



# **Climate Policy Forum Cum Workshops**

GHG Reduction Solutions for a Low Carbon Hong Kong

30 September, 2010

Disclaimer: This powerpoint presentation for this forum only reflects the opinion of our guest speakers and do not represent the stance of WWF-Hong Kong.

# Achieving the targets in Hong Kong's Climate Change Action Plan

**Helping to make informed decisions**

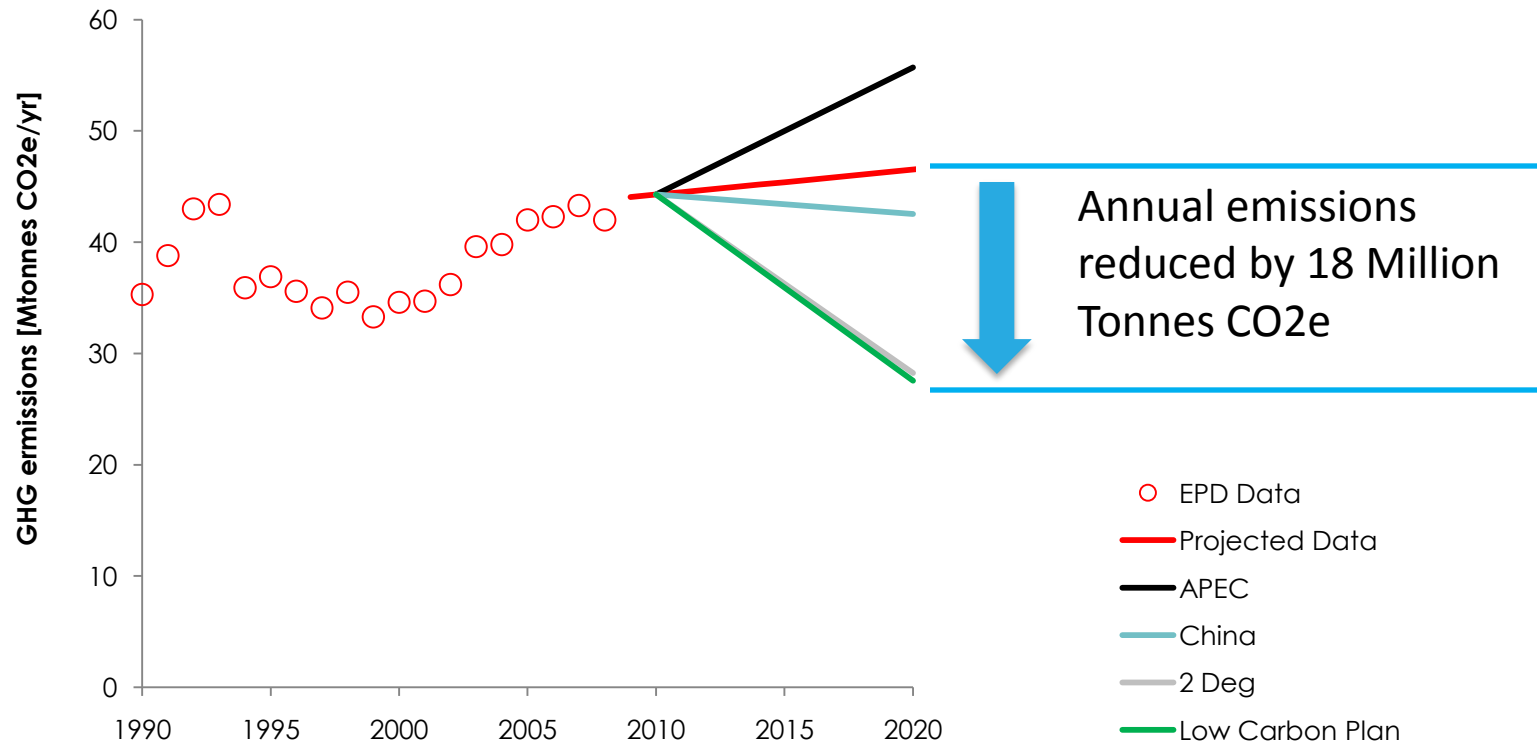
**By Dr Raymond Yau**

**Arup Fellow and Director**

**Arup – Hong Kong**

# Hong Kong's Climate Change Strategy and Action Agenda

- Announced on 10<sup>th</sup> September 2010
- Clear and Aggressive Target
- Outlined accompanying action
  - Voluntary carbon intensity reduction target of 50 - 60% by 2020 as compared to 2005
  - From 42 Million tonnes/yr in 2005 to 28 to 34 million tonnes/yr in 2020
  - Per capita emissions from 6.2 tonnes/yr in 2005 to 3.6 – 4.5 tonnes in 2020

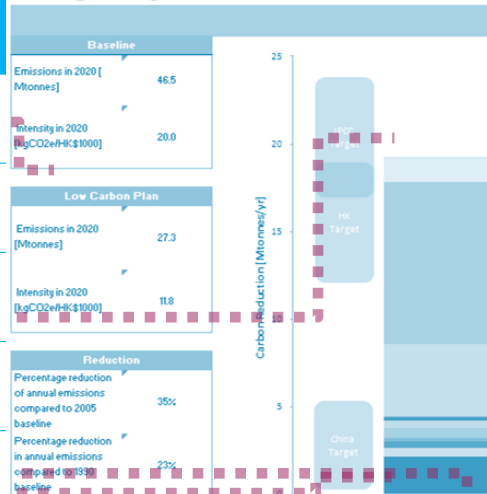


# How to get there?

## Develop quantitative scenarios on the “Carbon Calculator”

hongkong<sup>2020</sup>

ARUP

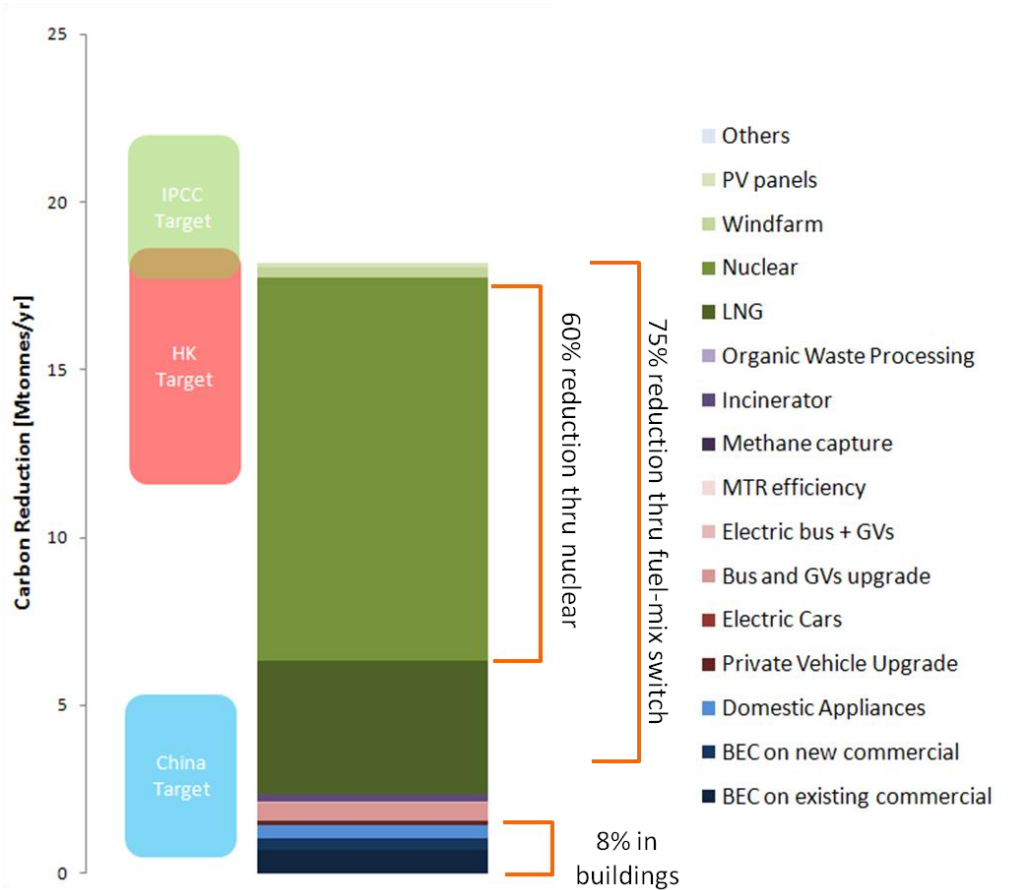


	Action by 2020	Change these values to form your plan	Error Check
Energy Efficiency	1 Penetration of BEC (%)	25.00	<     >
	2 Effectiveness of BEC % reduction	45.00	<     >
	3 Improved efficiency of new buildings	50.00	<     >
	4 Penetration of EE appliances	30.00	<     >
	5 Efficiency of Grade A appliance	25.00	<     >
Transport	6 Penetration of High Eff Cars	50.00	<     >
	7 Efficiency improvement of cars	20.00	<     >
	8 Penetration of Elec cars	5.00	<     >
	9 % of buses LGV etc Upgraded	50.00	<     >

	Action by 2020	Change these values to form your plan	Error Check
Transport	10 Efficiency of upgraded buses HGV etc	20.00	<     >
	11 % of Electric Bus HGV etc	10.00	<     >
	12 MTR efficiency improvement	0.00	<     >
Waste	13 % methane capture	60.00	<     >
	14 Incinerator size [tonnes/day]	3000.00	<     >
	15 Anaerobic Digester size [tonnes/day]	400.00	<     >
Electricity Generation	16 LNG % to displace coal	40.00	<     >
	17 Nuclear % to displace coal	50.00	<     >
	18 Wind farm (MW)	200.00	<     >
	19 Percentage of HK area	0.01	<     >

# Scenario E (for Energy)

- Bulk of emissions reduction achieved through changing the electricity generation fuel mix



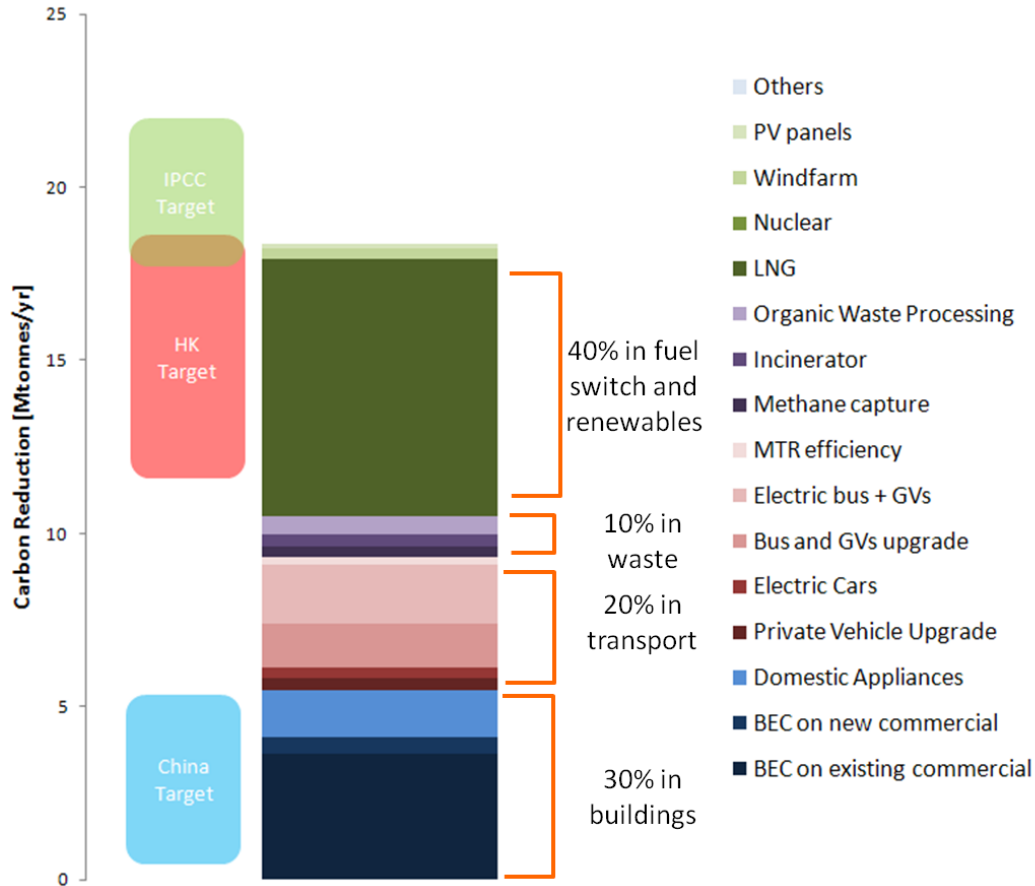
## Highlights:

- 50% of electricity generated by nuclear
- 40% of electricity generated by LNG
- 3000 tonnes/day incinerator
- Major MEP equipment in new buildings to be 50% more efficient
- 25% of existing commercial buildings (about 2% of total stock) to be 15% more energy efficient

Are we ready for more nuclear just across the border?

# Scenario B (for Buildings)

## Focus on energy efficiency



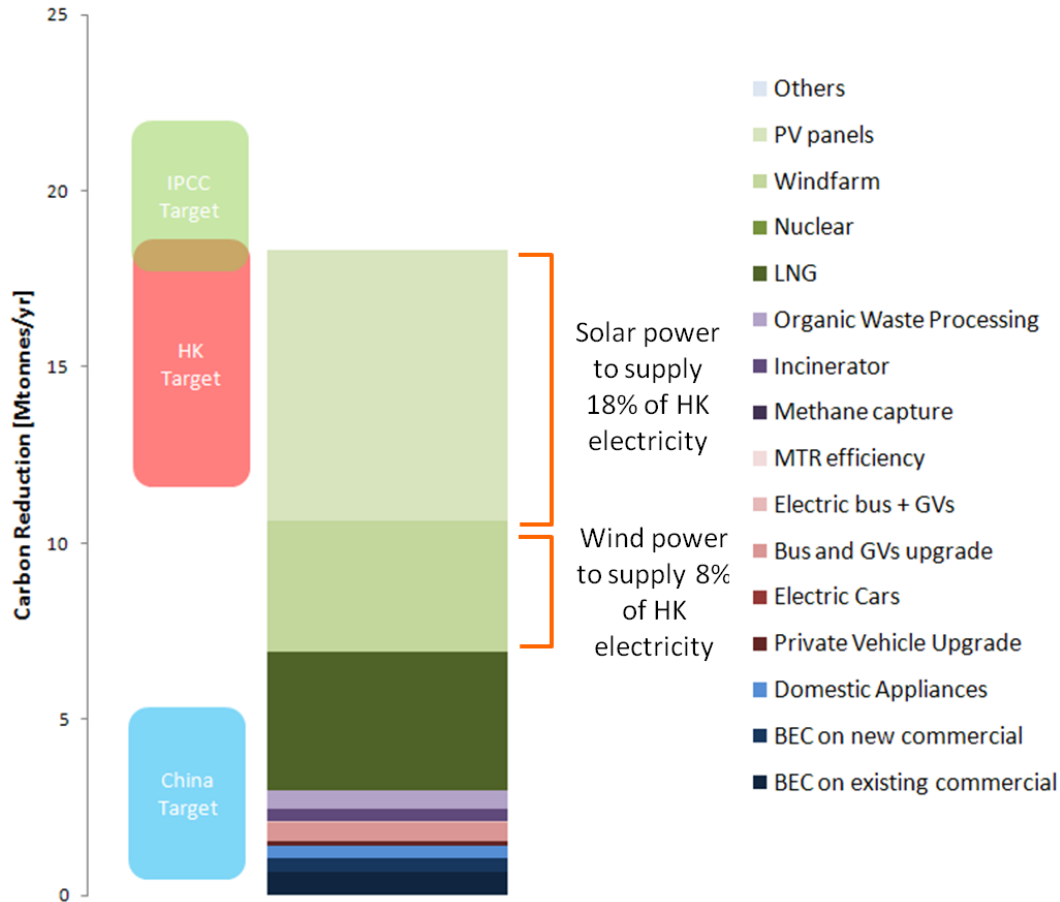
## Highlights:

- 50% of electricity generated by LNG
- 4000 tonnes/day incinerator
- 3000 tonnes/day Anaerobic Digester
- Reduce landfill emissions by 25%
- 50% of private cars, buses and goods vehicles converted to electric vehicles
- Major MEP equipment in new buildings to be 60% more efficient
- 50% of existing commercial buildings (4% of total stock) to be 40% more energy efficient

How many buildings can we retrofit in 10 years?

# Scenario R (for Renewables)

- Replace nuclear in scenario E with renewables



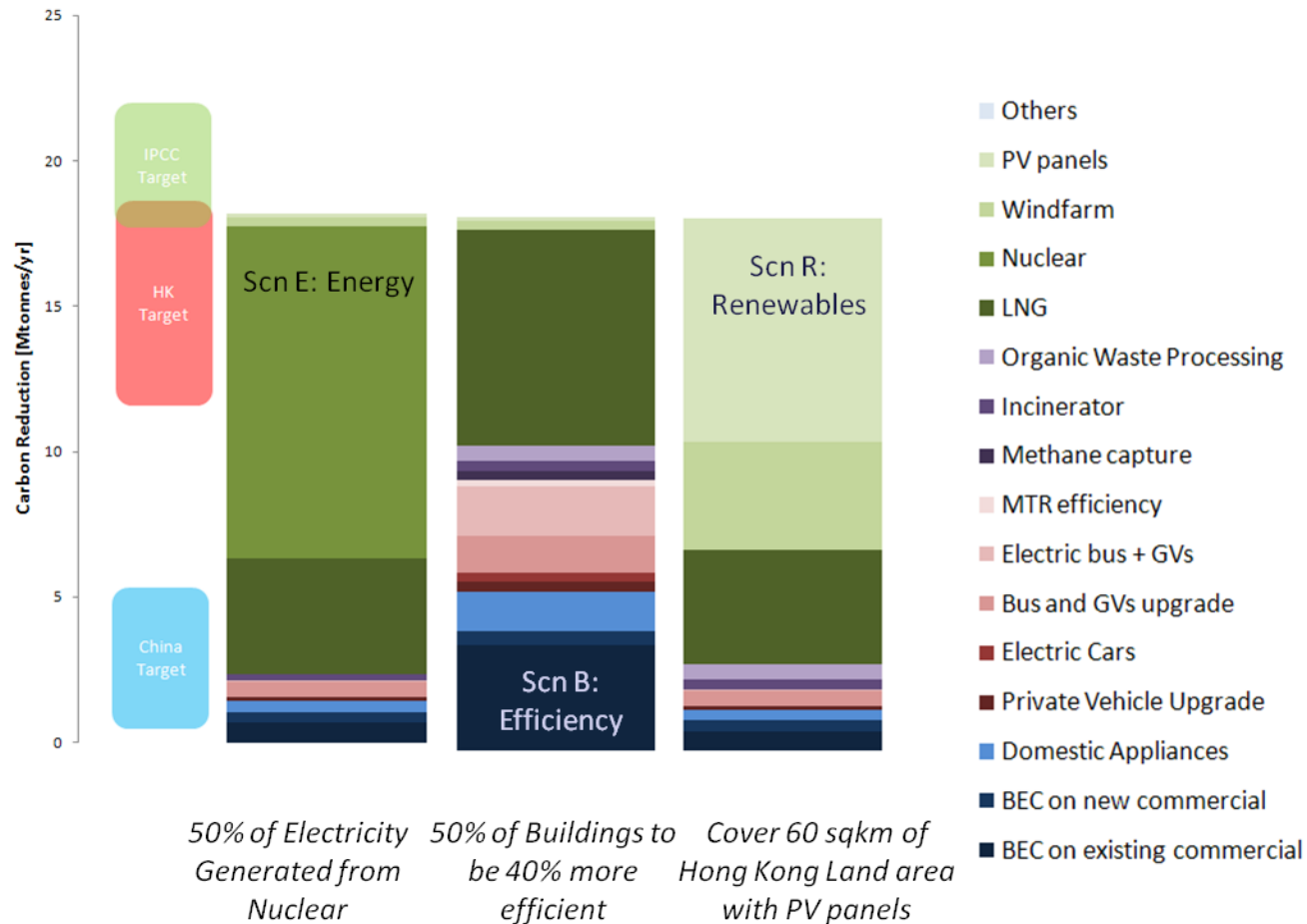
## highlights:

- 60 sqkm of PV panels
- 2500 MW windfarm
- 50% of electricity generated by LNG
- 4000 tonnes/day incinerator
- 3000 tonnes/day Anaerobic Digester

How much will it cost to install 60 sqkm of PV panels (about 20 to 50% of all roofs)?

# Three Scenarios for Hong Kong

- These scenarios are meant to illustrate the strengths and weaknesses in each sector
- N.B. We recognize that there are an infinite combination of strategies to achieve the target





## Perspective from the Building Sector

- Other than changing the way electricity is generated, buildings efficiency represent the largest opportunities in emission reduction
- 1 to 6 Mtonnes (out of 18 M tonnes required) can be achieved in this sector (depends on how far we want to pursue this)
- Long-term planning - 2050 and beyond

### Benefits

Economics – energy efficiency measures in buildings typically pay for themselves within 5 to 6 years

Jobs – >100,000 man-mths to retrofit all buildings

Environment – Green Buildings bring about an improvement to the internal and external environment

Re-energize assets – upgraded buildings are seen as desirable to owners and tenants

### Barriers

Capacity – Need to prepare sufficient capacity to retrofit a large portion of our buildings

Large number of stake-holders – Need to align their often conflicting interests

Significant Initial Costs – bore by building owners and developers

Lack of knowledge – what are the benefits of a retrofitted building, what buildings should be upgraded?

# Top Priorities in the Buildings Sector

## ■ How to retrofit 10,000 buildings in 10 years?

Barriers	Solutions	Exemplars	Projects
Lack of information	Knowledge Database	Singapore, UK	EASe database, Energy Performance Certificates
	Community Plans	Canada, Australia	Toronto Mayor's Renewal Plan, 1200 Buildings
Access to capital	Financing schemes	USA	New York Building Retrofit
	Incentives	Singapore	GREET, EASe
Short planning horizons	Energy Service Contracts	Singapore	ESCO Accreditation scheme
Split incentives	Green lease	Australia	Green Lease Australia
Complex and Multi-party Projects	One-stop shops	UK	London RE:NEW home program