

**URBAN PLANNING AND ENVIRONMENTAL LAW**  
**QUARTERLY**  
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*The equal awardee (see UPELQ, January 2013) of Fred Kan & Co. prize (M.Sc., Environmental Management, HKU) for 2012 was Chan Chun Tat for his dissertation A Global Review and Evaluation of the Derivation and Application of Sediment Quality Criteria to Protect Aquatic Ecosystem and Human Health. In this edition we review key elements of the dissertation.*

*The Editors*

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**SEDIMENT EVALUATION IS A KEY TOOL IN PREVENTING DAMAGE TO OUR AQUATIC ENVIRONMENT**

**Objective**

The author introduces the dissertation with a short statement of the content and purpose of his research :

*“Sediment Quality Guidelines (SQGs) serve as scientific benchmarks, or reference points of chemical contaminants levels for evaluating the possibility of occurrence of adverse biological responses in the aquatic environment. SQGs are important because the quality of sediment has significant influences on the health of aquatic organisms, and the use of SQGs is a critical means to protect and manage various aquatic ecosystems. In this study, nine conventional derivation methods are described and contrasted. Their uses and limitations, which in general reduce the ecological relevance of SQGs in applications, are discussed. Improvements can be made through implementing elements like site-specific, field-based, chemical mixtures assessments, etc. in the SQG derivation process.”*

The study sourced data from two geologically distinct areas : (i) Hong Kong – Zhuhai – Macao Bridge (HZMB) and (ii) the old Kai Tak Airport.

Incidence of pollution from various metals and chemicals differs between HZMB and Kai Tak, and the derived SQGs for both areas are consequently different. The

discrepancies between the SQGs and pollution incidence rates indicate that site-specific SQGs are essential. The dissertation explores methods for creating such SQGs.

**Applications of SQGs**

SQGs are used by government agencies to design “a standard that correctly determines the environment’s maximum capacity for pollutants without causing unacceptable harm to it will be ideal for a sustainable growth. It means if there is an allowable level of pollutant present in the environment without causing adverse effect to the ecosystem, pollution control can be set according to that level, and deterioration of economic development or limitation to social needs can be minimized”.

The assessed balance-point, designated by stipulated maximum allowable levels of pollutants discharge, or presence, is defined in *Environmental Quality Guidelines* (EQG).

SQGs are an important facet in formulating EQGs for aquatic ecosystems. They are important because sediment quality impacts the health of aquatic organisms. SQGs, therefore, can also be an important tool in broader environmental risk assessment.

The author says that an effective, or “properly derived” SQG will set standards “right below the trigger concentration of a contaminant in the environment, thus, it is termed the Predicted No Effect Concentration (PNEC) representing the maximum concentration that causes no adverse effect. In ERA, the PNEC value is usually compared to Predicted Environmental Concentration (PEC), which is the environmental concentration obtained by measurement or calculation with an

exposure model. If PNEC exceeds PEC, it can be concluded that the substance does not constitute an environmental risk (ECETOC, 1993). Reversely, if PEC is higher than PNEC, the risk to environment is higher, management measures like environmental remediation or applying more stringent control shall be applied”.

In Hong Kong, SQGs are used to try to ensure minimal environmental impacts from disposal of dredged sediment; they are an important component of our sediment management system. As a broad objective, the dissertation argues that the government should adopt site-specific SQGs, which is not always the case at present.

The current sediment management system “is set up to assess dredged sediments for deciding their disposal options. The system involves desktop study, chemical testing and biological testing to classify the level of contamination and the associated toxicity of the sediments, so as to assess the risk posed on the environment during disposal”.

The author reviews this approach to sediment management, and makes various recommendations for improvement, “like incorporation of a bioavailability testing tier, using local species for biological test, deriving site-specific SQGs, etc.”.

#### Methods for deriving SQGs

Currently, there are nine different methods for deriving SQGs followed by monitoring agencies : (1) Spiked-Sediment Toxicity Test (SSTT) Approach, (2) Screening Level Concentration (SLC) Approach, (3) Apparent Effects Threshold (AET) Approach, (4) Sediment Background Approach, (5) Equilibrium Partitioning (EqP) Approach, (6) Effect Range Approach, (7) Tissue Residue Approach (TRA), (8) Sediment quality Triad (SQT) Approach, and (9) Field-based Species Sensitivity Distribution (f-SSD) Approach.

Briefly, the essence of each of these different approaches to establishing SQGs is as follows :

##### (1) SSTT approach

This method involves exposure of test organisms to sediments to which known quantities of a variety of contaminants have been added. The concentration – response from laboratory toxicity tests of the sample sediment “are used to generate SQG or to validate other SQGs. Individual contaminants can be tested alone or in combination to determine their effect concentrations in sediment. This method can also be used to determine the bioavailability of contaminants of individual sediments. If normalization of sediments is performed, this approach may also be applied to sediments with different properties”.

##### (2) SLC approach

The SLC is the concentration in sediment of a nonpolar organic contaminant. A reading exceeding the stipulated SLC could result in environmental degradation. This approach uses field data rather than extrapolating laboratory results to on-site conditions.

##### (3) AET approach

The AET approach employs empirical data to identify concentrations of identified chemicals above which specific biological effects are expected to occur.

##### (4) Sediment background approach

Using this approach, ascertained background concentrations of priority contaminants are estimated from historical data. Then sediment contamination concentrations are assessed at the subject site and compared with the background contamination data. If the difference between the two sets of data is statistically significant, the sediment is assessed as contaminated.

##### (5) EqP approach

This approach is based on measuring the toxicity levels of contaminants by taking into account the varying bioavailability of chemicals in different sediment types, and allowing for the correlation between pore water concentration of a chemical and its toxic effects. The author comments : “The EqP approach offers a variety of advantages on the assessment of sediment contaminant level. It is consistence with existing water quality criteria and thus a sizeable data base is available and has undergone extensive review. It is applicable to all types of sediments and aquatic environment as it normalises the concentration to be carbon based. In the derivation and applicable process, only site-specific data is needed and the calculation can be done as soon as the data are available. Modification is done easily to adapt site or station specificity. As the equilibrium partitioning theory is well studied and developed, this approach shall be readily established”.

##### (6) Effect range approach

Researchers have used “biological and chemical data from numerous modeling, laboratory and field studies to derive two guideline values, named effect range-low (ERL) and effect range-median (ERM) for classifying sediments into rarely, occasionally or

frequently associated with adverse biological effects. In the study, a biological effects database for sediment was developed using chemical data and the corresponding biological responses from numerous studies including laboratory tests, field co-occurrence data, guideline values obtained from AET & SLC approach and EqP approaches. The database contained the concentrations of difference chemicals that would give adverse biological effects in the endpoints measured”.

##### (7) TRA

This approach ascertains safe sediment chemical concentration levels for chemicals that will result in acceptable tissue residues. TRA involves “linking toxic effects to residues (does-response relationships) and linking the chemical residues to the chemical contamination concentration in sediment”.

##### (8) SQT approach

This method assesses, the contamination status of sediment using chemistry, biology and ecology. “Sediment chemical identification and quantification, toxicity test of the contaminated sediments and the benthic community structure and function are assessed with this approach. Other investigative studies like bio-magnification, sediment stability, toxicity identification evaluation or the contaminant body residue can also be incorporated.”

##### (9) f-SSD approach

This method uses field data to compile SQGs, relying especially on data for the abundance of a specified species and the sediment concentration of a nominated chemical. The relationship between the data is plotted and sensitive species then identified. A decrease in species abundance in response to an increase in chemical concentration identifies the species as “sensitive”.

The f-SSD approach has the advantage of being an in-field method, without the drawbacks of laboratory-based methods which pose some uncertainties when extrapolated to assessment of a natural habitat.

#### Future trends of SQGs

Five major directions for evolving SQGs derivation methods are discussed by the author. For example, the move to use more field-based derivation methods, rather than laboratory test methods, is discussed. A reason for an increasing preference for field-

based data and assessments is the difficulty experienced in the past in extrapolating simple laboratory systems to complex natural systems to assess ecological risks.

An important observation is that experts are now emphasising more the need to protect "ecosystem services", and promoting this as the main purpose of effective SQGs. Protecting the health of ecosystems for the inherent value of having a healthy environment is perceived as having failed to render effective environmental protection. Hence the shift to measuring the health of ecosystem services, which are : *"the condition and processes through which natural ecosystems, and the species that make them up, sustain and fulfill human life, the benefit human populations derive, directly or indirectly, from ecosystem functions and the benefits people obtain from ecosystems"*.

The author comments that *"these services should be regarded as the endpoints of sediment assessments, and the management process should be aimed at protecting them"*.

[This is an interesting position to take, given that in recent years the anthropological approach has been heavily criticised and discredited by experts in other areas of environmental protection.]

#### **Review of sediment management system (SMS) in Hong Kong**

The government's current SMS concentrates on assessment and classification of dredged or excavated sediments to determine suitable disposal options. All sediment requiring disposal must first be classified for quality/toxicity. However, there is no standard for ambient sediment quality, or a statutory requirement for in situ remediation of contaminated sediments.

Hong Kong has a sediment classification framework which is divided into three tiers :

- (a) *desk-top study of available data* : a review of existing data to exclude from classification materials that are very unlikely to present environmental risks;
- (b) *chemical screening* : which involves chemical testing for a list of known, priority pollutants;
- (c) *biological screening* : involves further tests of sediments already classified by chemical screening as holding identified pollutants. The tests comprise three kinds of amphipod, and other media, toxicity tests.

The end result of applying these three stage tests is a determination of the way in which the subject sediment (which will have been given a formal classification) may be disposed. The disposal options are, in the order of least to heaviest polluted sediments :

- (i) open sea;
- (ii) confined marine disposal site;

- (iii) pre-disposal treatment and then disposal at a designated site under specified conditions.

Hong Kong has also fundamental classifications of sediment :

- (i) Lower Chemical Exceedance Level (LCEC); and
- (ii) Upper Chemical Exceedance Level (UCEL).

LCEC sediment has concentrations of pollutants below which biological effects are rare. UCEC represents a level of contamination at which severe adverse biological effects are likely.

Sediments are classified :

- (i) below LCEC, as **L**;
- (ii) with one or more of the priority pollutants present between LCEL and UCEL, as **M**;
- (iii) with one or more contaminant levels exceeding UCEC, as **H**;
- (iv) if the sample is 10 times (or more) LCEL, as **H(>10 x LCEL)**.

#### **Setting Hong Kong's SQGs**

The platform for Hong Kong's SQGs was a consultant's review and report in 1996. The author describes these as follows :

*"In the review, two sets of values were recommended, the first one is the value below which adverse biological effects are unlikely, and the second one is the value above which severe adverse biological effects are very likely, corresponding to LCEL and UCEL respectively. These two sets of values allows categorization of the sediments into three categories, which are L, M and H that represent biological effects unlikely, biological effects uncertain and biological effects very likely respectively. Category L sediment can be disposed of at open sea as its biological effects is not likely. The adverse ecological effect of category H sediment is certain and thus it shall be disposed of at confined marine sites for contaminated sediment disposal. Category M sediments contain moderate contaminants levels that their biological effects are uncertain, thus, biological testing shall be conduct to reduce this uncertainty."*

The initial SQGs were fine-tuned to take into account additional data, primarily tropical and sub-tropical data appropriate for Hong Kong's water environment. The current SQGs were finalised in 2002.

#### **Review of SQGs**

Since 2002 we have accumulated much more chemical and biological effects/no effects data from laboratory testing of dredged sediment. The author cites various sources of such data, as well as other data, such as factors affecting marine waters, which should be relied on to update the SQGs. The author discusses several factors which a review process should address, which are briefly described below.

- (1) *Review list of priority pollutants*  
Eight metals and one metalloid are on the list. However, today a wider range of artificial chemicals exists in our environment, and some are known to be toxic. These should be added to the list.

- (2) *Incorporation of bioavailability analysis in the tiered system*  
The author notes that : *"the total concentrations of chemicals analysed in the chemical tier do not represent the bioavailable form of chemicals, because only a portion of the total concentration is available to the organisms and causes toxic effects. That portion shall be evaluated to identify the risk in a more ecologically relevant sense."*

Factors affecting bioavailability of contaminants also affect toxicity of contaminated sediment, and so any risk assessment should include an assessment of likely impacts of such factors. This occurs in, for example, Australia and New Zealand.

- (3) *Review of biological testing*  
Biological toxicity tests are still based on North American protocols, using species from that region. Some of the subject species are not even found in Hong Kong, and so are ecologically irrelevant. Subject species from our own region should be used. Other aspects of our inherited biological testing methods also need to be changed to make the tests more realistic and relevant to Hong Kong's environment.

- (4) *Establish a data base*  
Hong Kong does not have a database of regional-specific datasets of chemical analysis and biological responses from the numerous dredging projects undertaken in recent years. Such a database is a necessary tool for effective derivation of SQGs.

- (5) *Site-specific SQGs*  
The author recommends creating a set of site-specific guidelines for designated sediment-disposal sites. He comments : *"In Hong Kong, the sediment management framework focuses on the disposal of dredged sediments, it involves disposal of uncontaminated sediment as open sea disposal areas located at south of Cheung Chau, East of Ninepin and East of Tung Lung Chau, these areas will not be capped after operation. The disposal option of contaminated sediments is at mud dumping pits located in East Sha Chau, these contaminated mud pits will be capped with clean sediment after it is filled up. To assess the biological effects of the dredged sediments applied to the permanent sink, a set of guidelines can be derived"*

specifically for the vicinity of open sea disposal areas (south of Cheung Chau, east of Ninepin, etc.) or any future mud disposal sites, in order to protect the ecology and human health at the site.”.

## Conclusion

The author concludes with a review of sediment quality data taken from his selected sample sites, NZMB and Kai Tak. The aim of the exercise is to determine the necessity for deriving site-specific SQGs and to assess the suitability of Hong Kong's current generalised SQGs. Underpinning the exercise is the common sense assumption that large variations in profiles of marine sediments exists at different sites. Detailed results of the exercise are set out in comprehensive tables, which we shall not attempt to summarise.

Differences between the two subject sites were considerable, and varied between chemicals. Even chemicals within the same range of concentrations exhibited different toxic effects at the two sites. This confirms the author's point that site-specific SQGs are needed for effective assessment of disposing of contaminated sediment in an environmentally safe way. Thus, generalised SQGs, as presently used, may not be an adequate precaution.

Key factors in improving our SQGs (site-specific or otherwise) recommended by the author are :

- (a) effective correlation of sediment properties and toxicity levels of selected chemicals;
- (b) use local flora/fauna species as the indicator species for biological tests, so as to create a more relevant and accurate biological dataset;
- (c) expand the pollutants/chemicals dataset.

In short, the author's research, which is well documented and presented in his award-winning dissertation, “suggests the need of site-specific SQGs, and the need of review of the current Hong Kong SQGs. Only with a set of ecologically relevant SQGs, the management goals will be achieved effectively and efficiently in both ecological and economic terms”.

## TOWN PLANNING

### Redevelopment plan for Ming Wah Dai Ha

The Town Planning Board (“TPB”) has approved the comprehensive redevelopment plan for Ming Wah Dai Ha (including flats, shop and services and social welfare facilities). A central memorial park will be built to showcase the unique architectural features of Ming Wah Dai Ha. The TPB said that the existing local character and social

network can be preserved by way of establishing the memorial park.

The redevelopment plan was originally approved in September last year. However, several committee members pressed for the preservation plan for Tower M of Ming Wah Dai Ha. Additional information was later submitted to the TPB for further consideration.

It is anticipated that the redevelopment of Ming Wah Dai Ha will provide 4,000 units compared to the current supply of 3,100. Approximately 20% of the units will be reserved for the elderly.

[Ming Pao, 16/03/2013]

### Hundreds protest against the Lee Wai Lee rezoning plan

The Kowloon District Council recently discussed the rezoning plan for the former Lee Wai Lee Institute site for residential use, but many of its members were against the idea.

One councillor accused the government of bypassing the TPB while others suggested the site should be reserved for community facilities.

Judy Chung Sui-kei, Principal Assistant Secretary for Development, made it clear the site will only be sold after the TPB has passed the rezoning proposal.

A Kowloon District planning officer said “mainly medium or low-density residential estates are built in Kowloon Tong, so we think a residential development is not inappropriate.”

The intention of Baptist University is to acquire the site in order to build a hospital specialising in Chinese medicine. Estrella Cheung King-sing, Principal Assistant Secretary for Food and Health, said the bureau has no authority to approve sites for the construction of a private hospital specialising in Chinese medicine. She said, however, she personally supports the university's proposal to build such a hospital.

More than 100 Baptist University students and teaching staff dressed in black and carrying black banners protested outside the offices of the Council against the rezoning plan. The demonstrators chanted slogans accusing the government of rushing into a decision even before a two-month consultation period ends next month.

[Ming Pao, 08/03/2013]

### REDA slams Town Planning Board for tighter draft zoning plans

The Real Estate Developers Association (“REDA”) accused the TPB of “micro-management” and failing to properly consider its views on four draft zoning plans.

REDA yesterday applied to the Court of First Instance for a judicial review of the draft plans. The zones involved are: Ngau Tau Kok and Kowloon Bay; Wan Chai; Mong Kok; Yau Ma Tei and Ngau Tau Kok. Amendments had earlier been made to tighten restrictions, including on the height and depth of structures and where should be considered “non-building areas”.

Benjamin Yu SC, for REDA, said laying down different limits for individual plots of land and buildings went against the broad-brush approach intended for outline zoning plans. “Once you allow this micro-managing of buildings, there is no end to it,” he said.

The barrister said decisions regarding building restrictions could affect the property rights of individual owners, who would get no compensation. Yu added: “These matters have been troubling the association for some time. After pursuing other avenues, [it believes] the only way is the court process.”

Yu said the TPB did not give an opportunity for views to be properly aired, with members sometimes leaving the room when someone was trying to make their case.

The hearing, scheduled to last four days, continues before Mr Justice Au Hing-cheung.

[South China Morning Post, 19/02/2013]

### Approved Kowloon Tong Outline Zoning Plan amended

The TPB has announced amendments to the approved Kowloon Tong Outline Zoning Plan (OZP), which involve the rezoning of a site at Renfrew Road that covers the following:-

1. the southern part of the ex-Lee Wai Lee Campus, from “Government, Institution or Community (9)” to “Residential (Group B)” for residential development;
2. part of the site at Dumbarton Road covering the Bethel Bible Seminary from “Government, Institution or Community (3)” to “Government, Institution or Community (12)” (eastern portion) for redevelopment of the seminary (with the existing historic building, Sun Hok Building, preserved in-situ); and
3. part of the site at Dumbarton Road covering the Bethel Bible Seminary from “Government, Institution or Community (3)” to “Residential (Group C)9” (western portion) for residential development.

The draft Kowloon Tong OZP No. S/K18/17, incorporating the amendments, is now available for public inspection. Any person may make written representation in respect of the amendments to the TPB on or before 15 April 2013. Representations will be available for public inspection.

[Town Planning Board, 15/02/2013]

### Town Planning Board to consider East Kowloon development plan

A massive private development project in east Kowloon to build 5,200 small to medium-sized flats in the next six years will be scrutinised by the TPB today after decades of revisions.

The project has been revised several times since it was first proposed in 2002. The current development plan comprises 28 apartment blocks, four hotels, shops, and facilities for children and families. The development is expected to be completed in two phases by 2017 and 2019 respectively. The site, covering a total area of 99,000 square metres beside the Eastern Harbour Tunnel and zoned as a "comprehensive development area", was formerly an industrial area occupied by dockyards and wood workshops.

The Planning Department says, in a paper advising the TPB, that it has "no in-principle objection" to the Yau Tong Bay project proposed by a consortium led by Henderson Land Development. "The application site is readily available for construction and would provide a significant number of small to medium-sized residential flats to meet the market demand," the developers have said, according to the paper.

A marina has been dropped because of technical difficulties and legal restrictions on reclamation from the harbour. A harbourside promenade will be built by the developers and it will link up with Yau Tong MTR station.

The TPB today will also look at the MTR Corporation's project atop the future railway station at Wong Chuk Hang. MTR aims to construct 4,700 flats by 2024. This project has received a total of 328 comments from residents and green groups, with 311 objecting on the grounds of traffic congestion, insufficient provision of public open space and excessive building bulk. The Planning Department, again, advised that it has no objection to the development proposal.

[South China Morning Post, 08/02/2013]

### Town Planning Board seek judicial review of Nam Sang Wai decision

The TPB is seeking a judicial review of an appeal board decision that favoured the developers of the Nam Sang Wai housing project.

The appeal board ruling in December 2010 required the TPB to review its decision made in 2010 that, inter alia, the developers had failed to meet 19 conditions under the project's 1996 approval. The developers are Nam Sang Wai Development and Kleener Investment, which are controlled by

Henderson Land Development and the Fu family.

It was originally proposed in the 1996 plan that a 43-hectare golf course would be built and 2,550 homes would be scattered over the course in well-spread clusters. Subsequently, a modified plan was filed in September 2010, in which a new wetland enhancement area was introduced and the size of the golf course was reduced to 10 hectares, making the residential blocks more concentrated. The TPB later ruled against these "major changes" in December 2010. The developers then took the case to an appeal board in which it was decided that the TPB had to review its 2010 decision.

[South China Morning Post, 31/01/2013]

### Facelift in Pok Fu Lam

After a decade of shortages in the supply of homes, Chief Executive Leung Chun-ying said in his inaugural policy address yesterday that as part of efforts to boost home supply: "We are actively considering relaxing or lifting a moratorium - which is an administrative measure - currently in force to restrict the sale of new land or modification to leases in Pok Fu Lam and Mid-Levels, so as to lift development restrictions in these two areas."

The so-called Pok Fu Lam Moratorium is a rare town planning measure implemented in the 1970s which was initially intended to be a temporary measure. A government source said that the intention to relax the decades-old building restriction is that the transportation network is expected to improve in the near future as a number of transport facilities, such as the MTR West Island and South Island lines, and Central-Wan Chai Bypass, are due to be completed.

The average plot ratio in Pok Fu Lam residential buildings (gross floor area over site area) is currently about 2.1 times compared with the five times set out in the district's outline zoning plan. If homeowners are allowed to redevelop, a considerable increase in building density could be expected, said Alnwick Chan Chi-hing, head of valuation and professional services at property consultancy Knight Frank.

Paul Zimmerman, a Southern District Council member, complained that the application of the moratorium has been inequitable and arbitrary due to the unfair treatment of private land and property and that it should have been removed ages ago.

The government has indeed made several exceptions. In 1985, governor Edward Youde lifted the moratorium partially for Kellett Bay in the district to allow building of public rental estates. This became Wah Kwai Estate that was completed in 1990. In 2000, the then-chief executive Tung Chee-hwa approved a controversial plan and contracted with Richard Li Tzar-kai's Pacific Century Cyberworks to develop Telegraph

Bay. This resulted in the supply of more than one million square feet of Grade A office space for information-technology related companies and some 2,800 apartments and houses in the up-scale Residence Bel-Air development.

There is speculation that the motive for lifting the moratorium is related to possible redevelopment plans for Wah Fu estates and judicial review involving No.2 Mount Davis Road which the owners initiated proceedings after being barred from redeveloping the property higher than three stories. The nearby No.4 Mount Davis Road is permitted to accommodate buildings up to 160 metres.

Some are of the view that the new development density should reflect the limitation of transport services and traffic restraints between the Southern District and the north shore of Hong Kong Island.

[The Standard, 17/01/2013]

## WEST KOWLOON CULTURAL DISTRICT (WKCD)

### West Kowloon Cultural District Authority criticised for lack of transparency

The editor of the South China Morning Post has called for transparency of board meetings of the West Kowloon Cultural District Authority. In its editorial, "No secrecy in West Kowloon", the SCMP alleged that the Authority has, without any prior notice, stopped giving public access to its board meetings via webcast. It is noted that no agenda or minutes have been uploaded to the website since April 2010. Even some board members were baffled when told about the change and found it unacceptable.

Shortly after it was established in 2008 to steer the HK\$21.6 billion arts hub project, the Authority embraced transparency. It was decided the meetings would be open unless discussions involved personnel matters, financial data, commercially sensitive issues or legal matters. The arrangement was hailed by former chairman Henry Tang Ying-yen as a reflection of the Authority's principle of operating "in a highly transparent manner and its spirit of being responsible to the public".

The open meeting measures, according to the Authority's website, lasted for only 12 months. It would be regrettable if the openness was just a gesture to ease pressure for transparency during the initial stages of the huge development project. The editor claimed that discontinuing public access procedures has sent the wrong signal that the Authority has back-pedalled on transparency. It also sits oddly with other arts bodies, such as the Arts Development Council, whose meeting agenda and minutes are readily available online. The arrangements should be restored as soon as possible.

The editor opined that a culture of secrecy has no place in public governance today. Sustainable efforts are needed if the Authority is committed to transparency and accountability. Transparency is also an essential component for good public governance. It enables people to keep a close watch on the government, give them a say on

public affairs and it holds officials accountable in the event of wrongdoing. Any move that goes against the spirit of openness should be questioned and rejected.

[SCMP Editorial, 22/01/2013]

#### Formation of an Executive Committee

During the 28<sup>th</sup> Board Meeting of the West Kowloon Cultural District Authority ("WKCD"), the Board considered measures to strengthen the current organisational structure of WKCD to ensure effective implementation of the West Kowloon Cultural District project. To this end, the Board has approved the formation of an Executive Committee for a term from 4 February to the end of December 2013, to advise the WKCD on pertinent issues relating to the project.

Chaired by Ronald Arculli, and made up of chairmen of the six committees under the Board, the Executive Committee will oversee strategic issues, such as the overall development programme, financial and funding strategies, planning for the operation of facilities and business development, etc., and also play a co-ordinating role among the six committees. A few co-opted members with specific professional expertise will be appointed, and once candidates have been confirmed, the Board's approval of the nominees will be sought.

On the transparency of the Board meetings of WKCD, members reaffirmed that there should be an open session at each of the Board meetings, so that the public could be kept informed of the work of the Authority without comprising the principle of confidentiality and commercially sensitive matters.

[West Kowloon Cultural District Authority, 04/02/2013]

#### Public museums pledge to innovate and showcase Hong Kong's heritage

The Leisure and Cultural Services Department said questions concerning the role of public museums amid the M+ development in the West Kowloon Cultural District were raised by the three Museum Advisory Panels set up in 2010.

The department manages 14 public museums and four cultural venues. Among them are key institutions such as the Museum of Art, Heritage Museum, Museum of History and the Hong Kong Film Archive. These are the most likely to overlap with M+.

According to the department's assistant director, M+'s collection will focus on 20th and 21st century culture covering visual art, design, architecture and the moving image. Whilst the West Kowloon museum has been criticised for its lack of Hong Kong focus, it has promised to maintain a collection that will reflect historical implications of local, regional and global networks on visual cultural production.

M+, which is still in its early stage of development, has the Sigg collection, which features 1,510 works of Chinese contemporary art, comprising 1,463 pieces donated and 47 acquired at HK\$177 million, including works by Hong Kong artists Pak Sheung-chuen and Lee Kit. The museum has also acquired another 364 works, of which 328 are by local artists or are directly related to Hong Kong. In contrast, the department

has a massive collection. The Museum of Art alone owns 15,900 objects from the early 20th century to the present, of which 4,400 items are Hong Kong art. Key artists represented in the collection include Antonio Mak, Leung Kui-ting and Lu Shoukun.

The Heritage Museum has more than 100,000 items from the latter half of the 19th century, including 14,000 pieces of Hong Kong art and 73,000 items related to Hong Kong heritage.

Among the major art collections in the Heritage Museum are the Lingnan School of Chinese paintings by Chao Shao-an, as well as Hong Kong photography works by the likes of Tchan Fou-li, Kan Hing-fook and Leo Wong Kwai-kuen. It also has works by Huang Xinbo, and pieces by leading designers such as Kan Tai-keung, Freeman Lau Siu-hong and Stanley Wong.

According to the department's assistant director, public museums will also be more active in pursuing international exposure, especially from visiting collectors.

[SCMP, 14/02/2013]

#### People enjoy West Kowloon Bamboo Theatre at Arts Hub

More than 100,000 people have visited this year's West Kowloon Bamboo Theatre during the three-week Cantonese opera and music event.

Following a popular debut in 2012, the West Kowloon Bamboo Theatre had its second run from 30 January to 16 February 2013 with full-house Cantonese opera, music and dance programmes, as well as a colourful New Year Fair at the future site of the Xiqu Centre.

The three-week West Kowloon Bamboo Theatre took place in an 800-seat purpose-built bamboo theatre at the arts hub's Canton Road entrance. Star-studded Cantonese opera shows were the main attractions, but the event also staged a series of programmes including Cantonese opera performances by budding talents, Chinese folk dance by the Hong Kong Dance Company, contemporary music concerts, and a Bamboo Theatre Fair to greet the Year of the Snake with Hong Kong people and tourists. The long-anticipated winning Xiqu Centre design model also exhibited for the first time at its future home.

[West Kowloon Cultural District Authority, 16/02/2013]

#### M+ museum chief aims to grant free entry

M+ (Museum Plus) is the new museum for visual culture in Hong Kong, as part of West Kowloon Cultural District, focusing on 20th and 21st century art, design, architecture and moving image. The head of the museum is supportive of making M+ free of charge, or only charging for major exhibitions, when it opens in 2017. He said that whilst no decision had been made yet, it would be a good policy for a place like Hong Kong, which does not have a long tradition of museums.

An arts critic also supported the proposal. She noted that most world-class museums were free and if the museum is to fulfil its function as a public educational institution on the arts, then charging an entrance fee would defeat the purpose.

[SCMP, 22/02/2013]

#### Canadian architect to design venues at the cultural hub

Hong Kong-born Canadian architect recently beat four other finalists in being chosen to design the HK\$2.7 billion Xiqu Centre for opera, the first 17 cultural venues to be built in the West Kowloon Cultural District.

The architect believes that having his one foot in the East and the other in the West allows him to look at things in a fresh way, as he must immerse himself in a place and carry that other attached identity. He also believes that his background in music gave him a perspective that played a role in the winning design. He played the clarinet in a concert band touring Europe and America and that stage experience has helped greatly when designing performing arts venues.

The opera centre, which is a curvaceous, modern structure that will be a symbolic gateway for the district, presented many challenges for the architect. He had to balance tradition with technology while considering the historical, social and economic context, which all help shape a building.

[SCMP, 11/03/2013]

#### West Kowloon Cultural District stays with low-density plan

A call for a higher development plot ratio for the West Kowloon Cultural District has been rejected by the government.

A culture-sector lawmaker told the Legislative Council that the stipulated maximum plot ratio of 1.81 is too low compared to the domestic plot ratio of 7.5 for Kowloon. He said that the West Kowloon Cultural District site is not being fully utilised and it is difficult to incorporate facilities like a literary museum and more space for artists' creative work. Raising the ratio would generate more revenue to cover construction costs.

However, the Secretary for Home Affairs noted that any proceeds from the disposal of hotel, office and residential sites in the district will go to the government. As such, any increase in the floor area for residential and commercial uses will not bring direct income to the West Kowloon Cultural District Authority; the income will be transferred to the Treasury instead. He also pointed out that the current plan allows for integrated development of residential and commercial spaces with those dedicated to arts and culture. Such integration should bring in people and create vibrancy for the district.

The *South West Kowloon Outline Zoning Plan* stipulates that not more than 20 percent of total plot ratio shall be for residential use in the cultural district and that building height limits shall be in the range of 50 to 100 metres. Such a low-rise plan aims to avoid a "wall effect," which would affect air circulation and block harbour views from inland areas.

The Secretary for Home Affairs opined that the cultural hub is intended for low-rise and low-density developments and the current plot ratio is in line with that objective.

He added that the 1.81 plot ratio is based on the entire 40 hectares of the cultural district, including the park and waterfront promenade. If these sites are excluded, and only the area with buildings calculated, the plot ratio is actually higher than 1.81.

Construction of the project, which has received HK\$21.6 billion in direct government funding, is expected to start this year.

[*The Standard*, 21/03/2013]

## HONG KONG BRIEFING

### Less waste collected from coastal areas

A three-month clean-up campaign reveals that about 40 percent less rubbish is washing up Hong Kong's beaches. Glass waste topped the list of coastal rubbish that was collected by volunteers from 43 locations, among which unmanaged beaches in Tuen Mun and on Lantau Island were found to be the dirtiest.

*Green Council*, which is the organiser of the annual exercise, commented that the drop in the amount of refuse did not mean the coasts had become cleaner or that public awareness had grown stronger. Separate clean-up efforts tonnes of plastic pellets washed ashore in July 2012 could have affected the result of the Council's campaign, which was conducted from mid-September to mid-November 2012.

More than 3,000 volunteers joined the campaign and 5.6 tonnes of rubbish were gathered, down from 9.6 tonnes the previous year. About 80 percent of the debris came from beaches without daily management by the Leisure and Cultural Services Department ("LCSD"). Contractors clean managed beaches every morning, which is not the case for other beaches that are not managed by the LCSD.

Lung Kwu Tan and Tai O, both unmanaged beaches, topped the list in terms of the weight and number of pieces of junk found. Whereas Rocky Bay Beach in Shek O was the dirtiest among government-run coastal areas. Approximately 16,000 pieces of broken glass were collected, accounting for 23 percent of total refuse. Plastic foam boxes, plastic bags and cigarette tips were the next commonly found items.

The Council commented that the dominance of glass indicated a lack of glass recycling formalities. The Council's chief executive expressed reservations about a proposal to impose a levy on wine or beer bottles as she had no idea how recycled glass would be treated.

An executive member of the Council commented that a levy on glass bottles would not result in behavioural changes due to the lack of choices. Unlike people may choose recycled bags over normal plastic bags, people cannot buy wine in environmentally friendly packaging. He further commented that it was better to have a system in which bottle producers could retrieve their bottles for re-use.

[*SCMP*, 01/02/2013]

### New producer responsibility scheme for glass beverage bottles

A consultation document on the

implementation of a mandatory producer responsibility scheme (PRS) for glass beverage bottles was released on 7 February 2013. The three-month public consultation will end on May 6.

It is proposed in the consultation paper that the government will appoint a contractor to collect and recycle glass beverage bottles, and will collect recycling fees from suppliers of glass-bottled beverages to cover PRS operation costs, which is in line with the "polluter pays" principle. The document also proposes that beverage retailers should provide recycling information and glass recyclers should be licensed.

Outlets for recycled glass bottles have been limited in the past. Research shows that glass beverage bottles can be turned into different kinds of construction materials after suitable processing.

Overseas experience shows that the recycling rate of glass beverage bottles can be boosted effectively by implementing a mandatory PRS. It is expected that 70 percent of local waste glass beverage bottles, i.e. over 100 tonnes per day, could be recovered under the scheme.

At present, about 9 000 tonnes of municipal solid waste, including 150 tonnes (about 2 percent) of waste glass beverage bottles, are disposed of at Hong Kong landfills each day. Since 2008, the government has been promoting green procurement to encourage wider use of construction materials containing recycled glass in public works projects. At the same time, the government has been promoting voluntary glass recycling schemes through relevant trades and the *Environment and Conservation Fund* to enhance public awareness of glass recycling. At present, 13 tonnes of waste glass beverage bottles are collected through different schemes every day, covering 8.5 percent of waste glass beverage bottles generated.

The Environmental Protection Department ("EPD") is supporting five major voluntary recycling programmes including:

- Glass Container Recycling Programme for the hotel sector organised by the Hong Kong Hotels Association;
- Glass Bottle Recycling Campaign organised by the Hong Chi Association;
- Green Glass Green organised by the Hong Kong Dumper Truck Drivers Association;
- Pilot Programme on Source Separation of Glass Bottles co-organised by the Hong Kong Housing Authority and the EPD on public housing estates; and
- Glorious Glasses in Shatin organised by the Shatin Inhabitants Association.

[*Press Release, Environmental Protection Department*, 07/02/2013]

### Regulating new sediment disposal facility

The *Dumping at Sea (Exemption) (Amendment) Order 2013* ("Amendment Order") to apply the regulatory control regime to a designated sea-bed situated in an area to the south of the Brothers has been gazetted. The Amendment Order is to protect the marine environment through imposing regulatory control on marine dumping operations.

The designated sea-bed is a new sediment disposal facility. A permit from the Director of Environmental Protection will be required for anyone intending to perform dumping operations at the new facility.

The Amendment Order will enable Hong Kong to fulfill its obligations under the *Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972*, and to keep Hong Kong in line with the international practices concerning the prevention of marine pollution caused by dumping of waste and other matter at sea.

The Amendment Order will be tabled on 20 February 2013 in the Legislative Council. It will take effect from May 1, 2013, subject to agreement of the Legislative Council, to tie in with the commencement of operation of the new facility in phases from June 2013.

[*Government Press Release*, 15/02/2013]

### Government's plan for greener vehicles

Particulates and nitrogen oxides emitted by franchised buses, liquefied petroleum gas ("LPG") taxis, light buses with worn-out catalytic converters which control emissions, and aged diesel commercial vehicles are the cause of much of Hong Kong's air pollution.

Franchised buses and LPG vehicles are the major emitters of nitrogen oxides. The government will subsidise franchised bus companies to retrofit Euro II and III buses with selective catalytic reduction devices that can reduce nitrogen oxide emissions by more than 60 percent. As well, the government will subsidise LPG taxi and light bus owners to replace their catalytic converters. Emission controls can be strengthened through the use of remote sensing equipment and dynamometers for emission testing.

Aged diesel commercial vehicles emit nitrogen oxides. Last year, the World Health Organisation declared that such emissions are carcinogenic. There are about 128,000 diesel-powered commercial vehicles (excluding franchised buses) in Hong Kong. Among them, 88,000 are pre-Euro IV vehicles. Compared to Euro V, they emit five to 34 times as much particulates. To improve roadside air quality and safeguard public health, these vehicles' retirement will be expedited.

Besides replacing old engines with the latest ones or retrofitting them with emission-reduction devices, vehicle manufacturers should conduct detailed technical testing for each model to ensure newly added components can work efficiently with the existing ones within the confines of the chassis.

Due to the difficult work and high costs required, the uncertain outcome and space availability, it may not be worthwhile to conduct these costly modifications on vehicles with aged chassis that have suffered severe wear and tear, especially poorly maintained ones. Hence, replacing them with new ones is the only viable solution.

[*SCMP*, 15/02/2013]

### Shark-fin traders must disclose their sources

A concerted effort by a number of nations and environmental groups has been responsible for a series of victories in

Bangkok for the natural world, at the recent Convention on International Trade in Endangered Species of Wild Fauna and Flora. Subsequent to the Thai prime minister's pledge to outlaw the nation's domestic ivory trade, delegates went on to vote to impose stricter regulations on the international trade of sharks.

Three types of shark : the oceanic whitetip, the hammerhead – including the scalloped hammerhead, great hammerhead and smooth hammerhead – and the porbeagle shark, were all accepted for inclusion in the convention. This allows the species to be commercially traded, but within strict regulations.

The great white shark, basking shark and whale shark have also been added to the list in recent years. Regrettably, few of the more than 400 shark species are protected in this way. Many sharks remain unmonitored by Cites. Efforts to have more species monitored and protected must continue.

We in Hong Kong now enjoy enhanced food safety through the registration and supervision of vegetable farms and collection stations in Mainland China. However, although shark fin costs much more than most vegetables, the origins of shark products are seldom disclosed, and their sources are neither registered nor certified to sustainable fisheries standards.

In the absence of effective measures to identify the species involved in shark products, consumers should say “no” to shark fin. How can we be sure it has been sustainably harvested? Restaurant owners and dining guide publishers also need to take their share of the responsibility and provide sustainable and shark-free dining options.

The government should collect and release full trade statistics on all shark products, including the species, volumes and country of origin. This will improve the regulatory environment, not just in Hong Kong but worldwide. At the same time, it will satisfy the public's need for information on the products they consume. Introducing methods, such as DNA testing, will also help consumers make smart decisions and avoid consuming threatened species.

The Hong Kong government must also follow the central government in adopting a “no shark fin consumption policy” for all official events.

[WWF-Hong Kong (SCMP), 19/03/2013]

#### Task force on light pollution at impasse

Resistance by vested interests in the tourism, advertising and property trades has stymied the work of a government-appointed task force on light pollution, a member of the group says. Little agreement has been reached, despite 20 months of discussion, Edwin Lau Che-feng, director of general affairs with *Friends of the Earth* and one of 19 task force members, said.

The group was set up in August 2011 to provide guidelines on light nuisance and energy wastage. It was intended to last one year, but was extended to work until 31 July this year.

Lau said that whilst voluntary guidelines endorsed by the task force require switching off external lights after 11 p.m., some members said it should be postponed to midnight. Lau believes that a voluntary

approach is doomed to fail. “Without a law, nothing can be done,” he said.

Secretary for the Environment Wong Kam-sing said more regulatory elements would be introduced, but did not say whether he meant legislation.

[SCMP, 20/03/2013]

## CLIMATE CHANGE

### Ice sheets melt faster than predicted

A survey suggests that most experts believe they have underestimated the effects of climate change. Glaciologists fear that they have seriously underestimated the potential for melting ice sheets to contribute to catastrophic sea-level rises in coming decades, which could see increases of a metre or more by 2100.

The ice sheets of Greenland and Antarctica contain about 99.5 per cent of the Earth's glacier ice. If these ice sheets melt completely, which the experts think this is highly unlikely in the foreseeable future, sea levels would rise by 65 metres. Whilst a complete melt-down is not anticipated, a survey of the world's top 26 glaciologists found that most believe melting of the ice sheets could be more rapid and severe than previously estimated.

The surveyed glaciologists believe that the melting of the ice sheets alone this century is likely to raise the average global sea level by 29cm, but there is a five per cent chance of the rise increasing even further by a catastrophic 84cm. If other factors such as the thermal expansion of oceans and runoff from mountain glaciers are taken into account, this would take the total sea-level increase to well over a metre.

Professor Jonathan Bamber of Bristol University (lead author of the study published in the journal *Nature Climate Change*) commented that their analysis shows that the main uncertainty regarding sea levels is the contribution from the ice sheets. Professor Bamber added that a warmer world will only cause oceans to expand thermally but will also lead to faster melting of mountain glaciers and some regions of the polar ice sheets. However, it is still uncertain how the ice sheets will respond to increasing global temperatures and climate change. The most challenging issues for glaciologists is to find out how much of the melting of the Greenland and West Antarctic Ice Sheet is due to natural variation and how much is due to emissions of man-made greenhouse gases into the atmosphere.

Their analysis shows that glaciologists believe there is a one-in-20 chance of sea levels rising by a metre or more by 2100. The impacts of sea-level rise of this magnitude imply a conceivable risk of forced displacement of up to 187 million people within this century.

[*The Independent*, 07/01/2013]

### Man-made warming to bring a future with less rain

Researchers have found proof that global warming caused by greenhouse-gas emissions has a different effect on rainfall than warming caused by increased solar radiation. The finding was published in the

journal *Nature*. Warming induced by carbon emissions is expected to accompany an increase in droughts in the future. This finding is contrary to the Medieval Warm Period, from 1000 to 1250 AD, when the Earth was hotter but also wetter than today, as a result of solar heating. Volcanic activity, the level of aerosols in the atmosphere and changes in the Earth's orbit around the Sun can also affect solar radiation.

The researchers conclude that the introduction of heat-absorbing greenhouse gases causes a narrowing of the usual temperature difference between different layers of the atmosphere, which is a more stable atmosphere that is less conducive to rain.

A *Nature* press statement said that solar heating will induce an overall higher level of rainfall than greenhouse gases for the same increase in temperature.

[SCMP, 01/02/2013]

### Nations navigate across North Pole as Arctic ice melts

Scientists suggest that the loss of sea ice in the Arctic will allow ships to navigate freely across the North Pole by the middle of the century. This may also lead to unprecedented geo-political tensions between countries which have territorial claims in the region.

A recent study reveals the impact on commercial shipping by the disappearance of floating sea ice. Ice-breaking ships that are only moderately strengthened against sea ice cross the Arctic Ocean with impunity from about 2050 during the late summer months. There will be new routes between the Atlantic and Pacific Oceans, so that shipping companies can abandon traditional courses through the Panama and Suez canals.

Climate change, caused by increasing levels of carbon dioxide in the atmosphere has led to melting of the Arctic sea ice during the summer months. About 25 per cent, in terms of surface area on average, has melted over the past 30 years. A new record was set last September for the minimum sea-ice extent. Scientists estimated that sea ice covered 1.32 million square miles, which was nearly 300,000 square miles less than the previous record minimum set in September 2007. This means an additional area of open ocean larger than the state of Texas.

Arctic experts believe that a totally ice-free summer Arctic could occur as early as 2030, and some even suggest that it could happen within the next five to ten years. Almost all computer models predict an ice-free summer in the Arctic Ocean by the end of this century.

The latest study revealed that even under moderate climate-change scenarios, new Arctic shipping lanes will open by the around the middle of the century. In other words, this means a future in which open-water vessels (i.e. not icebreakers) will be able to navigate unescorted through the Arctic, which at the moment is inconceivable.

Shipping through the North Pole is an entirely unexpected possibility. The Northwest Passage is navigable only about once in every seven years in summer at the moment. However, it is estimated that it should be accessible every year in 40 years' time. This will create commercial tensions



between Canada and the US given that Canada claims that the passage falls under its sovereignty whilst the US insists it is an international shipping route.

Moreover, Russia may also suffer a loss on its lucrative trade in escort fees from vessels navigating the Northern Sea Route.

[*The Independent*, 04/03/2013]

### Global temperatures highest in 4,000 years

Scientists have reported that global temperatures are higher than at any time in at least 4,000 years, and they are likely to be higher over the coming decades. Previous research indicated that the rapid temperature spike of the past century exceeded any warming episode during those years. The planet will be at least as warm as it was during the warmest periods of the modern geological era (known as the Holocene) even if the temperature increase from human activity that is projected for later this century comes out on the low end of estimates.

In the new research, scientists compiled the most meticulous reconstruction yet of global temperature over the past 11,300 years, virtually the entire Holocene. This method gives only an approximation. Though the paper is the most complete reconstruction of global temperature, it is roughly consistent with previous work on a regional scale. It suggests that a sharp temperature rise in the early Holocene was due to changes in the amount and distribution of incoming sunlight. The climate then stabilised at relatively warm temperature about 10,000 years ago, hitting a plateau that lasted for roughly 5,000 years. Thereafter, reduced incoming sunshine induced a long and slow cooling trend. The cooling was then interrupted by a fairly brief spike during the Middle Ages.

Scientists say that the Northern Hemisphere would probably have been destined to freeze over again in several thousand years, if natural factors were still governing the climate. However, the vast increase in greenhouse gases will almost certainly prevent that.

[*The New York Times*, 07/03/2013]

### Large rise in CO2 emissions sounds climate change alarm

The chances of the world holding temperature rises to 2C – the level of global warming considered "safe" by scientists – appear to be fading fast, as US scientists report the second-highest annual rise in CO emissions in 2012.

Carbon dioxide levels measured at Mauna Loa observatory in Hawaii jumped by 2.67 parts per million (ppm) to 395ppm in 2012. The record was an increase of 2.93ppm in 1998.

The increase is described as unprecedented for the last 1,500 years, was described in an article published in *Science* on Thursday. The article prompted UN climate chief, Christiana Figueres, to say that "staggering global temperatures show there is an urgent need to act. Rapid climate change must be countered with accelerated action." The US National Oceanic and Atmospheric Administration said the major factor in climate-change is an increase in fossil fuel use, and the prospects of keeping

temperature increases below that two-degree goal are fading away.

Preliminary data for February 2013 show carbon dioxide levels last month standing at their highest ever recorded at Manua Loa, a remote volcano in the Pacific. Last month they reached a record 396.80ppm with a jump of 3.26ppm parts per million between February 2012 and 2013.

The highest levels of carbon dioxide levels are usually observed in April, and the level fluctuates seasonally.

What is disturbing scientists is the acceleration of carbon dioxide concentrations in the atmosphere, which are occurring in spite of attempts by governments to restrain fossil fuel emissions. According to the observatory, the average annual rate of increase for the past 10 years has been 2.07ppm – more than double the increase in the 1960s. The average increase in CO levels between 1959 to the present was 1.49ppm per year.

In order to prevent some of climate-change's worst impacts, Dutch government scientific advisers advise that rich countries will have to reduce emissions by 50% percent below 1990 levels by 2020. They commented that with those higher level of reductions, a 2C goal is still attainable if the world acts ambitiously and immediately.

Extreme weather, which is predicted by climate scientists to occur more frequently as the atmosphere warms and carbon dioxide levels rise, has already been seen widely in 2013. China and India have experienced their coldest winter in decades and Australia has seen a four-month long heat wave with 123 *weather records* broken.

The Australian Climate Change Commission commented that a shifting from one climate system to another can be seen, and we are now entering a new series of climatic conditions that haven't been seen before.

Earlier this week the British Met Office warned that the "extreme" patterns of flood and drought experienced by Britain in 2012 were likely to become more frequent. One in every five days in 2012 saw flooding, but one in four days was in drought.

[*The Guardian*, 08/03/2013]

### Earth warmer now than during most of last 11,300 years

Using data from 73 ice and sediment core monitoring sites around the world, scientists have reconstructed Earth's temperature history back to the end of the last Ice Age. The analysis reveals that the planet today is warmer than it's been during 70 to 80 per cent of the last 11,300 years. Results of the study, by researchers at Oregon State University (OSU) and Harvard University, were published in the journal *Science*.

Previous research on past global temperature change has largely focused on the last 2,000 years. Extending the reconstruction of global temperatures back to the end of the last Ice Age puts today's climate into a larger context. "The last century stands out as the anomaly in this record of global temperature since the end of the last Ice Age," said Candace Major, programme director in the National Science Foundation's (NSF) Division of Ocean Sciences. The research was funded by the Paleoclimate Program in

NSF's Division of Atmospheric and Geospace Sciences.

"This research shows that we've experienced almost the same range of temperature change since the beginning of the industrial revolution as over the previous 11,000 years of Earth history," said Major. "But this change happened a lot more quickly."

Of concern are projections of global temperatures for the year 2100, when climate models evaluated by the Intergovernmental Panel on Climate Change show that temperatures will exceed the warmest temperatures during the 11,300-year period, known as the Holocene, under all plausible greenhouse gas emission scenarios.

What history shows, the researchers say, is that during the last 5,000 years, the earth on average cooled about 1.3 degrees Fahrenheit – until the last 100 years, when it warmed about 1.3 degrees F. The largest changes were in the Northern Hemisphere, where there are more land masses and larger human populations than in the Southern Hemisphere. Climate models project that global temperature will rise another 2.0 to 11.5 degrees F by the end of this century, largely dependent on the magnitude of carbon emissions.

The research team primarily used fossils from ocean sediment cores and terrestrial archives to reconstruct the temperature history.

The chemical and physical characteristics of the fossils – including the species as well as their chemical composition and isotopic ratios – provide reliable proxy records for past temperatures by calibrating them to modern temperature records.

Analyses of data from the 73 sites allow a global picture of the earth's history and provide a new context for climate change analysis. In the past 100 years, the increase in carbon dioxide through increased emissions from human activities has been significant. It is the only variable that can best explain the rapid increase in global temperatures.

[*Epoch Times*, 21-27/03/2013]

## ADVISORY COUNCIL ON THE ENVIRONMENT (ACE)

### Public Consultation on a Producer Responsibility Scheme for glass bottles (ACE Paper 1/2013)

The government has initiated a three-month public consultation on how to introduce a mandatory producer responsibility scheme ("PRS") for waste glass beverage bottles. The reason is that bottles are mostly disposed of in landfill in Hong Kong, and are seldom collected for recycling.

The *Product Eco-responsibility Ordinance* was enacted in July 2009 to provide a legal framework for the launching of PRSs. The first PRS (the Environmental Levy Scheme on Plastic Shopping Bags) was implemented on 7 July 2009. The next target for mandatory PRS in Hong Kong is waste glass beverage bottles.

The proposed PRS on waste glass bottles requires contributions from different stakeholders along the supply chain (e.g. consumers, retailers, importers, manufacturers etc.) in the proper management of waste glass bottles. The government will select a glass management contractor through open tender to arrange for the collection and treatment of waste glass bottles. The bottles will be treated to convert them to reusable materials. Processes, such as simple sorting, removal of non-glass items, cleansing and grinding, will be involved. As for collection of waste bottles, the management contractors will also be responsible for operating regional collection points at public places, such as restaurants and bars.

#### *Possible landfill ban on glass beverage bottles*

A few jurisdictions have banned the disposal of glass beverage bottles into landfill sites. However, the Council is of the view that a landfill ban is not altogether practical at this stage. The major factor against the imposition of such ban is that waste bottles are generally mixed with other household waste and therefore it is very difficult to distinguish these waste bottles from other waste not covered by the PRS.

#### *Glass food/sauce bottles not included*

The main focus of the proposed PRS is glass beverage bottles. Of course, there are other glass bottles such as food/sauce, cosmetics and medicines bottles. These non-beverage glass bottles account for about 37% of the overall waste glass generation in 2011. Theoretically, these non-beverage glass bottles should also be recycled. This possibility has been considered. However, solvents may be required to clean some of these bottles which contain chemical substances. This process would result in negative environmental impacts. Many consumer products such as fluorescent lamps may contain glass but these glass materials might contain hazardous materials which need to be detoxified through specific procedures. Therefore, the ACE is of the preliminary view that non-beverage glass materials should not be included in this new PRS.

#### *Review of the Air Pollution Index Reporting System (ACE Paper 2/2013)*

The ACE was consulted as to whether a new Air Pollution Index (AIP) should be introduced to replace the existing one. The new AIP, if introduced, will be a health-based Air Quality Health Index (AQHI).

The new AQHI will be calculated based on 3-hour moving average pollutant concentrations. The increase in hospital admission risks of various types of air pollutants would be used to determine the combined health effects. The AQHI would be reported on a scale of 1 to 10+, and categorised into 5 health risk categories, i.e. low, moderate high, very high and serious. For people who are susceptible to air pollution, when AQHI reaches a certain level, specific health advice may be given to them. For instance, where the health risk level is "high", people with existing heart or respiratory illnesses would be advised to "reduce outdoor physical exertion, and to reduce the time of their stay outdoors, especially in areas with heavy traffic". They would also be advised to "seek advice from a

medical doctor before participating in sport activities and take more breaks during physical activities".

The proposed AQHI is a health risk-based reporting system. With reference to the relationship between air quality and hospital admission risk, it can be of a higher referential value, from a health perspective. Also, each AQHI is linked to its respective health risk level. The public would probably better understand the extent of these adverse health effects and take appropriate precautions where necessary.

The Environmental Protection Department (the "EPD") plans to replace the existing API with the AQHI. If successfully adopted, Hong Kong would be the first territory in the Asia-pacific region to implement the AQHI. Meanwhile, the EPD will consult stakeholders on the proposed AQHI system. Promotion of the proposed AQHI system will also be launched in order to educate the public about the importance of an AQHI. Briefing sessions will be provided at schools, together with health advice. The EPD will also liaise with government departments to prepare guidelines for different target groups (such as outdoor workers, schools, nurseries, elderly homes etc.) for them to follow in implementing the proposed AQHI.

#### *Phasing out heavily polluting diesel commercial vehicles (ACE Paper 1/2013)*

The EPD plans to gradually phase out pre-Euro IV diesel commercial vehicles through a regulatory system. After the introduction of several air quality improvement measures, general air quality has improved. However, roadside air quality has not improved. In 2010, 88% of respirable suspended particulates ("RSP") and 46% of nitrogen oxides ("NOx") emissions from all vehicles were from diesel commercial vehicles. These diesel engine exhaust fumes are carcinogenic. The Chief Executive proposed in the 2013 Policy Address that the government plans to phase out pre-Euro IV diesel commercial vehicles by giving owners greater financial incentives to change to less polluting vehicles. At the same time, more stringent regulatory measures will also be imposed.

There are several major components of the government's proposal. Firstly, for those users who participate in this scheme of phasing out their pre-Euro IV diesel commercial vehicles, the government will offer an ex-gratia payment of 30% of the taxable values of new vehicles. The payment level will be proportionate to the age of the vehicle. For instance, for vehicles less than 10 years old, the proposed ex-gratia payment will be 30% of the taxable value. Whilst for vehicles of 18 years old or above, the ex-gratia payment will be 18% of the taxable value. It is hoped that these proposed payment levels, which decrease with the age of vehicles, will encourage owners to discard or replace their vehicles earlier. Secondly, with effect from specified dates, renewal of licences for pre-Euro IV diesel commercial vehicles will be prohibited. This proposed ban will be carried out in phases. Thirdly, a statutory retirement age for newly registered diesel commercial vehicles will be set at 15 years.

Phasing out all pre-Euro IV diesel commercial vehicles will reduce cancer risks associated with diesel engine exhausts. The

EPD assessed that if the proposals are carried out, the RSP and NOx emissions from vehicles would reduce by 80% and 30% respectively. Consequently, the estimated number of premature deaths due to long-term exposure to RSP and NOx would reduce by approximately 14% every year.

In addition to phasing out all pre-Euro IV diesel commercial vehicles, the government has also considered other measures to further improve roadside air quality. As regards the phasing-out proposal, the transport industry and other stakeholders are being consulted. They are mainly concerned about the subsidy levels to be provided by the government. The industry also expressed concerns about the phasing out period and suggested that a longer phasing-out period should be imposed in order to ease financial burdens on vehicle owners.

## REGIONAL & INTERNATIONAL

### UNITED KINGDOM

#### *Court reserves UK air quality ruling*

People who are working or living in polluted areas, such as Britain's busiest streets, are exposed to serious health risks, especially those with heart or lung problems. About 29,000 early deaths each year in the UK are blamed on air pollution.

Recently, the Supreme Court reserved judgement on the question of whether the UK has breached European Union air pollution laws. The government takes the view that the EU air pollution laws are unrealistically strict, and that the European Commission is partly to blame because it did not set proper limits on pollution from diesel exhausts at the outset.

The High Court and the Court of Appeal of UK refused to take action on the issue, ruling that enforcement was a matter for the European Commission. An environmental NGO recently submitted to the Supreme Court that the national courts must enforce EU environmental law in the UK so as to ensure that EU laws and treaties are equally applicable in all member states. Simon Birkett, Founder and Director of *Clean Air in London*, said that if the Supreme Court does not require remedial action, the European Commission must.

Emission of diesel fumes is the most significant cause of poor air quality in most cities around the world. The pollutants of most concern are tiny airborne particles, "PM10s", and nitrogen dioxide.

The European Commission is encouraging the Supreme Court to take action on its own initiative so that the EU can avoid any direct confrontation with the UK, a member state which is objecting to other EU environmental rules as well.

A spokesman for the Department for Environment, Food and Rural Affairs said that air quality in UK has improved significantly in recent decades and most areas in UK meet EU air quality limits for all pollutants.

Confronted with the current situation, the government has tried to reduce emissions of nitrogen dioxide through tax breaks and subsidies for low emission vehicles. The

government has invested £75m to support green bus technologies and £560m for local sustainable transport, and has given approximately £3m in grants to local authorities every year since 2010 to help them tackle pollution on a local level.

[BBC News – 08/03/2013]

## CHINA

### Underground water safety investigation

With reference to data provided by the National Development and Reform Commission, about one-fifth of China's annual water consumption, or about 110 billion cubic metres, is sourced from underground supplies. In northern regions, like Beijing and Hebei province, underground water can account for over half the water used for agricultural, industrial and residential purposes.

A senior government official from China's top economic planning agency said that China had conducted investigations of the condition of underground water to determine the extent of pollution. Based on data collected, drinking water from underground sources is considered safe, but the government cannot guarantee that the quality of underground water will never worsen. Pollution of underground water is not only a problem in urban areas but also in rural areas and is spreading from shallow aquifers to deeper aquifers.

Many Chinese were enraged that some chemical plants in Shandong province had illegally dumped toxic substances into underground aquifers, thus threatening the health of citizens.

To ensure the safety of underground water, exploitation of underground water must be restricted, related law enforcement activity should be strengthened and legislation for the protection of underground water should also be introduced.

[China Daily, 08/03/2013]

### Expansion of air quality monitoring network

A senior environmental official said that a national air quality monitoring network with about 950 monitoring stations installed in 190 cities is expected to be in operation by the end of this year.

The government plans to build 440 air quality observation points in 116 cities this year, following the installation of 496 observation points in 74 cities last year. The network will publicise real-time data for air quality after it comes into operation.

The Ministry of Environmental Protection will also supervise and urge major polluters to disclose their pollutant information this year. The Ministry is also expected to introduce a pollution prevention and control policy very soon.

[Xinhua News Agency, 15/03/2013]

### Curbs on coal use vital

Greenpeace campaigners warned yesterday that Beijing's air quality would only deteriorate without drastic changes to control coal consumption on the mainland, because the capital was surrounded by some of the biggest consumers of coal.

The warning followed a month in which Beijing experienced its worst air pollution in recent memory, with 26 days in January rated heavily polluted.

A study led by Dr. Wang Yuesi, a researcher with the Chinese Academy of Sciences' Institute of Atmospheric Physics, found that between 9 and 15 January an estimated 4,000 tonnes of pollutants were floating in Beijing's grey sky, the *National Business Daily* reported yesterday.

Greenpeace said that even though Beijing was determined to cut annual coal consumption from 27 million tonnes in 2010 to 20 million tonnes by 2015, the drop would easily be offset by increased consumption in neighbouring Tianjin and Hebei province.

The burning of coal in Beijing contributes to about 20 per cent of the city's smog. Pollutants from neighbouring regions account for 20 per cent and the capital's vehicle emissions for another 25 per cent.

Tianjin's municipal government has said it expects to see annual coal consumption rise from 48 million tonnes to 63 million tonnes between 2011 and 2015. Hebei consumed 300 million tonnes of coal in 2010. Hebei is China's third largest provincial consumer of coal.

The surrounding provinces of Shandong and Shanxi took the top two spots. Inner Mongolia is ranked fourth. Statistics showed that each of them burned more coal in 2010 than Japan.

The central government ordered polluting industries in Tianjin, Hebei, Shanxi, Shandong and Inner Mongolia to shut down in 2008, ahead of Beijing's Olympic Games.

As a result, levels of PM2.5 – tiny respirable particles – dropped 27 per cent during the Games, according to a study by Peking University.

[SCMP, 5/02/2013]

### Challenge to green chiefs

Two environmental protection officers in the eastern province of Zhejiang have been openly challenged to swim in trash-strewn, heavily contaminated rivers for cash prizes – in a sign of growing frustration among the people over widespread pollution.

A businessman posted on his microblog photos of a garbage-filled river in his hometown of Rui'an city and dared the local environmental protection chief to swim in it for a cash prize of 200,000 yuan (HK\$248,523). Another challenge made online is an offer of 300,000 yuan for the environmental protection chief in a nearby county to swim in polluted rivers there. A Rui'an government official said the authorities welcome public supervision.

This comes amid news of emission limits being imposed on six pollution industries, including coal-fired power plants and steel and petrochemical factories, as early as Friday week to improve air quality in major cities. The nation must strictly impose the limits to improve air quality according to a statement posted on the Environmental Protection Ministry website. Existing plants and new thermal power, steel, oil, cement, metal and chemical projects in 47 cities will

have to adhere to the new emission standards, the statement said.

The World Bank estimates China has 16 of the world's 20 most-polluted cities. It is also the largest emitter of greenhouse gases, with coal burning the main source of pollution – accounting for 19 percent, whilst vehicle emissions contribute 6 percent, according to a study by Greenpeace and Peking University published in December.

Pollution in Beijing rose to a record on 12 January, sparking criticism of the government's handling of the environment. Premier-in-waiting Li Keqiang called for patience as authorities work to reduce emissions.

Beijing has proposed rules to scrap old vehicles, ban new cement and steel factories and impose fines on roadside vendors barbecuing food on smoggy days. Coke production is a major source of pollution from steel production, releasing coke over gas, naphthalene and ammonium compounds into the air.

[The Standard, 21/02/2013]

## MEXICO

### Chinese consumption threatens sea cucumbers survival

Sea cucumbers, the spiky, sluglike marine animals which are bottom feeders that are not even consumed in Mexico but are a highly prized delicacy in China, are setting off a maritime gold rush up and down the Yucatan peninsula.

An indefinite ban on harvesting sea cucumbers is loosely enforced and the black market is thriving. With increasing Chinese wealth, demand for the creatures has soared, depleting populations in Asian and Pacific waters due to overfishing.

“Sea cucumber fever,” as residents call it, has reduced stocks from an estimated 20,000 tonnes in 2009 to just 1,900 tonnes today, according to Felipe Cervera, secretary of rural development in Quintana Roo state.

The ban, which was meant to give the population time to replenish, came during seasonal bans on grouper, octopus and lobster. With few alternative sources of income, some fishermen are going after the sea cucumbers in secret, far from the coast.

The catch is sold to “intermediaries,” who truck it to ports in northern Mexico – where authorities are less concerned with illegal sea products than drug shipments – then shipped to China, where a kilogram of top-quality sea cucumbers can sell for US\$600.

[SCMP, 21/03/2013]

## AFRICA

### Overfishing causes jellyfish plague

Marine biologists say they have proof that excessive trawling of small fish species leads to proliferation of jellyfish, a worsening phenomenon whose causes have been unclear to date.

The scientists monitored ecosystems in two ocean zones a thousand kilometres apart, traversed by the same current. One was off Namibia, where fishing has been unregulated, and the other was off South

Africa, where catches of so-called forage fish – sardines, anchovies and herrings – are controlled according to available stocks.

“In the 1960s, the waters off Namibia used to yield 10 million tonnes of sardines annually. This has been replaced by 12 million tonnes of jellyfish,” Philippe Cury at France’s Institute for Development Research (IRD) said on Tuesday. But in South Africa, there was very careful management of forage fish stocks, and there has been no jellyfish outbreak.

Cury said that when little fish are removed from the sea, jellyfish have no competitors for plankton, their source of food, and so proliferate.

[SCMP, 21/03/2013]

## POLAND

### EU court rebuffs Poland over CO2 emissions

Poland has voiced dismay following the European Court of Justice’s rejection of a legal argument made by Poland concerning the EU’s mechanism for cutting carbon emissions. Poland argued that the EU’s distribution of CO2 emission permits is not fair to all member states because it uses gas-based benchmarks, whereas about 90% of Poland’s electricity is generated from coal burning, a fuel blamed for increased levels of carbon dioxide (CO2) in the atmosphere. The distribution of allowances based on gas-based benchmarks does not fit the Polish economy.

The European Court of Justice held that the Commission had not acted unfairly because the Commission did not breach the principle of equal treatment when it decided to treat uniformly installations that are in different situations, due to the use of different fuels, when determining the benchmarks. Enterprises fuelled by coal generally have to purchase more allowances than those using gas from other enterprises because their CO2 emissions are usually higher.

The EU’s Emissions Trading System (ETS) introduced CO2 emission allowances. Heavy emitters of CO2 have to purchase emission allowances from other enterprises which have managed to cut their CO2 emissions. The guiding principle is “the polluter pays”, and ETS provides incentives for enterprises to adopt low-carbon technologies and practices. However, taking into account the current low price of carbon – about four euros per tonne – there is less incentive for enterprises to sell CO2 allowances to heavy emitters. Therefore, the Commission plans to withdraw a large portion of CO2 allowances from the current market so as to boost the carbon price.

The EU wants China and the US, the world’s two biggest CO2 polluters, to agree on more ambitious targets so as to tackle climate change. On current trends, the world will miss the target of keeping the rise in temperatures below 2C, which will increase the risk of drought and rising sea levels.

[BBC News, 08/03/2013]

## ARGENTINA

### Argentina announces two marine protected areas

Argentina has created two marine protected areas in Patagonia, a region that is filled with majestic shorelines and abundant wildlife. The government’s decision was applauded by the *Wildlife Conservation Society*.

Legislation creating Isla Pingüino Coastal Marine Park and Makenke Coastal Marine Park was recently passed by the National Congress in Argentina to safeguard marine and coastal species.

Isla Pingüino Marine Park covers an area of nearly 720 square miles of ocean and coastline, whereas Makenke Coastal Marine Park covers almost 230 square miles of shore and ocean.

The Parks are classified as priority conservation sites by the Patagonia Coastal Zone Management Plan project, carried out by the *Wildlife Conservation Society* and the *Fundación Patagonia Natural* and are fully supported by the Global Environmental Facility and United Nations Development Program.

[*Environmental Protection Online*, 13/03/2013]

## UNITED STATES

### Likely delay in new rules for power plants

U.S. environmental regulators will likely delay finalising new environmental protection rules to limit emissions of CO2 from new power plants, a measure that has been one of President Obama’s top strategies to tackle climate change. The rules, proposed by the government nearly a year ago, limit to no more than 1,000 pounds CO2 per megawatt-hour emissions. This standard effectively blocks the construction of new coal fired power plants. The government has held regular and informal consultations with various stakeholders, including green groups and electric utilities, to hear proposals for setting a reasonable emissions standard for power plants.

Gina McCarthy, a spokesperson for EPA, hinted that finalising the new rules may take extra time as EPA had received nearly 2 million comments on the rules.

Commentators said that there is no evidence that the EPA plans to weaken the existing proposal, but warned that a deadline to finalise the environmental protection rules is less than one month away. If the government does not meet the deadline, environmental NGOs will commence legal action to ask the courts to enforce the deadline.

[*Reuters*, 16/03/2013]

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Convictions under environmental legislation:  
January to April 2013 (May 2013 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:

#### *January 2013*

Forty-five convictions were recorded in January  
for breaches of legislation enforced by the  
Environmental Protection Department.

Eleven of the convictions were under the Air  
Pollution Control Ordinance, 19 were under the  
Noise Control Ordinance, 13 were under the  
Waste Disposal Ordinance, and 2 were under the  
Water Pollution Control Ordinance.

The heaviest fine in January was \$30,000,  
assessed against a company that used powered  
mechanical equipment otherwise than in  
accordance with permit conditions.

#### *February 2013*

Twenty-nine convictions were recorded in  
February for breaches of legislation enforced by  
the Environmental Protection Department.

Ten of the convictions were under the Air  
Pollution Control Ordinance, 5 under the Noise  
Control Ordinance, 11 under the Waste Disposal  
Ordinance, and 3 under the Water Pollution  
Control Ordinance.

The heaviest fine in February was \$50,000,  
assessed against a company that contravened the  
provisions of a licence.

#### *March 2013*

Thirty-two convictions were recorded in March  
for breaches of legislation enforced by the  
Environmental Protection Department.

Fourteen of the convictions were under the Air  
Pollution Control Ordinance, 10 under the Noise  
Control Ordinance, 7 under the Waste Disposal  
Ordinance, and 1 under the Water Pollution  
Control Ordinance.

The heaviest fine in March was \$50,000. A  
company that used powered mechanical  
equipment without valid construction noise  
permit and carried out prescribed construction  
work in designated area without valid  
construction noise permit has been fined \$50,000  
for each offense.

#### *April 2013*

Thirty-one convictions were recorded in April for  
breaches of legislation enforced by the  
Environmental Protection Department.

Ten of the convictions were under the Air  
Pollution Control Ordinance, 8 under the Noise  
Control Ordinance, 12 under the Waste Disposal  
Ordinance, and 1 under the Water Pollution  
Control Ordinance.

The heaviest fine in April was \$100,000, assessed  
against a company that used powered mechanical  
equipment otherwise than in accordance with  
permit conditions.

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