



LOW-CARBON CITY CONSTRUCTION AND MANAGEMENT

**EXPERIENCE SHARING OF TIANJIN
GREEN DEVELOPMENT**

TIANJIN ENVIRONMENTAL PROTECTION BUREAU

JUNE 2018, IN ULAANBAATAR

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About Tianjin

1.1 Geographical Condition

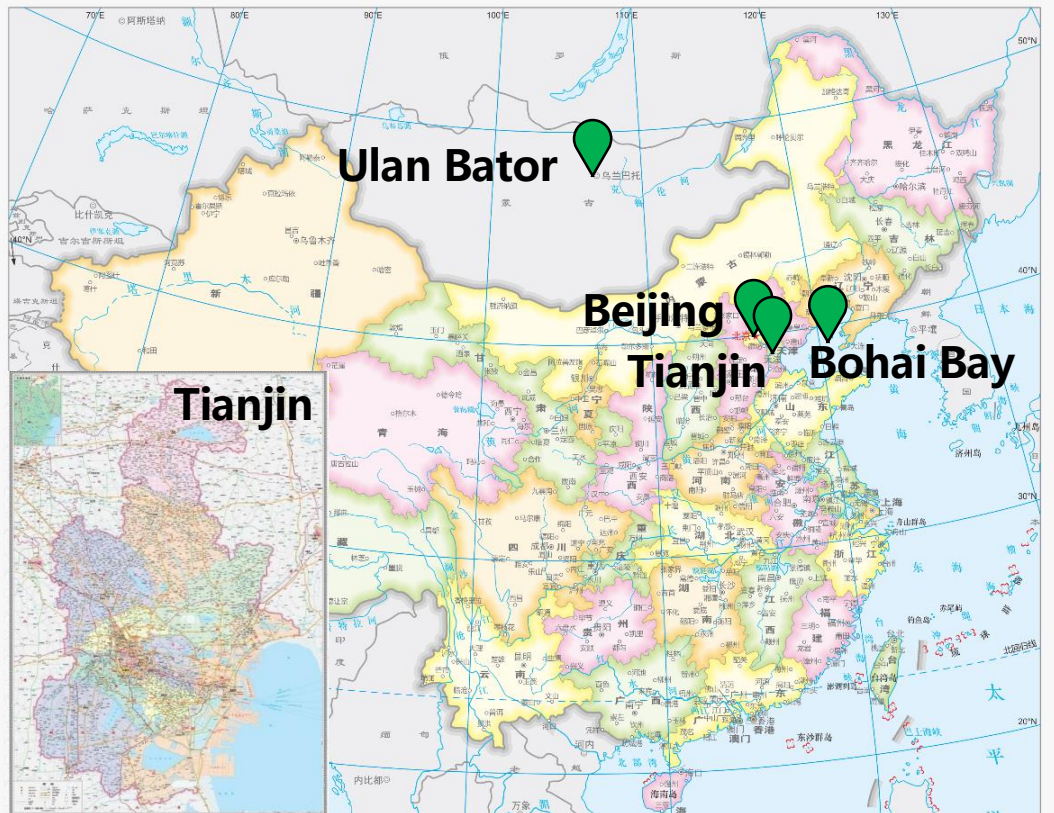
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1.3 Energy and Carbon Emission

1. About Tianjin

1.1 Geographical Condition

Tianjin is located in northeast part of North China Plain, downstream of Haihe River Basin and center of Bohai Bay. It is 120 km from Beijing and is the biggest coastal city in the north part of China. Tianjin has a land area of 1.19 million hectares, 153 km coastline, and more than 3,000 km² of sea area.



1.2 Social and Economic Development



In 2016, GDP was 269 billion USD; it had 15.62 million residents; GDP per capita was more than 17 thousand USD; service industry accounted for more than 56%.

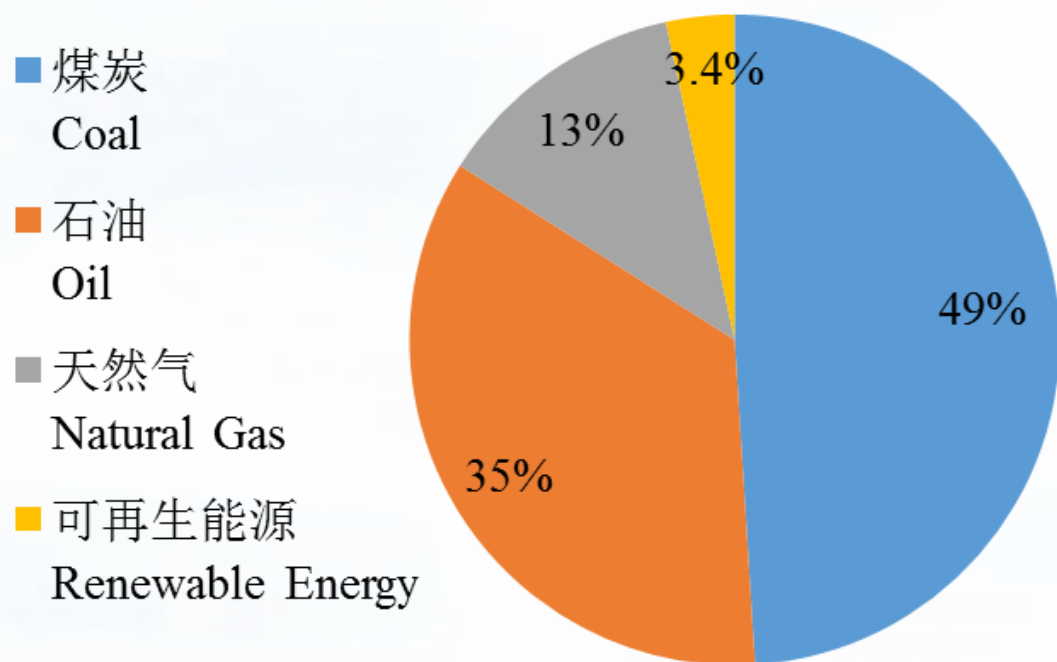


1. About Tianjin

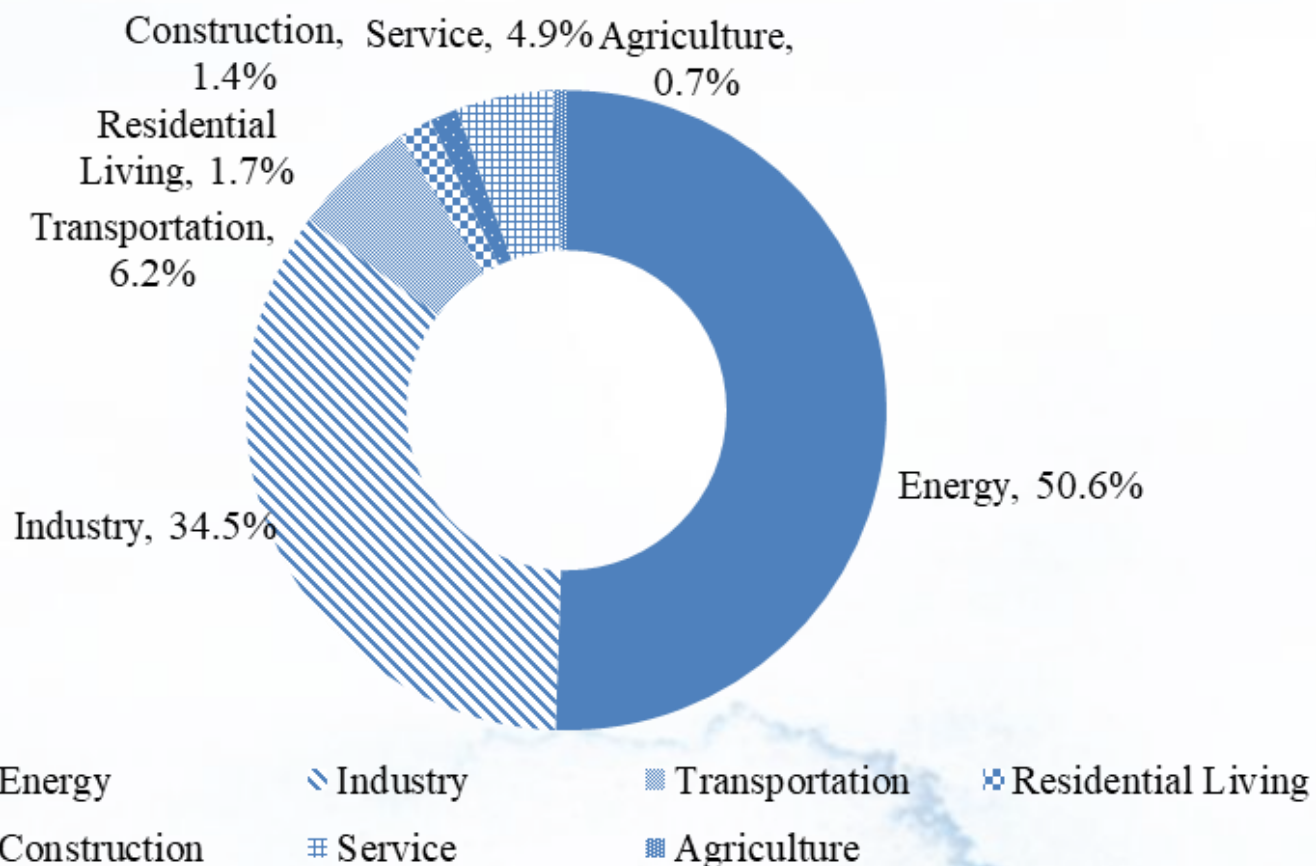
1.3 Energy and Carbon Emission

Coal is the major source for energy consumption and it accounted for 50% of all energy consumption for 2015. Carbon Emission: Energy production sector 51%; Industry sector 35%.

From 2005 to 2015, energy intensity decreased 50%; Carbon emission intensity decreased 50%.



Energy Consumption in 2015



Contribution to Carbon Emission Grouped by Sectors in 2015

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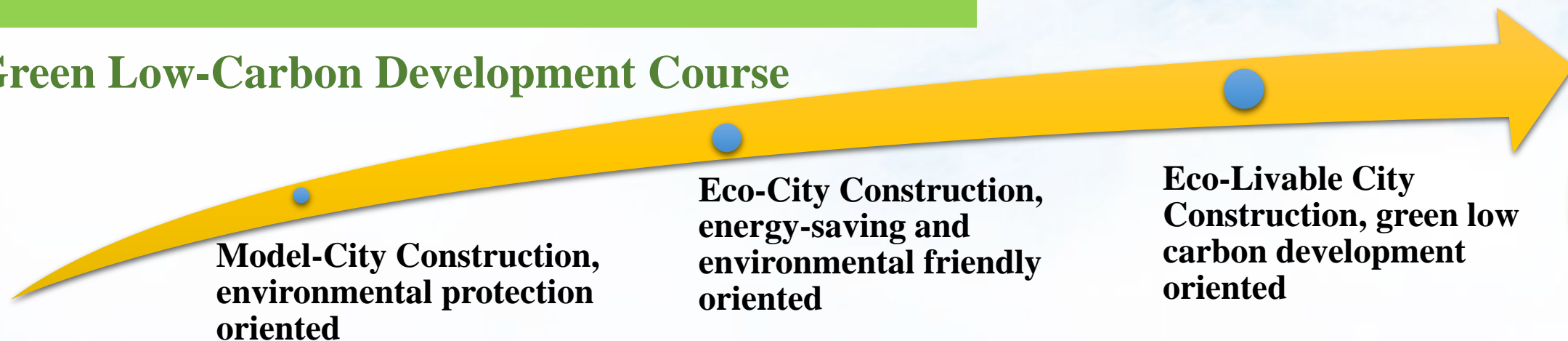
System of Green Development Policy

2.1 Green Low-Carbon Development Course

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2. System of Green Development Policy

2.1 Green Low-Carbon Development Course



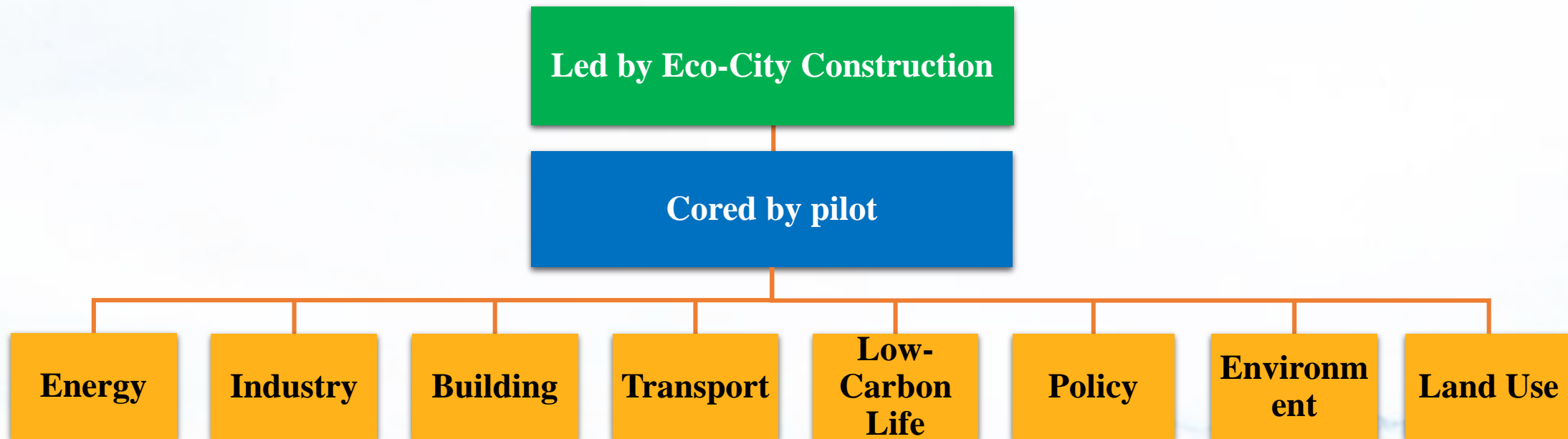
Green Low-Carbon Policy System, environmental protection policy oriented (2002-2006)	Green Low-Carbon Policy System, energy conservation and emission reduction oriented (2006-2010)	Green Low-Carbon Policy System, carbon emission target oriented (2010-2015)	Green Low-Carbon Policy System, ecological civilization oriented (2015-now)
<p>1. Implement 6 projects: Blue Sky Project, Green Water Project, Noise-Free Project, Eco-Environment Projection Project, Industrial Pollution Control Project and Environment Model City Project.</p> <p>2. Control coal-sourced pollution and vehicle emission pollution.</p>	<p>1. Issue <i>Outline of Tianjin Eco-City Construction Planning</i>, and make the eco-city action plan.</p> <p>2. Formulate <i>Tianjin Energy Conservation and Energy Reduction Implementation Scheme</i>.</p> <p>3. Awarded as National Circular Economy Pilot City, and widely carry out pilot construction.</p>	<p>1. Introduce carbon intensity target.</p> <p>2. Formulate <i>Tianjin Low-Carbon Pilot Implementation Scheme</i>.</p> <p>3. Formulate a Five-Year planning to carry out energy conservation, low-carbon, environmental protection and eco-city construction.</p> <p>4. Release <i>Clean Air Action Plan</i>.</p>	<p>1. Make Eco-Civilization Construction target;</p> <p>2. Implement energy consumption total amount control and energy intensity control.</p> <p>3. Carry out study on carbon emission peak value, and put out the peak goal in 2025.</p> <p>4. Establish joint air pollution prevention and control cooperation mechanism among Beijing, Tianjin and Hebei Province.</p>



2. System of Green Development Policy

2.2 Green Low-Carbon Development Mode

Led by Eco-City Construction, cored by pilot demonstrative construction, Tianjin has a comprehensive low-carbon development mode integrated by the low-carbon development of energy, industry, building, transportation and other areas.



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3.5 Integrated Green Development Pilot Construction

3. Practice of Low-Carbon Construction and Management

3.1 Energy

Core of Policies : Strictly control total coal consumption amount and promote the use of clean energy

Control of total coal consumption amount :

- Carry *Tianjin Coal Consumption Reduction and Clean Energy Replacement Implementation Scheme*.
- Strictly control the approval of coal-consumed new projects and eliminate small-scale thermal power unit.
- Strongly promote to dismount coal boilers in all industries and heating boilers, and replace coal boiler by other clean energy boilers.
- Step up the introduce of outer electricity source into Tianjin.

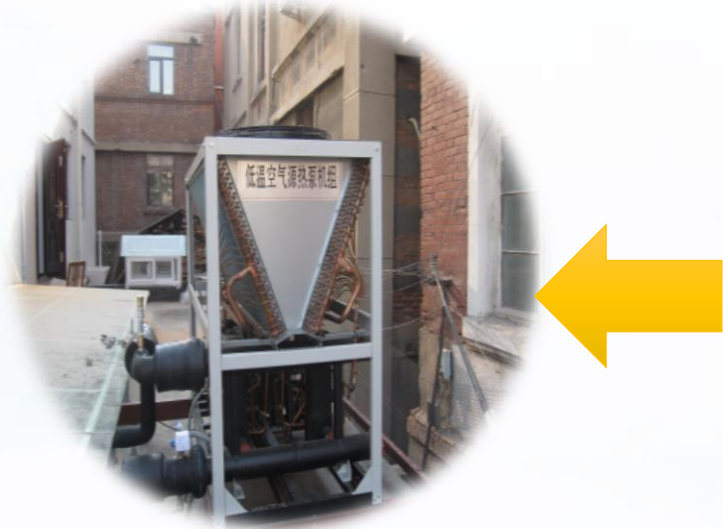
Replaced by clean energy:

- **Step up clean energy project:** wind power, photovoltaic, gas generation, geothermal utilization.
- **Promote clean heating in winter:** electricity replace coal, gas replace coal, etc. in proper situations.
- **Implement clean-coal utilization:** renovate to obtain low emission of coal-sourced industries, or replace by non-smoking coal

3. Practice of Low-Carbon Construction and Management

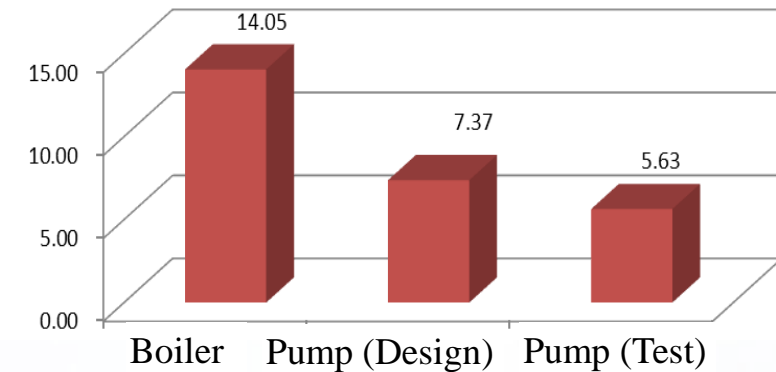
3.1 Energy

Case of clean energy use: Air sourced heat pump replace coal or fuel boiler for winter heating.

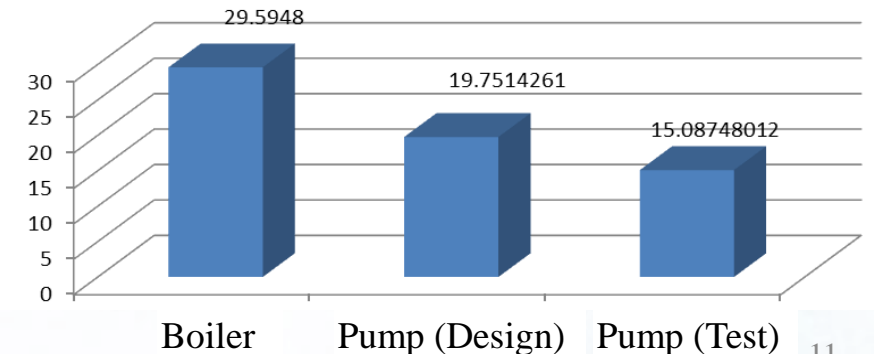


A 60KW air-sourced heat pump Unit (R32), as a heating source instead of the original fuel boiler (the three-story building in the right pictures), the actual building area is 904m² for heating. The heat pump system can ensure the indoor temperature stability reach more than 20 °C (indoor average temperature of 22.02 °C)

Energy Consumption
Oil Boiler VS Heat Pump



Energy Consumption
Oil Boiler VS Heat Pump



3. Practice of Low-Carbon Construction and Management

3.2 Industry

Core of Policies: industry structure adjustment, reconstruction and standard- lifting for key industries

Adjust industry structure:

- Promote development of advanced manufacturing industry; push transformation of tradition industries.
- Eliminated lagged-behind enterprises(key industries such as iron and steel industry, cement industry) and deal with the surplus energy, through industry integration, elimination, transformation, etc.
- Fully develop modern service industry and keep same focus on manufacturing service industry and life-living service industry.

Reconstruction and standard lifting for key industries:

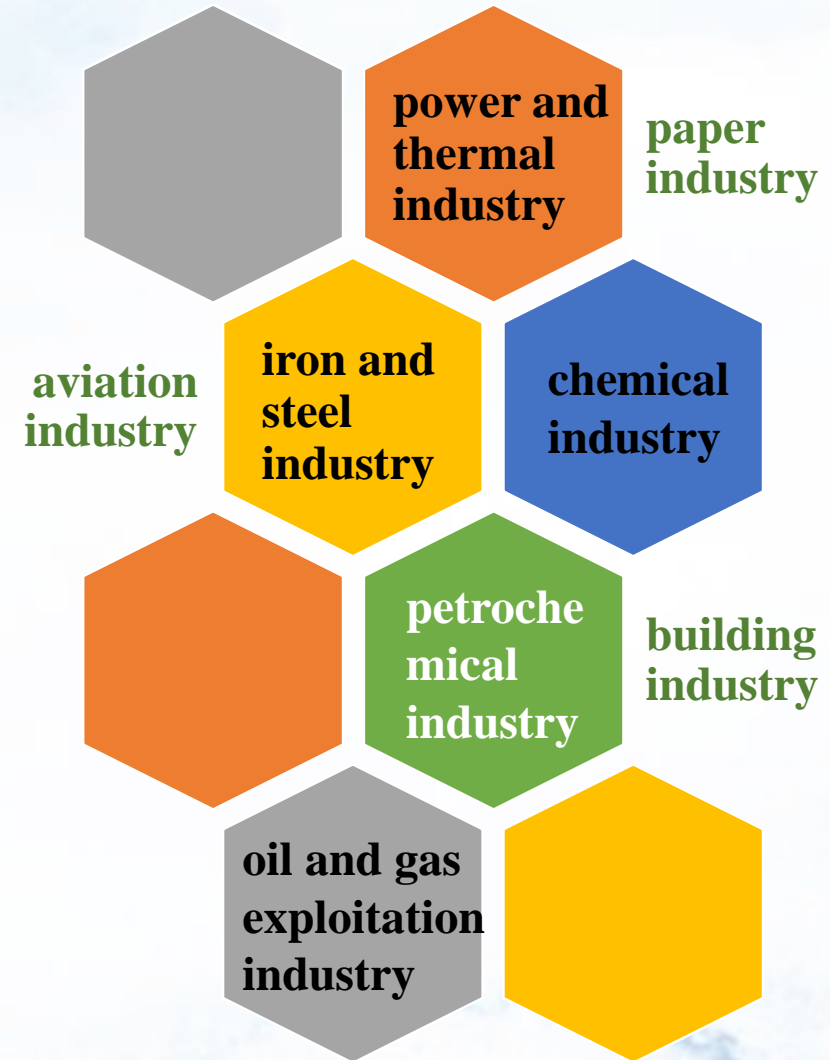
- Implement desulphurization, denitrification and de-dust projects to thermal power, iron and steel, petrochemical, cement and nonferrous metal smelting, so as to reach emission standards.
- Key energy-conservative projects: industrial boilers (kiln) renovation, regional cogeneration, residual heat utilization.
- Fully implement pollutants discharge permit to ensure key industries act according to permit.

3. Practice of Low-Carbon Construction and Management

3.2 Industry

Industry transformation promoted by markets: carbon emission : Carbon Emission Trading Pilot

- ❑ One of the seven carbon emission trading pilots
- ❑ Pilots include enterprises with a CO₂ emission equal to or more than 20 thousand tons, in iron and steel industry, power and thermal industry, petrochemical industry, chemical industry, oil and gas exploitation industry. About 110 enterprises were included.
- ❑ Control the total amount of carbon trading. Make the enterprises to reduce carbon through quota allocation, market trading.
- ❑ Tianjin started carbon trading in December 26, 2013. agreement fulfillment rate rises from 96.5% in 2013 to 100% in 2015. The awareness of enterprises rises obviously.
- ❑ More areas are included into national carbon trading: paper industry, building industry, aviation industry, about 150 enterprises.



3. Practice of Low-Carbon Construction and Management

3.3 Transportation

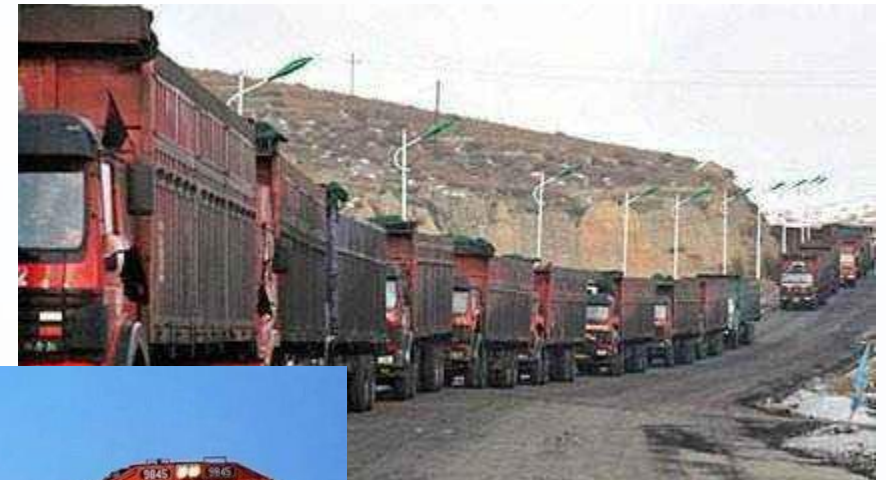
Core of Policies : refine urban transport management and adjust transportation structure

Refine urban transport management:

- **Control and Manage the total amount of all small passenger cars in Tianjin since 0 am, December 16th, 2013.**
- **Implement traffic restriction for high emission vehicles.**
- **Eliminate vehicles without reaching valid emission standards.**
- **Widely promote new energy vehicles.**

Adjust transportation structure:

- **Implement ocean-rail transportation of coal.**
- **Manage permit of coal cars.**
- **Step up the construction of track traffic.**



CO₂

3. Practice of Low-Carbon Construction and Management

3.4 Building

Core of Policies: promote green building construction and energy-conservative reconstruction of existed buildings

Promote green building construction:

- Implement *Tianjin Green Building Action Plan*, promote green building construction in newly built cities, government invested projects and large-scale public buildings.
- Make and Release *Tianjin Green Building Design Standard*, Newly built non-public building must 100% implement this standard.
- Widely Use renewable energy and construct renewable energy station.

Promote energy-conservative reconstruction of existed buildings:

- Reconstruct building covering, heat supply system and energy supply system in residential and public buildings, so as to reduce energy consumption.
- Strengthen energy efficiency monitoring and strive to implement heating metering.

3. Practice of Low-Carbon Construction and Management

3.5 Integrated Green Development Pilot Construction

National green development pilot: Sino-Singapore (Tianjin) Eco-City

It is a strategic cooperative project between Chinese and Singapore governments. It shows the strong mind to tackle climate change, strengthen environment protection, conserve resource and energy. It is also a pilot to construct a energy-conservative and environmental friendly society.

The Tianjin Eco-city has determined the development orientation and goals of “4-3-2-1”:

- ◆ **Four Areas:** ecological environment, economy, ecological science and technology, and culture;
- ◆ **Three Harmonies:** People-People, People - Economic Activities, and People - Environment ;
- ◆ **Two Wheels:** new urbanization and industrialization ;
- ◆ **A Road** to strive for a green, sustainable development of ecological cities.

Eco-city Construction Index System includes economic, social, ecological, and regional coordinated development. A new path is formulated for urban management under the guidance of indicators.

Eco-city Construction Index System

Economic growth

- GDP
- Value Added by Service Sector in Gross Domestic Product
- Barrier-free facilities rate
- (5 items)

Resources and Energy Conservation

- Energy production rate
- Land productivity
- Renewable energy use ratio
- Green building ratio
- (10 items)

Ecosystem

- Carbon emission intensity
- Total SO₂ emissions
- Total nitrogen oxide emissions
- Urban green coverage
- (8 items)

Green lifestyle

- Daily per capita energy consumption
- Daily per capita domestic waste generation
- Proportion of green travel
- (5 items)

3. Practice of Low-Carbon Construction and Management

3.5 Integrated Green Development Pilot Construction

Main Features:

- ◆ The first ecological city which is developed and built by intergovernmental cooperation
- ◆ Choose to build an ecological city under resource constraints ;
- ◆ Targeting ecological restoration and conservation ;
- ◆ Compact urban layout supported by green traffic ;
- ◆ The index system serves as the basis for urban planning ;
- ◆ Eco-valley and ecological cells constitute the basic framework of the city ;
- ◆ Directly drinking water as a symbol to establish an ecological recycling water system ;
- ◆ Taking the use of renewable energy as a symbol to build a resource-saving and environment-friendly society ;







Thanks for your attention!