

URBAN PLANNING AND ENVIRONMENTAL LAW QUARTERLY

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In this edition we return to an issue we have raised in the past: Hong Kong’s pathetic record of low penalties imposed by our courts for environmental offences. Prosecution statistics in this edition again reflect our court’s long-standing low fines approach. We also look at Hong Kong’s comparatively weak air quality benchmarks.

The Editors

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LOW PENALTIES TRIVIALISE ENVIRONMENTAL OFFENCES

Air pollution is a major environmental problem for Hong Kong and is probably the only environmental issue of which there is wide public awareness and concern. The main legislation relating to air pollution is the *Air Pollution Control Ordinance (APCO)* (Cap.311) (and various air pollution regulations made under APCO) and the *Ozone Layer Protection Ordinance (Cap.403) (OLPO)* (and regulations). Therefore, the issue of inadequate penalties for environmental offences is reviewed mainly in the context of these air pollution laws.

Statutory penalties

The key offence provision of APCO is section 12, which makes unlicensed noxious emissions illegal. The penalty is a fine of HK\$200,000 and imprisonment for 6 months plus a fine of \$20,000 per day of a continuing offence. A fine of \$500,000 and 12 months imprisonment apply for a conviction of refusing to obey an abatement notice: section 10.

Many of the penalties listed below were imposed for offences under various regulations made pursuant to section 43, APCO. Section 43(4) limits penalties for regulatory offences to:

- (i) a fine of \$200,000 and 6 months imprisonment;
- (ii) for a continuing offence, \$1,000 for every 15 minutes, or \$50,000 for every day the offence continues.

Examples of penalties for air pollution regulatory offences are as follows.

- (1) *Air Pollution Control (Fuel Restriction) Regulations*
 - (i) offences under 4(1), 4A, 4C(1) and d(D): \$20,000, 6 months imprisonment and \$5,000 per day of each day of a continuing offence;
 - (ii) offences under 4C(2):
 - 1st offence – \$50,000
 - 2nd offence – \$50,000 and imprisonment for 3 months.
- (2) *Air Pollution (Construction Dust) Regulations*
 Reg.5: Offence of failing to carry out construction work in accordance with the Schedule:
 - 1st offence – \$25,000
 - 2nd and further offences – \$50,000
 - Continuing offence – \$5,000 per day
- (3) *Air Pollution Control (furnaces, Ovens and Chimneys) Regulations*
 Offence by occupier under Reg.1 – \$50,000 plus \$500 per day for a continuing offence

The OLPO makes it an offence to manufacture or import (without a licence) a “scheduled substance”. Penalties are:

- (1) For manufacturing:
 - (i) \$1,000,000 and imprisonment for 2 years; and
 - (ii) \$100,000 per day of a continuing offence: section 3
- (2) For unlicensed importation: \$1,000,000 and imprisonment for 2 years: section 4.

A number of chemicals are listed in the Schedule as “Scheduled Substances”, including halons and chlorofluorocarbons.

Under the APCO and the OLPO, prescribed penalties are reasonably substantial (but it is time the government considered increasing them), although at a lower level for regulatory offences. However, from the day these statutes became part of our laws about 35 years ago, the courts have almost always imposed ridiculously light penalties on offenders, even serial repeat offenders. The Environmental Protection Department’s own figures (plus our 2014 table drawn from EPD’s data) illustrate this, as set out below. And keep in mind that many of the conviction are for second or more offences; that is, the same defendants are fronting the court regularly for the same, repeated offences, yet still penalties never reach the maximum and imprisonment is rarely, if ever, ordered.

[Until a few years ago the EPD’s monthly prosecution statistics stated whether the conviction was a first or subsequent offence. For some reason this useful additional detail is no longer included. It is to be hoped the change was not due to pressure from big business frequent offenders.]

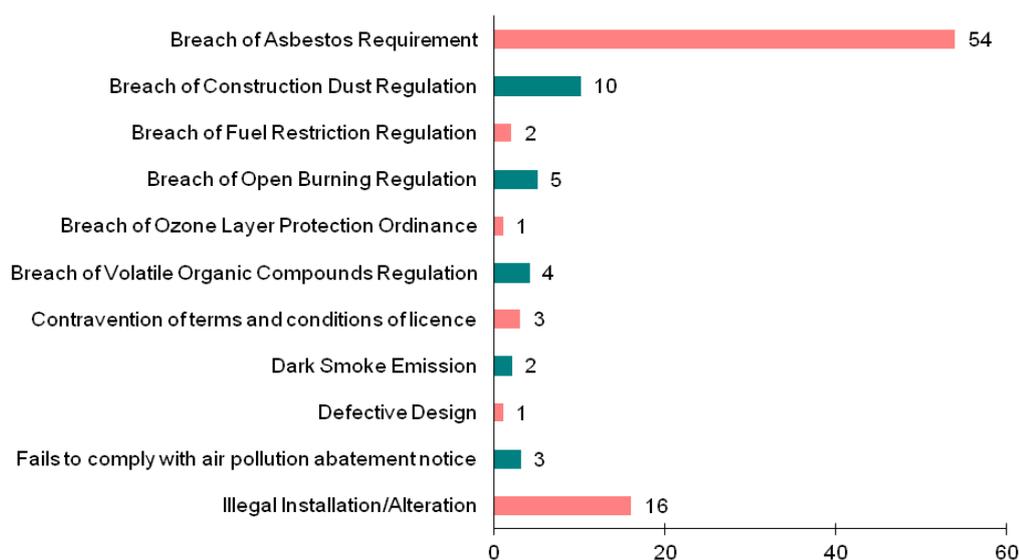
Prosecution statistics

APCO offences and penalties

Air Pollution Enforcement Statistics in 2010

Chimney Applications Processed	450
Specified Process Licences (Issued)	6
Notices Served	1 025
Prosecutions (APCO & OLPO)	101
Technical Advice Given	7 200

Air Pollution Prosecution Statistics in 2010



Fines Imposed for Air Pollution Convictions in 2010 (HK\$)

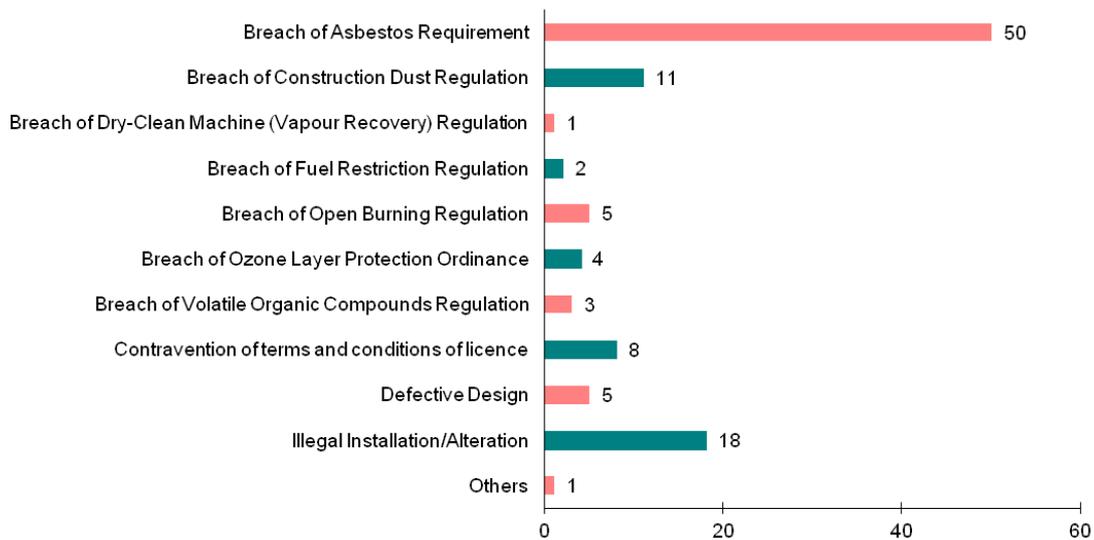
	Total	Highest	Lowest	Average
Breach of Asbestos Requirement	240 400	20 000	500	4 452
Breach of Construction Dust Regulation	54 500	20 000	2 500	6 056
Breach of Fuel Restriction Regulation	5 000	5 000	5 000	5 000
Breach of Open Burning Regulation	8 000	3 000	1 000	1 600
Breach of Ozone Layer Protection Ordinance	12 000	12 000	12 000	12 000
Breach of Volatile Organic Compounds Regulation	12 500	4 000	2 000	3 125
Contravention of terms and conditions of licence	12 000	4 000	4 000	4 000

Dark Smoke Emission	11 000	7 000	4 000	5 500
Fails to comply with air pollution abatement notice	12 500	5 000	3 000	4 167
Illegal Installation/Alteration	79 200	8 000	4 000	5 280

Air Pollution Enforcement Statistics in 2011

Chimney Applications Processed	455
Specified Process Licences (Newly Issued)	11
Notices Served	243
Prosecutions (APCO & OLPO)	108
Technical Advice Given	2 986

Air Pollution Prosecution Statistics in 2011



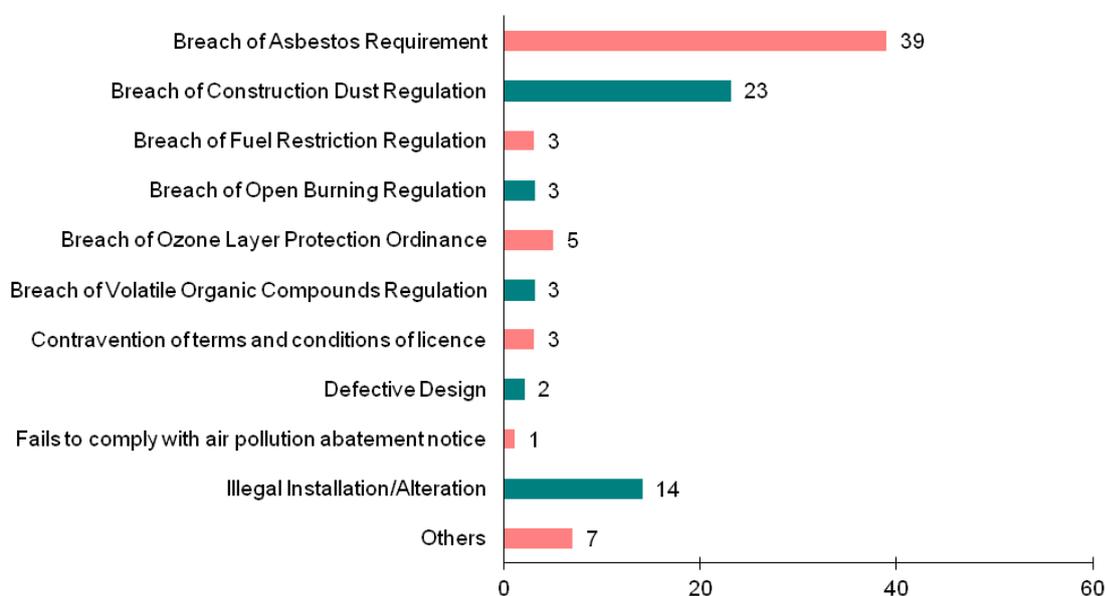
Fines Imposed for Air Pollution Convictions in 2011 (HK\$)

	Total	Highest	Lowest	Average
Breach of Asbestos Requirement	173 100	12 000	500	3 606
Breach of Construction Dust Regulation	56 000	12 000	2 500	6 222
Breach of Dry-Clean Machine (Vapour Recovery) Regulation	2 500	2 500	2 500	2 500
Breach of Fuel Restriction Regulation	5 500	4 000	1 500	2 750
Breach of Open Burning Regulation	7 200	2 000	1 000	1 440
Breach of Ozone Layer Protection Ordinance	78 800	50 000	2 800	19 700
Breach of Volatile Organic Compounds Regulation	19 500	12 000	2 500	6 500
Contravention of terms and conditions of licence	40 000	5 000	5 000	5 000
Defective Design	34 500	8 000	5 000	6 900
Illegal Installation/Alteration	80 000	6 000	3 000	4 444
Others	1 500	1 500	1 500	1 500

Air Pollution Enforcement Statistics in 2012

Chimney Applications Processed	393
Specified Process Licences (Newly Issued)	8
Notices Served	109
Prosecutions (APCO & OLPO)	103
Technical Advice Given	4 545

Air Pollution Prosecution Statistics in 2012



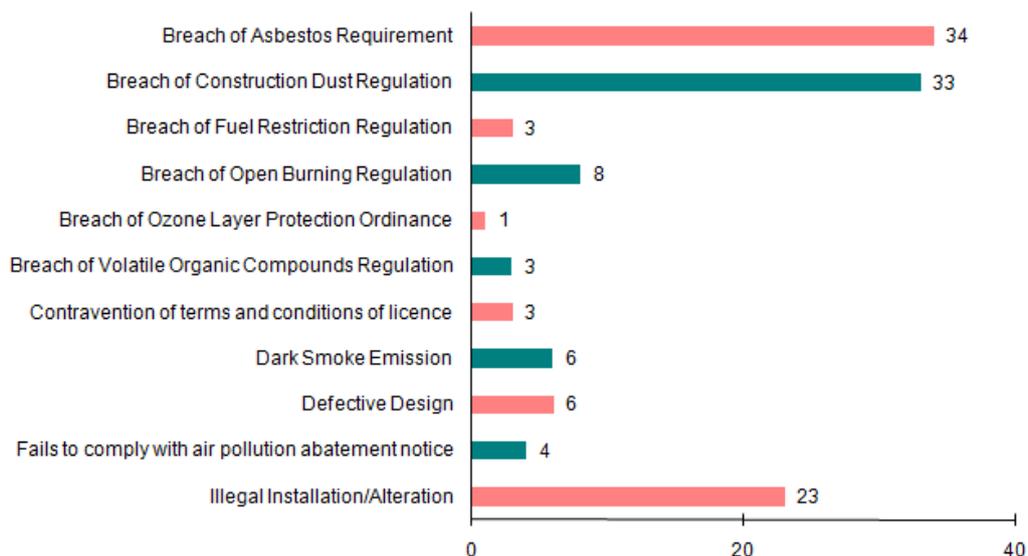
Fines Imposed for Air Pollution Convictions in 2012 (HK\$)

	Total	Highest	Lowest	Average
Breach of Asbestos Requirement	180 400	10 000	1 000	5 154
Breach of Construction Dust Regulation	112 500	15 000	2 000	6 250
Breach of Fuel Restriction Regulation	5 000	4 000	1 000	2 500
Breach of Open Burning Regulation	2 200	1 200	1 000	1 100
Breach of Ozone Layer Protection Ordinance	45 000	30 000	3 000	9 000
Breach of Volatile Organic Compounds Regulation	13 000	5 000	4 000	4 333
Contravention of terms and conditions of licence	17 000	7 000	5 000	5 667
Defective Design	50 000	40 000	10 000	25 000
Fails to comply with air pollution abatement notice	4 000	4 000	4 000	4 000
Illegal Installation/Alteration	79 300	12 000	2 000	5 664
Others	14 000	6 000	4 000	4 667

Air Pollution Enforcement Statistics in 2013

Chimney Applications Processed	469
Specified Process Licences (Newly Issued)	5
Notices Served	313
Prosecutions (APCO & OLPO)	124
Technical Advice Given	3 899

Air Pollution Prosecution Statistics in 2013



Fines Imposed for Air Pollution Convictions in 2013 (HK\$)

	Total	Highest	Lowest	Average
Breach of Asbestos Requirement	194 000	20 000	2 000	5 879
Breach of Construction Dust Regulation	244 000	20 000	2 500	8 133
Breach of Fuel Restriction Regulation	13 000	5 000	4 000	4 333
Breach of Open Burning Regulation	17 900	10 000	600	2 238
Breach of Ozone Layer Protection Ordinance	30 000	30 000	30 000	30 000
Breach of Volatile Organic Compounds Regulation	10 000	4 000	3 000	3 333
Contravention of terms and conditions of licence	40 000	25 000	5 000	13 333
Dark Smoke Emission	27 700	10 000	1 200	4 617
Defective Design	193 000	80 000	5 000	32 167
Fails to comply with air pollution abatement notice	58 000	18 000	10 000	14 500
Illegal Installation/Alteration	176 200	30 000	2 500	7 661

Air Pollution Enforcement Statistics in 2014

	Number of cases
Breach of Asbestos Requirement	29
Breach of Construction Dust Regulation	19
Breach of Fuel Restriction Regulation	3
Breach of Open Burning Regulation	2
Breach of Ozone Layer Protection Ordinance	2
Breach of Volatile Organic Compounds Regulation	3
Contravention of terms and conditions of licence	3
Dark Smoke Emission	2
Fails to comply with air pollution abatement notice	6
Illegal Installation/Alteration	11

Fines Imposed for Air Pollution Convictions in 2014 (HK\$)

	Total	Highest	Lowest	Average
Breach of Asbestos Requirement	148,000	15,000	1,000	5,103
Breach of Construction Dust Regulation	257,000	40,000	5,000	13,526
Breach of Fuel Restriction Regulation	18,000	6,000	6,000	6,000
Breach of Open Burning Regulation	2,500	2,000	500	1,250
Breach of Ozone Layer Protection Ordinance	8,000	4,000	4,000	4,000
Breach of Volatile Organic Compounds Regulation	22,000	10,000	6,000	7,333
Contravention of terms and conditions of licence	21,000	7,000	7,000	7,000
Dark Smoke Emission	20,000	12,000	8,000	10,000
Fails to comply with air pollution abatement notice	76,000	18,000	10,000	12,667
Illegal Installation/Alteration	99,000	40,000	3,000	9,000

EPD's poor track record

The statistics tell the story. Indeed, as said, the story is in fact far worse, because many of the convictions are likely to be for second and successive offences. Fines handed out by the courts are shamefully low in relation to the possible maximum penalties. However, the EPD never appeals against sentence on the ground of manifest inadequacy.

The rate of prosecutions must also be queried, although it is difficult to do so without baseline data for actual detections of breaches of air quality laws. EPD's widespread use of warnings and advice notes, instead of immediate prosecution, should be reviewed by the department's enforcement branch. After all, it has been shown in other jurisdictions that robust prosecution of offenders is the single most effective way of educating potential air-polluters not to pollute.

So enforcement – especially by the judiciary – is quite weak, which, sadly, is reflective of the government's general attitude to all aspects of environmental damage.

Setting low air quality standards

Another weakness of Hong Kong's measures to combat air pollution is that the key standard for air quality – AQOs set for each of 10 Air Quality Zones – is generally too low, especially compared with other jurisdictions. Hong Kong's current AQOs are in Schedule 5 of APCO, which we set out below. Under section 7A, APCO, the EPD must review the AQOs at least once in every "review period" in order to:

- (a) promote the conservation of air in the zone in the public interest; and
- (b) promote the best use of air in the zone in the public interest.

A "review period" is each 5 years period from 1 January 2014.

HONG KONG

Schedule:	5	Air Quality Objectives	12 of 2013	01/01/2014
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[section 7A]

Part 1**Preliminary****1. Interpretation**

In this Schedule—

fine suspended particulates (微細懸浮粒子) means suspended particles in air with a nominal aerodynamic diameter of 2.5 μm or less;

respirable suspended particulates (可吸入懸浮粒子) means suspended particles in air with a nominal aerodynamic diameter of 10 μm or less.

2. Application

The air quality objectives set out in this Schedule are prescribed for every air control zone.

3. Reference conditions

All measurements of the concentration of gaseous air pollutants set out in Part 2 of this Schedule are to be adjusted to a reference temperature of 293 Kelvin and a reference pressure of 101.325 kilopascal.

Part 2**Concentration Limits of Air Pollutants****4. Sulphur dioxide**

- (1) The concentration limit of sulphur dioxide in air averaged over a reference period is 500 $\mu\text{g}/\text{m}^3$ and the number of reference periods in which the limit is exceeded should not be more than 3 per calendar year.
- (2) The concentration limit of sulphur dioxide in air averaged over a day is 125 $\mu\text{g}/\text{m}^3$ and the number of days on which the limit is exceeded should not be more than 3 per calendar year.
- (3) For the purposes of subsection (1), a reference period is—
 - (a) the first 10 minutes of a day; or
 - (b) each successive 10-minute period of the day.

5. Respirable suspended particulates

- (1) The concentration limit of respirable suspended particulates in air averaged over a day is 100 $\mu\text{g}/\text{m}^3$ and the number of days on which the limit is exceeded should not be more than 9 per calendar year.
- (2) The concentration of respirable suspended particulates in air averaged over a calendar year should not exceed 50 $\mu\text{g}/\text{m}^3$.

6. Fine suspended particulates

- (1) The concentration limit of fine suspended particulates in air averaged over a day is 75 $\mu\text{g}/\text{m}^3$ and the number of days on which the limit is exceeded should not be more than 9 per calendar year.
- (2) The concentration of fine suspended particulates in air averaged over a calendar year should not exceed 35 $\mu\text{g}/\text{m}^3$.

7. Nitrogen dioxide

- (1) The concentration limit of nitrogen dioxide in air averaged over an hour is 200 $\mu\text{g}/\text{m}^3$ and the number of hours in which the limit is exceeded should not be more than 18 per calendar year.
- (2) The concentration of nitrogen dioxide in air averaged over a calendar year should not exceed 40 $\mu\text{g}/\text{m}^3$.

8. Ozone

- (1) The number of days on which the maximum daily 8-hour mean concentration of ozone in air exceeds 160 $\mu\text{g}/\text{m}^3$ should not be more than 9 per calendar year.
- (2) For the purposes of subsection (1), the maximum daily 8-hour mean concentration of ozone in air is selected by examining 8-hour running averages, calculated from hourly data and updated each hour.
- (3) Each 8-hour running average calculated for the purposes of subsection (2) is assigned to the day on which the 8-hour period ends, that is—
 - (a) the first calculation period for a day is the period from 5 p.m. on the previous day to 1 a.m. on that day; and
 - (b) the last calculation period for a day is the period from 4 p.m. to 12 midnight on that day.

9. Carbon monoxide

- (1) The concentration of carbon monoxide in air averaged over an hour should not exceed 30000 $\mu\text{g}/\text{m}^3$.
- (2) The maximum daily 8-hour mean concentration of carbon monoxide in air should not exceed 10000 $\mu\text{g}/\text{m}^3$.
- (3) For the purposes of subsection (2), the maximum daily 8-hour mean concentration of carbon monoxide in air is selected by examining 8-hour running averages, calculated from hourly data and updated each hour.
- (4) Each 8-hour running average calculated for the purposes of subsection (3) is assigned to the day on which the 8-hour period ends, that is—
 - (a) the first calculation period for a day is the period from 5 p.m. on the previous day to 1 a.m. on that day; and
 - (b) the last calculation period for a day is the period from 4 p.m. to 12 midnight on that day.

10. LeadThe concentration of lead in air averaged over a calendar year should not exceed 0.5 $\mu\text{g}/\text{m}^3$.

(Schedule 5 added 12 of 2013 s. 7)

Source: Schedule 5 of the APCO

We also set out some examples of comparative AQOs as follows.

SOUTH KOREA

Air Pollutants	Standard
Sulfur Dioxide (SO ₂)	≤0.02ppm (annual average) ≤0.05ppm (24-hr average) ≤0.15ppm (1-hr average)
Carbon Monoxide (CO)	≤9ppm (8-hr average) ≤25ppm (1-hr average)
Nitrogen Dioxide (NO ₂)	≤0.03ppm (annual average) ≤0.06ppm (24-hr average) ≤0.1ppm (1-hr average)
PM10	≤50µg/m ³ (annual average) ≤100µg/m ³ (24-hr average)
Ozone (O ₃)	≤0.06ppm (8-hr average) ≤0.1ppm (1-hr average)
Lead	≤0.5µg/m ³ (annual average)
Benzene	≤5µg/m ³ (annual average; applied from 2010)
Notes: 1. 1-hr average: The 99th percentile value less than the standard 8-hr and 24-hr average: the 99th percentile value less than the standard 2. PM10 stands for Particular Matter of less than 10 millionths of a metre (10 micrometers or 10µm) in diameter.	

Source: TransportPolicy.net [http://transportpolicy.net/index.php?title=South_Korea:_Air_Quality_Standards]

JAPAN

1. Environmental Quality Standards in Japan

Substance	Environmental conditions	Measuring method
Sulfur dioxide	The daily average for hourly values shall not exceed 0.04 ppm, and hourly values shall not exceed 0.1 ppm (Notification on May 16, 1973)	Conductometric method or ultraviolet fluorescence method
Carbon monoxide	The daily average for hourly values shall not exceed 10 ppm, and average of hourly values for any consecutive eight hour period shall not exceed 20ppm (Notification on May 8, 1973)	Nondispersive infrared analyzer method
Suspended particulate matter	The daily average for hourly values shall not exceed 0.10 mg/m ³ , and hourly values shall not exceed 0.20 mg/m ³ (Notification on May 8, 1973)	Weight concentration measuring methods based on filtration collection, or light scattering method; or piezoelectric microbalance method; or β-ray attenuation method that yields values having a linear relation with the values of the above methods.
Nitrogen dioxide	The daily average for hourly values shall be within the 0.04-0.06 ppm zone or below that zone (Notification on July 11, 1978)	Colorimetry employing Saltzman reagent (with Saltzman's coefficient being 0.84) or chemiluminescent method using ozone.
Photochemical oxidants	Hourly values shall not exceed 0.06 ppm (Notification on May 8, 1973)	Absorption spectrophotometry using a neutral potassium iodide solution; coulometry; ultraviolet absorption spectrometry; or chemiluminescent

Substance	Environmental conditions	Measuring method
		method using ethylene.

1. Suspended particulate matter is defined as airborne particles with a diameter smaller than or equal to 10 µm.
2. Photochemical oxidants are oxidizing substances such as ozone and peroxyacetyl nitrate produced by photochemical reactions (only those capable of isolating iodine from neutral potassium iodide, excluding nitrogen dioxide.)

2. Environmental Quality Standards for Benzene, Trichloroethylene, Tetrachloroethylene and Dichloromethane

Substance	Environmental conditions	Measuring method
Benzene	Annual average shall not exceed 0.003 mg/m ³ (Notification on February 4,1997)	Preference method: gas chromatograph-mass spectrometer (sample gas should be collected with a canister or tube) or equivalent method.
Trichloroethylene	Annual average shall not exceed 0.2 mg/m ³ (Notification on February 4,1997)	
Tetrachloroethylene	Annual average shall not exceed 0.2 mg/m ³ (Notification on February 4,1997)	
Dichloromethane	Annual average shall not exceed 0.15 mg/m ³ (Notification on April 20,2001)	

3. Environmental Quality Standards for Dioxins

Substance	Environmental conditions	Measuring method
Dioxins (PCDDs,PCDFs and coplanar PCBs)	Annual average shall not exceed 0.6pg-TEQ/m ³	Using high resolution gas chromatograph - high resolution mass spectrometry (HRGC-HRMS). (Samples should be collected by an air sampler equipped with an inlet filter followed by a cartridge filled with polyurethane foam.)

4. Environmental Quality Standards for the PM_{2.5}

Substance	Environmental conditions	Measuring method
Fine Particulate Matter (PM_{2.5})	The annual standard for PM _{2.5} is less than or equal to 15.0 µg/m ³ . The 24 hour standard, which means the annual 98th percentile values at designated monitoring sites in an area, is less than or equal to 35µg/m ³ . (Notification on September 9, 2009)	Mass measurement with filter sample collection which is designated as a reference method, or alternative automated methods, designated as equivalent methods, which are proved to have measurement performance comparable to the corresponding reference method.

1. Fine Particulate Matter is defined as airborne particles that pass through a size-selective inlet with a 50 % efficiency cut-off at 2.5 µm aerodynamic diameter.

Source: Ministry of the Environment, Govt of Japan [<https://www.env.go.jp/en/air/aq/aq.html>]

EUROPEAN UNION

Pollutant	Concentration	Averaging Period	Legal Nature	Permitted Exceedences Each Year
Fine particles (PM_{2.5})	25 µg/m ³ ***	1 year	Target value entered into force 1.1.2010 Limit value enters into force 1.1.2015	n/a
Sulphur dioxide (SO₂)	350 µg/m ³ 125 µg/m ³	1 hour 24 hours	Limit value entered into force 1.1.2005 Limit value entered into force 1.1.2005	24 3
Nitrogen dioxide (NO₂)	200 µg/m ³ 40 µg/m ³	1 hour 1 year	Limit value entered into force 1.1.2010 Limit value entered into force 1.1.2010*	18 n/a
PM₁₀	50 µg/m ³	24 hours	Limit value entered into force	35

			1.1.2005**	
	40 µg/m ³	1 year	Limit value entered into force 1.1.2005**	n/a
Lead (Pb)	0.5 µg/m ³	1 year	Limit value entered into force 1.1.2005 (or 1.1.2010 in the immediate vicinity of specific, notified industrial sources; and a 1.0 µg/m ³ limit value applied from 1.1.2005 to 31.12.2009)	n/a
Carbon monoxide (CO)	10 mg/m ³	Maximum daily 8 hour mean	Limit value entered into force 1.1.2005	n/a
Benzene	5 µg/m ³	1 year	Limit value entered into force 1.1.2010**	n/a
Ozone	120 µg/m ³	Maximum daily 8 hour mean	Target value entered into force 1.1.2010	25 days averaged over 3 years
Arsenic (As)	6 ng/m ³	1 year	Target value enters into force 31.12.2012	n/a
Cadmium (Cd)	5 ng/m ³	1 year	Target value enters into force 31.12.2012	n/a
Nickel (Ni)	20 ng/m ³	1 year	Target value enters into force 31.12.2012	n/a
Polycyclic Aromatic Hydrocarbons	1 ng/m ³ (expressed as concentration of Benzo(a)pyrene)	1 year	Target value enters into force 31.12.2012	n/a

Source: European Commission on Air Quality Standards [<http://ec.europa.eu/environment/air/quality/standards.htm>]

AUSTRALIA

Pollutant	Averaging Period	Maximum (Ambient) Concentration	Goal within 10 Years (Maximum Allowable Exceedences)
Carbon monoxide	8 hours	9.0 ppm	1 day a year
Nitrogen dioxide	1 hour	0.12 ppm	1 day a year
	1 year	0.03 ppm	none
Photochemical oxidants (as ozone)	1 hour	0.10 ppm	1 day a year
	4 hours	0.08 ppm	1 day a year
Sulfur dioxide	1 hour	0.20 ppm	1 day a year
	1 day	0.08 ppm	1 day a year
	1 year	0.02 ppm	none
Lead	1 year	0.50 µg/m ³	none
Particles as PM ₁₀	1 day	50 µg/m ³	5 days a year

The PM_{2.5} Variation to the Air NEPM sets the following advisory reporting standards and goal for particles as PM_{2.5}.

Pollutant	Averaging Period	Maximum (Ambient) Concentration	Goal
Particles as PM _{2.5}	1 day	25 µg/m ³	Goal is to gather sufficient data nationally to facilitate a review of the standard as part of the review of this Measure scheduled to commence in 2005.
	1 year	8 µg/m ³	

Source: Australian Government Department of the Environment [<http://www.environment.gov.au/protection/air-quality/air-quality-standards>]

Conclusion

Regrettably, the future for Hong Kong's air quality (and our environment in general) is not bright. Admittedly, we have a strong adverse factor in the form of our close proximity to southern China, with its massive industrial complexes, but even so, our air quality would be improved by stricter enforcement of the law by the EPD and the courts. No doubt a far more sincere and robust approach by the authorities to preventing or reducing domestic air pollution could only improve the quality of our air – which, after all, we all have to breathe!

TOWN PLANNING

Student challenges plan to build flats on Tai Po green belts

A judicial review application to the High Court has been made by a student at the Institute of Education, Yau Ka-po, to overturn rezoning plans in Tai Po that would allow flats to be built on green-belt sites. On February 13, the Town Planning Board approved the rezoning plans.

Yau is not against rezoning to meet the housing needs of the city per se. Instead, Yau is strongly against green belts being sacrificed to meet the city's housing needs and the environmental impacts that this sacrifice will bring.

By 2019, the government intends to build 480,000 new homes by converting a total of 70 green-belt sites, covering 150 hectares of land, to housing. One of the affected sites contains more than 2,000 trees.

In support of the government's plans, Secretary for Development Paul Chan Mo-po emphasised that the 70 sites make up only 1 percent of the overall green belt sites in the city, and most of the sites were "de-vegetated" and had lower conservation value. If rezoning plans are approved, the land could accommodate approximately 89,000 flats, 70 per cent of which would be public housing.

Yau argues that if rezoning of green belts were allowed, it will set a precedent, and if continued, green recreational areas might well disappear altogether over time.

Roy Tam Hoi-pong, chief executive of the environmental group Green Sense, which is helping Yau with his application, said the Minister failed to consult the public on plans to review the re-zoning of the Tai Po green belt. These plans, involving destruction of forest areas, amount to a major policy decision and were made public for the first time by Chan only last year. Tam commented that this is an unacceptable way to inform the public.

[SCMP, 14/05/2015]

Runway judicial review accepted

An application for judicial review submitted by a member of the Land Justice League and a Tung Chung resident in relation to the government's plan to build a third runway at Chek Lap Kok airport has been accepted by the High Court.

In essence, the applicants are seeking an order to quash the decision of the Director of the Environmental Protection Department to approve an environmental impact assessment report and to issue a permit for the project. The applicants' main concern is the long-lasting environmental impact on people, flora and fauna over a wide area of Hong Kong that this infrastructure development project will cause.

The applicants also claim that the environmental impact assessment carried out was not comprehensive enough and that the requirement to assess noise and air-quality impacts of the expansion was not met.

[The Standard, 22/05/2015]

Draft Fu Tei Au and Sha Ling Outline Zoning Plan approved

The Chief Executive in Council has approved the draft Fu Tei Au and Sha Ling Outline Zoning Plan (OZP) which will provide a statutory land use planning framework to guide development and redevelopment within the Fu Tei Au and Sha Ling area.

The planning scheme area, about 306 hectares situated north of Fanling North New Development Area, is mainly within the closed area boundary, bounded by Man Kam To boundary crossing in the north, Hung Lung Hang in the east, Ng Tung River in the Southeast, Fu Tei au Road in the southwest and the Mass Transit Railway in the west.

The land will be divided into six zones, mainly to promote and conserve the rural character through control of urban sprawl, minimisation of flood risk and preservation of agricultural land, and to control the open storage problem.

About 129.96 hectares is zoned "Agriculture" to retain and safeguard the good quality agricultural land/farm/fish ponds and fallow arable land suitable for cultivation and other agricultural purposes. To conserve the natural environment, safeguard it from encroachment by urban development and provide additional outlets for passive recreational activities, about 112.42 hectares are zoned "Green Belt".

San Uk Ling Village and Sheung Shui Wa Shan village will be in 12.65 hectares "Village Type Development" zone. This zone also designates specific areas which are suitable for village expansion.

Approximately 7.19 hectares are zoned "Open Storage" for appropriate open storage uses.

Government, institution or community facilities serving needs of local residents and the wider district will be allocated a total of 23.73 hectares in the "Government, Institution or Community" zone. As well, 8.78 hectares are zoned "Other Specified Uses" for specified uses.

[Town Planning Board Press Release, 19/06/2015]

Government to construct more residential units

The proposal to create a residential complex on a parcel of land at West Rail Yuen Long station, owned by the MTR corporation Limited is likely to face judicial review. This development is expected to comprise 1,880 units, raising the government's private housing production from 4,600 to 5,100 private flats in the three months ending June 2015. Greensense, an environmental group, says that the development will impede air flow in the neighbourhood. A total of 3,310 residential units will be constructed on this parcel of land together with another site in Tseung Kwan O, Lohas Park Phase Eight, which is also owned by MTRCL.

Three government sites, located in Tuen Mun, Tsing Yi and Pak Shek Kok, will accommodate approximately 1,650 flats. To ensure the housing supply remains flexible and stable, the government deliberately withheld some sites from sale. The government will receive HK\$5.1 billion from the sale of these three plots. The Pak Shek Kok site is valued at HK\$2.5 billion.

Given these other sites, even if the West Rail development fails to deliver, the government should still meet its annual target of supplying 19,000 flats following the rezoning several sites.

[The Standard, 30/06/2015]

Draft To Kwa Peng and Pak Tam Au Outline Zoning Plan approved

The Chief Executive in Council has approved the draft To Kwa Peng and Pak Tam Au Outline Zoning Plan (OZP). A Town Planning Board spokesman said that the approved OZP provides a statutory land use planning framework to guide development and redevelopment within the To Kwa Peng and Pak Tam Au area.

The two sub-areas which are the subject of the planning scheme include To Kwa Peng area (about 9.77 hectares) and Pak Tam Au area (about 15.19 hectares) which covers a total of 24.96 hectares. The combined area is surrounded by Sai Kung East Country Park, Pak Tam Road and Sai Kung West Country Park.

The intention in the planning scheme is to effect high conservation and landscape value of the area so as to preserve the complementary naturalness and beauty of the surrounding Sai Kung East and West Country Parks. The planning scheme proposes to divide the area into five zones, each serving a different purpose.

The first zone, "Village Type Development", covering about 4.46 hectares, will preserve existing recognised villages and provide land suitable for village expansion.

The second zone, "Agriculture", of approximately 0.88 hectares, covers grassland and woodland developed from abandoned agricultural land to the south of the channelised stream in Pak Tam Au. This zone will retain fallow arable land for agricultural purposes and preserve rural settings as well as the natural environment of the area.

The third zone, "Green Belt", of approximately 1.79 hectares, includes vegetated hillslopes, natural stream and woodland in the western part of To Kwa Peng and vegetated hillslopes and woodland at the southwestern part of Pak Tam Au. This zone will provide a buffer between the developed areas and the Country Park and Conservation area.

The fourth and largest zone, "Conservation Area", comprising 16.75 hectares, covers native woodland ecologically linked to natural habitats in the adjacent Sai Kung East Country Park. This zone will retain existing natural landscape and ecological or topographical features of the area for the purposes of conservation, educational and research. The region's sensitive natural environment, such as Country Park, will be separated from adverse effects of development by the Conservation Area.

The last zone, "Costal Protection Area", covering 1.08 hectares, is the coastal region of Ko Tong Hau at To Kwa Peng. This area will conserve and protect the natural coastline and sensitive costal environment. Within this area, there may only be a minimum of built development.

[Town Planning Board Press Release, 03/07/2015]

WEST KOWLOON CULTURAL DISTRICT

West Kowloon Cultural District partners with Google Cultural Institute

The West Kowloon Cultural District Authority (WKCD) announced its partnership with the Google Cultural Institute on 21 May 2015. The Partnership allowed audiences from all over the world to view and experience the M+ online exhibition "NEOSIGNS.HK".

NEOSIGNS.HK is an interactive album comparing 150 new and rare archive photos, videos, sketches and documentaries of over 12 Hong Kong streets views. The main attractions in these street views are the neon signs which have always been a part of Hong Kong's history. To supplement the project, Google captured a unique series of panoramic night views of the city, using its famous 'Street View technology'. This allows users to explore Hong Kong's fascinating neon signs in fine detail.

The public submitted photographs to the first digital online exhibit, 'Electric City – The Neons of Hong Kong'. This exhibition also featured portraits by photographer Wing Shya and a video interview with renowned cinematographer Christopher Doyle which reveals how neon has influenced some of his classic film works.

In 'Hong Kong's Neon Signs – Then and Now', is a collection of historical photographs in their 60s to 90s which are juxtaposed with their present-day views. A master craftsman explained the receding art of making neon, and how quickly the neon is disappearing from the streets of Hong Kong.

The first online interactive exhibition series was launched in March last year. The exhibition celebrated, mapped and documented the unique neon signs of Hong Kong. An invitation was sent to the public to upload their images and stories of their favourite neon signs to its Neon Map. Over 4,200 entries were received. It has been expected that the partnership with the Google Cultural Institute will enhance the project further.

Hong Kong's history has been inseparable from its neon signs, which were first introduced in the city in the 1920s. However, more recently Neon lights have largely disappeared from the cityscape, due to the introduction and refining of safety rules and regulations. The WKCD's work on this subject documents the important social and historical changes in the use of neon signs in Hong Kong.

[WKCD Press Release, 21/05/2015]

Commercial developments to pay for arts facilities

The WKCD is considering how to look to recover from commercial developments in this WKCD the substantial costs of the development.

In a paper sent to lawmakers and published on 30 June 2015, the WKCD disclosed that the commercial component of this project were the "only realistic option available" to keep the project in good financial health, after all cost-cutting measures have been exhausted.

Apart from having theatres, museums and galleries as the basis of WKCD, the project also includes hotels, offices and homes with a total gross floor area of no more than 366,620 square metres. In the WKCD's paper, the Authority suggested that commercial developments would assist in the funding of the development.

In 2014, the Authority said commercial areas in WKCD could be put up for sale by 2015. However, delays to the high-speed railway to Guangzhou, which has its terminus adjacent to the arts hub, have delayed that plan, plus raised further questions as to how long the project will be delayed. Transport minister Professor Anthony Cheung Bing-leung announced on 30 June 2015 that the terminus is expected to be completed by 2018. This completion date has been postponed from 2015, then to 2017, and now to 2018.

[SCMP, 01/07/2015]

HONG KONG BRIEFING

Levy on waste electrical and electronic equipment

The *Promotion of Recycling and Proper Disposal (Electrical Equipment and Electronic Equipment) (Amendment) Bill 2015* was published in the Gazette 13 March 2015. The objective of this Bill is to implement the producer responsibility scheme (PRS) for waste electrical and electronic equipment (WEEE).

The PRS is an important waste reduction initiative under the *Hong Kong: Blueprint for Sustainable Use of Resources 2013-2022*, which seeks to reduce waste at source. The implementation of the PRS on WEEE as one of our major objectives is the sequel to the levy on plastic shopping bags which came into force on 1 April 2015.

The Bill creates a scheme for the recycling and disposal of specified types of electrical equipment and electronic equipment. The major provisions of the Bill include:

1. Introduction of the term “regulated electrical equipment” (“REE”) which includes refrigerator, washing machine, television, computer, printer, and scanner;
2. To define electrical equipment or electronic equipment as *e-waste*;
3. To implement the mandatory PRS, which requires registration of suppliers of REE. A person who carries on business of distribution of REE in Hong Kong without a licence commits an offence;
4. To regulate the obligations of registered suppliers of REE to sellers, in that registered suppliers are required to affix a recycling label;
5. To require registered suppliers to pay a recycling fee for REE and submit returns and an audit report to the Director of Environmental Protection;
6. To require sellers of REE to submit a removal service plan before distributing REE to consumers;
7. To require a collector of REE to ensure that REE is accepted by a recycler;
8. To introduce requirements for a permit for importing e-waste into, and exporting e-waste out of, Hong Kong.

To implement the new PRS, the government obtained funding approval from the LegCo on 27 February, 2015 and will appoint an operator for the development of the WEEE treatment and recycling facility at the EcoPark. The facility has a handling capacity of about 30,000 tonnes per annum and will provide proper treatment for regulated e-waste collected under the PRS. WEEE will be collected and processed in the facility, thus turning it into useful materials. The new facility is expected to be completed for commissioning in 2017.

[EPD Press Release, 12/03/2015]

Regulate glass container disposal

The *Promotion of Recycling and Proper Disposal (Product Container) (Amendment) Bill 2015* was published in the Gazette on 3 July 2015.

The Bill is the second product eco- responsibility bill introduced by the government in this legislative year aiming at providing the statutory regulatory framework for the implementation of a producer responsibility scheme (PRS) for glass beverage containers and, in future, containers of other products, based on the “polluter pays principle”.

The Bill will impose a recycling levy on suppliers of certain articles, as well as regulating disposal of container waste. The Bill proposes:

1. To introduce the definition of “regulated article”, which covers all types of glass containers of beverage, whether in the form of a bottle, jar or otherwise;
2. To control unauthorised disposal of container waste;
3. To provide for registration of suppliers of regulated articles. An unauthorised person who carries on a business of distributing regulated articles in Hong Kong commits an offence;
4. To require a registered supplier distributing regulated articles to pay container recycling levies for the articles and submit returns and an annual audit report to the Director of Environmental Protection;
5. To introduce requirements for a permit for importing container waste into, and exporting container waste out of, Hong Kong.

To promote the recycling of glass containers, the Environmental Protection Department is expanding the glass container collection network and preparing to hire glass management contractors to facilitate the collection and re-use or treatment of glass containers until they are turned into re-usable materials. The Department is also promoting the Community Green Stations (CGSSs) in 18 districts in order to strengthen environmental education and provide logistical support to encourage more members of the public to participate in the recycling of glass containers and other recyclable materials.

[EPD Press Release, 03/07/2015]

ADVISORY COUNCIL ON THE ENVIRONMENT (ACE)

Summary of minutes of the 205th Meeting of the Advisory Council on the Environment held on 11 May 2015.

At the meeting on 11 May 2015, ACE discussed two main items:

1. The Public Consultation on the Future Development of the Electricity Market (ACE Paper 5/2015); and
2. Municipal Solid Waste Charging : Latest Development (ACE Paper 6/2015).

The Public Consultation on the Future Development of the Electricity Market (ACE Paper 5/2015)

This paper covered the public consultation on the future development of the electricity market and improvements to the regulatory framework. Members were briefed on the public consultation of the electricity market. The consultation finished on 30 June 2015.

A member opined that to reach emission reduction targets for major air pollutants by 2020, the government should focus on two fronts:

- (1) to reduce demand for electricity in the commercial sector; and
- (2) to further increase the proportion of natural gas to over 50% in the fuel mix for electricity generation.

The member explained that reduction of electricity consumption by businesses will be effective because the commercial sector accounted for more than half of total electricity consumption in Hong Kong. The member suggested that, instead of asking the two privately owned power companies to take measures to drive down the electricity demand, the government could consider engaging an independent authority to take that initiative.

In response to the second suggested front, a spokesman for the Environmental Bureau ("EB") explained that an increase in the proportion of natural gas in the future fuel mix from the current 20% to the suggested 50% in 2020 would call for the construction of new gas-fired units and would use more natural gas by the power companies. An environmental impact assessment study, initiated by CLP in relation to building new gas-fired generation units at Black Point Power Station, is already underway. CLP will also explore the feasibility of maintaining the current level of imported nuclear energy from the Daya Bay Nuclear Power Station (Daya Bay) after 2018.

In response to the first front, he said that the government will soon announce its energy saving plan for the next decade and beyond, which will include educating the public to promote a collective effort in energy saving.

Another spokesman for the EB added that a multi-pronged approach had already been adopted in promoting energy saving, such as the government taking the lead in adopting energy saving measures in governmental buildings and public houses, and launching *Energy Saving Charters* in collaboration with the commercial sector, green groups, NGOs and local communities. It was also noted that following the 2013 Mid-term Review of the current *Scheme of Control Agreements* ("the SCAs"), the two power companies had set up energy saving funds using the incentive payments received under the SCAs to promote energy saving in buildings.

A member recognised the government's effort in imposing emission reduction targets and regulating the performance of the two power companies under the SCAs. He reiterated that the government could set up an independent authority to supplement the plan.

A member asked about the progress on cooperating with the tourism sector on energy saving. A spokesman for the EB replied that the Task Force on External Lighting (Task Force) had reviewed the matter and submitted a report to the government in April this year. The report concluded that the approach of using charter schemes to encourage relevant parties (such as owners of signboards) to voluntarily switch off lighting/advertisement signs after a preset time is better than a top-down regulatory approach. The EB spokesman assured members that the government would involve the tourism sector in this energy saving project.

A member commented that the current consultation could focus more on how the future regulatory framework and the permitted Rate of Return (RoR) regime could encourage the two power companies to promote energy saving. A spokesman for the EB responded by saying that the government would examine the relevant issues and negotiate with the power companies.

A member suggested that the government should set clear targets on RE (Renewable Energy) adoption, which could be done by engaging relevant stakeholders in promoting the wider application of RE in Hong Kong. Another member enquired if maintaining the import level of 80% of power from the Daya Bay nuclear plant would have any impact on the Mainland.

A spokesman for the EB responded by saying that these suggestions were considered by the government in the March-June 2014 consultation exercise. However, he reported that feedback and comments received show that the community had reservations concerning importing electricity from the Mainland grid, due to reliability concerns. Instead, the public preferred to increase the local generation of power by use of natural gas.

As regards the use of nuclear energy, diverse views were received during the fuel mix consultation. The current position is that 80% of output of Daya Bay, instead of 70% in previous years, is used by Hong Kong. He said that although the price of nuclear energy was relatively low when the contract was signed with the Daya Bay plant back in the 1990s, the price of the newly increased quota was much higher and at the moment, there was no substantial difference in price in nuclear energy compared with electricity generated from natural gas.

As to the waste-to-energy option, a number of facilities, including the Sludge Treatment Facility at Tuen Mun, will come into operation and be connected to the grid in a few years' time. However, he warned that the limitation in using nuclear energy should be taken into account, including scarcity of resources and land for development, high costs of RE generation and intermittent nature of supply, which called for backup power supply along with additional costs.

A member expressed concerns for the issue of resultant pollution when using imported electricity from the Mainland grid. He considered investing in the development of RE instead would benefit Hong Kong, despite the constraints.

Another member echoed the view that RE was the cleanest form of energy and asked if the government would adopt a target for RE. He also agreed with earlier comments that the government should put its focus on reducing demand by negotiating with the power companies and learning from other countries on how it is done, instead of building more power generation units.

A spokesman for the EB replied that while the government had paid considerable attention in energy saving, the two power companies would still need to build new generation units by 202 to meet the relevant environmental targets.

A member opined that power companies should make note of their customers' electricity consumption patterns and try ways to shift their loads to avoid needing to set up additional generation units. A spokesman for the EB replied that the power companies have already been exploring the feasibility of reducing electricity use at peak times.

A member suggested that the government should explore ways to further cut down emissions by reducing the coal content (at the moment, it accounts for around 25%) of the future fuel mix. A spokesman for the EB replied that there had been no new coal-fired units approved since 1997, and the use of coal is therefore decreasing and will decrease further as the old coal-fired plants gradually retired in the near future. Also, the two power companies have been using low-emission coal to contribute further to emission reduction.

In response to a member's enquiry about shelving of the offshore wind farm project, Ms. Anissa Wong explained that the proposal involved substantial and long-term investment on the part of the power companies. She also explained that the development would be subject to tariff implications and environmental impacts. She understood that the power companies were not ready to take forward the proposed project yet.

Ms. Anissa Wong said the government had an open mind in investing in RE. Under the current SCAs signed in 2008, the permitted RoR (Rate of Return) was set at 11% for RE, compared with 9.99% for gas-fired and coal-fired energy. She said that the permitted RoR is an area to be reviewed when discussing future SCAs, which will include the RoR on RE. However, due to the situation in Hong Kong, it is more practicable to develop RE through waste-to-energy technologies. Discussions are already taking place between the government and the power companies in that regard.

A member suggested that an incentive/penalty scheme can be implemented in promoting energy conservation among users, especially among the high-end user groups. Another member was of the view that the Education Bureau should be engaged to encourage discussion on sustainable energy and energy conservation at schools as part of liberal arts studies, and to draw views/opinions from the younger generation.

Municipal Solid Waste Charging : Latest Development (ACE Paper 6/2015)

Members were briefed on the background for introducing municipal solid waste (MSW) charging in Hong Kong and the recommendations made by the Council for Sustainable Development (SDC) in its report on the implementation framework upon completion of the second-stage public engagement in December 2014.

A member spoke of his Taipei experience, that waste reduction efforts in residential buildings could be notably discounted if a charging method “by volume by building” during the three-year transitional period was to be adopted. She also expressed concerns for the sustainability of the \$1 billion one-off recycling fund injection by the government in supporting recycling businesses. In Taipei, income generated from the producer responsibility schemes (PRSs) and the development/production of value-added recycled products supported the recycling industry. That member asked about the possibility of setting up a dedicated trust fund for supporting local waste recycling industries.

A member said that the government should implement the charging scheme while the public is well aware of the importance of waste management. He also suggested that experienced green groups should be engaged to run Community Green Stations (CGSs) on a district level.

A government spokesman replied that the first two CGS operators were appointed through open tender in accordance with standard government procurement procedures. Green groups were invited to join briefings on this new initiative at various stages. He said that green groups would be invited to visit the Shatin CGS in June 2015 and would be encouraged to participate in future tender exercises.

On the financial arrangements for the PRSs, the spokesman explained that a circular economy would be created for recycling waste electric and electronic equipment (WEEE) and glass beverage bottles, and a recycling fee would be imposed to fully recover the costs incurred by the government. He further explained that this financial arrangement was preferred as the government would allocate the necessary public funding to initiate and operate the PRSs.

A member said that the government should have a master plan for waste management which links up the work of different bureaux/departments, recyclers and consumers. The member also said that the various charging initiatives should be introduced with minimum time gaps in between.

The spokesman explained that the pledge under the *Hong Kong: Blueprint for Sustainable Use of Resources 2013-2022* is that the government will promote sustainable use of resources through social mobilisation, infrastructure and policies/legislation, and that, if it is to be done progressively, it would drive social mobilisation and encourage more investments in infrastructure for waste recycling, thus contributing to the momentum on sustainable waste management. MSW charging in Hong Kong would be an important step in giving the momentum to the society in initiating the waste reduction and recycling efforts.

As regards the release of the SDC report, the spokesman said that the government had conveyed a strong message to the community that relevant bureaux/departments would work closely to expedite implementation of the charging scheme. Stakeholders’ forums in the second half of 2015 are expected to strengthen the efforts of public education and community involvement.

A member reiterated her concern about the “by volume by building” option during the transitional period, as she said the effectiveness of waste charging will be dependent on the mode of the charging mechanism, as evident in Taipei and Taichung. Instead, the member suggested that the “by household by pre-paid bag” charging mechanism should be adopted.

The Chairman reaffirmed that ACE was supportive of quantity-based MSW charging and that the Council was keen to see the government implement the charging scheme as soon as practicable.

CLIMATE CHANGE

Climate change may destroy 1 in 6 species

If greenhouse gas emissions continue at the current pace, one in every six species on the planet could become extinct. That is the finding of new research published in the journal *Science*.

Climate change is a big factor in what has been tagged “The Sixth Extinction,” potentially the worst die-off in Earth’s history since the dinosaurs disappeared 65 million years ago. Ecologists warn it could threaten our economy, food security and health.

“Imagine if we lose an important predator for an agricultural pest,” said Mark Urban, an expert in ecology and evolution at the University of Connecticut and author of the new study. “Suddenly we have a major pest problem that threatens our ability to grow food.”

Plants, animals, birds and insects on land and in oceans are already struggling to adapt. Their habitats are shifting in response to warming temperatures, as rainfall patterns change, and as the other species they rely on for nourishment or protection shift as well. For example, the American pika, a small mouse-like example, has already disappeared from more than one-third of its known mountain habitats.

Warming ocean temperatures are threatening coral reefs across the globe. Sea level rise is eliminating the mangrove forest habitats of India’s tigers and shrinking the South American beaches where sea turtles surface to lay their eggs.

Predicted extinction risks from climate change differ by continent. South America faces the highest potential die off, with 23 per cent of its species likely to disappear because of global warming. Australia and New Zealand could see 14 per cent of their species go extinct.

The extinctions could also restrict our ability to fight climate changes as biologically rich carbon reservoirs like the Amazon rainforest begin to disappear.

Scientists for years have been trying to quantify the extent of climate change-driven extinction. Dozens of studies have been published, with extinction percentages ranging from zero to 54 per cent. Mark Urban analysed 131 of these to get an average.

Stuart Pimm, an expert on extinctions at Duke University, said Urbana’s analysis has some limitation, including scientists’ inability to predict whether species will adapt or die off, but said his broad conclusions are correct. He agreed that the less governments do to combat climate change, the higher the extinction rates will be. Some regions, such as South America, will see more extensive die-offs than others.

Urban found the world could lose 5.2 per cent of its species if temperatures rise 2 degrees Celsius by the end of this century – which world leaders agree the world must stay under to avoid catastrophe and which scientists say is now likely unavoidable. If the earth warms 3 degrees, this extinction rate jumps to 8.5 per cent. If temperatures increase 4.3 degrees, a likely scenario if nations refuse to curb their emissions soon, 16 per cent of species will be lost.

[SCMP, 02/05/2015]

Everest glaciers under threat

Glaciers in the Everest region could shrink at least 70 per cent or even disappear by the end of the century as a result of climate change, scientists have warned. Researchers in Nepal, the Netherlands and France studied weather patterns on the roof of the world and then created a model of condition on Everest to determine the future impact of rising temperatures. “The worst-case scenario shows a 99 per cent loss in glacial mass ... but even if we start to slow down emissions somewhat, we may still see a 70 per cent reduction,” said Joseph Shea, who led the study. Shea was part of a team that published a major study last year using satellite imagery to show how Nepal’s glaciers had shrunk by nearly a quarter between 1977 and 2010.

[SCMP, 31/05/2015]

Church and science to fight climate change

From Galileo to genetics, the Catholic Church has danced with science, sometimes in a high-tension tango but more often in a supportive waltz. Pope Francis is about to introduce a new twist: global warming.

The field of genetics was started by Catholic cleric Gregor Mendel. Entire aspects of astronomy, including the genesis of the Big Bang theory, began with members of the Catholic clergy. While some religions reject evolution, Catholicism has said it fits with the story of creation.

The church teaches that science and faith are not contradictory and even work well together. After lukewarm opposition to the theory of evolution in the late 19th century, the church has embraced that field of science that other faiths do not.

“The Big Bang, which nowadays is posited as the origin of the world, does not contradict the divine act of creating, but rather requires it,” Pope Francis said last October. “The evolution of nature does not contrast with the notion of creation, as evolution presupposes the creation of beings that evolve.”

Pope Francis, once a chemist, will soon issue an authoritative church document laying out the moral justification for fighting global warming.

Veerabhadran Ramanathan, a Scripps Institution of Oceanography climate scientist, said scientists felt they were failing in getting the world to understand the moral hazard that man-made warming presents.

[SCMP, 31/05/2015]

Global warming has not stopped

Global warming has not stopped or even slowed in the past 18 years, according to a new US government federal study that rebuts doubters who claim heating trends have paused.

Scientists at the National Oceanic and Atmospheric Administration (NOAA) readjusted thousands of weather data points to account for different measuring techniques through the decades. Their calculations showed that since 1998, the rate of warming was about the same as it had been since 1950: about 0.1 of a degree Celsius a decade.

The so-called hiatus has been touted by non-scientists who reject mainstream climate science. Those claims have resonated; two years ago, the UN Intergovernmental Panel on Climate Change felt the need to explain why the earth was not heating up as expected, listing such reasons as volcanic eruptions, reduced solar radiation and the oceans absorbing more heat. “The reality is that there is no hiatus,” said Tom Karl, director of the National Centres for Environmental Information. He is the lead author of a study published in the journal *Science*. This year is on pace to break last year’s global heat record.

Scientists keep updating the way they measure earth’s temperatures. This study focused on the effects of the way ocean temperatures were taken.

The old way, going back generations, was with ships. Sometimes people would simply dip a bucket. Other times they’d measure water that came into the engine. They also did it at various times of day.

The new way was to take samples on buoys at the same time of day. Karl said the buoy measurements were more accurate, but could not be compared directly to the ship measurements for a trend without making adjustments, because that would be comparing apples and oranges. So to come up with a trend using comparable numbers, NOAA increased the buoy temperatures a bit.

A few years ago NOAA made similar adjustments to make land temperatures more comparable decade-to-decade. But that also caused some non-scientists who reject climate change to cry tampering.

A few years ago, a group out of University of California Berkeley – funded in part by the Charles Koch Foundation, whose founder is a major funder of climate doubter groups and the “tea party” – took what was initially billed as a sceptical look at the previous NOAA data. But the group pronounced the earlier adjustments legitimate. The same scientists now say the new NOAA adjustments are also proper.

“NOAA is confirming what we have been saying for some time, that the ‘hiatus’ in global warming is spurious,” Berkeley team chief and physicist Richard Muller said.

[SCMP, 06/06/2015]

Japan’s modest CO² cuts

Japan may find itself the odd man out as Prime Minister Shinzo Abe presents his government’s blue-print for combating climate change this weekend at the summit of the world’s leading industrialised democracies.

The host for the Group of Seven meeting, German Chancellor Angela Merkel, has indicated she supports a pledge of eventual zero carbon emissions. Japan favours coal, gas and nuclear power over green energy despite rapid growth in investment in renewables since all its nuclear reactors were taken offline after the 2011 disaster in Fukushima.

Japan is the world's No.3 economy and its fifth-largest emitter of greenhouse gases that contribute to global warming. Abe plans to explain to fellow leaders its target of a 26 per cent reduction from 2013 levels of carbon emissions by 2030. That compares with an intended 26 to 28 per cent cut by 2025 from 2005 levels for the United States, and the European Union's target of a 40 per cent reduction from 1990 levels, or 35 per cent from 2005.

As for zero emissions, the world's carbon dioxide pollution level hit a record 396 parts per million in 2014, way above the 350 level of heat-trapping gases in the atmosphere seen by some scientists and environmental groups as a safe level.

Japan's view is that limiting emissions to 450 parts per million by 2050 would be "very difficult". "With additional effort to introduce advanced technology, the realistic target should be 550," a spokesman said.

Japan's long-term energy plan is evolving and actual trends will depend on various factors, including nuclear plant restarts, the pace of decline in the population, changes in technology and expanded use of solar panels and other renewable energy by households and businesses.

The country faces unique challenges as an island nation with scant conventional resources. Unlike European countries, it cannot use regional electricity grids. Abe's government is seeking restarts of reactors that meet upgraded safety standards, and in the meantime fossil fuels remain the preferred option for bridging energy supply gaps.

Japan could do far better, given the trend towards wider, ad hoc adoption of renewable energy in the private sector, said Tomas Kaberger, chairman of the Japan Renewable Energy Foundation and a former head of Sweden's energy agency. "It's just a matter of very costly delays to an industrial development that will be inevitable for global competition reasons. Japan cannot be the last fossil country in the world," he said.

[SCMP, 07/06/2015]

Global warming is killing bees

Bumblebees are struggling to adapt to global warming and are simply dying rather than migrating northward to cooler climes, concluded a study that raised new concerns about these important pollinators.

A report published in the journal *Science* is the first of its kind to point to the role of climate change in worldwide bee decline, which until now has largely been blamed on pesticide use, parasites, disease and loss of areas for habitat.

"Picture a vice. Now picture the bumblebee habitat in the middle of the vice," said lead author Jeremy Kerr, professor of macroecology and conservation at the University of Ottawa. "As the climate warms, bumblebees species are being crushed as the 'climate vice' compresses their geographical ranges. The result is widespread, rapid declines of pollinators across continents, effects that are not due to pesticide use or habitat loss."

Bumblebees help pollinate plants, wildflowers and fruit trees as well as important crops like blueberries and tomatoes, providing an invaluable service to agriculture and wildlife. "We are looking at rates of loss of about nine kilometers per year from those southern areas," Ken told reporters.

[SCMP, 11/07/2015]

Climate shrinking bees' range

Climate change has narrowed the range where bumblebees are found in North America and Europe in recent decades, according to a paper published in the journal *Science*. Warming temperatures have caused bumblebee populations to retreat from the southern limit of their travels by as much as 190 miles since the 1970s.

Logic would suggest that the northern reaches of their home turf would shift to higher latitudes by a corresponding distance. But that has not happened, leading researchers to think that the more northern habitats may be less hospitable to them.

Researchers compared bee population changes from 1974 to 2010, when temperatures began to warm, with changes from 1901 to 1974, when human-caused climate change was less of a factor. They found that the southernmost range of bumblebees retreated north at a rate of about 3 miles per year (the precise latitude was different for the many species of bees they studied).

For example, *Bombus affinis* once buzzed as far south as Georgia, but now is only rarely seen in states like Illinois, Maine and Wisconsin, while *Bombus terricola*, which thrived in North Carolina and the Mid-Atlantic, is now mostly seen in parts of Maine, New Hampshire, Ontario and Quebec.

James Strange, an entomologist with the United States Department of Agriculture, said he was worried this paper might cause people to blame climate change entirely for bee population destruction and to ignore potential factors such as parasites, pesticides and habitat destruction.

[International New York Times, 11/07/2015]

REGIONAL & INTERNATIONAL

CHINA

China needs 2 trillion yuan annually to combat pollution

A report by China's central bank says that the country needs to spend 2 trillion yuan (US\$322 billion) every year for the next five years if it wants to counter the impact of pollution on the environment. The startling number is 3 per cent of China's total GDP. The annual government budget sits at around 14.2 trillion yuan and the portion dedicated to the environment was 1 trillion yuan in 2014.

"Spending a few trillion yuan would only mitigate the level of pollution, but not really solve the pollution issue in China; a few trillion won't do. China needs hundreds of trillions," according to Frank Tian Xie, a professor at the Business School of the University of South Carolina, in an interview with Radio Free Asia.

Chinese author Zheng Yi, based in the United States, said that resolving just heavy metal pollution would be an enormous economic burden. "Currently the method to tackle the problem of land pollution is digging up the soil that has been polluted, however deep the pollution might be. The polluted soil is then transported and buried elsewhere. There are millions of acres of land in China that have been polluted. It is simply impossible to dig up a few metres of the soil from all these polluted places," Zheng said in an interview with RFA.

Official Chinese statistics indicate that one-fifth of all agricultural land has been polluted by heavy metals to differing degrees, and that about 10 per cent has been severely polluted.

As for groundwater and coastal water pollution, Zheng Yi says that money can't solve those problems. Only nature, over thousands of years, can repair such contamination.

One attempt the regime is making to mitigate air pollution is to reduce reliance on coal power plants to generate electricity, and go nuclear instead. According to the People's Bank of China report, authorities have earmarked 930 billion yuan (US\$150 billion) for the construction of nuclear power plants.

Rapid economic development in China over the last 30 years has come at the massive expense of the environment, says Zheng Yi. It's been bad for the country, but a bargain for the rich and powerful – and it's unclear if efforts to clean it up won't also be hijacked by vested interests, he says.

"It is like selling your family's wok. You benefit at the expense of your parents, and you can use the money to buy candy," Zheng said. "Similarly, taxpayers' money is used to fight environmental pollution. And the beneficiaries of tackling pollution are the rich and powerful people in China."

[*Epoch Times*, 30/04/2015 – 06/05/2015]

Electric cars are making inroads

The adage "the early bird catches the worm" is often used to praise those with a pioneering spirit. Mainlanders who spearheaded the move towards electric vehicles now have a bigger "worm" to catch – using their experience of driving and owning an electric car to help the authorities draw up a practical and effective strategy to convince other motorists to join them.

Wisley Jin, a Zhejiang entrepreneur who drives a Tesla, attributes his purchase of the car to group psychology and is bullish that more wealthy mainlanders will follow his lead to own an alternative-energy vehicle.

Topping up his batteries at a "supercharging" facility built by Tesla in Jinqiao district, Shanghai, Jin said it was not just the energy efficiency that gave him a sense of achievement. "It's an ideal mode of transport and more charging stations would make it more attractive."

The mainland market for electric vehicles has so far failed to take off despite the government's high ambitions and its generous handout of 37 billion yuan (HK\$47 billion) in subsidies for domestically produced models – but not for imports like Tesla.

Global management consulting firm McKinsey said the mainland's electric-vehicle industry fell short of expectations and the stalled market could not be rebooted unless the government fostered competition to stimulate innovation.

China is the world's biggest greenhouse gas contributor, with total emissions hitting 10 billion tones last year.

Aside from subsidising purchases of electric vehicles to the tune of up to US\$17,400 per car, mainland authorities also provide other inducements, such as car licence fee waivers, free or reduced parking fees and exemptions from the consumption tax levied on vehicles.

It is expected the mainland will need at least 10 years to build good quality electric cars and develop the infrastructure to support them. To convince more people to own electric vehicles, the experience of those who already drive them is vital to potential owners.

[*SCMP*, 02/05/2015]

Rice bird faces extinction

The rice bird, which was once one of the most abundant in Europe and Asia, is being hunted to near extinction because of Chinese eating habits. The population of the yellow-breasted bunting has plunged by 90 percent since 1980 – all but disappearing from eastern Europe, Japan and large parts of Russia, according to a study published in the *Conservation Biology* journal.

Following initial rice bird population declines, China in 1997 banned the hunting of the species. However, millions of them, along with other songbirds, were still being killed for food and sold on the black market as late as 2013, the study said.

Researchers found that consumption of these birds has increased as a result of economic growth and prosperity in East Asia, with a 2001 estimate of one million buntings consumed in Guangdong province alone.

The birds have been hunted for more than 2,000 years, according to the group BirdLife International.

[*The Standard*, 10/06/2015]

Air pollution reduced

China saw levels of two common air pollutants improve modestly in the first half of 2015, environmental group Greenpeace East Asia said yesterday. Average levels of PM2.5 – particulate matter with a diameter of 2.5 micrometres that can penetrate deep into the lungs – fell 16 per cent in the first six months from a year ago, the group said, adding that sulphur dioxide levels fell 18 per cent.

According to Greenpeace, the fall in coal consumption is the principal reason for recent improvements in air quality.

Beijing was ranked as the region with the third-worst levels of PM2.5, behind neighbouring Hebei province and central Henan province, slipping from fourth place in the first quarter. Shanghai was ranked as having the 11th-worst levels, versus a 14th place in the first quarter.

Last week, the ministry said nearly 75 per cent of big cities failed to meet air quality standards in June, an improvement over the same month last year. Beijing saw PM2.5 levels rise 11 per cent last month.

Amid growing public disquiet about smog and other environmental risks, the mainland has declared a war on pollution, vowing to abandon a decades-old growth-at-all-costs economic model that has spoilt much of its water, skies and soil.

[*SCMP*, 23/07/2015]

TAIWAN

10,000 rally against air pollution

Nearly 10,000 people in nine cities and counties around Taiwan took to the streets to protest against air pollution, according to the official Central News Agency. They demanded that the government impose an energy tax, expand green spaces, and raise flags in schools to warn of high levels of air pollution.

[SCMP, 07/06/2015]

JAPAN

Solar power drives energy shift

Solar power is set to become profitable in Japan as early as this quarter, according to the Japan Renewable Energy Foundation (JREF), freeing it from the need for government subsidies and making it the last of the G7 economies where the technology has become economically viable.

Japan is now one of the world's four largest markets for solar panels and a large number of power plants are coming on stream, including two giant arrays over water in Kato City and a US\$1.1 billion solar farm being built in Okayama. "Solar has come of age in Japan and from now on will be replacing imported uranium and fossil fuels," said Thomas Kaberger, executive board chairman of JREF.

Japan is retiring nearly 2.4 gigawatts (GW) of expensive and polluting oil-fired energy plants by March next year and switching to alternative fuels. Its 43 nuclear reactors were closed in the wake of the 2011 meltdown at the Fukushima power plant after an earthquake and a tsunami – renewable energy capacity has since tripled to 25GW, with solar accounting for more than 80 per cent.

A crash in the prices of photo-voltaic panels and improved technology that harnesses more power from the sun have placed solar on the cusp of a global boom, analysts say, who compare its rise to shale oil.

In Japan, residential solar power production costs have more than halved since 2010 to under 30 yen (HK\$1.95) per kilo-watt-hour, making it comparable to average household electricity prices.

Solar is already well-entrenched in Europe and North America, but it is Beijing's new anti-pollution policies that are making the big difference in Asia.

China's 2014 solar capacity was 26.52 GW, less than 2 per cent of its total capacity of 1,360 GW. But the government wants to add 17.8 GW of solar power this year and added 5 GW in the first quarter alone, with plans to boost capacity to 100 GW by 2020.

[SCMP, 27/04/2015]

Reactor restart delayed

Japan's Kyushu Electric Power has delayed the restart of its Sendai nuclear plant in southwestern Japan, which is planned to be the first brought back into service under new rules introduced following the 2011 Fukushima disaster.

The delay to mid-August from the previous target of late July follows a warning by Japan's nuclear regulator in April that the utility's schedule for a restart was too optimistic.

All 43 of Japan's operable nuclear reactors are currently offline. A restart of Sendai's 890-megawatt No.1 unit, following stringent safety checks, would mark the first resumption of nuclear power generation in nearly two years.

Prime Minister Shinzo Abe has said that rebooting the country's nuclear sector is needed to cut the cost of using fossil fuels for power generation, but he faces a sceptical public after the meltdowns at the Fukushima Daiichi plant. Five of Japan's reactors have received basic clearance and are at varying stages of the review process.

[SCMP, 03/06/2015]

Dolphins sold overseas

Nearly half the dolphins caught in drive hunts in western Japan since 2009 were exported to China and other countries despite criticism of the hunting technique, according to data confirmed by Kyodo News.

The drive hunt practice, used for decades in the coastal town of Taiji, Wakayama Prefecture, has been criticised as cruel, and recently prompted an international association of aquariums to suspend the membership of the Japanese Association of Zoos and Aquariums (Jaza), forcing the Japanese body to ban its domestic members from acquiring drive-hunted dolphins.

Jaza issued the ban last month after the World Association of Zoos and Aquariums (Waza) threatened to expel the Japanese body if its members continued to purchase such dolphins.

In drive hunting, fishermen capture dolphins by herding them into coves by banging metal poles against their fishing boats. The practice has spurred international controversy, especially following the Oscar-winning 2009 US documentary film *The Cove* showed the bloody slaughter of dolphins.

According to data from Japan's Fisheries Research Agency, 760 live dolphins were sold between September 2009 and August 2014 after they were caught off Taiji.

The Finance Ministry's trade statistics show 354 live dolphins were exported to 12 countries during the same period, including 216 to China, 36 to Ukraine, 35 to South Korea and 15 to Russia. One dolphin was exported to the United States.

UN data based on the *Washington Convention* for the protection of endangered species showed the export of live dolphins from Japan between 2009 and 2013 was almost entirely to zoos or aquariums.

[SCMP, 07/06/2015]

MYANMAR

Illegal loggers gaoled

A court in Myanmar has handed life sentences to 153 Chinese nationals for illegal logging, according to a court official. The court in Myitkyina, capital of Kachin state in the north of the country, also sentenced two Chinese to 10-year prison terms.

The individuals were arrested in January in a crackdown on the country's lucrative illegal logging and timber trade launched by the military, police and forestry department. According to state media at the time, more than 400 vehicles and 1,600 logs were seized during the raid.

Regions along Myanmar's porous border with the mainland have long been hotbeds for the illegal trade in timber to feed Chinese demand. Much of Myanmar's jade is also smuggled into the mainland. The mainland's voracious demand for Myanmar's raw materials has contributed to resentment in the country towards its giant northern neighbor.

Ten thousand tones of illegal timber were seized from illegal loggers since January, most of it from Kachin state.

[SCMP, 23/08/2015]

AUSTRALIA

Australia to invest in solar energy

Australia's federally funded Clean Energy Finance Corporation says it is ready to help finance newly-approved large-scale solar farms, but that did not mean it should stop financing wind projects and small-scale rooftop solar.

The CEFC said it was ready to invest in a new plan by the Australian Renewable Energy Agency (ARENA) to develop another 200 megawatts of large-scale solar capacity in Australia.

Unable to abolish the government-owned loan facility, the government has directed the CEFC to stop helping finance established technologies, such as wind farms and rooftop solar, and to focus on large-scale solar and "new, innovative and emerging technologies".

The CEFC is challenging the directive and, in the meantime, has announced plans were already well advanced to finance the large-scale solar projects given the go-ahead by ARENA on Tuesday. ARENA will supply \$100 million in grants.

"The CEFC will continue to fulfil its purpose by working to bridge the financing gap for projects that make commercial sense, reduce Australia's carbon dioxide emissions and contribute to Australia's productivity," its chief executive said.

The industry and the opposition argues that whilst some of the technologies are mature, the financing is still immature and the CEFC filled a vital role in supplementing loans.

[The Australian Financial Review, 15/07/2015]

Federal opposition commits to key policies

On 26 July 2015 the Australian federal opposition, the Australian Labour Party, committed to three key policies in renewable energy and environmental protection:

- power Australia with 50% clean and renewable energy by 2030 by cutting pollution, driving new investment in renewables and creating jobs. The ALP also said no to domestic nuclear power and storing the world's radioactive waste;
- strengthen the laws that protect life by refusing to hand over approval powers for environmentally damaging projects to under-resourced and conflicted state governments;
- restore life to the nation's threatened wildlife by implementing threatened species recovery plans and limiting habitat loss – one of the greatest threats to Australia's unique wildlife.

These are big steps and the ALP is to be commended. But if life is to thrive for generations to come, far greater commitments are needed, not just from the ALP but from all political parties.

[Press Release of Australian Conservation Foundation, 27/07/2015]

GERMANY

Aiming high for renewable energy

Germany, one of the biggest energy-consuming countries in the world, is proving that serious investment in renewable energy sources, like hydropower, biomass and wind energy, can provide a stable alternative to fossil fuels.

Germany has been almost constantly investing in renewable energy in the past several years, and last year announced that 28 per cent of its total energy comes from renewable sources.

Despite the relatively large reliance on renewable sources, the grid has remained pretty stable. Gunter Scheibner, in charge of keeping energy flows stable over 6200 miles of transmission lines in eastern Germany, told Bloomberg that the country experiences only 15 minutes of outages a year – compared to 68 minutes in France and more than four hours in Poland.

Some energy groups and researchers insist that relying on some renewables, principally wind and solar, on a large scale can cripple power grids at times because of the sources' intermittent nature. But Germany is proving doubters wrong, thanks to a 10-year, 120 billion-euro (HK\$998.3) investment towards low-polluting energy forms. That investment, along with ongoing developments in the sector, has helped spur lower costs, such as a drop from over 40 cents per kilowatt hour in 2005 to 9 cents per kilowatt hour, according to the think tank Agora Energiewende.

Researchers say that a higher concentration of renewable energy – even more than 50 per cent – is possible, and the country's "Energiewende" movement aims to run the country almost entirely on renewable sources by 2050. The plan includes shuttering all of Germany's nuclear power plants by 2022.

[Epoch Times, 23/04/2015]

NORWAY

Norwegian fund sells coal investments

Norway's parliament has decided to sell off coal investments in the country's US\$880 billion sovereign wealth fund. According to new rules approved by the Norwegian parliament's finance committee, the Government Pension Fund Global – also known as the Oil Fund because of its funding from oil and gas production – will sell its stakes in companies that get 30 per cent or more of their revenue from coal mining or burning fossil fuels or ongoing projects that surpass the 30 per cent threshold. The measures are to be implemented by 1 January 2016.

The move was welcomed by the country's lawmakers and environmental groups who estimate the fund's investments in coal could be more than US\$11 billion. It was not immediately known how much of these investments would be affected.

Climate change is one of three themes that Norges Bank Investment Management, which manages the pension fund's assets, adopts in its investment outlook.

"Coal is by far the biggest source of greenhouse gases, so this is a big victory for the climate," said committee member Torstein Tvedt Solberg of the opposition Labour party.

The fund has divested from 114 companies in the past three years, including 14 companies in the coal mining sector last year. The fund's coal mining assets totalled 493 million kroner (HK\$486 million) at the end of the first quarter, down from 805 million in December, according to its first-quarter report.

[SCMP, 07/06/2015]

U.S.A.

Batteries will power homes

Tesla Motors chief executive Elon Musk unveiled a suite of batteries to store electricity for homes, businesses and utilities, saying a greener power grid furthers the company's mission to provide pollution-free energy.

The announcement, after weeks of anticipation, marks Tesla's expansion beyond electric cars. As homes, businesses and utilities use more renewable energy generated by sunshine and wind, the need to provide reliable power grows. Batteries can be used to store electricity during peak production and dispense it later, when the sun is not shining or the wind is not blowing.

Tesla's home battery, named "Powerwall", is a rechargeable seven kilowatt-hour or 10 kilo-watt-hour lithium-ion battery that mounted on the wall, the company said in a statement. Deliveries would begin in late summer with prices starting from US\$3,000, Tesla said. The battery is designed to enable so-called load-shifting by charging during times when electricity prices are lower due to less demand, and discharging when demand and prices are high. It can also store solar power generated during the day and release it at night, and serve as backup during power cuts, according to Tesla.

The power industry has struggled to come up with a cost-effective storage solution, an issue that has become more pressing as growing amounts of solar and wind are integrated into the grid.

Tesla's utility-scale battery will consist of 100 kilowatt-hour blocks that can be grouped to a scale of 500 kilowatt-hours to more than 10 megawatt-hours.

Tesla is making a bet that its US\$5 billion "gigafactory", under construction near Reno, Nevada, will enable the mass production needed to drive down battery costs for both cars and energy-storage products that are already serving as a revenue stream for the company. More such factories will be needed to help make the transition from fossil fuels to renewable energy, Musk said.

[SCMP, 02/05/2015]

WORLD

Wild bees are dying

The dramatic decline of bee populations has had scientists worried for some time now. After all, insects are responsible for pollinating 35 per cent of the world's crop production, according to the United Nation's Food and Agriculture Organization (FAO).

Many American farmers rely on renting European honeybee hives to pollinate their crops, but the species has been on the decline due to *colony collapse disorder*, a phenomenon where worker bees disappear from the colony and leave behind the queen. Scientists still haven't figured out why it happens.

The honeybee crisis has made wild bees ever more crucial to human crop production. A study published in April confirmed that a commonly used pesticide was doing damage to wild bees. The scientists compared the bee population in patches of landscape where canola crops were coated with pesticide and in areas where it wasn't. They found less bee density, less reproduction and less colony growth in the areas with pesticide.

Now, a newly published study by Cornell University researchers has found similar negative effects on wild bees in farm environments. They also discovered that a class of fungicides labelled "safe for bees" are actually contributing to the damage to wild bees.

For two years, the researchers examined wild and honeybee populations in 19 apple orchards in central and western New York.

They marked the orchards based on how much pesticide was being used on them (from low to high use), and also kept track of the natural landscape surrounding the orchards, according to the study published in the June issue of the journal *Proceedings of the Royal Society B*.

The scientists found that the number of wild bees and the number of bee species fell as the pesticide use on the orchards increased. But they also discovered some good news. The damages to wild bees was stymied when there were natural areas surrounding the orchards. With more natural habitat, there was less pesticide impact bees.

The pesticides didn't have any effect on the honeybee population. The researchers predicted that this was because the honey beehives are only brought to the orchards during blooming season, then removed.

There are more than 20,000 known species of bees. To make use of their beneficial pollination of orchard crops like watermelons, squashes and blueberries, the researchers suggested that orchard growers consider the importance of the natural landscape when deciding how much pesticides they use on their crops.

[*Epoch Times*, 03/06/2015]

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Convictions under environmental legislation: May to June 2015 (July 2015 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:

May 2015

Sixteen convictions were recorded in May 2015 for breaches of legislation enforced by the Environmental Protection Department.

Six of the convictions were under the Air Pollution Control Ordinance, 3 were under the Noise Control Ordinance, and 7 were under the Waste Disposal Ordinance.

The heaviest fine in May was \$80,000, assessed against a company that imported controlled waste without a permit.

June 2015

Thirty-five convictions were recorded in June 2015 for breaches of legislation enforced by the Environmental Protection Department.

Twelve of the convictions were under the Air Pollution Control Ordinance, 2 were under the Dumping at Sea Ordinance, 3 were under the Noise Control Ordinance, 6 were under the Waste Disposal Ordinance, and 12 were under the Water Pollution Control Ordinance.

The heaviest fine in June was \$20,000 on each count for the two offences assessed against a company that commenced asbestos work without proper notification, and carried out asbestos work without appointment of a registered contractor, or the contractor failed to discharge his duties; and another fine of \$20,000 assessed against a company that discharged waste or polluting matter into the water control zone.

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