



Better Living through Energy Management

Top Express Group
萬匯集團



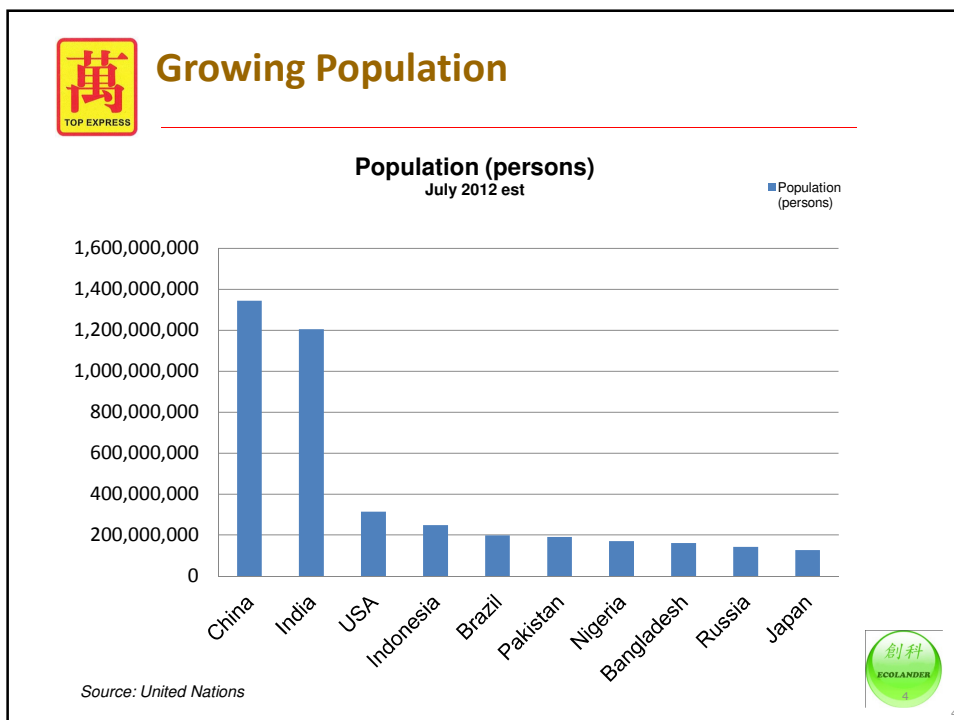
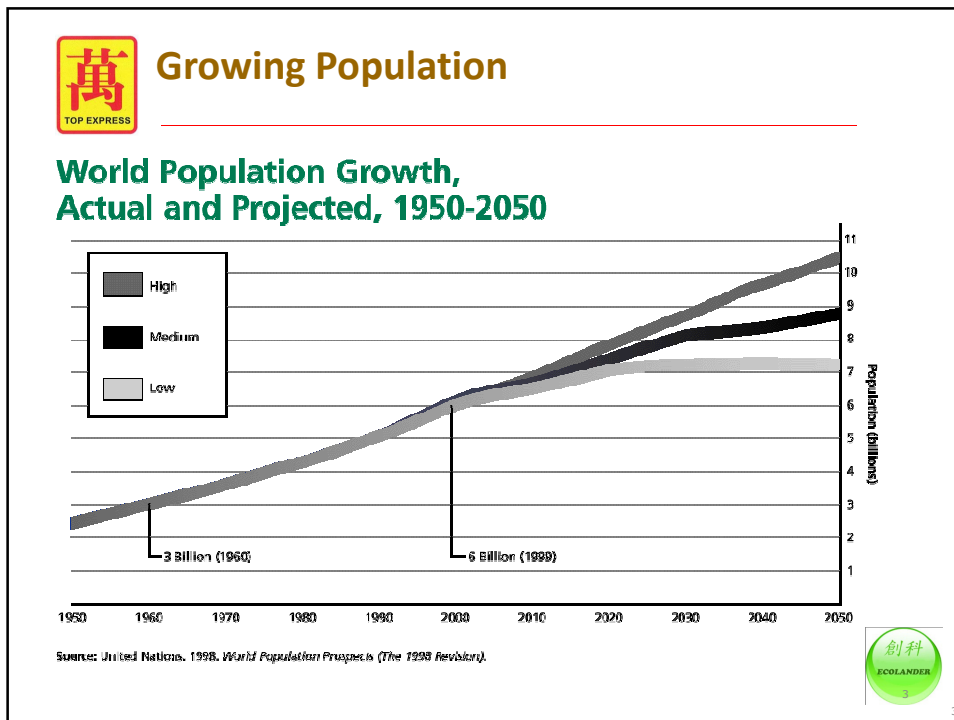
Why Manage Energy?

- Population is growing fast
- Energy demand or carbon foot print per person is increasing
- Depletion of natural resources is getting worse
- Following the advancement of the developing countries such as China, demand of fuels and natural resources increase significantly
- The amount of fuel we use nowadays and in the future also create significant risk and impact to the environment

We do not inherit the environment from our parent; we borrow it from our children



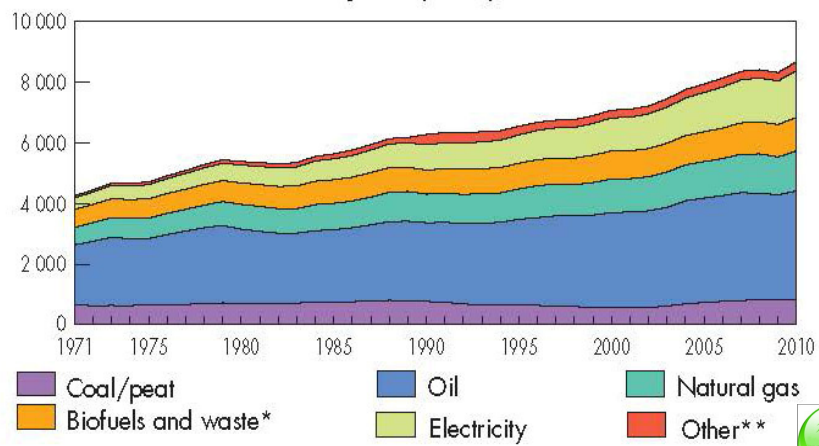
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World Consumption of Fuel

World total final consumption from 1971 to 2010
by fuel (Mtoe)



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Electricity

- Electricity is becoming a necessity
- Use electricity wisely to reduce CO₂ emission and pollution

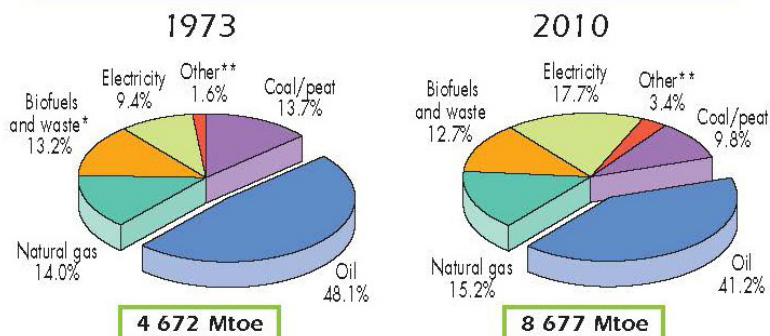


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World Consumption of Fuel

1973 and 2010 fuel shares of total final consumption



*Data prior to 1994 for biofuels and waste final consumption have been estimated.
 **Other includes geothermal, solar, wind, heat, etc.

Source: International Energy Agency

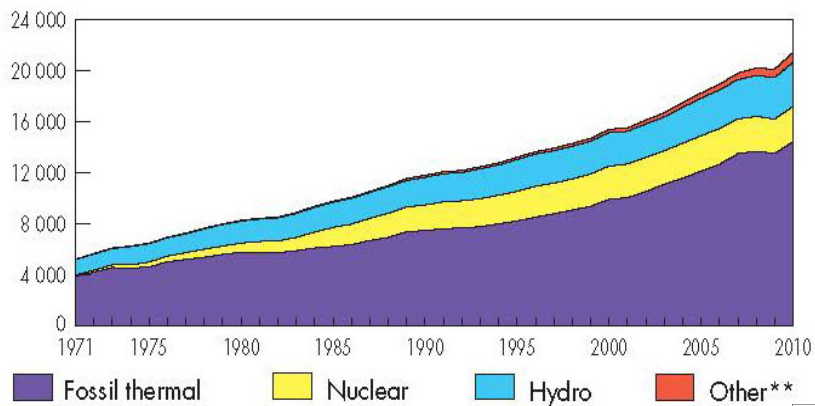


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World Electricity Generation

World electricity generation* from 1971 to 2010 by fuel (TWh)



Source: International Energy Agency

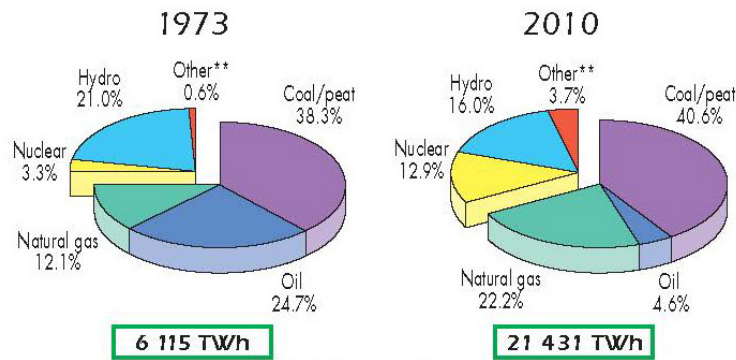


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World Electricity Generation

1973 and 2010 fuel shares of electricity generation*



*Excludes pumped storage.

**Other includes geothermal, solar, wind, biofuels and waste, and heat.

Source: International Energy Agency

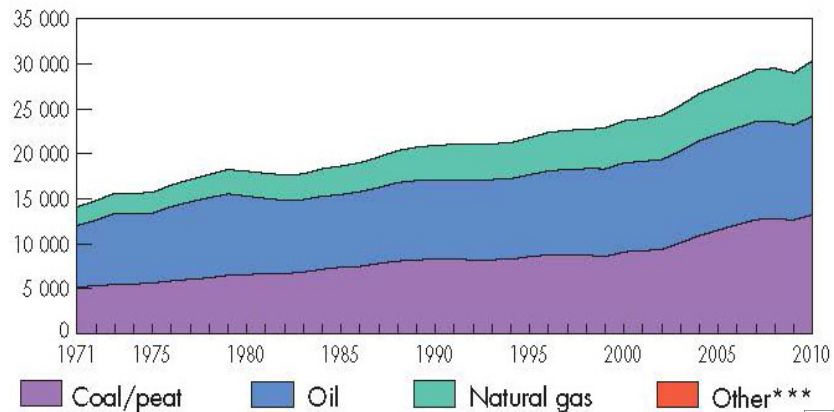


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World CO₂ Emission by Fuel

World* CO₂ emissions** from 1971 to 2010 by fuel (Mt of CO₂)



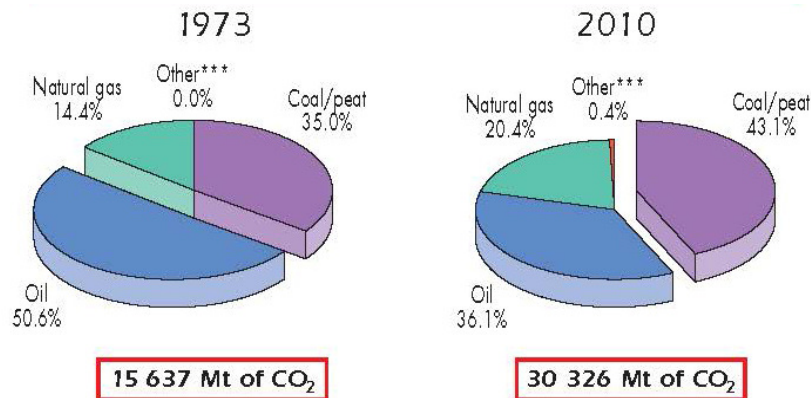
Source: International Energy Agency



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World CO₂ Emission by Fuel



*World includes international aviation and international marine bunkers.
 Calculated using the IEA's energy balances and the Revised 1996 IPCC Guidelines. CO₂ emissions are from fuel combustion only. *Other includes industrial waste and non-renewable municipal waste.

Source: International Energy Agency

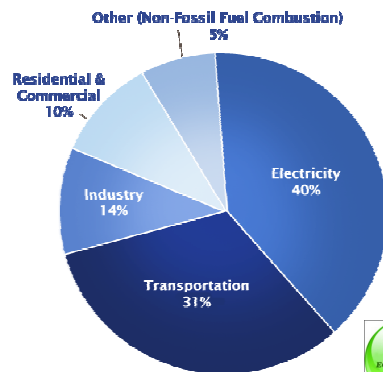


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Greenhouse Gas

- CO₂ is the primary greenhouse gas emitted through our daily life
- In US, more than 80% of greenhouse gas is CO₂ and is generated through daily activities
- Human activities that emit CO₂ is the combustion of different type of fuel for electricity generation, transportation, industrial processes etc.



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Greenhouse Gas

- CO₂ is constantly exchanged among atmosphere, ocean and land surface through absorption of different microorganisms, plants and animals
- Excessive CO₂ and other greenhouse gases that cannot be absorbed through natural process trapped in the earth and starts creating problem
- Globe warming on of the major hazards that greenhouse gas creates
- CO₂ concentration in atmosphere reaches the dangerous level



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Global Warming

- Threaten agricultural and grazing industries
- Wildfires
- Severe rain storms, snow storms and typhoon
- Heavy flooding
- Extreme high/low temperature
- Rise of sea level due to melting of ice in south and north poles causing land that has low sea level elevation been flooded



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Air Pollution

Air pollution can be caused by

- Natural events such as hill fire, volcanic eruptions, evaporation of natural radioactivity etc.
- Human activities such as emission from industrial processes, burning fossil fuel by vehicles, for electricity generation; heating



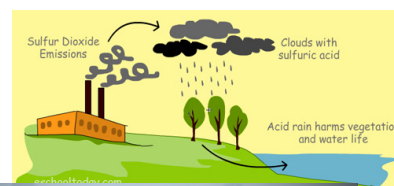
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Air Pollution

Emission includes:

- Carbon Monoxide (CO)
- Ground-level Ozone (O₃)
- Lead (Pb)
- Nitrogen Dioxide (NO₂)
- Sulfur Dioxide (SO₂)
- Particulate Matter (PM)



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Why Energy Management?

- Slow down depletion of fuels and associated natural resources
- Slow down global warming issue through reduction of greenhouse gases generation
- Minimize air pollution
- Act responsibly to the benefits of our children



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What Is Energy Management?

- Turn off lights
- Turn off air conditioning in hot summer day?
- Slow down driving to save fuel?
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What Is Energy Management?

***Adoption of good practices
and latest technologies
to reduce energy consumption
while not scarifying living standard***



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What Is Done Globally To Help?

- Kyoto Protocol to the United Nations Framework Convention on Climate Change (UNFCCC) is an international treaty that sets binding obligations on industrialized countries to reduce emission of greenhouse gases
- Kyoto Protocol's first commitment period was between 2008 and 2012
- Kyoto Protocol was amended in 2012 in Doha and has been extended to 2020

2008



2012



2020



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What Is Done Nationally To Help?

- In the 12th five yearly plan (國家十二五規劃) (2010-2015), the Chinese Government plans to put a lot of effort in energy conservation and reduction in emission through investment in scientific research for development of energy efficient device as well as legislation to minimize waste



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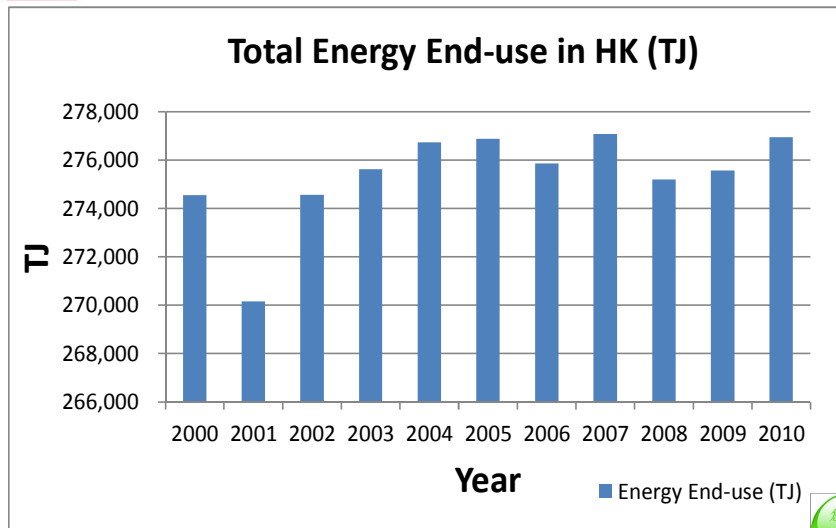
What is HK's Situation in Energy Consumption?



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Total Energy Consumption in HK



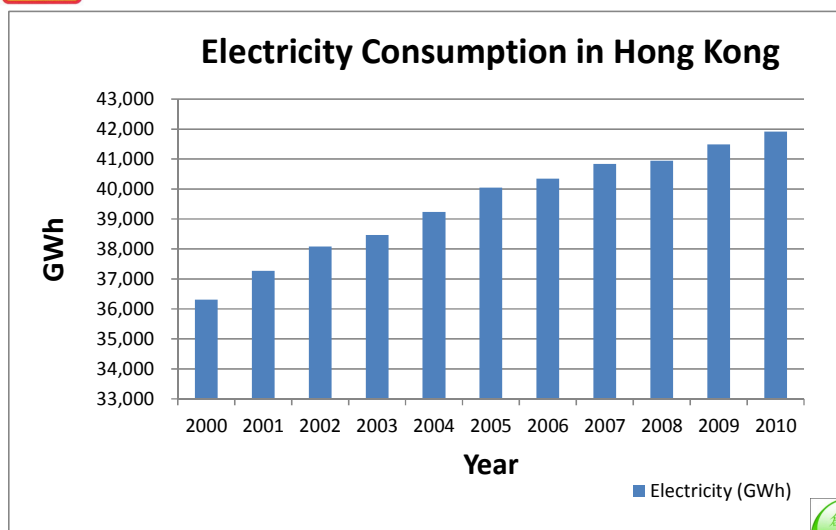
Source: EMSD



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Electricity Consumption in HK



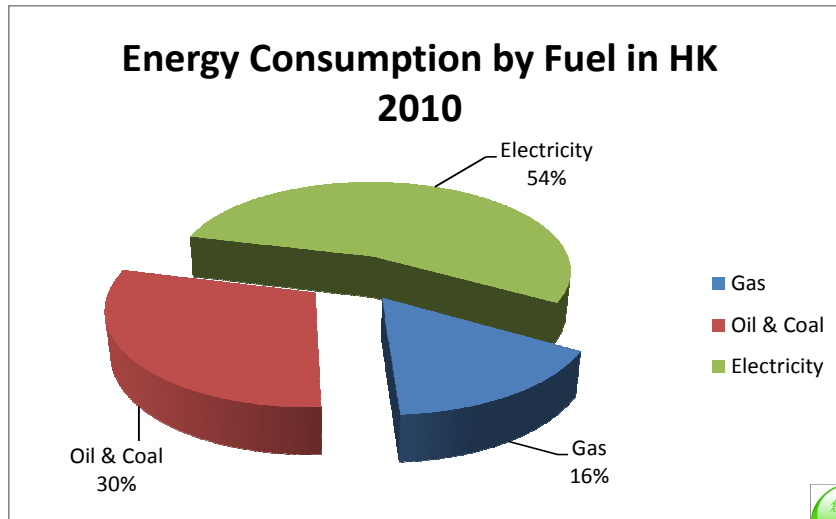
Source: EMSD



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Energy Consumption by Fuel in HK



Source: EMSD



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Industry and Government Effort in Energy Management



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The HKSAR Government Programme

The HKSAR Government is in full support of in energy conservation and reduction in emission. Examples are:

- Setting up Energy Efficiency Office in EMSD to spearhead and coordinate Government's effort to promote energy efficiency ad conservation
- *Buildings Department (BD)* promulgated a set of practice notes that stipulate the *Sustainable Building Design (SBD)* guidelines
- Advocated voluntary compliance with BEC (2007) up to 21 September 2012
- Implement mandatory compliance with BEC (2012) for new buildings under the new Ordinance



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The Government Non-mandatory Scheme

- *Granting of gross floor area (GFA) concessions for desirable green / amenity features and non-mandatory / non-essential plant rooms and services (under an overall 10% cap) for new building developments*
- *First registration tax concession for vehicle meeting the rules set out by Environmental Protection Department*
- *Subsidy to replace aged goods vehicle to vehicle meeting latest emission regulations set out by Environmental Protection Department*
- *Carbon "Less" Certificate from the HK Awards for Environmental Excellence (HKAEE)*
- *Good Energy Performance Certificate from EMSD*



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The Government Mandatory Scheme

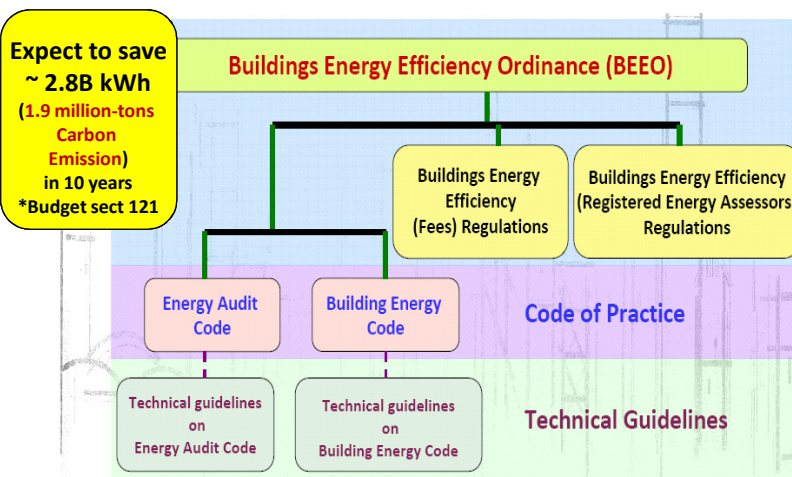
- **Building Energy Efficiency Ordinance (BEEO), Building Energy Code (BEC), Energy Audit Code (EAC) and related measures are fully implemented with effect from 21 September 2012 to promote and improve energy efficiency of the following building services installations**
 - Air-conditioning;
 - Electrical;
 - Lighting; and
 - Lifts and escalator
- **Penalty will apply to those who do not follow the Ordinances and the associated regulations and code of practices**



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Legislation Framework of BEEO Hong Kong



Source: EMSD



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Building Energy Efficiency Ordinance

	1 st Energy Audit	Declaration for COCR	Form of Compliance
New Buildings (Consent to commencement of building works for superstructure of the building granted after 21 September 2012)	Within 10 years after the date granted with COCR	Appoint a REA to sign and submit Stage 1 Declaration and Stage 2 Declaration respectively	For major retrofit work, appoint a REA to sign and submit FOC to EMSD within 4 months after work completion Major retrofit work: area > 500m ² or by equipment factors
Existing buildings (OP granted after 1 Jan 1988)	Before 21 Sept 2013	Not applicable	
Existing buildings (OP granted before 1 Jan 1988 and after 31 Dec 1977)	Before 21 Sept 2014		
Existing buildings (OP granted before 31 Dec 1977 and after 31 Dec 1969)	Before 21 Sept 2015		
Existing buildings (OP granted before 31 Dec 1977)	Before 21 Sept 2016		

Source: EMSD

COCR: Certificate of Compliance Registration



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Useful Links

- **Chapter 610 Building Energy Efficiency Ordinance**
http://www.legislation.gov.hk/blis_ind.nsf/WebView?OpenAgent&vwpg=CurAllEngDoc*607*100*607.1
- **The Hong Kong Green Building Council (HKGBC)**
<http://www.hkgbc.org.hk/eng/>
- **Hong Kong 3030**
<http://www.hkgbc.org.hk/hk3030/eng/>
- **Energy Conservation Fund**
<http://www.building-energy-funds.gov.hk/en/about/index.html>



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Industry's Effort in Energy Management

- Research and development of energy efficient devices such as LED lighting, electric vehicle, photo-voltaic system and other renewable energy systems
- Adaptation of national and international best practices in building industry such as BEAM and LEED for green building design, build and operation & maintenance



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Conclusion

- Global warming and air pollution are hitting everyone of us and we need to actively do something to protect and save the earth we live
- We are here using in advance the resources of our next generation. We need to be vigorous in conserving energy to look after the well being of our children in the future
- Energy management indeed creates ample business opportunities in various disciplines

Thank You



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