

**URBAN PLANNING AND  
ENVIRONMENTAL LAW  
QUARTERLY**

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In late 2015, China and the USA – the world’s two largest emitters of greenhouse gases – announced they would work towards implementing measures to reduce their greenhouse gas emissions levels. Part of China’s new policies to achieve this goal is the recent introduction of pilot emissions trading schemes, which we consider in this edition of the UPELQ.

*The Editors*

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**CHINA INTRODUCES PILOT EMISSIONS TRADING SCHEMES**

*Introduction*

It is widely accepted today by the vast majority of climate scientists and ordinary people, as well as the leaders of more than 195 nations (at the Paris Summit), that climate change and global warming are real and increasingly serious threats to the world.

There can be little doubt in the minds of reasonable people that human activities, such as the use of fossil fuels to generate electricity and power motor vehicles, substantially contribute to the above-average increases in global temperatures and other symptoms of “climate change”, including the increased incidence and ferocity of storms.

The release of global-warming gases into the atmosphere – especially carbon dioxide, which is emitted from burning coal and other fossil fuels – has been and continues to be a major contributory cause of global warming.

For several years a number of nations have investigated implementing greenhouse gas emissions trading schemes (ETS) to reduce the volume of emissions of carbon dioxide, in particular.

Several countries or groups of countries have already adopted an ETS as a crucial part of their climate change policies. These tend to be the more environmentally enlightened jurisdictions, such as Switzerland, New Zealand and the European Union.

*What is an ETS?*

The central mechanism of an ETS is that a central authority (usually a government agency) allocates (usually sells) a finite number of permits to discharge specific volumes of designated pollutants within the period stipulated in the permit. A business emitting greenhouse gases (GHG) must hold permits covering its total emissions within the given period. Additional permits may be procured on the “open market” if a business wants to increase its emissions. The total volume of GHG represented by the total permits for the given period (say, yearly) is the capped volume of the nation’s emissions. Most nations promised at the Paris Climate Change Summit in December 2015 to effect reductions of their GHG emissions via the number of permits issued under their ETS, if and when they introduced such schemes, or through other emission reduction schemes.

The following is a short description of the essential elements of an ETS, taken from The Climate Group’s (CG) *Understanding China’s Emissions Trading Schemes and Emissions Reporting*:

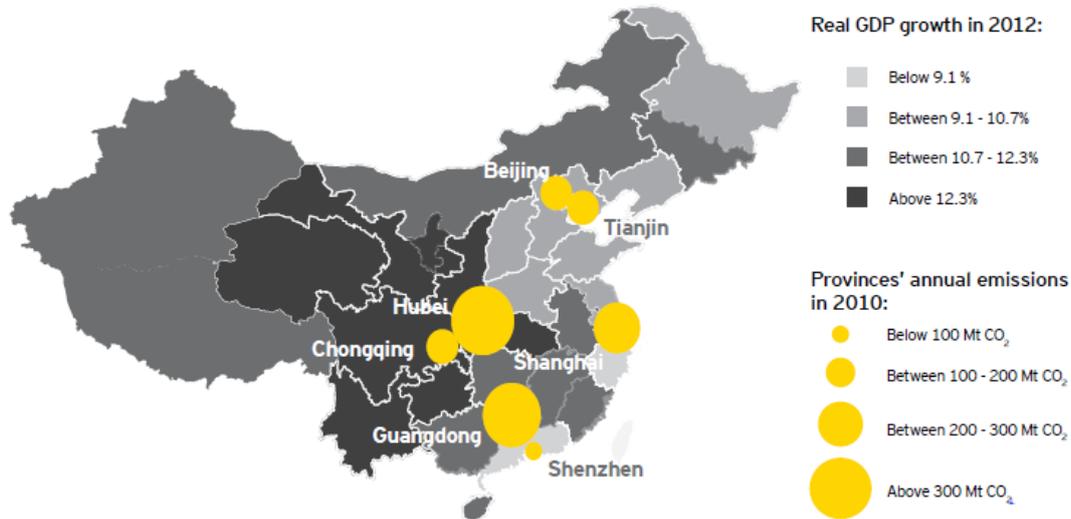
In considering ETS design there are two key variables: a set level of allowable emissions and price. An ETS sets a 'cap' on the total allowable emissions with the market then determining the price based on supply and demand. Most ETSs have designated exchanges where buyers and sellers of emissions credits can place in bids and offers at a price and quantity they wish to deal at which can then be matched based on price. The trading of emissions allowances puts a financial cost on emitting excess greenhouse gases and gives a financial incentive to reduce emissions and sell excess quota volumes.

However, unlike other markets, ETSs are usually complimented with an emissions offset scheme. Offset schemes allow emission abatement activities to generate emission offset credits for each tones of CO<sub>2</sub> abated. These credits add to the emissions to offset their emissions.

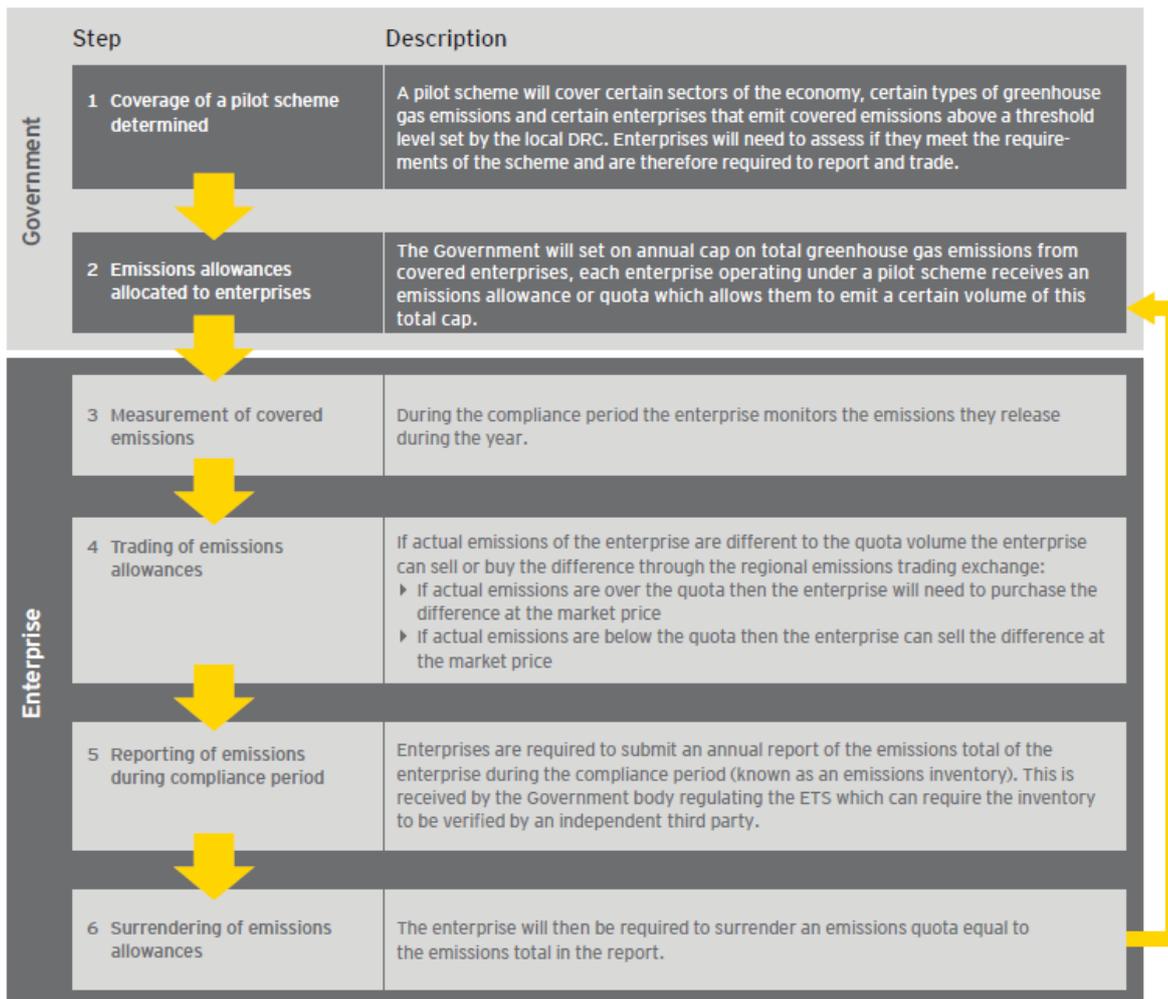
An ETS coupled with an emissions offset scheme is theoretically the least-cost approach to reducing greenhouse gas emissions.

The basic steps of participating in an ETS are as outlined in the following diagram.

Location of pilot schemes showing provinces' different GDP growth rates and greenhouse gas emissions profiles



Overview of an ETS



## China's proposed ETS

In recent years China has taken steps to regulate and reduce emissions, combined with implementing policies and incentive schemes to encourage wider use of renewable energy. These include taking steps to implement an ETS as a key element of significantly reducing GHG by 2020, which is an objective of China's 12<sup>th</sup> Five Year Plan (2011-2015).

The 12<sup>th</sup> Five Year Plan has a target of reducing GHG emissions per unit of gross domestic product to 40% –45 % of 2005 emissions by 2020. This equates with an estimated total reduction of 33 giga tonnes of carbon dioxide equivalent between 2011 and 2020, which is more than 5 times the USA's annual emissions. A key part of these broad policies was the introduction of pilot ETSs in seven regions in 2013-2015. In October 2015 President Xi Jinping announced that, as part of China's pledge to do its part in combating climate change, China will launch a national ETS in 2017.

An essential component of the pilot ETSs is that businesses within designated industries, such as: steel, chemical, glass and cement manufacturing, will be obliged to maintain emissions records so that their individual GHGs can be monitored, a process referred to as "internal carbon monitoring, reporting and verification (MRV)". The government expects that businesses preparing for the introduction of an ETS or the MRV will be forced to more seriously consider their energy consumption and emissions levels.

Several variable factors determine whether an enterprise is to be subject to a pilot scheme, including geographical or sector of operation, nature of emissions and the kinds of activities conducted.

### Key design elements of the pilot ETSs

Taking two of the sector pilot schemes as examples – Shenzhen and Beijing – key features of the schemes are summarised by CG as follows.

Design element	Shenzhen	Beijing
Start date	<ul style="list-style-type: none"> <li>18 June 2013</li> </ul>	<ul style="list-style-type: none"> <li>28 November 2013</li> </ul>
Approximate price guide	<ul style="list-style-type: none"> <li>60 yuan per permit</li> </ul>	<ul style="list-style-type: none"> <li>50 yuan per permit</li> </ul>
Emission intensity target based on GDP	<ul style="list-style-type: none"> <li>21% reduction by 2015 based on 2010 levels</li> <li>Scheme also has an absolute 100 Mt CO<sub>2</sub> (tones carbon dioxide) emissions cap, meaning emissions for all liable parties cannot exceed 100 Mt CO<sub>2</sub> over its three year life</li> </ul>	<ul style="list-style-type: none"> <li>18% reduction by 2015 based on 2010 levels</li> </ul>
Coverage	<ul style="list-style-type: none"> <li>Annual threshold for liability of 5,000 t CO<sub>2</sub></li> <li>For commercial buildings the threshold is set at 20,000m<sup>2</sup> and for public buildings at 10,000m<sup>2</sup></li> <li>Liability threshold includes scope 1 and scope 2 CO<sub>2</sub> emissions</li> <li>Covers emissions of 635 enterprises totaling approximately 31.7 Mt CO<sub>2</sub></li> </ul>	<ul style="list-style-type: none"> <li>Annual threshold for liability is 10,000 t CO<sub>2</sub> or energy consumption of greater than 5,000 TCE (tones of coal equivalent) between 2009 and 2012</li> <li>Liability threshold includes scope 1 and scope 2 CO<sub>2</sub> emissions</li> <li>Scheme expected to cover 435 enterprises</li> <li>A lower reporting threshold of 5,000 t CO<sub>2</sub> or over 2,000 TCE annually has been set for non-liable enterprises</li> </ul>
Reporting level	<ul style="list-style-type: none"> <li>Legal person</li> </ul>	<ul style="list-style-type: none"> <li>Legal entity</li> </ul>
Point of obligation	<ul style="list-style-type: none"> <li>Scope 1 emissions reported at point of release</li> <li>Scope 2 emissions from electricity and heat reported by end user</li> </ul>	<ul style="list-style-type: none"> <li>Scope 1 emissions reported at point of release but excludes mobile combustion</li> <li>Scope 2 emissions from electricity and heat reported by end user</li> </ul>
Offsets	<ul style="list-style-type: none"> <li>Use of Chinese Certified Emissions Reductions (CCERs) limited according to supply volumes and qualitative standards</li> </ul>	<ul style="list-style-type: none"> <li>CCERs limited to 5% of annual covered emissions, with preference for Beijing based projects</li> </ul>
Quota allocation	<ul style="list-style-type: none"> <li>Online platform based on estimates for 2013 to 2015 production volumes</li> <li>Quotas can be revised once actual production is reported</li> <li>2% of the total quota is to be set aside for new entrants</li> </ul>	<ul style="list-style-type: none"> <li>Quotas will be allocated based on the emissions profile of each sector and the historical emissions of each enterprise between 2009 and 2012</li> <li>For new entrants quotas will be set from an emissions intensity benchmark for each industry</li> <li>Quotas will be allocated twice annually, initial allocation for existing firms and a second allocation for new entrants</li> <li>98% will be freely allocated in 2013, dropping to 94% by 2015, with a remaining balance available for sale</li> </ul>
Reporting guidance	<ul style="list-style-type: none"> <li>Shenzhen Market Supervision Administration has released guidance: "Specification with guidance for quantification and reporting of the organization's greenhouse gas emissions"</li> <li>Guidance references international GHG standards ISO 140064 and GHG Protocol</li> <li>Guidance refers to reporting on six greenhouse gases: <ul style="list-style-type: none"> <li>Carbon dioxide (CO<sub>2</sub>)</li> <li>Methane (CH<sub>4</sub>)</li> <li>Nitrous oxide (N<sub>2</sub>O), Hydrofluorocarbons</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Beijing DRC has released sector specific guidance for the MRV requirements for the following sectors: <ul style="list-style-type: none"> <li>Power generated</li> <li>Heat generated</li> <li>Cement manufacturing</li> <li>Petrochemical manufacturing</li> <li>Other industrial sectors</li> <li>Service sector</li> </ul> </li> </ul>

- (HFCs)
- Perfluorocarbons (PFCs)
- Sulfur hexafluoride (SF6)
- Note: only CO2 emissions are liable

Penalties	<ul style="list-style-type: none"> <li>▸ Shenzhen's DRC's guidance specified penalties of three times the market price of carbon for any shortfall in surrendered quotas</li> </ul>	<ul style="list-style-type: none"> <li>▸ Beijing DRC will regulate the scheme and are expected to release penalties in the range of two to three times the carbon price once penalties are finalised and approved</li> </ul>
Trading infrastructure	<ul style="list-style-type: none"> <li>▸ China Shenzhen Emissions Exchange</li> </ul>	<ul style="list-style-type: none"> <li>▸ Beijing Environment Exchange</li> </ul>

### MVR process

The obligation to undertake MVRs has an important role in the pilot schemes. Requirements of an MVR can vary greatly from one scheme to another. MVR responsibilities are summarised provided by CG as follows.

*We have compiled an MVR guide to assist enterprises in understanding the 'grey' areas and assessing the impacts of different reporting methods if no set approach is given in guidance documents. A summary of this guide is provided in this section.*

*The guide can also be used for enterprises considering voluntarily monitoring and reporting their greenhouse gas emissions for the first time in anticipation of a national ETS and tighter international reporting standards and scrutiny.*

*These concepts can be complex and given the range of different sectors covered under the pilot schemes, difficult to apply. We explore each concept further in this section.*

To ensure compliance with the pilot scheme requirements there are concepts specific to emissions reporting that need to be understood and applied appropriately during the MRV processes, such as:	
Point of obligation	Which types of emissions is an enterprise required to report?
Reporting boundaries	What level of the enterprise is required to report and what are the emissions reporting boundaries for each facility? (special cases examined further below: transport sector and joint ventures)
Covered emissions	What types of greenhouse gas emissions are covered by the pilot scheme?
Allocation of quotas	What is the methodology for allocating emissions quotas? (special case below: Expanding capacity, merging and closing down facilities)
Compliance requirements	What are the reporting requirements and what are the measurement methods required to be used?
Record keeping	What are the requirements around documentation used in the MVR processes?

#### Point of obligation

*Point of obligation refers to where in an emission life cycle the requirement to report and pay for that emission exists. Usually an ETS design selects the point of obligation from one of the following options:*

Upstream	Liability occurs before the greenhouse gas has been emitted e.g. a coal mining company being liable for the emissions in the coal it produces before the coal is sold and burnt.
At the point of emission	Liability occurs at the point the greenhouse gas is emitted e.g. a coal fired power station is liable for its combustion of coal to generate electricity.
Downstream	Liability lies with the owner of the outputs to which emissions are generally attributable to e.g. A manufacturer is liable for the emissions from the electricity they use which is sourced from the grid and includes a mixture of coal, gas and renewable sources.

*The pilot schemes apply a hybrid of these options. Companies are liable at the point of emission but are also liable downstream if the energy source is electricity or heat. This is thought to be appropriate for China as, unlike in other countries, the electricity prices in China are regulated by the central Government – meaning electricity generators cannot pass on carbon cost to customers (which would otherwise encourage customer driven energy efficiency). Therefore, unlike other international ETSs a double liability for emissions associated with electricity and heat generation exists (e.g. a power generator will be liable for emissions from combusting fuel as direct emissions and the end use of the electricity will also be liable for the same emissions as indirect emissions). As a result, the double counting of emissions associated with electricity generation will likely drive both demand and supply side emission reductions.*

#### Reporting boundaries

*Determining at what level an enterprise is required to submit an emissions report and what its total liability is can be complex, particularly for large diversified organisations.*

*To assist enterprises in understanding what parts of their business will be impacted, the first questions to consider are:*

1. What level of your business will be required to submit an emissions report?
2. What level of your business will the pilot scheme's liability threshold apply?
3. Where do the boundaries of ownership for emissions at your business' facilities lie?
4. Will you be responsible for only your emissions or also for certain contractors and joint ventures?

The first two questions have different answers depending on the regulations of each pilot scheme. The level of the business required to report (the reporting unit) and the level of the business that the liability threshold is applied at, can either be the:

- Enterprise level
- Entity level
- Facility level

In the simplest case the reporting unit and the liability threshold will occur at the same level, for example under the Beijing pilot scheme where it has been confirmed the entity level is the reporting unit and is the level the liability threshold is applied. This is consistent with the current energy reporting requirements, so streamlines the reporting and administration burden on covered enterprises.

However in some cases the reporting unit and the level the liability threshold applies are different. For instance, under the Shenzhen scheme thresholds apply to building sizes, which is a facility level threshold and the reporting unit is the 'legal owner' of that facility, whether that be the entity or the enterprise.

#### **Emissions covered**

The pilot schemes presently cover only carbon dioxide emissions. However, the scheme may be expanded and they, or later, the proposed national ETS, may in future cover other GHG emissions, such as: methane, nitrous oxide, hydrofluorocarbons and sulphur hexafluoride.

#### **Conclusion**

There can be no doubt the creation of pilot ETS is a welcome step forward in China's addressing its critical role in what is probably the single most important and pressing problem for the global community today, namely, achieving a meaningful reduction in the world's annual GHG emissions to limit the predicted rise in average global temperatures to below 2°C by 2100. As the world's largest emitter of GHG, China must implement measures, such as a national ETS, to significantly reduce its GHG emissions levels. However, as always in the field of environmental protection, by far the most important factor in China's attaining its climate change objectives will be the degree to which the ETS and other laws are enforced. And sadly, China's record in enforcing environmental protection laws is very poor to date.

## **TOWN PLANNING**

### **Approved Tsz Wan Shan, Diamond Hill and San Po Kong Outline Zoning Plan amended**

The Town Planning Board announced amendments to the approved Tsz Wan Shan, Diamond Hill and San Po Kong Outline Zoning Plan ("OZP") on 24 March 2016.

The main amendments are :

- 1) Rezoning of a site at Sheung Fung Street from "Government, Institution or Community" to "Residential (Group A)" with revision of the building height restriction to 145mPD to facilitate a government staff quarters development;
- 2) Incorporation of "Art Studio (excluding those involving direct provision of services or goods)" as a Column 1 use in the Schedule II for "Other Specified Uses" annotated "Business" zone; and
- 3) Corresponding amendment to replace "Place of Recreation, Sports or Culture" under Column 2 by "Place of Recreation, Sports or Culture (not elsewhere specified)" of the said zone.

[Town Planning Board Press Release, 24/03/2016]

### **Draft Chek Lap Kok Outline Zoning Plan approved**

The Chief Executive in Council approved the draft Chek Lap Kok Outline Zoning Plan ("OZP") on 29 April 2016.

The planning scheme area is about 2095 hectares, covering the airport island and the proposed reclamation for the third runway of the Hong Kong International Airport ("HKIA"), the Hong Kong Boundary Crossing Facilities ("HKBCF"), part of the Hong Kong-Zhuhai-Macao Bridge ("HZMB") Hong Kong Link Road and the Southern Landfall of Tuen Mun-Chek Lap Kok Link at Chek Lap Kok, is located off the north shore of Lantau and separated physically from the new town development in Tung Chung by a water channel.

Specific zones are:

- (i) 118.18 hectares are zoned "Commercial" zone, for commercial developments and airport-related and other business activities;
- (ii) 12.3 hectares are zoned "Government, Institution or Community", for the provision of government, institution or community facilities to support the airport operations and to serve the needs of other developments on the airport island;
- (iii) 1,869.73 hectares are zoned "Other Specified Uses" ("OU"), which provides or reserves sites for further specified uses.
- (iv) 21.3 hectares are zoned "Green Belt", which preserves the existing natural landscape at the knoll on the southeastern tip of the airport island to provide a visual and environmental buffer for the adjacent Tung Chung.

The HKIA site has been zoned as "OU(Airport)" which is primarily for the development of airport operational facilities; and the HKBCF is zoned as "OU(Boundary Crossing Facilities)" for the development of boundary crossing facilities and related activities for the HZMB.

[Town Planning Board Press Release, 29/04/2016]

## Draft Ta Kwu Ling North Outline Zoning Plan approved

The Chief Executive in Council approved the draft Ta Kwu Ling North Outline Zoning Plan ("OZP") on 13 May 2016.

The planning scheme, with an area of about 431 hectares, is bounded by Sham Chun River in the north, Lin Ma Hang Road in the northeast, Wong Mau Hang Shan in the east, Tung Fung Au and Tung Lo Hang in the south, and Ping Che Road in the west. The North East New Territories Landfill is located immediately to the southeast of the area at Wo Keng Shan.

The primary planning intention is: to promote cultural conservation and recreation tourism; to provide suitable facilities for cross-boundary infrastructure; to protect the natural setting and cultural integrity of the area, as well as to promote sustainable agricultural activities.

Individual zones are:

- (i) 27.83 hectares are zoned "Village Type Development" to demarcate existing recognised villages and areas suitable for village expansion;
- (ii) 1.98 hectares are zoned "Government, Institution or Community", aiming to serve the needs of the local and district populations;
- (iii) An area of 99.8 hectares, comprising abandoned agricultural land around Pak Fu Shan, north of the Tsung Yuen Ha, Ha Heung Yuen and Heung Yuen Wai, a large area east of Kan Tau Wai and Kaw Liu Village, is designated as "Recreation" to encourage the development of low-density active and/or passive recreation and tourism/eco-tourism;
- (iv) 23.82 hectares, being the proposed Liantang/Heung Yuen Wai Boundary Control Point are zoned "Other Specified Uses (Boundary Crossing Facilities)" for the development of boundary crossing facilities and related uses.
- (v) 54.62 hectares are zoned "Agriculture" in order to retain and safeguard good quality agricultural land, farm and fish ponds for agricultural purposes;
- (vi) 221.46 hectares are zoned "Green Belt", which mainly covers the prominent hilly areas of densely vegetated Wong Mau Hang Shan, Pak Fu Shan and Tung Lo Hang. Green buffer areas also include permitted burial grounds within the area and the "fung-shui" woods adjoining the villages. There is a general presumption against development within this zone;
- (vii) 1.1 hectares are zoned "Conservation Area"; this is the area of the "fung-shui" woods at the back of Heung Yuen Wai.

[Town Planning Board Press Release, 13/05/2016]

## WEST KOWLOON CULTURAL DISTRICT

### Minutes of the West Kowloon Cultural District Authority ("WKCD")'s 50<sup>th</sup> Board Meeting held on 22 March 2016

At the meeting, the Chief Executive Officer ("CEO") of WKCD reported that there has been good progress on the design and construction of the facilities in the district.

On 24 February 2016, the Xiqu Centre's theatre structure was successfully completed.

A simple ceremony was held on 4 March 2016, marking the commencement of the foundation works for the Lyric Theatre Complex and the surrounding basement below the Artist Square. The Project Delivery team is making good progress on finalising the design for the Lyric Theatre Complex and construction of M+ Main Works.

The CEO also noted the project's good safety. The construction site for Xiqu Centre Main Works recently won the Gold Prize in the Building Sites (Sub-contractors category) and the Silver Prize in the Building Sites (Private Sector category) in the *Construction Industry Safety Award Scheme* for the year of 2015/2016. The CEO also briefed the Members on a Safety Performance Award Presentation Ceremony which was held in early March by WKCD in recognition of individuals and contractors' commitment to high standards of safety management for the period of July to December 2015.

The meeting noted that a number of artistic programmes have received positive responses from the public: e.g. the M+ Sigg Collection Exhibition; Four Decades of Chinese Contemporary Art which has attracted a record of over 22,000 visitors since its opening on 23 February 2016, and over 100 school groups registered to visit the exhibition; The M+ Screenings. Forty Years organised in conjunction with the M+ Sigg Collection Exhibition, which examines the evolution of Chinese contemporary art through a selection of eight rarely seen artists' moving images, documentaries and feature films in March; as well as the M+ Matters public talk on Confronting Activist Art and Design from a Museological Perspective, held on 21 March 2016.

[WKCD Press Release, 22/03/2016]

### The M+ Rover outreach programme

The M+ Rover: Travelling Creative Studio was launched on 9 April 2016 to reach out to major schools in Hong Kong. M+ Rover is a pop-up exhibition and learning space unit installed in the Sha Tin Town Hall Plaza. About 150 students from 6 secondary schools participated to share their creative efforts with the public.

Between March and July 2016, M+ Rover aims to visit 45 schools and 11 community spaces, sharing with them art and cultural experiences.

The idea of M+ Rover originated from the concept of a space expedition to a distant planet. M+ Rover aims to stimulate and foster creative thinking by young people.

The M+ Rover was designed by the artist, Kacey Wong. The unit has a metal exterior that looks like a spaceship. By contrast, its interior is warm and is lined with recycled wood from discarded pallets. Ms. Wong said the interior should look like a 'cosy nest that resembles the belly of a whale'.

Two local artists – Tang Kwok Hin and Siu Wai Hang – were commissioned in 2016 to guide students through their participation. Mr. Tang will be leading the first round of school workshops and Mr. Siu will be heading the second.

Apart from school workshops, the M+ Rover will also visit community spaces around the city, giving students and artists the opportunity to talk to the public and share their creative experience.

The Lead Curator of Learning and Interpretation at M+ expected the unconventional museum learning experience to expand the younger generation's horizons and encourage them to imagine the boundless possibilities of visual culture through collaborations with local artists.

[WKCD Press Release, 09/04/2016]

### **Minutes of the West Kowloon Cultural District Authority ("WKCD")'s 51<sup>st</sup> Board Meeting held on 26 April 2016**

The Chief Executive Officer ("CEO") of WKCD reported that design and construction activities have continued to progress at a steady pace.

It is expected that the Park Construction contract will be awarded by end of June following the closing of the tender on 12 April 2016. The existing waterfront promenade will be closed in phases from mid-2016 to facilitate the construction of the Park. During this time, the Nursery Park, together with the northern part of the waterfront promenade, will remain open.

It was noted that approximately 8,700 people, 380 dogs and some other pets attended the pet-themed Freespace Happening finale on 27 March 2016, making a total of over 53,000 visitors to the 8-month programme since August 2015.

Since August 2015, 321 Street Performance Permits have been issued to individuals and WKCD will continue to monitor and review the impact of park construction on street performances.

The first Producers' Network Meeting and Forum, which took place last year, was a huge success. The second edition of Producers' Network Meeting and Forum also took place in early May 2016, when participants share their concepts for future creative projects and looked for partners and collaborators.

The M+ Sigg Collection Exhibition, which was stayed from 23 February 2016 to 5 April 2016, was successful, attracting over 40,000 visitors and coverage in local and international media. The CEO particularly praised the effort by M+ to introduce various universal access provisions, including tactile maps with braille and coded symbols as well as some tactile representation of artworks accompanied by live audio descriptions for the visually impaired to explore the M+ Sigg Collection exhibition.

Lastly, it was reported that M Plus Museum Limited was incorporated on 14 April 2016.

[WKCD Press Release, 26/04/2016]

### **Xiqu Centre: a new stage of theatrical experience**

The Xiqu Centre is the first major performing arts venue of the WKCD to be finished. To date, it has reached a significant milestone. On 16 May 2016, it reached a significant milestone when the Centre celebrated the successful lifting of the main theatre structure to its final position at the top of the building.

The Xiqu Centre is still two years away from its grand opening in 2018. WKCD is pleased with the progress so far and will continue with the remaining construction and other preparatory works to ensure that the Xiqu Centre will be completed as scheduled.

At a ceremony on 16 May 2016, the Chairman of the WKCD Board said in her speech that the Xiqu Centre, as the eastern portal of the West Kowloon Cultural District, will serve as an interactive platform for the Xiqu sector and enhance cross-genre and cross-regional exchanges between local traditional Cantonese Opera and other Xiqu art forms. She said that the Xiqu Centre will commit to preserving and developing the traditional culture of Chinese Operas, and will serve as a focus in both the hardware and software for the sector in achieving this mission.

The Xiqu Centre is situated at the junction of Canton Road and Austin Road West. It is designed with the main theatre located at the top of the building, which allows space below to be used for teaching and rehearsals, whilst also making room for a large atrium as open space for the public. The total area of the Xiqu Centre will be 13,800 square metres.

The steel structure of the main theatre weighs approximately 2,400 tonnes and its construction is complex. Raising this main theatre had to be done in stages. Since the commencement of foundation works in late September 2013 and the superstructure works in December 2014, construction has progressed smoothly.

The Executive Director of Performing Arts for WKCD said that the WKCD is fully aware of its entrusted mission of fostering and passing on the legacy of Chinese Opera. A lot of focus has been put on training and grooming systemically young talent to learn Cantonese Opera from the older generation. The WKCD is also committed to audience-building initiatives in Chinese Opera. Its vision is to see Chinese Opera flourish for many generations to come.

A total of seven new recruits have been chosen. They were presented with certificates at the ceremony. The selected young artists will take part in a performance of *Rising Stars of Cantonese Opera II* in August this year.

[WKCD Press Release, 16/05/2016]

## **HONG KONG BRIEFING**

### **Landowners urged to act on soil dump**

The landowners of an illegal four-story soil dump in Tin Shui Wai would be ordered to start urgent work to ensure public safety. The dump is located near Kingswood Villas and the Wetland Park, covering an area equivalent to two football fields. Concerned residents feared that a landslide, similar to one in Shenzhen last December, could happen.

Although the soil dump appears to be stable, the Housing Department ordered the landowner to begin urgent shotcreting work within a week. As the fill materials were found to be loose due to the lack of proper compaction, the side slopes of the dump are potentially unstable and may become dangerous, according to the Department. "Follow-up action will also be taken against all illegal activities in accordance with the law," a government spokesman added.

The Environmental Protection Department also found the soil dumping violated air pollution laws, and will prosecute those involved.

[The Standard, 09/03/2016]

## Solid waste project

To facilitate the implementation of the municipal solid waste (“MSW”) charging scheme, the Environment and Conservation Fund (ECF) has allocated \$50 million to support non-profit-making organisations or bodies to participate in *Community Involvement Projects for MSW Charging*. This government sponsored programme aims to provide the community an early experience of the waste charging scheme. Fourteen applications have been approved by the ECF and a launch ceremony was conducted by the Environmental Protection Department on 28 May 2016.

“MSW charging is one of the key initiatives in the *Hong Kong Blueprint for Sustainable Use of Resources* to bring about behavioural change and encourage people to reduce and recycle waste.” the Secretary for the Environment, Mr Wong Kam-sing, said in the ceremony. “The full participation and collaboration of the entire community are crucial to the successful implementation of the charging scheme. All sectors of the community would have to be well informed of the charging arrangements so that they can get prepared for it in a timely manner.”

According to Mr. Wong, the projects will try out different “Pay as You Throw” charging arrangements in the participating buildings and premises. Measures to enhance support for waste reduction and recycling efforts, as well as initiatives to promote publicity and public education also form part of this programme. The experience gained through these projects will provide useful reference to the community in preparing for the future implementation of charging a fee to dispose of MSW at different premises.

The 14 approved applications involve over 70 residential and non-residential buildings, such as: institutional premises; community services units; commercial buildings; shopping malls; residential housing estates with property management companies; single block buildings; and low-density residential buildings and shops in rural areas. Total funding support involved is approximately \$12 million for these.

[Press Release, EDP, 28/05/2016]

## Prosecution for illegal discharge

The Environmental Protection Department (“EPD”) has completed investigations of the cause of muddy water found at the seafront of Tseung Kwan O Industrial Estate in early April. According to a spokesman for EPD, these investigations have revealed that the South East New Territories (SENT) Landfill and a construction site in Tseung Kwan O Industrial Estate were the likely sources of muddy water discharged into the storm drains. The EPD is preparing to initiate prosecution against the responsible contractors.

The EPD spokesman explained that the storm drains serve to convey rain water and floodwater only. Any direct discharge of muddy water into storm drains is a contravention of the *Water Pollution Control Ordinance (WPCO)*.

After the muddy water incident, the EPD said it had immediately instructed the operator of the SENT Landfill to conduct a comprehensive review of its operation, and to implement enhanced measures to prevent the discharge of muddy water to the storm drains outside the landfill area. According to the EPD, the landfill contractor has also strengthened its surface water management measures, including suspending slope restoration and greening works at the landfill on rainy days, increasing the frequency of inspection and de-silting of the drainage system within the landfill.

Under the WPCO, any person who discharges wastewater into storm drains, streams or the sea without a permit contravenes the WPCO. First-time offenders are liable to a maximum fine of \$200,000 and six months' imprisonment. A maximum fine of \$400,000 and six months' imprisonment may be imposed for second or subsequent convictions. In addition, a daily fine of \$10,000 may be levied for a continuing offence.

[Press Release, EPD, 10/06/2016]

## Hong Kong's corals extensively damaged

The waters around Hong Kong were once filled with a wide variety of coral species, but many have succumbed to climate change, land reclamation and water pollution, and scientists are urging the government to take action to protect the ecosystem

Although scientists do not have conclusive data on the number of species that have been lost locally, studies show that there once was an abundance of corals even in places like Victoria Harbour and Tolo Harbour – places that have now become so polluted that only one or two of the toughest species may be found clinging on to life.

At a cursory glance, Hong Kong corals seem to be thriving. The city currently has 84 hard coral and 26 soft coral species, many of which can be found at hotspots in Mirs Bay and Port Shelter. That's more than the number seen in the entire Caribbean Sea.

Whilst this level of biodiversity is remarkable considering the extent of marine degradation caused by urbanization, it falls short in comparison to those seen in surrounding territories. Taiwan's Dongsha Atoll – just 340 km away from Hong Kong – had 137 species of hard corals as of 2004, a study from the National Taiwan University's Institute of Oceanography showed. Farther to the east in Okinawa, Japan, there are also about 200 coral species.

Once home to a host of marine life, Hong Kong waters have drastically deteriorated as a result of climate change, land reclamation, water pollution and physical damage from divers and fishermen releasing anchors and nets. Sewage waste from the city and industrial waste from the Pearl River Delta are among the main pollutants, experts say.

When sewage waste is discharged into the water, the added nutrients – including nitrogen from protein-heavy food and phosphorus from soaps and detergent – cause certain life forms like algae to grow rapidly and take over the corals in a process called eutrophication.

The increased nutrients not only cause corals to become ill easily by allowing microbes to thrive, but they also cause bioerosion, or the breakdown of dead corals, to occur at a faster rate. This prevents corals from being able to build proper reefs, which is why Hong Kong now only has coral communities.

In addition to improving the treatment of sewage, the government has designated four marine parks and one marine reserve as areas for conservation.

Marine scientists say the next step for the government would be to take an active role in managing ecosystems by farming corals and transplanting them to areas that have suitable water quality. Since fish also provide cleaning services – by removing algae and controlling coral predators – fisheries regulations need to be updated and enhanced to ensure more protection of fishstocks.

[SCMP, 11/06/2016]

## New rubbish bins introduced to reduce oversized waste

The first batch of new rubbish bins with smaller openings and larger warning notices was introduced to the busier districts of Hong Kong on 13 June 2016. In the first phase of the government's plan to replace all public rubbish bins, about 800 bins will be replaced with new ones in an attempt to combat dumping of oversized waste.

The opening for a standard 130-litre bin will be reduced from 370 x 190mm to 230 x 150mm. Later this year the Food and Environmental Hygiene Department ("FEHD") will introduce 70-litre bins with openings reduced from 290 x 190mm to 205 x 130mm. A new 100-litre bin will also be introduced at a later date.

Hong Kong had approximately 40,000 rubbish bins as at 2014. This figure is 6 times more than in Singapore, 10 times more than in Seoul and 14 times more than in Taipei. Hong Kong generates more domestic waste per capita than all these cities.

Apart from introducing the new rubbish bins, the FEHD is also considering reducing the number of bins on the streets by 15 per cent, before the government's planned levy on disposal of municipal solid waste is implemented.

[SCMP, 13/06/2016]

## Energy saving campaign begins

The Environment Bureau and the Electrical and Mechanical Services Department are jointly promoting *The Energy Saving for All 2016 Campaign* this year to promote energy saving.

The Secretary for the Environment, Mr Wong Kam-sing, said countries around the world adopted the Paris Agreement in December last year with an objective of limiting the temperature rise to 1.5 degrees C above pre-industrial levels. The Agreement is a crucial step in combating climate change. As in other places, Hong Kong should get ready for taking collaborative actions to support the broad task of reducing the causes of combating climate change.

Mr Wong said he hopes that the *Energy Saving for All 2016 Campaign* can build close partnerships among the government, the business sector and non-governmental organisations, as well as schools and tertiary education institutions, with a common objective of promoting energy saving. He urged the community to actively contribute to the promotion of a healthy, liveable and sustainable environment for Hong Kong.

The *Energy Saving for All 2016 Campaign* comprises the *Energy Saving Charter 2016*, the prize presentation ceremony for the *Youth Energy Saving Award* and the *Energy Saving Championship Scheme*.

[Press Release, Environmental Protection Department, 20/06/2016]

## ADVISORY COUNCIL ON THE ENVIRONMENT (ACE)

*Summary of minutes of the 21<sup>st</sup> Meeting of the Advisory Council on the Environment held on 11 April 2016:*

Mr W C Mok, Assistant Director (Air Policy), the Environmental Protection Department (EPD), introduced the background, guiding principles and work plan for the review of *air quality objectives (AQOs)*. He informed Members that an AQOs Review Working Group (Working Group) led by Under Secretary for the Environment would be formed to collect views from relevant stakeholders, experts and the public before submitting a report to the Secretary for the Environment for consideration.

A Member noted that although *the Air Quality Guidelines*, recommended by the World Health Organisation (WHO), are stringent and had not been fully adopted by any country, Hong Kong should not be discouraged from adopting them.

Mr. Mok explained that the government was committed to improving air quality and had been adopting a progressive approach in updating the AQOs, with the view of complying with Guidelines in the long term. The government reviews the AQOs at least once every five years to assess the feasibility of introducing new air quality improvement measures and the scope for tightening the AQOs. He explained that the AQOs set the concentration limits of key air pollutants, above which there would be adverse health effects at the local level, whereas the climate change debate is focused on the increasing emission of greenhouse gases on a global scale.

A Member expressed concern that some areas with more severe air pollution problems, such as Tung Chung could not meet the AQOs

Mr. Mok advised one the objectives of the AQOs is to identify the levels and sources of air pollutants across different regions of Hong Kong. He also pointed out that except for ozone, the concentration levels of air pollutants in Tung Chung met the AQOs in 2015 and that the excessive pollutants in Tung Chung were mainly attributed to elevated ozone levels in the Pearl River Delta Region. He said that both the Hong Kong and Guangdong governments had been working to identify emission sources of nitrogen oxides and volatile organic compounds and to reduce their emissions for tackling the ozone problem.

Mr W C Mok added that the EPD had been taking actions to address the pollution sources. For instance, cement production is now subject to special control requirements under the *Air Pollution Control Ordinance* (Cap. 311).

A Member queried whether increased use of electric vehicles could reduce overall air pollutants emissions. Mr. Mok replied that electric vehicles do not burn fossil and are more energy efficient than fuel-powered vehicles. They emit less carbon dioxide. He added that vehicle emissions directly affect roadside air quality, whereas air pollutants emitted by power stations are released and dispersed at a higher elevation via tall chimneys. Replacing conventional vehicles with electric vehicles would therefore help reduce direct human exposure to air pollutants.

## CLIMATE CHANGE

### China launches nationwide emissions trading scheme

China has announced that it will implement a national emissions trading scheme in 2017, and encourage more power generation from renewables. In a joint statement in Washington DC recently, Presidents Xi Jinping and Barack Obama outlined how they intended to make good on their previous commitments to cut emissions, and made clear that a new level of ambition is needed to address climate change.

The timetable to implement a national trading system is 'tremendously ambitious', says Jeff Swartz, director of international policy at the International Emissions Trading Association. "It sends a signal to investors in China that the government is going to properly set a carbon budget and that may be more

effective in catalysing business and industry away from fossil fuels.” China has pilot trading systems in seven cities – the first set up in 2011. The challenge will be bringing them all together, and success will depend on China setting “an ambitious cap or else the price of carbon will be too low”, says Swartz. “They’re going to have to be transparent about the cap setting and about how many credits they’ll distribute for free.”

Cap and trade is just one of a number of policies that the Chinese government is implementing to ensure its carbon emissions peak by 2030. Many observers believe it will achieve this goal earlier, perhaps even before 2025. Indeed a new alliance of peaking pioneer cities in China – also announced in September – has established peak years for carbon emissions that are earlier than the national goal.

As part of the so called “green dispatch” approach in the power sector, China says it will establish guidelines which will mean that grid operators should turn first to the most efficient and least polluting sources of power and so make better use of the country’s rapidly growing solar and wind power capacity. This will also support its target of having 15% of its energy from non-fossil fuels by 2020, and 20% by 2025. China has had a system where coal power plants were guaranteed a minimum level of generation in order to incentivise their construction, but this has had the perverse effect of shutting down generation from wind, for example.

David Doniger, director of the climate and clean air programme at the US environment group Natural Resources Defense Council (NRDC), is working with the government in Beijing on a cap on the use of coal, which he believes the government is likely to institute. He thinks coal use might already have peaked in China.

The US has no plans for a national trading scheme but some states, notably California, have implemented schemes. “The US is on a more complicated path,” says Doniger, but he expects that “almost every state will choose some model of carbon trading” in response to requirements to limit carbon emissions at power plants that need to be planned out by June 2016.

The two presidents also made clear that any agreement reached at the climate talks in Paris should be a platform for bolder actions. Significantly, the Chinese have committed \$3.1 billion to finance climate change schemes in developing countries. This will not, however, be delivered through the UN’s Green Climate Fund, which has only raised a tenth of its \$100 billion a year goal, and is intended to help the world’s poorest countries adapt to climate change and adopt low emissions economies.

Amongst other measures, the world’s biggest polluters have agreed to strictly control public investment for projects that are highly polluting and carbon intensive, both at home and abroad. The US and China also committed to implement new fuel efficiency standards for heavy duty vehicles by 2019, and to develop efficiency standards for buildings and equipment. Obama said that next year, the US would be finalising standards which will reduce methane emissions in the oil, gas and landfill sectors: its goal here is to cut methane emissions 40-45% from 2012 levels by 2025. It will also press ahead with proposals to phase out hydrofluorocarbons (HFCs). In July, the US Environmental Protection Agency outlawed the use of some of the most harmful HFCs in aerosols, refrigeration and air conditioning sectors. Doniger says new proposals are expected on cutting other uses of HFCs. China says it will accelerate its efforts to control HFCs, including HFC-23 (primarily used in air conditioning and refrigerants) which has a global warming potential nearly 15,000 times greater than carbon dioxide.

The two countries are also pursuing clean energy research. They announced new initiatives to develop energy efficient lorries and collaborative electric vehicle interoperability centres, to provide technical support and agree standards for developing electric vehicles, in a partnership that goes back to 2009.

[*Chemistry World*, 06/10/2015]

### Beijing plans to list smog as a meteorological disaster

Beijing has announced it will include smog as a meteorological disaster in the draft of a new air pollution prevention and control regulation that is under review. The draft of the *Beijing Meteorological Disasters Prevention and Control Regulation* defines a meteorological disaster as: *damage mainly caused by haze, torrential rains, blizzards, sandstorms, drought or freezing conditions.*

If smog is included in the regulation as proposed, the Beijing Government would be required to improve urban planning - including better design of green zones and corridors - to reduce damage from smog. Liu Zhengang, chief of the Beijing Legal Affairs Office, said that it is appropriate to include smog since its negative effects have become a major concern for the government and public. Other provinces such as Tianjin and Hebei provinces have already listed smog in their equivalent regulations. Nationally, the State Council has yet to list smog as a meteorological disaster.

To reduce damage from smog, better urban planning is needed. The Beijing Government should take active steps to improve air quality, like rearranging green zones, rivers and roads, and building corridors to disperse air pollutants, the draft stated.

The Beijing Municipal Environmental Protection Bureau said that in 2015, compared with 2013, the capital had seen a 46 percent reduction in the concentration of PM2.5, which is a fine particulate matter that could pose health risks. But the concentration level was still above the national health standard by 1.3 times and residents endured 46 days of hazardous pollution.

According to Zhou Heping, deputy director in charge of the rural affairs congress of the Standing Committee of Beijing Municipal People’s Congress, about 70 percent of the natural issues affecting the capital were meteorological ones. Research by the congress showed that from 2001 to 2014, meteorological disasters caused 111 deaths and 22.5 billion yuan (\$3.43 billion) in direct economic losses.

[*China Daily*, 27/05/2016]

### Rodent first to become extinct due to climate change

Increasing sea levels appear to have wiped out a rodent species living on an island in the Great Barrier Reef Marine Park. This is the first documented case of a mammal species becoming extinct due to climate change.

The mammal, called the Bramble Cay melomys, was a small rat with a long-tail and reddish-brown fur. It was considered the only mammal native to the Great Barrier Reef. Its home was a tiny island in the northeast Torres Strait between Queensland, Australia and the southern shores of Papua New Guinea. Melomys were once abundant on the island as late as the 1970s. Their population has dwindled rapidly over the last few decades. They were last spotted on the island in 2009.

From August to September 2014, scientists conducted a thorough survey effort of the island, using traps, cameras and daytime searches to try to spot and count the species. However, they failed to find any, leading them to conclude that it had likely gone extinct.

“The assertion that Australia has lost another mammal species can be made with considerable confidence,” they wrote in their report to Queensland’s government. Anthropogenic (human-induced) climate change was blamed for the extinction. “The key factor responsible for the death of the Bramble Cay

melomys is almost certainly high tides and surging seawater, which has traveled inland across the island,” Luke Leung, study co-author and scientist at the University of Queensland told The New York Times.

The rise in seawater levels is believed to have destroyed the creature’s restricted habitat. As the seawater level increases, the livable surface of the island shrinks, causing the refuge sites used by the critters, such as rock caves and crevices, to disappear. This also led to problems with food. Whilst its diet was poorly researched, melomys are believed to be mostly vegetarian and they had to compete for food with nesting seabirds and turtles.

“Certainly, extinction and climatic change have gone hand in hand throughout the history of the world,” says John White, an ecologist from Deakin University. “So, if this is one of the first, it is more than likely not going to be the last.”

[SCMP, 16/06/2016]

### Cities must tackle climate change

Under the accord signed in Paris in December last year, 195 countries set their own emission reduction targets, aiming at limiting temperature rises to 1.5 degrees Celsius. But the agreement only comes into effect when at least 55 countries representing at least 55 per cent of global emissions ratify it domestically.

France ratified the agreement on 15 June 2016, becoming the first major nation to do so, joining 17 small countries which had also ratified the agreement. France and the other countries represent less than 1 per cent of emissions combined.

While waiting for nations to ratify the climate change accord, the world’s metropolises can work together to reduce their carbon levels right now, says Paris Deputy Mayor Patrick Klugman. Metropolises should be able to act faster and go further than nations in implementing acting upon the Paris climate change deal. More Chinese cities should join the global network of megacities committed to emission cuts, Klugman said in the *Fourth Shenzhen International Low Carbon City Forum* on 17 June 2016.

“What we are now doing in the frame was of the C40 is taking the Paris agreement into action before it’s taken into action by the states,” he said.

Simon Hansen, director of regions for C40, a network of the world’s megacities committed to addressing climate change, said most members were already setting clear targets for emissions peaks or cuts, as well as laying out how those goals would be achieved.

Hong Kong and six mainland cities – Shenzhen, Guangzhou, Nanjing, Wuhan, Dalian and Chengdu – are members of the network. Beijing and Shanghai, being observers only, do not have to hand over emissions data to the network.

“When we expand, we would like to expand in the areas of the world where cities are growing most rapidly and where the potential to reduce carbon emissions is the highest,” Hansen said. “So I think the Chinese cities are prime examples of that.”

[SCMP, 17/06/2016]

### Climate change blamed for French floods

Torrential rains which caused flooding in France recently bore the unmistakable fingerprint of climate change, according to research to be submitted to a scientific journal this week. The Seine hit its highest water mark in three decades, while over-flowing tributaries forced evacuations and left tens of thousands of people without power in nearby towns.

Global warming, especially in the last 50 years, had almost doubled the likelihood of the kind of three-day downpour that burst the banks of the Seine and Loire rivers, they calculated. At the very least, the probability of such an extreme rainfall event had increased by more than 40 per cent.

“We found that we could tie global warming directly to the recent rainstorms in France that triggered so much flooding and destruction,” said Robert Vautard, a senior scientist with France’s Laboratory for Climate and Environment Sciences.

Scientists have been struggling for years to connect the dots between climate change and individual extreme weather events, such as superstorms or droughts.

“Until recently, scientists weren’t able to make this sort of judgment, but that’s changing fast,” said Richard Black, director of the Energy and Climate Intelligence Unit, an advocacy group, in London. “We’ve learned that climate change made both last year’s European heatwave and last December’s extreme rainfall in parts of the UK more likely.”

Part of the explanation lies in basic physics. A warmer atmosphere can hold – and discharge – more water. Over the last 25 years, satellites have measured a 4 per cent rise in atmospheric water vapour. The number of record-breaking rainfall events has significantly increased over the same period, scientists say. This trend has been particularly pronounced in western and central Europe, earlier studies have shown.

[SCMP, 12/06/2016]

## REGIONAL & INTERNATIONAL

### CHINA

#### Concern about toxic environments in schools

Fear gripped parents across eastern China after national media reported that hundreds of students in separate schools had fallen ill following exposure to fumes emitted from chemical plants. Symptoms include rashes, itching, nosebleeds and stomach pains. Some suspect the fumes come from nearby chemical factories.

Parents took their discontent to the local government in Hai’an, Jiangsu province, with public protests and demands to clean up the air. In response, environmental authorities have determined the chemical factories did not violate any regulations, but ordered dozens of facilities to halt production immediately, pending more extensive investigations.

[The Wall Street Journal, 22/04/2016]

## Increased electric vehicle registrations

Beijing said a total of 17,600 new applications by individuals and companies were made for electric vehicle registrations – a record – during the third round of applications up to 8 June, Xinhua reported.

The capital plans to allow 60,000 new energy vehicles on the road this year, with 25,424 assigned during the first two rounds of applications. This year's quota is likely to be filled by August.

[SCMP, 12/06/2016]

## AUSTRALIA

### Northern Great Barrier Reef corals dead

More than one-third of the coral reefs of the central and northern regions of the Great Barrier Reef have died in the huge bleaching event earlier this year, Queensland researchers said. Corals to the north of Cairns – covering about two-thirds of the Great Barrier Reef – were found to have an average mortality rate of 35 per cent, rising to more than half in areas around Cooktown. The study of 84 reefs found corals south of Cairns had escaped the worst of the bleaching and were now largely recovering any colour that had been lost.

Professor Terry Hughes, director of the ARC Centre of Excellence for Coral Reef Studies at James Cook University, said he was “gobsmacked” by the scale of the coral bleaching which far exceeded the two previous events in 1998 and 2002.

“It is fair to say we were all caught by surprise,” Professor Hughes said. “It’s a huge wake up call because we all thought that coral bleaching was something that happened in the Pacific or the Caribbean which are closer to the epicentre of El Nino events.”

The El Nino of 2015-16 was among the three strongest on record but the starting point was about 0.5 degrees warmer than the previous monster of 1997-98 as rising greenhouse gas emissions lifted background temperatures. Reefs in many regions, such as Fiji and the Maldives, have also been hit hard.

Bleaching occurs when abnormal conditions, such as warm seas, cause corals to expel tiny photosynthetic algae, called zooxanthellae. Corals turn white without these algae and may die if the zooxanthellae do not recolonise them.

The northern end of the Great Barrier Reef was home to many 50- to 100-year-old corals that had died and may struggle to rebuild before future El Ninos push tolerance beyond thresholds.

The health of the reef has been a contentious political issue. Federal Environment Minister Greg Hunt pledged more funds in the May budget to improve water quality – one aspect affecting coral health. But Mr. Hunt has also had to explain why his department instructed the UN to cut out a section on Australia from a report that dealt with the threat of climate change to World Heritage sites including the Great Barrier Reef and Kakadu.

Professor Hughes said tropical cyclones can cut a 50km-wide swatch of destruction of corals, but this year's bleaching event was like “10 cyclones holding hands and marching across the northern third of the Great Barrier Reef”. But cyclones can also help. The category-five Cyclone Winston that slammed into Fiji in February 2016 brought widespread rains over parts of Queensland as a tropical depression, helping to lower sea temperatures by two degrees and sparing much of the southern corals from severe bleaching, Professor Hughes said.

Even so, those southern reefs are still likely to have had their reproduction and growth rates slowed by the unusually warm seas. The scientists said the bleaching event showed how important it was to continue to bolster resilience of the reef, such as through programs to limit run-off from farms and towns bringing in excessive nutrients and pollution.

“The reef is no longer as resilient as it once was, and it's struggling to cope with three bleaching events in just 18 years,” Professor John Pandolfi, from the ARC Centre of Excellence for Coral Reef Studies at The University of Queensland, said. “Many coastal reefs in particular are now severely degraded.”

Professor Hughes said he did not advocate the reef being put on the “in danger” list by the World Heritage Committee, but it was time governments reconsidered their approval for massive new coal mines in Queensland's Galilee Basin and elsewhere.

“The key threat to the Great Barrier Reef is climate change – the government has recognised that many times,” he said. “[But] there is a disconnect in the policy and the fact of governments issuing permits for 60 years for new coal mines, without considering how that might impact the Great Barrier Reef and reefs more generally.”

[Sydney Morning Herald, 30/05/2016]

### Queensland buys cattle station

At 56,000 hectares, Springvale Station up on the Atherton Tablelands behind Cairns is bigger than the US island territory of Guam. It's about the same size as Britain's Isle of Man, except, rather than being home to 86,000 people, 4300 Brahman-cross cattle normally roam the Queensland property. And now the farm is owned by Queensland taxpayers after a landmark decision by the government to buy the property for \$7 million to protect the Great Barrier Reef.

Queensland environment minister Dr. Steven Miles said 560 square kilometres of cattle farm was one of the biggest contributors of sediment run-off in the northern reef area. “Areas of badly degraded grazing land on the property are responsible for 40% of sediment from gully erosion in the Normanby basin, which is the Cape York region's largest reef catchment,” he said.

Runoff from land carries sediment from the Normanby Basin to the outer reef where it blocks light, smothers marine organisms and reduces coral and seagrass growth. “The worst bleaching event in nearly two decades has hit the far north's coral reefs the hardest, with the worst affected sites near the tip of Cape York where bleaching is severe. We need to make sure the reef has the best chance to recover from this event by making sure water flowing from the catchments is as clean as possible, and that includes stepping up effective erosion control measures on the gullies and rivers in far northern Queensland.”

The minister said the property is also home to a range of threatened species and part of a continuous wildlife corridor from the head of the Normanby River catchment to Princess Charlotte Bay.

“There are 48 mapped regional ecosystems on the property providing important habitat for the critically endangered bare-rumped sheath-tail bat and other endangered or vulnerable flora and fauna species. These include the southern cassowary, northern quoll, spotted-tailed quoll, red goshawk, Semon’s leaf-nosed bat, ghost bat, spectacled flying-fox, greater large-eared horseshoe bat, Cooktown orchid and brown antelope orchid.”

[*Business Insider Australia*, 22/06/2016]

## **SOUTH CHINA SEA**

### **Fish and reefs are suffering**

Tensions between China and Southeast Asian countries with territorial claims in the South China Sea are creating a conservation vacuum and taking a heavy toll on the ecology of an area known for its biodiversity, scientists and conservationists warn.

They say the hostility harboured by rival claimants, and the resultant lack of intergovernmental cooperation, has prevented any meaningful projects to combat illegal fishing, overexploitation of fisheries, poaching and destruction of coral reefs.

The South China Sea, one of the world’s five most-productive fishing zones, has suffered from severe illegal, unreported and unregulated (IUU) fishing activities by 12 countries or territories, so much so that its marine resources had been depleted by between 5 per cent to 30 per cent of 1950 levels, according to a study by researchers at the University of British Columbia in Canada, published last year.

Destructive fishing practices – including bottom trawling, dynamiting and using cyanide to stun fish – were widely used in the area, severely damaging marine habitats and coral reefs, the Canadian study said.

Overfishing and habitat destruction had directly contributed to a reduction in biodiversity, with marine megafauna, such as dugongs, formerly abundant along the coasts of Malaysia and southern China, now rarely found.

A environmental campaigner based in Manila said the animosity between the Chinese and Philippine governments made illegal poaching and trading of endangered sea turtles by fishermen from the two countries easier due to the lack of joint operations between their coast guards.

A Beijing-based staff member at a green group, who requested anonymity, said that in China, which accounted for about 45 per cent of the commercial catch in the South China Sea, the political and diplomatic claims had made it “taboo” for conservation groups to talk to authorities about overfishing and other illegal practices.

Chinese fishermen received “special diesel subsidies” of nearly 170,000 yuan (HK\$200,000) a boat from a local government in Hainan (海南) province in the middle of last year for month-long voyages to the disputed Spratly Islands.

Overfishing is not the only threat. An official admitted in May the region had been “rapidly degrading” for years, with more than 80 per cent of coral reefs and 73 per cent of mangroves present in the 1970s having disappeared.

The most wide-spread physical damage to coral reefs across the Paracel Islands and Spratlys is from giant clam harvesting – to make expensive artefacts – by fishermen in Tanmen township in Hainan. “They anchor them to small boats and pull them with the propellers on ... the process spreads sand and silt into the water, which then kills nearly all coral reef animals,” he said. More than 40 reefs have been severely damaged, with another 20 under threat.

McManus said it was island construction work that spelled the “death sentence” for damaged reefs. Other nations there have done some reef burial, but China accounts for at least 95 per cent of the damage.

[*SCMP*, 11/06/2016]

## **CANADA**

### **Environmental impacts of wildfires**

The wildfire in Canada’s tar sands region has forced 90,000 people to flee. Although fires in boreal forest are common in Canada. What makes this one unique is its intensity and location in the heart of the tar sands region. In addition to the estimated \$9 billion economic loss to Fort McMurray, the fire will have significant environmental impacts in terms of forest area, air pollution and water pollution.

A forest ecologist at the University of Alberta said the intensity of this wildfire will irreversibly transform the ecosystem of the locality. Before the wildfire, the Fort McMurray area was a mixed boreal forest of aspen, spruce and peatlands, thus normally quite wet. The wildfire will leave the soil scorched and no longer suitable for the same mix of species to prosper.

In terms of air pollution, there is little doubt the fire mobilised contaminants, such as mercury and polycyclic aromatic hydrocarbons deposited in the soils and the 2,400 buildings burnt during the fire. Hazardous smoke has travelled across the US to the Gulf coast, 3,400 km away, with potential adverse health effects for communities along its path.

Smoke aside, contaminants are also found in the ash. According to an expert from *Treeline Ecological Research*, rain will wash a significant amount of these into waterways, including the Athabasca River, worsening its existing pollution problem from oil sands production. Alberta officials have undertaken to collect water samples to monitor the potential impacts on aquatic organisms in the river.

[*The Guardian*, 11/05/2016]

## **UNITED STATES**

### **Flint water crisis prompts nationwide water tests**

Often we just assume we have clean drinking water. Not anymore. Environmental Protection Agency (“EPA”) data show that 278 schools and day-care centres operating their own water systems are required to test classroom sinks and cafeteria taps for lead. The other schools are exempted as they receive their water from municipal systems.

Of the 278 schools, 64 found lead levels exceeded the EPA limit of 15 parts per billion. In almost all cases, the problems can be traced to aging buildings with lead pipes and older drinking fountains and water fixtures that have parts made with lead. Unfortunately, replacing the pipes buried deep underground is often not an option, as the cost of doing so may equal the cost of building a new school. Instead, school officials have decided to supply students with bottled water.

However, it may only be the tip of the iceberg. Under EPA guidelines, schools and day-care centres can report that an entire building is safe even if an individual drinking fountain is above the threshold. Further, nationwide, the average age of school buildings dates to the early 1970s. It was not until 1986 that lead pipes were banned, and it was not until 2014 that brass fixtures were ordered to be lead-free.

[*The Guardian*, 09/04/2016]

### **Trump promises to cut environmental regulations**

At an oil industry conference in North Dakota, Republican presidential candidate Donald Trump promised to remove obstacles to exploration by scaling back President Obama's environmental regulations. He proclaimed that "political activists with extreme agendas" will no longer write the rules.

Trump's agenda will radically change the trajectory of federal energy and environmental policy. He promised to address "real environmental challenges" like providing clean air and clean water, while not dealing with "phony" issues. For example, he will "euthanise" the *Clean Power Plan*, "cancel" the Paris Agreement signed by more than 190 countries, stop funding of any international efforts to address global warming, and save the coal industry by generous subsidies to attain energy independence for the country.

Some, if not all of his proposals, however, defy common understandings of the energy industry. On one hand, his promise to save coal runs counter to the trend of coal being a more expensive option compared to natural gas, therefore the industry may not survive without the significant subsidies Trump promised. On the other hand, he promised to support ethanol as alternative energy source, again by subsidies, which is naturally competing with traditional energy sources such as coal.

Trump is a determined climate change denier. The prospect of a Trump presidency has already unsettled foreign leaders who have prioritised addressing climate change. For instance, French foreign minister Laurent Fabius, who led the Paris climate conference in December 2015, feared the prospect of Trump singlehandedly undoing decades of global effort to address climate change.

[*Time Magazine*, 26/05/2016]

### **U.S. adopts near-total ivory ban**

Pursuant to President Barack Obama's executive order in 2013 to combat illegal wildlife trafficking, new regulations, effective from 6 July 2016, will limit trade of ivory and ivory products by imposing a near-total ban on the commercial trade of African elephant ivory.

The new rules restrict exports and sales across state lines, and limit ivory trophy imports from unlimited to 2 per year, in the hope of ending the scourge of elephant poaching, with its tragic impact on wild populations. Reportedly, poachers kill some 30,000 elephants a year to feed the global demand for ivory, with China by far the largest consumer, while the United States remains a significant ivory market.

This marks the fulfilment of an agreement with China made last September to restrict each nation's domestic ivory trade, although China has yet to take any significant public steps toward that goal.

[*National Geographic*, 03/06/2016]

## **TANZANIA**

### **Fishermen bomb their catch**

Some dynamite and a plastic bottle. That's all it takes for a fisherman to kill hundreds of fish and transform thriving coral reefs into rubble within seconds. Blast fishing, or dynamite fishing – that is, using explosives to stun fish – once was a common practice from Lebanon and Malaysia to the Philippines. Currently, Tanzania in Africa is the only country where blast fishing still occurs, and on an unprecedented large scale.

Researchers of *Wildlife Watch* counted more than 300 explosions in 30 days in a new video footage. Some of the blasts are captured in broad daylight. Just off the coast of Dar es Salaam, Tanzania's biggest city, fishermen toss overboard bombs that blast skyward huge plumes of water. As one dynamite fisherman in the video puts it: "The easiest way for people to earn something is from fishing with dynamite."

The practice has disastrous consequences. The blasts destroy not only their targets but entire coral reefs, which support fish, crabs, and other species and play a crucial role in controlling carbon dioxide levels in the ocean.

[*National Geographic*, 03/06/2016]

## **FRANCE**

### **Old cars are banned**

Air pollution has resurfaced as a key public health issue in Paris, as in other major European cities, like London. Increased air pollution levels are in part due to a spike in the prevalence of diesel vehicles, which were marketed as clean alternatives for having lower greenhouse gas emissions than their petroleum counterparts. Paradoxically, diesel vehicles emit many times more nitrogen dioxide, which contributes to respiratory problems and asthma.

As part of the latest string of measures aimed at tackling the city's air pollution, Paris will ban cars registered before 1997 from travelling in the city centre during the day, as part of a broader tiered system to evaluate which cars can enter the city at any given time. Diesel vehicles manufactured before 2011 will also face particularly tough regulations when the measure takes effect on 1 July 2016.

[*Time Magazine*, 02/06/2016]

## MALAYSIA

### Palm oil giant drops lawsuit

IOI Group, one of the world's largest producers of palm oil and a former supplier to Unilever, Mars, Kellogg's, and Nestlé, has dropped a lawsuit against the *Roundtable on Sustainable Palm Oil* (RSPO), for revoking its accreditation with RSPO.

The IOI Group was suspended last April in the face of allegations that it was not doing enough to prevent deforestation in Indonesia. Major buyers immediately moved to drop IOI Group. The Group subsequently sued the RSPO, claiming it had been unfairly hindered by the decision. However, on 6 June 2016, the IOI Group announced its decision to withdraw the lawsuit and its commitment to comply with the highest level of accreditation of the RSPO, the *Next Certification System*, by the end of 2016.

The RSPO has refused to comment until the legal proceedings are officially withdrawn. *Aidenvironment Asia*, the sustainability consultancy organisation which filed the complaints with RSPO in relation to IOI Group in 2015, welcomed the withdrawal, but said much still needed to be done to resolve their original concerns. *Greenpeace* has previously urged the RSPO to exclude IOI Group until it had repaired the forests and peatlands it destroyed.

[*The Guardian*, 07/06/2016]

## SWEDEN

### Sweden may keep coal in the ground

Vattenfall, the government-owned energy company, has proposed to the government the sale of its coal mines and power plants in Germany, including 3 of the top 10 most polluting coal plants in Europe, to a deeply unattractive buyer, Energetický a Průmyslový Holding (EPH). EPH is a Czech company with a history of burning as much coal as possible and consistently buying up dirty coal mines and plants across Europe. The company now has 1 billion tonnes of coal and 5GW of coal power plants. EPH has exploited loopholes in the EU climate and energy package, which allows it to keep burning fossil fuels despite European agreements to limit emissions from coal power stations.

Stefan Löfven, the Swedish Prime Minister, is presented with a stark choice. He could either break his election promises and sell the most climate-destroying assets in Europe, or take unprecedented governmental action to keep fossil fuels in the ground. Advocates for governmental action said that by selling these coal assets, they will no longer be on Sweden's books but the mines will be expanded and the brown coal will be burnt, and that was no different to a trading company selling their slaves to a more brutal owner to clear its conscience.

Reportedly, the majority of Swedes oppose the sale of brown coal. For instance, in May 2016, 4,000 people shut down Vattenfall's coal operations in Ende Gelände, in the world's largest act of civil disobedience against fossil-fuel burning.

The positive global impact of transitioning towards cleaner energy sources cannot be underestimated. Will the Prime Minister live up to the promises he made?

[*The Guardian*, 02/06/2016]

## SOLOMON ISLANDS

### Five islands lost to rising seas

The Solomon Islands, a Pacific Ocean nation comprising hundreds of islands and with a population approximately 640,000, lies about 1,000 miles north-east of Australia. Five tiny islands in the Solomon Islands – an archipelago that during the last two decades has seen annual sea levels rise as much as 10 mm – have disappeared due to rising seas and erosion. These missing islands of 1 to 5 hectares were not inhabited.

Disturbingly, however, six more islands have had large swaths of land washed into sea, and on two of those, villages have been destroyed. One was Nuatambu Island, home to 25 families, which has lost 11 houses and half its inhabitable area since 2011. According to researchers, this is confirmation of "the numerous anecdotal accounts from across the Pacific of the dramatic impacts of climate change on coastlines and people".

Naturally, questions were asked about relocation of the affected population. Unable to finance the entire relocation process alone, the country has reached out to the *Green Climate Fund*, part of *United Nations Framework Convention on Climate Change*, for financial assistance.

[*The Guardian*, 10/05/2016]

## WORLD

### Pledge to end fossil fuel subsidies by 2025

Leaders of the G7 have urged all countries to join them in eliminating "inefficient fossil fuel subsidies" by 2025. The word "inefficient" indicates subsidies that distort energy markets. The *Organisation for Economic Co-operation and Development* estimated such subsidies amount to \$160-200 billion each year. If taken into account the cost of damage from pollution and climate change, the *International Monetary Fund* has estimated the amount increases to a staggering \$5.3 trillion a year, or \$10 million per minute, exceeding the total global spending on human health.

Subsidies in the G7 are already falling, assisted by falling commodity prices. A notable exception is the United Kingdom, which increased subsidies by granting new tax breaks for North Sea oil producers. Further, Japan has been criticised for funding new coal projects at home and abroad. Canada also recently extended some subsidies for natural gas. It is yet to be seen whether these pro-fossil fuel measures aforementioned will be affected by G7's declaration.

[*The Guardian*, 27/05/2016]

### Plant-based diets could cut greenhouse gas emissions

While energy generation, transport and buildings have long been targeted to reduce greenhouse gas emissions, the impact from food production has often been ignored. Food production for the world's burgeoning population has sent countless greenhouse gases into the atmosphere. Agriculture increasingly involves intensive livestock farming to meet the demand for meat of rising middle class communities in areas that have emerged from poverty. Within three decades, methane gas emission from the animals will account for about half of the world's available "carbon budget"; that is, the limited amount of carbon dioxide and its equivalents that can be poured into the atmosphere safely before the world heads for irreversible climate change.

A recent study suggests that widespread adoption of a mostly vegetarian diet, or even simply cutting down meat consumption to within accepted health guidelines, would reduce related emissions by nearly 63%. To that end, non-intensive farming of livestock, such as raising animals on marginal land, could allow meat-eating at lower levels with less environmental harm.

Additionally, researchers argued such steps would also save lives. The lead researcher of this study said that imbalanced diets, typically low in vegetables and high in red and processed meat, are responsible for the main health burdens globally. He estimated more than 5 million premature deaths could be avoided if health guidelines on meat consumption were followed. This would increase to 7 million with a vegetarian diet and 8 million on a vegan diet.

As the researcher puts it, “the size of the projected benefits should encourage individuals, industry and policymakers to act decisively to make sure that what we eat preserves our environment and health”.

[*Oxford Martin School*, 21/03/2016]

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**Convictions under environmental legislation: April to May 2016 (June data not available)**

**[Note: the EPD no longer classifies second (and subsequent) offences.]**

The EPD's summary of convictions recorded and fines imposed during the above period is as follows:

***April 2016***

Seventy convictions were recorded in April 2016 for breaches of legislation enforced by the EPD (Environmental Protection Department).

Six of the convictions were under the Air Pollution Control Ordinance, 6 were under the Noise Control Ordinance, 57 were under the Waste Disposal Ordinance, and 1 was under the Water Pollution Control Ordinance.

The heaviest fine in April was \$29,400, assessed against a company that installed or altered furnaces/chimney without authorisation.

***May 2016***

Eighty-one convictions were recorded in May 2016 for breaches of legislation enforced by the EPD.

Four of the convictions were under the Air Pollution Control Ordinance, 3 were under the Noise Control Ordinance, 71 were under the Waste Disposal Ordinance, and 3 were under the Water Pollution Control Ordinance.

The heaviest fine in May was \$80,000, assessed against a company that used powered mechanical equipment otherwise than in accordance with permit conditions.

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