STUDY ON

HAIPHONG LOW CARBON CITY

Vu Thi Thu Huong - Haiphong DONRE, Vietnam

Bandung 25-26, October 2016

HAI PHONG CITY

The City hall

BANDUNG - INDONEXIA

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I. Overview of Haiphong

Haiphong City

1. The third largest city in Vietnam, Area 1.507km^2, Population 1.925.217
2. Located on the west of Tonkin Gulf
3. Formed, developed in association with the development of Haiphong port (Haiphong port formed in 1876, the City founded in 1888)

Haiphong City

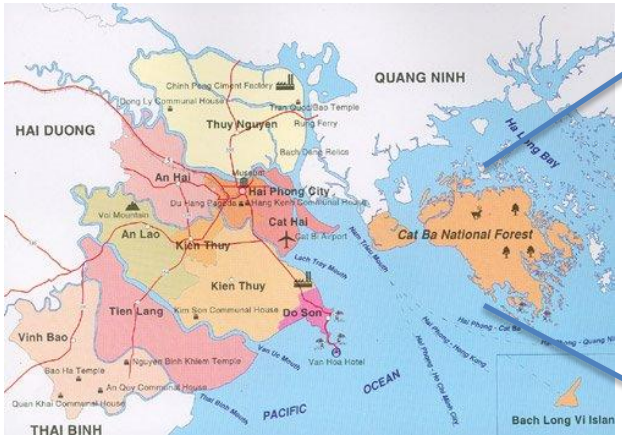
4. Coastal line: 125 km with nearly 400 islands

5. There are 5 big estuaries:Bach Dang, Cua Cam, Lach Tray, Van Uc and Thai Binh.

6. 15 Districts (02 districts islands: Cat Hai, Bach Long Vy)


North China
Japan
CẢNG HẢI PHÒNG
Korea
Hong Kong
Ha Noi
Taiwan
Hai Phong
To North America
Da Nang
Qui Nhon
Ho Chi Minh
Singapore, Port Kelang, PTP
To Middle East,
Europe
North America

The World's Biosphere Reserve Catba Island - Haiphong



Long Chau Lighthouse - Cat Ba Island

Bach Long Vy Island

II. Policies are issued by:

- Government
- Haiphong People's Committee (HPPC)

Goverment

The decisions of the Prime Minister:

1. No.1393/QD-TTg dated on 09/25/2012 approved the National Strategy on green growth.
2. No.1474/QD-TTg dated on 10/05/2012 issued the National Action Plan on Climate Change for period 2012 - 2020.
3. No.403/QD-TTg dated on 03/20/2014 approved the National Action Plan on green growth for period 2014 - 2020.

Haiphong People's Committee (HPPC

The decisions of the HPPC:

1. No.1463/QD-UBND dated on 03/7/2015 issued the Action Plan implementing the National Strategy for green growth for period 2014 - 2020.

2. No.65/QD-UBND dated on 08/01/2014 issued the CCAP.

3. No.2842/QD-UBND dated on 17/12/2014 established Steering Committee of Action Plan Responding to Climate Change in Haiphong.

Haiphong Low Cacbon Scenario

Study Team

- Haiphong Department of Natural Resources and Environment (DONRE)
- Institute of Strategy and Policy on Natural Resources and Environment (ISPONRE)
- Kyoto University (KU)
- Ritsumeikan University (RU)
- E-konzal
- National Institute for Environmental Studies (NIES)
- Institute for Global Environmental Strategies (IGES)
- Mizuho Information and Research Institute (MHIR)

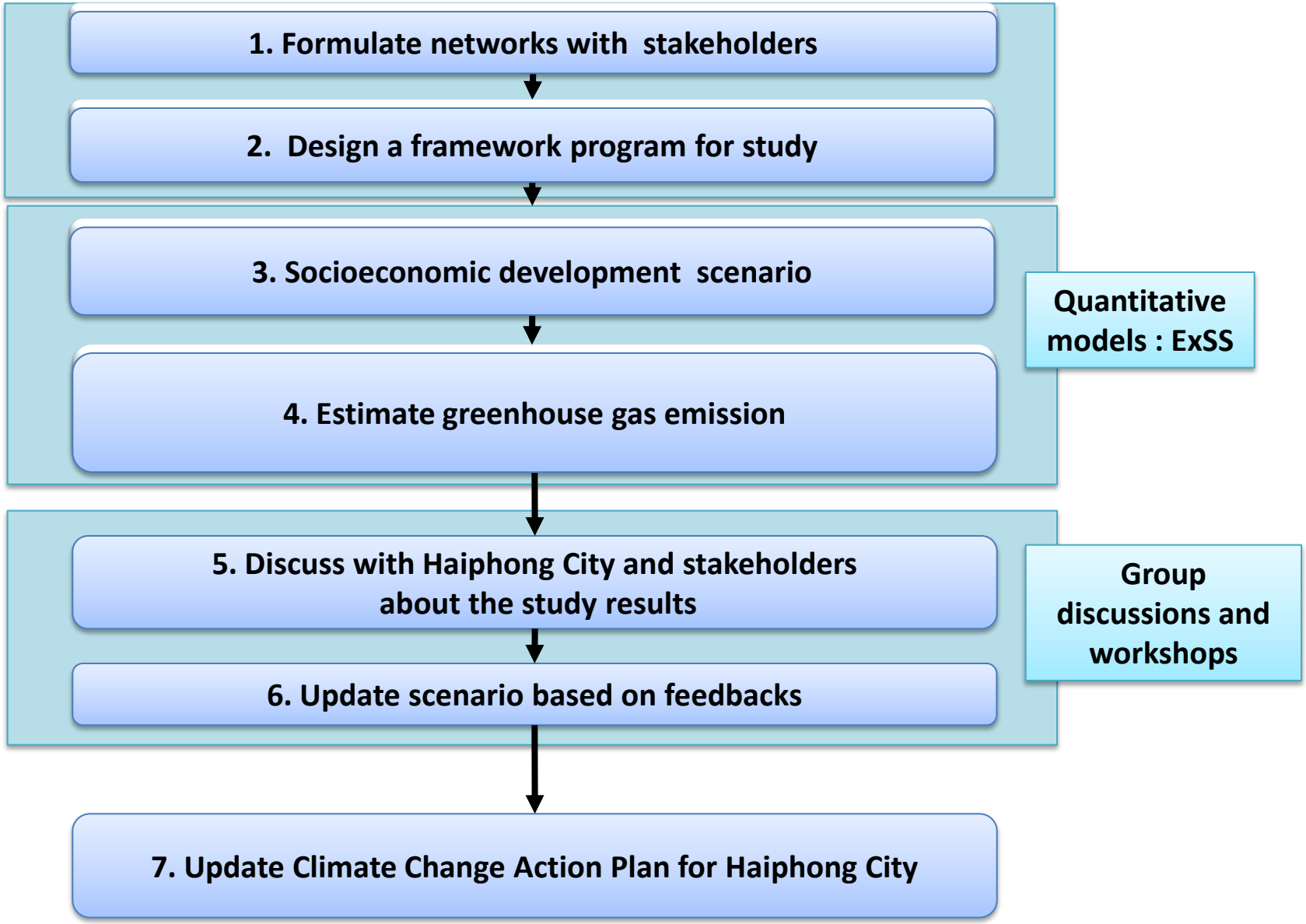
1. Object

Design and Support to build Low Carbon Scenario for Haiphong City, using methodology as Asian-Pacific Integrated Model (AIM)

2. Study scope

- **Base year**: 2013
- **Target year**: 2030
- **Study sectors**: Resident, Commerce, Transport, Industry.
- **Study area**: Haiphong City
- **Type of Greenhouse Gas:** CO_2
- **Scenario**:
  - 2030BaU: Business as Usual
  - 2030CM: Counter Measures

3. Implementation steps



ExSS Tool

- ✓ ExSS: Extended Snapshot
- ✓ ExSS: Estimates future GHG emissions and reductions based on two approaches:
  - Top-down
  - Bottom-up

- Top-down approach is used to estimate socio-economic activities (such as population, number of household, economic development, industrial structure and transport demand) and energy demand and GHG emissions from a macroscopic point of view.

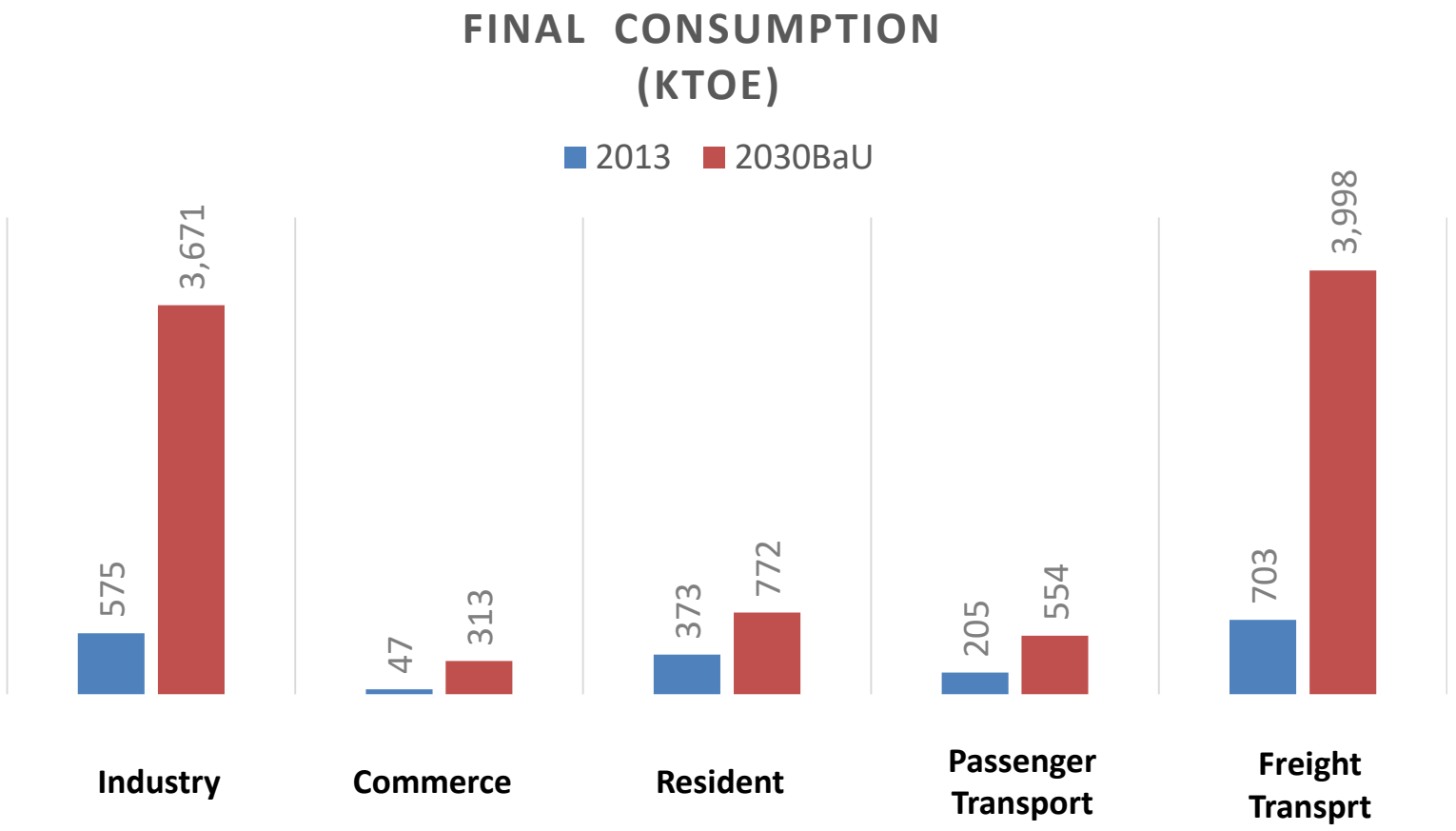
- Bottom-up approach is used to assume the technology-related information (such as diffusion rate and energy saving rate) and to estimate GHG emission reduction and GHG absorption capacity by project.

- We improve estimation by repeating model simulation through information sharing and exchanging with Hai Phong city.

4. Outputs (1)

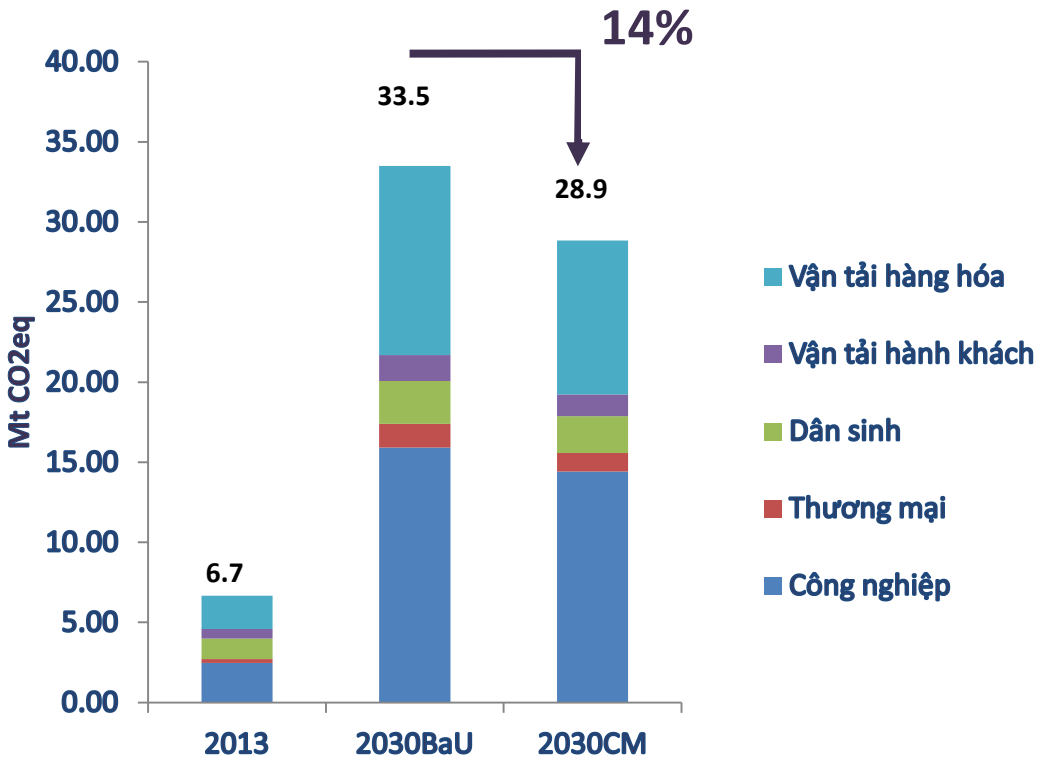
	Unit	2013	2030	2030/2013
Population	Persons	1,925,217	3,000,000	1.56
No. of households	Household	553,406	1,000,000	1.81
GDP per capita	Mil.Dongs	55	193	3.51
GDP	Bil.Dongs	105,651	577,829	5.47
Outputs	Bil.Dongs	282,310	1,595,478	5.65
Final consumption	Bil.Dongs	67,644	369,309	5.46
Gross fixed capital formation	Bil.Dongs	38,607	210,777	5.46
Export	Bil.Dongs	111,247	607,360	5.46
Import	Bil.Dongs	111,847	609,616	5.45
Passenger transport demand	Mil.per.km	10,236	22,490	2.20
Freight transport	Mil.ton.km	8,470	48,158	5.69

4. Outputs (2)


FINAL CONSUMPTION
(KTOE)
2013
2030BaU
575
3,671
47
313
373
772
205
554
703
3,998
Industry
Commerce
Resident
Passenger Transport
Freight Transprt

4. Outputs (3)

Greenhouse Gas emissions



Haiphong is expected to reduce by **14%** of total of green house gas emission in 2030CM year (between 10-20% in National Strategy on green growth and 8-25% in Vietnam INDC).

4. Outputs (4)

Climate change actions	Industry	Commerce	Resident	Passenger Transport	Freight Transport	**Total ($ktCO_2eq$)**
Action 1. Green Industry Promotion of energy efficient equipment and fuel shift	1,477					**1,477**
Action 2. Green Urban Diffusion of low-energy building (EMS, Insulation, Fuel shift)		168	60			**228**
Action 3. Energy Efficiency Promotion of energy efficient device/appliance		130	233			**363**
Action 4. Clean Transport Energy efficient vehicle and modal shift				284	2,257	**2,541**
Action 5. Green Energy Deployment of renewable electricity		30	4			**34**
Total ($ktCO_2eq$)	**1,477**	**329**	**296**	**284**	**2,257**	**4,643**

Mitigation projects in Hai Phong to achieve Low Carbon City

No	Action	Emission reduction ($ktCO_2eq$)
1	Green Industry	1,476.8
2	Green Urban	228.0
3	Energy Efficiency	362.8
4	Clean Transport	2,541.3
5	Green Energy	34
	Total	4,642.9

Mitigation projects in Hai Phong to achieve Low Carbon City

	Action		Project	Emission reduction ($ktCO_2eq$)
1	**Green Industry**	1-01	Energy savings in factory	601.9
		1-02	Installation high energy efficiency facilities (such as compressors and motors)	93.4
		1-03	Regional energy supply system	514.8
		1-04	Improvement of kiln and furnace technology	266.6
2	**Green Building**	2-01	Installation of insulated glasses to commercial buildings	19.5
		2-02	Installation of insulated glasses to households	35.4
		2-03	Introduction of incentive to low energy buildings	3.5
		2-04	Introduction of insulating material to houses	13.4
		2-05	Energy efficiency technology applied to buildings	9.7
		2-06	Introduction of solar water heater to commercial buildings	44.4
		2-07	Introduction of solar water heater to households	102.2
3	**Energy Efficiency**	3-01	Energy savings in commercial facilities	35.4
		3-02	Conversion of street lights to LED lighting High efficiency lighting in public lighting	3.2
		3-03	High efficiency lighting in commercial buildings	43.0
		3-04	High efficiency lighting in households	36.4
		3-05	High efficiency air conditioners (such as air conditioners with inverter controllers) in commercial buildings	22.7
		3-06	High efficiency air conditioners (such as air conditioners with inverter controllers) in commercial households	48.8
		3-07	Promotion of energy-efficient appliances (refrigerator and other appliances)	172.2
		3-08	Promotion of energy-efficient appliances (cooking appliances)	1.1
4	**Clean Transport**	4-01	Promotion of eco-driving with digital tachographs	169.7
		4-02	Wide-range traffic control	5.4
		4-03	Expansion of frequencies and routes of bus transportation	7.6
		4-04	Development of Bus Rapid Transit (BRT)	3.8
		4-05	Introduction of EV buses	7.8
		4-06	Introduction of electric motorbikes	39.9
		4-07	Promotion of energy-efficient vehicles (cars for passenger)	160.2
		4-08	Promotion of energy-efficient vehicles (motorbikes)	87.0
		4-09	Promotion of energy-efficient vehicles (trucks)	2,060.1
5	**Green Energy**	5-01	Introduction of photovoltaic power generation to commercial buildings	28.5
		5-02	Introduction of photovoltaic power generation to households	4.1
		5-03	Introduction of small-scale hydropower generation (at water distribution stations)	1.4
	Total			**4,642.9**

Mitigation projects in Hai Phong to achieve Low Carbon City

Action 1: Green Industry

Action		Project	Emission reduction ($ktCO_2eq$)
1 **Green Industry**	1-01	Energy savings in factory	601.9
	1-02	Installation high energy efficiency facilities (such as compressors and motors)	93.4
	1-03	Regional energy supply system	514.8
	1-04	Improvement of kiln and furnace technology	266.6
Total 1			**1,476.7**

Mitigation projects in Hai Phong to achieve Low Carbon City

Action 2: Green Urban

Action		Project	Emission reduction ($ktCO_2eq$)
2 Green Urban	2-01	Installation of insulated glasses to commetcial buildings	19.5
	2-02	Installation of insulated glasses to households	35.4
	2-03	Introduction of incentive to low energy buildings	3.5
	2-04	Introduction of insulating material to houses	13.4
	2-05	Energy efficiency technology applied to buildings	9.7
	2-06	Introduction of solar water heater to commercial buildings	44.4
	2-07	Introduction of solar water heater to households	102.2
Total 2			**228.1**

Mitigation projects in Hai Phong to achieve Low Carbon City

Action 3: Energy Efficiency

Action		Project	Emission reduction ($ktCO_2eq$)
3 Energy Efficiency	3-01	Energy savings in commercial facilities	35.4
	3-02	Coversion of street lights to LED lighting	3.2
	3-03	High efficiency lighting in commercial buildings	43.0
	3-04	High efficiency lighting in households	36.4
	3-05	High efficiency air conditioners (such as air conditioners with inverter controllers) in commercial buildings	22.7
	3-06	High efficiency air conditioners (such as air conditioners with inverter controllers) in commercial households	48.8
	3-07	Promotion of energy-efficient appliances (refrigerator and other appliances)	172.2
	3-08	Promotion of energy-efficient appliances (cooking appliances)	1.1
Total 3			**362.8**

Mitigation projects in Hai Phong to achieve Low Carbon City

Action 4: Energy Efficiency

Action		Project	Emission reduction ($ktCO_2eq$)
4 **Clean Transport**	4-01	Promotion of eco-driving with digital tachographs	169.7
	4-02	Wide-range traffic control	5.4
	4-03	Expansion of frequencies and routes of bus transportation	7.6
	4-04	Development of Bus Rapid Transit (BRT)	3.8
	4-05	Introduction of EV buses	7.8
	4-06	Introduction of electric motorbikes	39.9
	4-07	Promotion of energy-efficient vehicles (cars for passenger)	160.2
	4-08	Promotion of energy-efficient vehicles (motorbikes)	87.0
	4-09	Promotion of energy-efficient vehicles (trucks)	2,060.1
Total 4			**2,541.5**

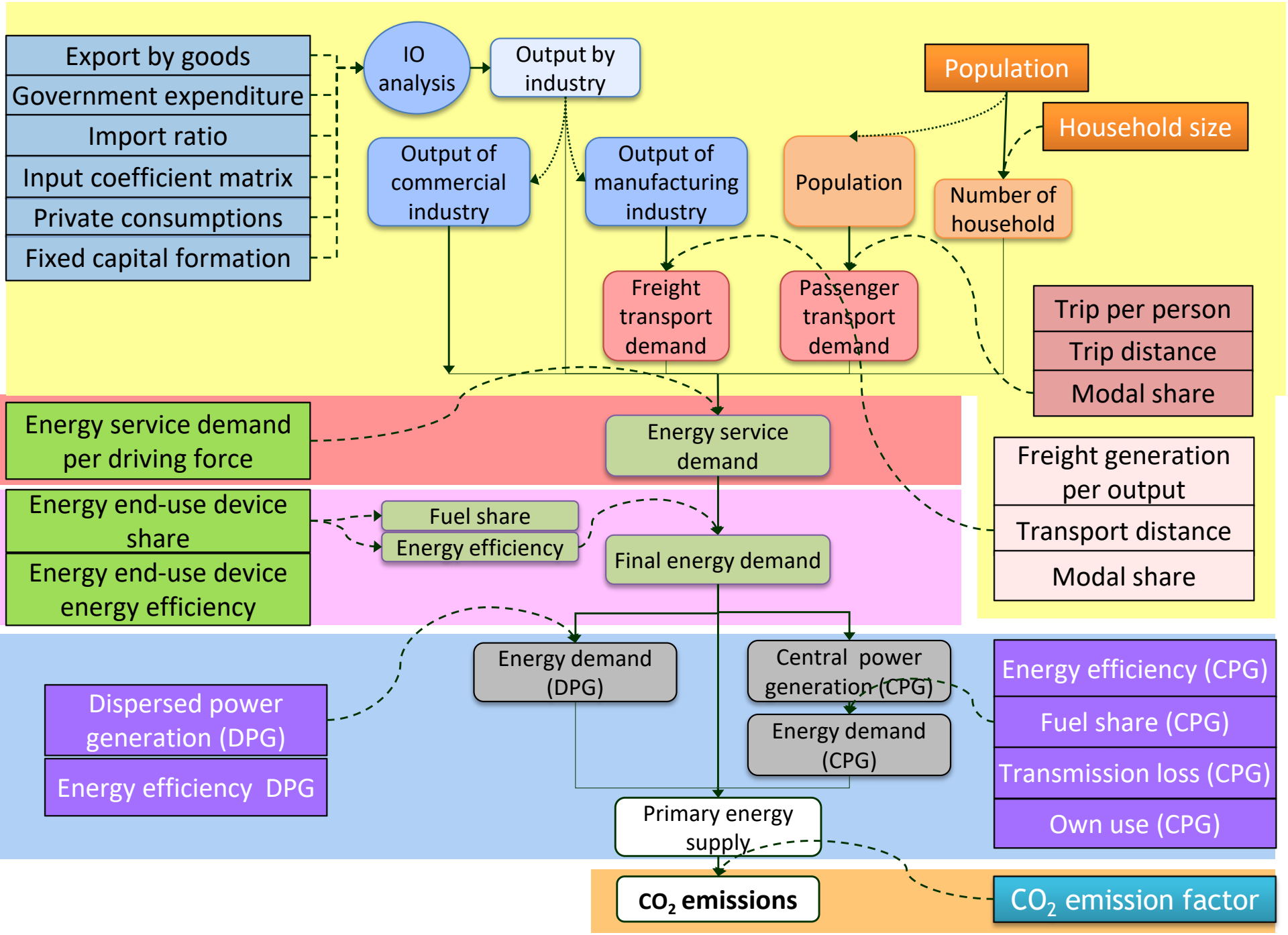
Mitigation projects in Hai Phong to achieve Low Carbon City

Action 5: Green Energy

Action		Project	Emission reduction ($ktCO_2eq$)
5 Green Energy	5-01	Introduction of photovoltaic power generation to commercial buildings	28.5
	5-02	Introduction of photovoltaic power generation to households	4.1
	5-03	Introduction of small-scale hydropower generation (at water distribution stations)	1.4
Total 5			**34**

Green environment with your and my role

Thank you very much.


Export by goods
Government expenditure
Import ratio
Input coefficient matrix
Private consumptions
Fixed capital formation
IO analysis
Output by industry
Output of commercial industry
Output of manufacturing industry
Population
Household size
Population
Number of household
Freight transport demand
Passenger transport demand
Trip per person
Trip distance
Modal share
Energy service demand per driving force
Energy service demand
Freight generation per output
Transport distance
Modal share
Energy end-use device share
Energy end-use device energy efficiency
Fuel share
Energy efficiency
Final energy demand
Dispersed power generation (DPG)
Energy efficiency DPG
Energy demand (DPG)
Central power generation (CPG)
Energy demand (CPG)
Energy efficiency (CPG)
Fuel share (CPG)
Transmission loss (CPG)
Own use (CPG)
Primary energy supply
CO_2 emissions
CO_2 emission factor