



Policy Scenarios of Zero Carbon Building for Hong Kong: To Survive or To Lead?

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Introduction



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http://www.emsd.gov.hk/filemanager/en/content_762/HKEEUD2016.pdf



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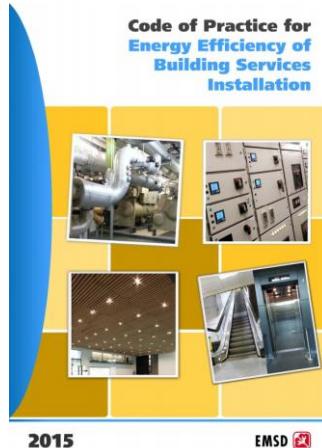
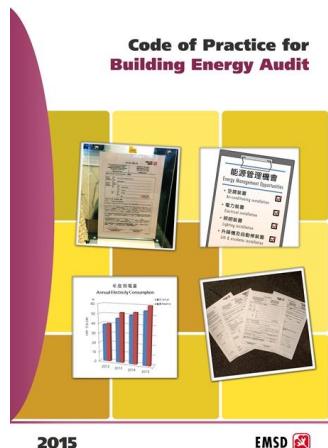
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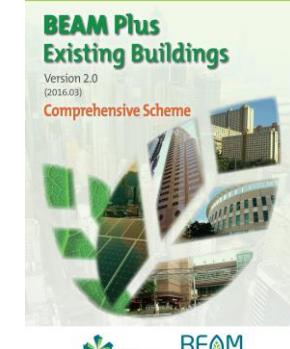
Introduction

Years of efforts have been done on building energy policies, codes and regulations.



There is still no policy agenda of achieving possible zero carbon for buildings.

Practices on sustainable building development.



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Executive Order 13514



EISA
Energy Independence
and Security Act 2007

Equilibrium™
HEALTHY HOUSING
FOR A HEALTHY ENVIRONMENT

ZERO CARBON HOMES AND
NEARLY ZERO ENERGY BUILDINGS
UK Building Regulations
and EU Directives



low carbon
finland 2050
VTT clean energy
technology strategies
for society



Ds 2014:11
Sweden's Sixth
National Communication
on Climate Change

The Hong Kong Model To Survive or To lead?



Hungary's National Energy Efficiency
Action Plan until 2020

Mandatory reporting under Article 24(2) of Directive 2012/27/EU of the
European Parliament and of the Council on energy efficiency

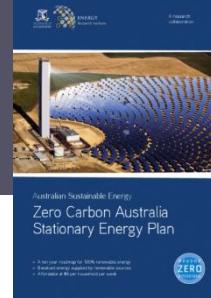


Italy's National Energy Strategy:
For a more competitive and sustainable energy



Energy efficiency action plan for
France - 2014

Directive 2012/27/EU of the
European Parliament and of the Council of 25 October
2012 on energy efficiency



Australian Sustainable Energy
Zero Carbon Australia
Stationary Energy Plan



MASTER PLAN
outlook & policies to 2035

January 2014



Japan's Climate Change Policies

18th Mar. 2014

Ministry of the Environment, Japan

Introduction —— Aim

To develop policy scenarios of zero carbon building (ZCB) for the high-rise high-density context of Hong Kong.



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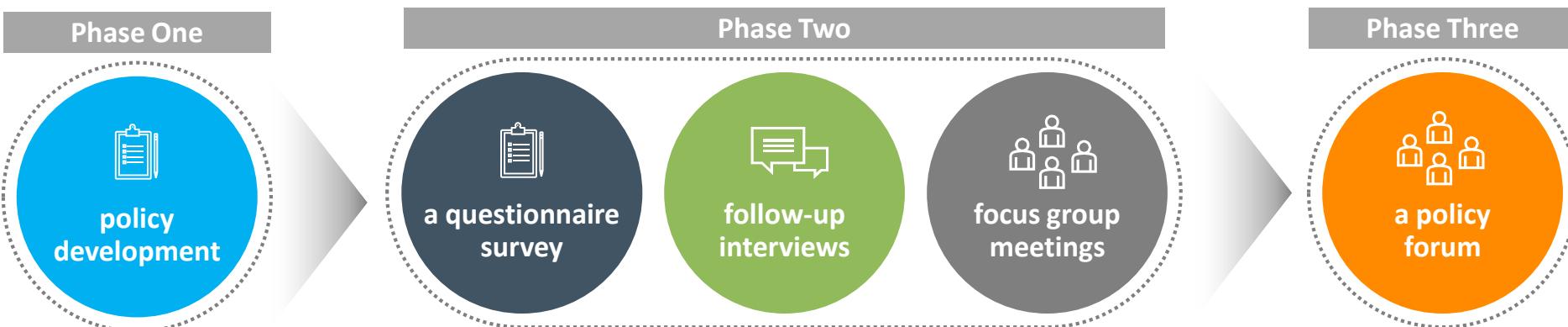
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Research Methodology

The research was conducted through the engagement with professionals and stakeholders in Hong Kong over a 15-month period.



Study Components and Number of Participants

Items	Questionnaire survey	Follow-up Interviews	Four Focus group meeting	Discussion forum
Number of participants	235	30	105	248



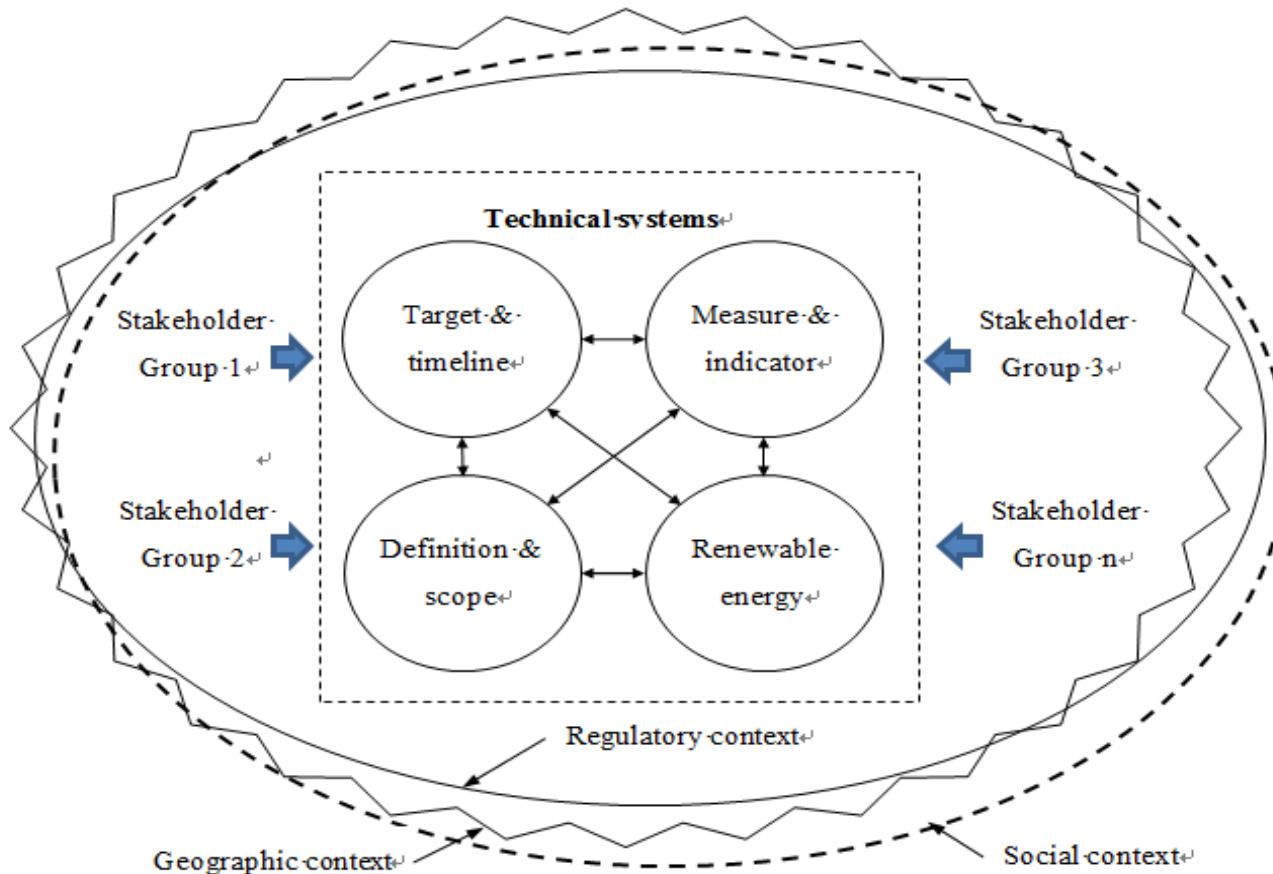
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Results and Analysis

The proposed ZCB policy for Hong Kong has drawn on the **socio-technical systems policy framework**, which highlights a ZCB policy as a complex socio-technical system.



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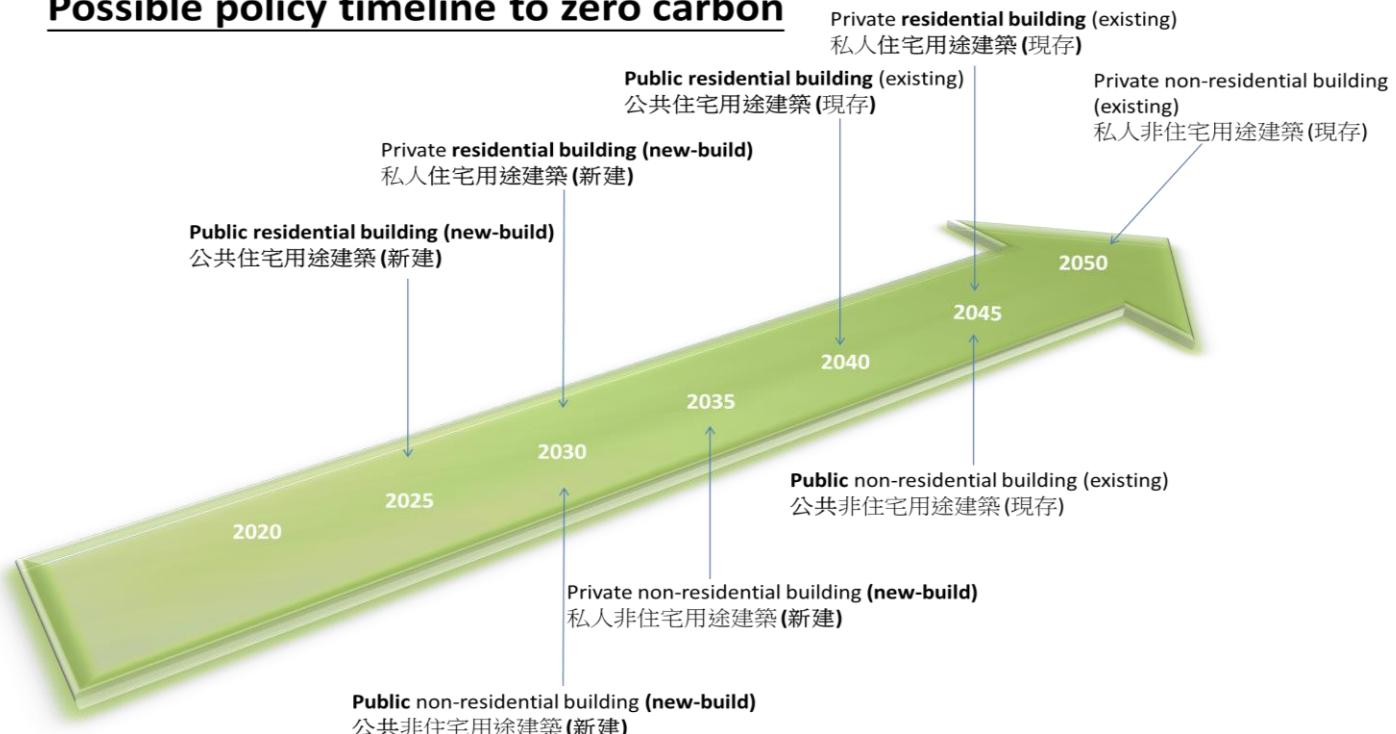
Results and Analysis —— Proposed Policy

• Definition and Scope •

The generic definition of a ZCB (or a LCB) is a building within its defined systems boundaries with net-zero (or very low) carbon emissions on an annual basis during the operational stage of the building.

• Target and Timeline •

Possible policy timeline to zero carbon



Results and Analysis —— Proposed Policy

- Measures and indicators

carbon emission intensity (CEI) : kgCO²e/m²/year
energy use intensity (EUI): kWh/m²/year

- Use of Renewable Energy

on- or off-site and directly connected with the building
and/or
off-site and indirectly connected with the building



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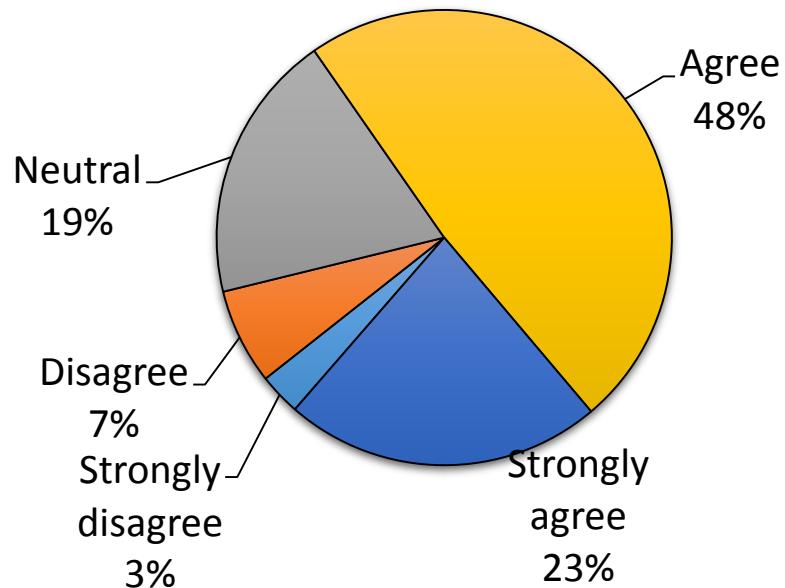
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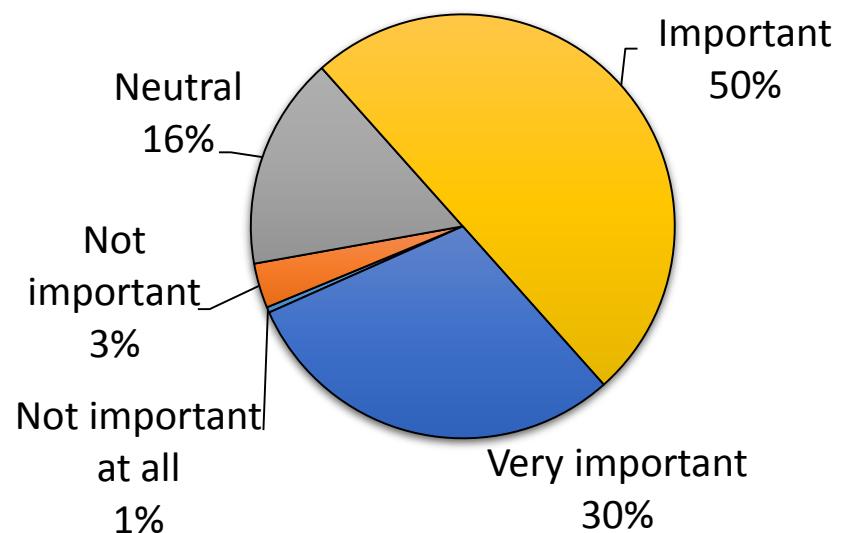
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Results and Analysis —— Perceptions

Q: How would you appraise the statement:
“Hong Kong is lacking a strategic policy
leading to zero carbon”? (n=235)



Q: How important do you view the need for a zero carbon building (ZCB) policy for Hong Kong? (n=235)



Interview Q: Why would you think Hong Kong needs, or does not need, a ZCB policy?

From interview survey, most believe such policy is required, but maintain an uncertain of its feasibility.



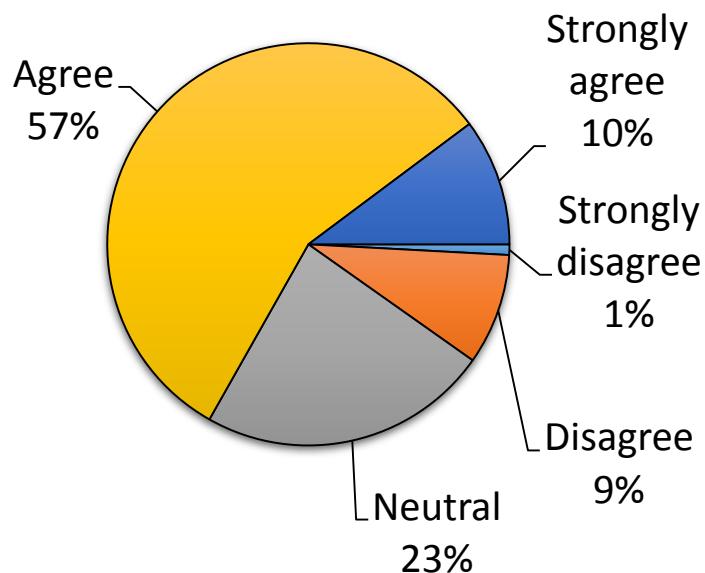
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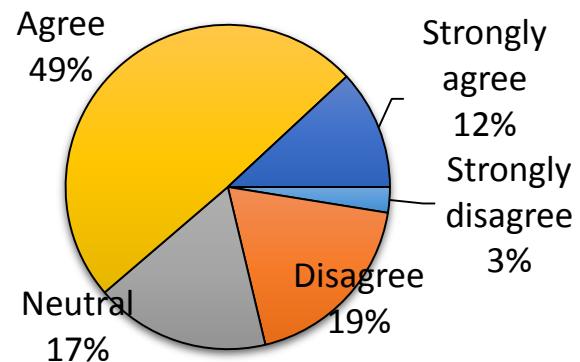
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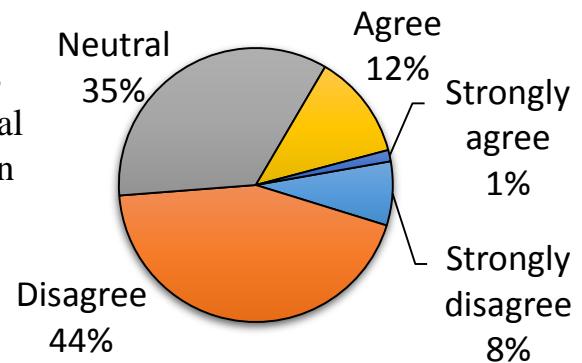
Results and Analysis --- Perceptions



Appraisal of the ZCB policy target: public buildings first and then private ones
(n=235)



Appraisal of the ZCB policy target: residential buildings first and then non-residential ones
(n=225)



65% of the questionnaire respondents perceived that implementing the possible ZCB policy in Hong Kong would be difficult.



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Results and Analysis — Opportunities, risks and recommendations

Risks

- ❑ Geographical difficulties for domestic renewable energy generation
- ❑ Heavy reliance on fossil fuels
- ❑ Resistance of practitioners to support the policy due to uncertain benefits



Opportunities

- ❑ Raising public awareness of sustainable living
- ❑ Promoting strategic urban planning for long-term city development
- ❑ Cutting building energy consumption

Recommendations

- ❑ The encouragement of energy and carbon reduction through urban planning
- ❑ The demonstration of life cycle economies and cost benefits of ZCB
- ❑ Setting zero carbon/energy targets in public project procurement

Discussion

developers,
clients and
investors

estate and
facilities
managers

contractors

professional
advisors

Policy Scenarios of Zero Carbon Building for Hong Kong

Definition and Scope

- 'true' ZCB or LZB?
- embodied energy included or not?
- general definition or scenario-based definition?
- world-wide definition or Hong Kong specified definition?

Target and Timeline

- aggressive or conservative?
- non-residential first or residential first?
- only new buildings or both new and existing buildings?

To Survive or To Lead?

Measures and Indicators

- common measures or specified measures?
- single indicator or several indicators?
- gross floor area or site area?

Renewable Energy

- solar power as main focus or not?
- promote waste from energy or not?
- feasible to act as a key role or not?
- carbon trading or not?

manufacturers
and suppliers

government and
its departments
and agencies

financers,
bankers and
mortgage
lenders

universities and
professional
bodies

Debate on details of policy scenarios of ZCB for Hong Kong



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Conclusions

- Possible ZCB Policy for Hong Kong as a socio-technical system is proposed.
- A L/ZCB policy is widely recognized as a necessity for Hong Kong.
- Debates are analysed on details of policy scenarios of ZCB for Hong Kong.
- Strengthening the partnership between different stakeholders is crucial.



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