

# ***CHALLENGES*** of Quality Carbon Auditing for Carbon Audit Practitioners

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**Understand the Background  
Requirements**

**Understand the Technical  
Requirements**

**Facing the Challenges**

# Understand the Background

- 1980s United Nations Framework Convention on Climate Change
- 1990s Kyoto Protocol
- 2000s WRI and WBCSD publishes *The GHG Protocol: A Corporate Accounting a Reporting Standard (Corporate Standard)*
  - ISO adopts the *Corporate Standard* as the basis for ISO 14064-1

## China and the Kyoto Protocol

Date of Signature: May 1998

Date of Entry into Force: Feb 2005

## 12<sup>th</sup> Five Year Plan (2011-2015)

Carbon Intensity: 17% reduction

## 13<sup>th</sup> Five Year Plan (2016-2020)

Carbon Intensity: 40 - 45% reduction

## Hong Kong SAR

Guidelines to Account for and Report on GHG Emissions and Removals for Buildings (Commercial, Residential or Institutional Purposes) in Hong Kong 2010

# Understand Technical Requirements

## PAS 2050

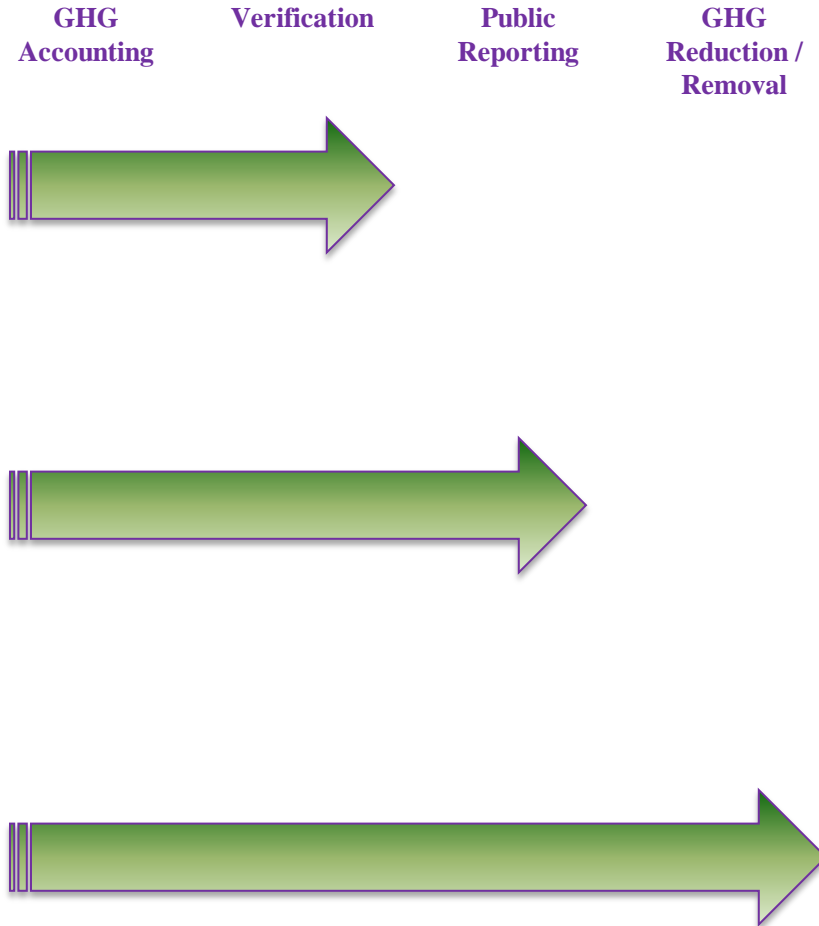
- Internationally applicable method for product
- Assessing life cycle of goods and services

## WRI and WBCSD GHG Protocol

- Multiple guidance (e.g. agriculture, financial) + Scope 2 accounting
- Requirements on public reporting

## ISO 14064

- 14064-1: Organizational level
- 14064-2: Project level
- 14064-3: Validation and verification



## Emission Scope

WRI/WBCSD and ISO14064

### Scope 1: Direct

Stationary source, mobile source, A/C refrigerant, and trees

### Scope 2: Indirect

Electricity and towngas consumption

### Scope 3: Other Indirect (optional)

Waste disposal, water consumption, sewage discharge and overseas duty visit

*more, more, more and more .....*

Scope	Emission /Removal Description	Emission Factor					Factor Source
		Source	Fuel Type	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	
1	Fuel consumed by stationary combustion sources	Boiler	Towngas	2.549 kg/unit	0.0446 g/unit	0.0099 g/unit	EPD Guidelines
			LPG	3.017 kg/kg	0.0020 g/kg	0.0000 g/kg	
	Intentional or unintentional release from equipment and systems	Source	GHG				EPD Guidelines
Refrigerant	XXX						
Assimilation of CO <sub>2</sub> into biomass	Source	CO <sub>2</sub>				EPD Guidelines	
	Trees	23kg CO <sub>2</sub> -e/tree/year					
2	Electricity consumed	Source	Year 2011/12	Year 2010/11	Year 2009/10	Power company	
		CLP	0.59kg CO <sub>2</sub> -e/kWh	0.57kg CO <sub>2</sub> -e/kWh	0.55kg CO <sub>2</sub> -e/kWh		
	HEC	0.79 CO <sub>2</sub> -e/kWh	0.79 CO <sub>2</sub> -e/kWh	0.81 CO <sub>2</sub> -e/kWh	Towngas		
	Towngas consumed	Source	Year 2011/12	Year 2010/11		Year 2009/10	
Boiler	0.62kg CO <sub>2</sub> -e/Unit	0.62kg CO <sub>2</sub> -e/Unit	0.62kg CO <sub>2</sub> -e/Unit				
3	General refuse disposed at landfills	1.5kg CO <sub>2</sub> -e/kg				Web	
	Electricity used for fresh water processing by WSD	Source	Year 2011/12	Year 2010/11	Year 2009/10	WSD	
		Fresh water processing	0.44kg CO <sub>2</sub> -e/m <sup>3</sup>	0.43kg CO <sub>2</sub> -e/m <sup>3</sup>	0.42kg CO <sub>2</sub> -e/m <sup>3</sup>		
	Electricity used for sewage processing by DSD	STW/ Process	Year 2011/12	Year 2010/11	Year 2009/10	DSD	
		STSTW/ Secondary	0.29kg CO <sub>2</sub> -e/m <sup>3</sup>	0.29kg CO <sub>2</sub> -e/m <sup>3</sup>	0.28kg CO <sub>2</sub> -e/m <sup>3</sup>		
		SHWSTW/ CEPT	0.16kg CO <sub>2</sub> -e/m <sup>3</sup>	0.16kg CO <sub>2</sub> -e/m <sup>3</sup>	0.16kg CO <sub>2</sub> -e/m <sup>3</sup>		
		SWHSTW/ Secondary	0.25kg CO <sub>2</sub> -e/m <sup>3</sup>	0.25kg CO <sub>2</sub> -e/m <sup>3</sup>	0.25kg CO <sub>2</sub> -e/m <sup>3</sup>		
NPSTW/ Tertiary	4.32kg CO <sub>2</sub> -e/m <sup>3</sup>	4.32kg CO <sub>2</sub> -e/m <sup>3</sup>	4.32kg CO <sub>2</sub> -e/m <sup>3</sup>				
Emissions from overseas trips	Flights: to be calculated by website				web		
	Rail: 0.01552kg CO <sub>2</sub> -e/pkm						
	Road: 0.03064kg CO <sub>2</sub> -e/pkm						

# Facing the Challenges

## Awareness and Readiness

Low awareness – resistance and reluctance towards when there is a lack of understanding and appreciation of long term climate change

Cooperate and concert effort from all parties to acquire information

# Assessment Methodology

## Applicable protocol / guidelines



## Physical boundary



## Unlimited Scope 3 items

- Purchased goods / services
- Employee commuting
- Carboy water
- Business ground travel
- Suppliers



# Assessment Methodology

Available of local emission factors

Availability of emission factors for  
overseas Activity Data

Time-dependent emission factors

# Benchmarking

Appropriate Ratio Indicator

Availability of comparable data

# Carbon Reductions

Appropriate targets

Software targets – hard to “Walk the Talk”

Hardware targets – costs and benefits