015 with a funding of \$50 million as approved by the Finance Committee of the LegCo in December 2012.

MANAGEMENT OF THE PROGRAMME

6. To oversee the implementation of the Programme, we have set up a Project Management Committee (PMC) comprising representatives from the four major chambers of commerce, namely, the Hong Kong General Chamber of Commerce, Federation of Hong Kong Industries, Chinese Manufacturers' Association of Hong Kong and Chinese General Chamber of Commerce, EPD, Trade and Industry Department as well as an academic. Over the past five years, the PMC held 19 meetings to provide steer to the operation of the Programme and scrutinise funding applications.

7. The HKPC established a programme management team and a programme quality assurance team to coordinate and ensure effective implementation of the Programme. In addition, two support teams have been set up in Shenzhen and Dongguan respectively for local liaison work and co-ordination of programme activities.

KEY ACTIVITIES

8. To arouse and sustain interests of Hong Kong-owned factories towards cleaner production and joining the Programme, we carried out in

conjunction with trade and industry associations and municipal authorities in the PRD a total of 301 awareness promotion activities. They included seminars, workshops, factory visits and exhibitions which attracted some 28 300 participants. In addition, the HKPC operated a dedicated CP website to showcase success stories and provide a resources platform on CP related materials. The HKPC also operated an enquiry hotline to enhance information dissemination and sharing of the related experience.

9. To widely share CP technologies adopted by participating factories, we published 10 CP guidebooks under the Programme which cover six industries, namely printing, textile, metal and metal products, food and beverage, plastic products, and furniture manufacturing, as well as technologies/practices for cross-sector applications, namely paint spraying process, industrial boiler system, generic energy saving measures, and wastewater treatment and reuse. In addition, we also produced two promotional videos for the Programme and three industry-specific videos for metals and metal products, printing and textile industries. The industry-specific videos facilitate factory owners and personnel to better understand the working principles and operation of the relevant CP technologies.

10. In the first five-year term of the Programme, the approved funding applications under the three categories are as follows -

	Approved Applications as at 20 January 2013					
	2008/09	2009/10	2010/11	2011/12	2012/13	Total
On-site Assessments	113	227	319	284	176	1119
Demonstration Projects	25	25	38	41	20	149
Verification Services	28	178	154	370	26	756

The number exceeded the targets set for the Programme.

11. Among the 149 approved demonstration projects, 75, 40 and 34 projects involved technologies mainly for energy saving, abatement of air pollution, and effluent control and reduction respectively. Specifically, the technologies tested in these demonstration projects include:

- (a) **energy saving** through direct steam condensate return system for boilers, use of servo motors or variable speed drives to

power production machines, application of energy management system to optimize energy performance, use of advanced insulation coating to reduce heat loss, application of electromagnetic induction or infra-red technologies in heating components of production machines;

- (b) **volatile organic compounds (VOC) reduction** through the use of low/no VOC substitutes for solvent-based materials, solvent recovery through vacuum condensation, use of enclosed systems equipped with treatment or solvent recovery equipment to control fugitive emissions of VOC, application of automatic or high volume low pressure spraying equipment to reduce solvent and paint consumption in coating processes, and application of high energy ion purification or catalytic combustion technologies for treatment of VOC;
- (c) **air pollutant emissions reduction** through application of advanced flue gas treatment to reduce air pollutant emissions, alternative design of furnaces and boilers to enhance fuel combustion efficiency thus reducing air pollutant emissions, use of cleaner energy and renewable energy such as biogas or solar energy to replace fossil fuels; and
- (d) **effluent and pollutant reduction** through recovery of metals and other materials from effluent, application of reverse osmosis and other filtration technologies to recycle industrial wastewater, application of biological processes or advanced oxidation for treatment of pollutants, etc.

12. Participating factories have shared their knowledge and experience gained from these demonstration projects with other factories with a view to encouraging them to follow suit.

13. The total expenditure upon the completion of the five-year Programme on 20 January 2013 is HK\$92,820,798. The balance of the unspent funding will be returned to the Treasury.

ENVIRONMENTAL BENEFITS

14. While the Programme is primarily an awareness promotion and technical support initiative, the demonstration projects sponsored by the

Programme as well as follow-up investment made by enterprises have brought about significant environmental and economic benefits to the PRD region. As rough indicators, the 149 demonstration projects approved by the Programme alone are estimated to contribute to the reduction of emissions/discharges in the following order –

Pollutants	Emission/Discharges Reduction (tonnes)
VOC	480
Sulphur Dioxide (SO ₂)	520
Nitrogen Oxides (NO _x)	370
Carbon Dioxide (CO ₂)	110 000
Effluent discharges	2 100 000

Furthermore, an annual energy saving of some 950 tera-joules (TJ) was achieved and the annual saving in the production cost of the participating factories was in the region of \$72 million.

15. Majority of the demonstrated technologies for VOC reduction can reduce the emission levels ranging from 30% to 90%, while those for reducing other air pollutants (i.e. SO₂ and NO_x) can achieve a reduction level ranging from 10% to 80%. Some VOC reduction technologies can even eliminate VOC discharge by using alternative production materials. On effluent reduction and control as well as enhancing energy efficiency, the reduction potentials of the demonstrated technologies are also significant ranging respectively from 50% to 90% and from 30% to 80%.

16. It was also estimated that the demonstration projects, together with other CP improvement measures implemented by the participating factories at their own cost, have reduced emissions/discharges in the following order –

Pollutants	Emission/Discharges Reduction (tonnes)
VOC	3 400
SO ₂	4 400
NO _x	2 500
CO ₂	660 000
Effluent discharges	10 000 000

The annual energy saving is about 4 000 TJ and the annual saving in production costs is around \$700 million.

PARTNERSHIP WITH ENVIRONMENTAL TECHNOLOGY (ET) SERVICE PROVIDERS

17. ET service providers play an important role in the Programme through providing professional advices and technical services to the participating factories for conducting on-site assessments and demonstration projects. A total of 170 ET service providers have been registered under the Programme. Amongst them, 99 were based in Hong Kong, 65 in the PRD and six from other regions. The HKPC organised a total of nine briefings to facilitate capacity building amongst the ET service providers over the years. It has also conducted quality checks on the work of ET service providers.

COLLABORATION WITH MAINLAND AUTHORITIES

18. The Programme has fostered regional collaboration with relevant Mainland authorities in reducing pollution arising from industrial activities. We have worked with the nine PRD municipalities in publicising the Programme and promoting CP. As at the end of the five-year term, a total of 70 events had been jointly organised with the Mainland authorities to reach out to Hong Kong-owned factories in the PRD. Moreover, we have developed joint action plans for taking forward the Programme taking account of the CP measures spearheaded by the PRD cities.

19. To encourage participation of Hong Kong-owned factories in the Programme and to give recognition to those participating factories which have adopted CP technologies and practices, a Hong Kong-Guangdong Cleaner Production Partners Recognition Scheme has been jointly launched with the GDEIC since 2009. A total of 222 Hong Kong-owned manufacturing enterprises, 24 ET service providers and nine sourcing enterprises have been recognised as "Hong Kong - Guangdong Cleaner Production Partners".

WAY FORWARD

20. Members are invited to note the key activities and achievements of the Programme over the first five-year term. We will continue to provide progress reports to this Panel for the two-year extension programme on an annual basis.

Environmental Protection Department
August 2013

Key Initiatives under the Cleaner Production Partnership Programme

The overall objective of the Programme is to encourage and facilitate Hong Kong-owned factories in the Pearl River Delta (PRD) region to adopt cleaner production technologies and practices, thereby making a positive contribution to a cleaner environment by reducing pollutants and energy consumption. The Programme targets at eight industry sectors^{Note} of Hong Kong-owned factories which generate pollution in the PRD region and are most likely to yield positive improvements.

Key Initiatives

2. The key initiatives of the Programme include –
 - (a) *awareness promotion* – this comprises structured briefings, study missions, training seminars and workshops, conferences and exhibitions, in Hong Kong and cities in PRD region. Participation in the awareness promotion activities is normally free of charge;
 - (b) *on-site improvement assessment for about 800 to 1 000 factories (subject to response)* – the Hong Kong Productivity Council (HKPC), in conjunction with other environmental technology (ET) service providers, provide guidance and conduct on-site assessment for participating factories to identify and analyse the problems they face and propose practical improvement solutions. The Government will sponsor 50% of the assessment cost, subject to a ceiling of \$15,000. Any cost exceeding the ceiling has to be met by the participating factories;
 - (c) *demonstration projects* – the HKPC will work closely with ET service providers to conduct some 120 demonstration projects

^{Note} The eight industry sectors include textiles, non-metallic mineral products, metal and metal products, food and beverage, chemical products, printing and publishing, furniture and paper/paper product manufacturing.

through installation of equipment and/or modification of production processes. The cost is equally shared between participating factories and Government, and the government expenditure is capped to a ceiling of \$160,000 per project; and

- (d) *verification of the effectiveness of 500 to 1 000 improvement projects (subject to response)* – for those factories which have implemented improvement measures at their own cost, the HKPC will provide an independent third-party service to verify the effectiveness of the improvement projects. This service is provided free of charge to participants, capped to a ceiling of \$15,000 per project.
