

National ETS Policy Study and Market Outlook in the Post-PA Era

全国碳市场建设研究和展望

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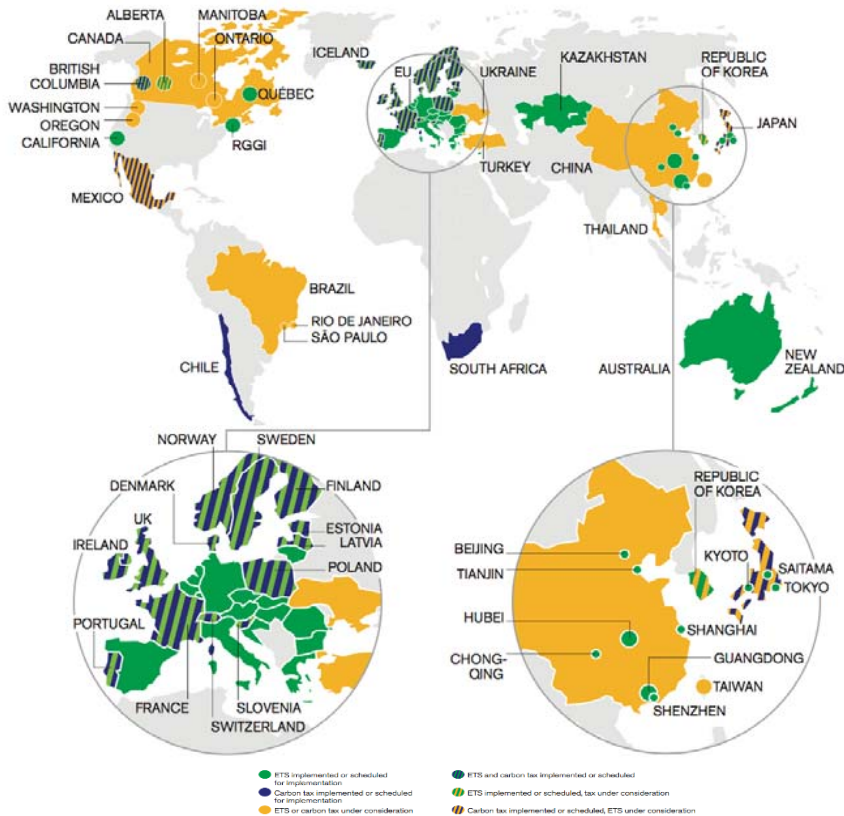
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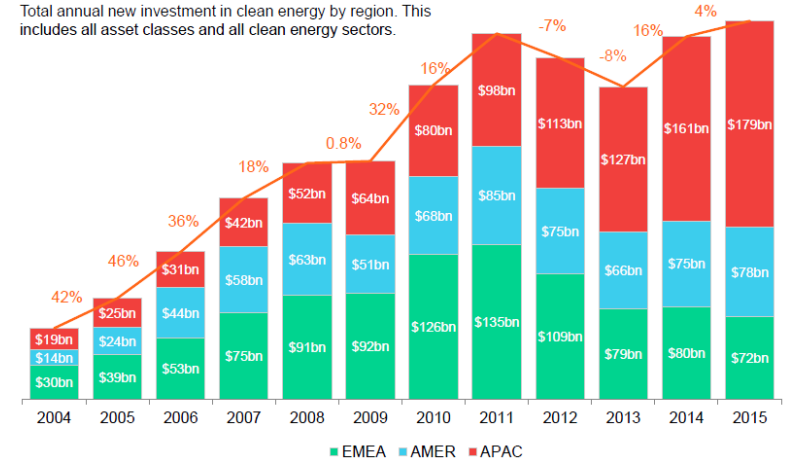
国家应对气候变化战略研究和国际合作中心

National Center for Climate Change Strategy and International Cooperation (NCSC)

Emerging Global Green Market



Total annual new investment in clean energy by region. This includes all asset classes and all clean energy sectors.



Global clean energy investment in 2015 reached a record total of **\$ 328.9 billion**. China has once again become the world's largest clean energy industry investor, with investment in 2015 increased by 17% to \$ 110.5 billion.

Global carbon market transactions totaled about 6.17 billion tons (4.96 billion tons in the EU) in 2015, with total transactions of about **€ 48.35 billion** (€ 37.46 billion in the EU).

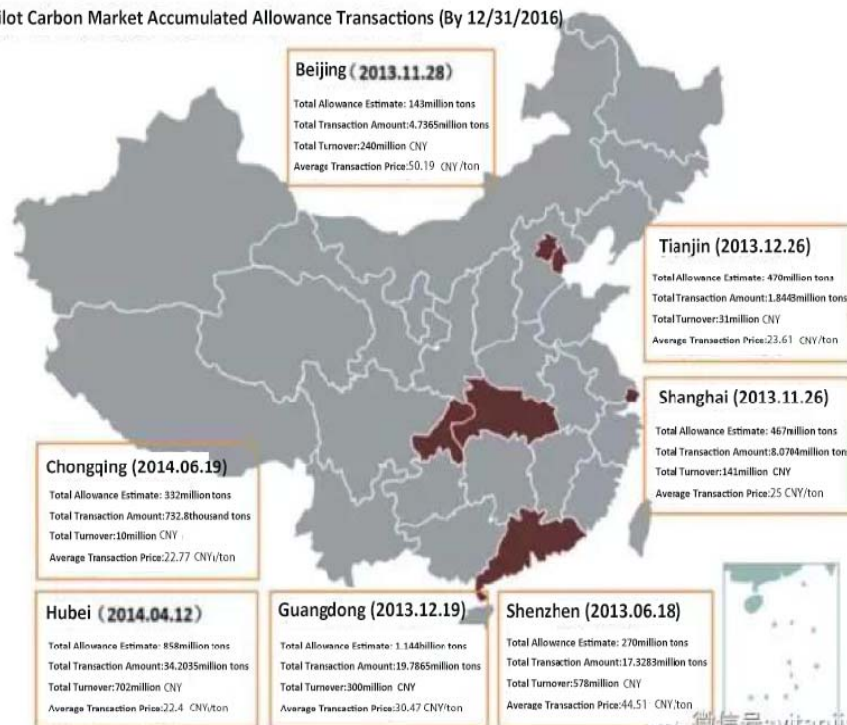
In 2017, **40 countries** and **25 countries jurisdiction areas** have adopted carbon pricing mechanisms, covering about **50% of GDP** and **8 billion tons** of CO₂e, accounting for about **15%** of global annual emissions. Over the past 10 years, the share of global carbon emissions covered by carbon pricing has quadrupled.

- ✓ The countries and regions that have started their carbon markets include China which launched carbon trading pilots in seven provinces and municipalities and Fujian, the United States which has RGGI covering California, Washington and the eastern ten states, Quebec, Ontario, British Columbia, Alberta in Canada, Tokyo, Kyoto and Saitama Prefecture in Japan, as well as the European Union, Switzerland, New Zealand, South Korea, Australia, Chile (T), Colombia (T).
- ✓ Canada, Mexico, Colombia, Chile, Kazakhstan, Singapore plans to carry out national carbon emissions trading system.

ETS Pilots in China

- By the end of 2016, the total allowances traded was around 86 million tons CO₂e and transaction amount is around **2 billion CNY**, an average rate of **23 CNY/ton CO₂e**. Trading amount made up less than 10% of the total allowances, showing a lack of liquidity; CCER traded is about 81.11 million tons of CO₂e and transaction amount is about **720 million CNY**, an rate of **8.9 CNY/ton CO₂e**.
- By the end of March, 2017, the cumulated number of CCER in pipeline is 2871. 1047 programs were registered and around 400 CCER were issued, and issued emission reduction amount is around 72 million tons of CO₂e.
- Allocation methods of quota in the pilot area is dominated by grandfathering+ benchmark method, and Guangdong tried auction.

Seven Pilot Carbon Market Accumulated Allowance Transactions (By 12/31/2016)



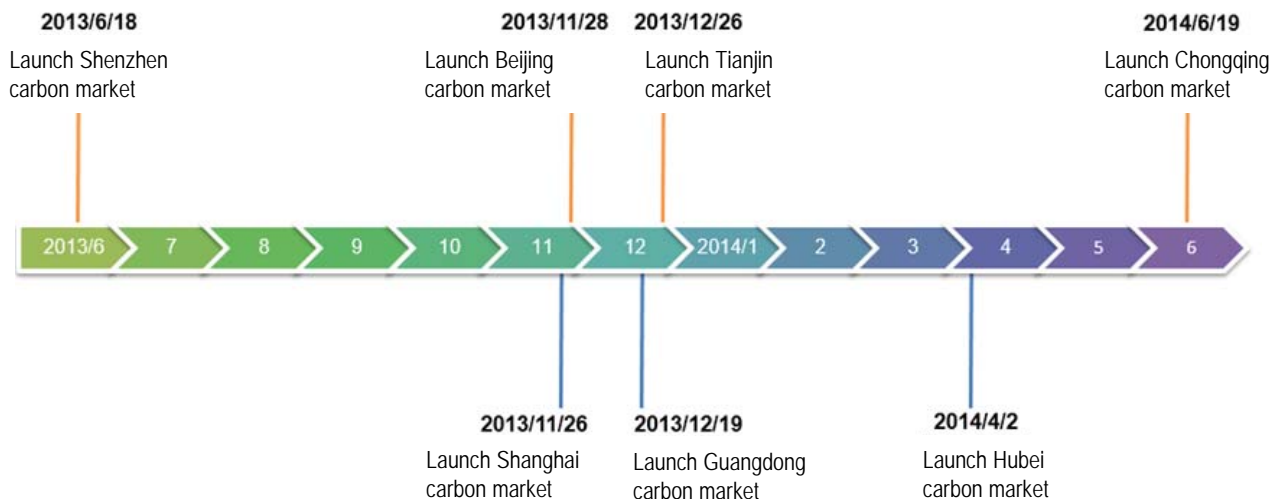
Pilot Region	Offset Mechanism
Beijing	5% max. and more than 50% should be generated by local projects of the city
Shanghai	5% max.
Shenzhen	10% max.
Guangdong	10% max. and more than 70% should be generated by local projects of the province
Tianjin	10% max.
Hubei	10% max. and all should be generated by local projects of the province
Chongqing	8% max. and all projects should be local ones that put into service after 12/31/2010, excluding water and power projects



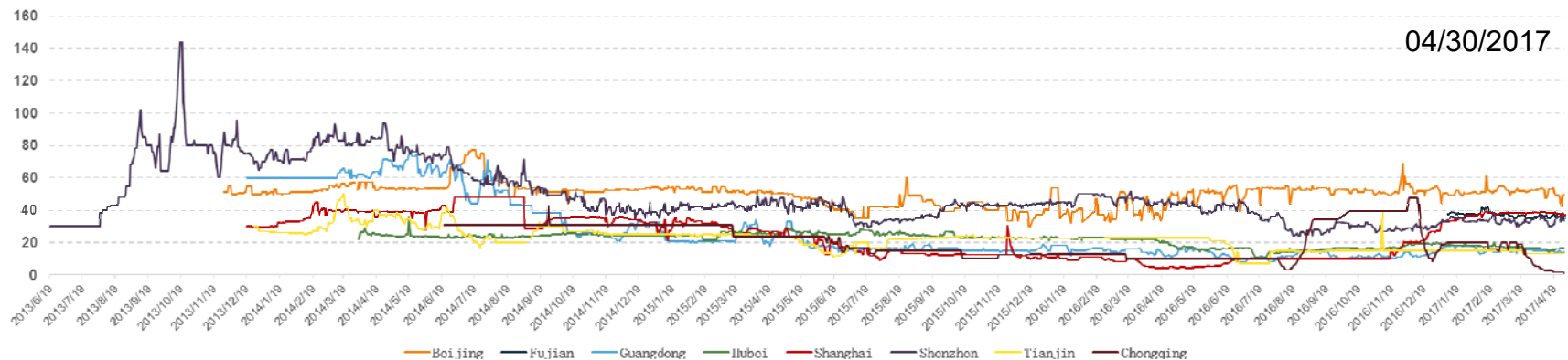
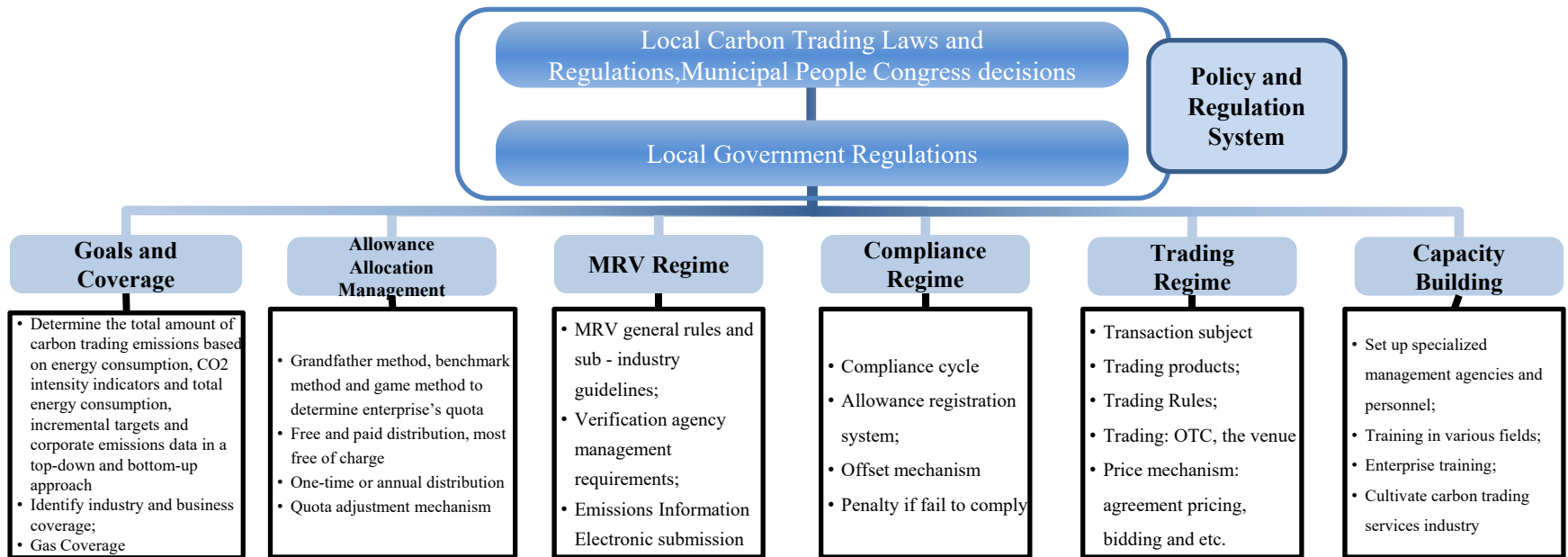
Representativeness of Seven Pilots

Region	Population (10 thousand)	GDP (100 million CNY)	GDP per Capita (CNY)	The proportion of the tertiary industry accounted for GDP (%)	Fossil Fuel Consumption(ten million tons standard coal)	Fossil fuel energy Consumption per Capita(Ton Standard Coal)	Fossil fuel energy generated by carbon dioxide emissions(100 million ton)
Beijing	2151.6	21330.8	99995	0.7/21.3/77.9	4820.71	2.24	1.00
Tianjin	1516.8	15726.9	103684	1.3/49.4/49.3	6293.23	4.15	1.47
Shanghai	2425.7	23567.7	97159	0.5/34.7/64.8	8914.08	3.68	2.00
Chongqing	2991.4	14262.6	47679	8.3/51.1/40.5	6216.76	2.08	1.48
Guangdong	10724.0	67809.9	63232	4.7/46.3/41.5	20820.47	1.94	4.90
Hubei	5816.0	27367.0	47055	0.1/42.7/57.2	12156.87	2.09	2.96
Shenzhen	1077.9	16002.0	149497	9.2/42.7/48.1	—	—	—
Nationwide	136782.0	634043.4	46629	0.7/21.3/77.9	378077.35	2.76	93.3

The pilots covers a total of 480,000 square kilometers land area , 250 million population, 14.2 trillion CNY GDP, 830 million tons of standard coal of energy consumption, accounting for 19%, 27% and 24% respectively.



Innovation in Seven Pilots Values



Roles of Governments and Market

Research and Preparation

2015

- Draft regulations, supporting with management practices and technical standards, report to the Legislative Affairs Office of the State Council for audit
- Research to determine the scope of industry coverage, threshold, and allowance allocation method
- Research and report to verify the relevant management rules, construct enterprise carbon emissions reporting platform and carbon trading registration system

2016

- With the State Council Legislative Affairs fulfill regulations established procedures, revise and improve the supporting management practices, and introduce some technical standards
- Organized the local to report more than 5,000 into the list of enterprises and carry out corporate carbon emissions data inventory (currently 10 provinces have been reported, and it is expected that by the end of December most of the provinces will submit their data)
- Verified the allocation of quota in different industries, and is currently summarizing in the local reporting of corporate carbon emissions data; determine the accounting parameters, the introduction of allowances allocation method and the specific distribution guidelines; organize part of the enterprise to try to allocate, and improve the distribution method
- Improve the function of registration system and carry out establishment registration

Launch and Test Run

2017

- Introduce and implement regulations, supporting management practices and the required technical standards
- Further determine around 8000 qualified enterprise, organize them continue to submit carbon emissions data, and officially launch the first year of the national carbon market quota points
- Issue a report to verify the relevant management rules, to carry out third-party verification agency qualification
- Establish a countervailing mechanism, the revision of the CCER management approach, and the delegation of authority

Fully Implementation

2018-2020

- Expand coverage
- Improve system rules
- Establish a trading platform
- Study connection with international markets

Central Govt.

Local Govt.

Enterprise

- Organize capacity building activities
- Identify key entities, organize accounting and reporting of historical emissions of the key entities
- Allocate allowances based on a unified method

- Participate in capacity building activities
- Establish an internal carbon emissions accounting reporting system
- Fulfill the reporting obligations and cooperate with accounting
- Non-coverage enterprises can participate in the carbon market through CCER

- Carry out annual quota allocation
- Carry out annual emissions accounting, reporting and compliance
- Participate in the system improvement according to local characteristics

- Fulfill the emission reports and performance responsibilities
- Improve the carbon asset investment and management system
- Voluntarily participate in transactions to reduce emissions reduction costs
- Actively improve regulations and encourage innovation

A Roadmap for National ETS

	2017-2020 Phase I	2021-2030 Phase II	After 2030 Phase III
Characteristics	Low carbon development start period; Push industry to achieve emission peak.	Low carbon development transformation period; Control consumption emission growth.	Low carbon development breakthrough period; Achieve fast carbon emission reduction.
Market Coverage	The establishment of central primary market and local secondary market, wide emission coverage, high concentration, good data quality, emissions caused by overcapacity.	Improve the unified market, covering emissions from industries, buildings and traffic that reached the unified threshold, connect with part of the external market	Improve central, local, voluntary, all-inclusive carbon market, expand to emissions from small and medium size companies, buildings and traffics, connect with major market in other countries and regions.
Sector Coverage	Electricity, cement, aluminum, aviation and etc.	Large industrial enterprises, large constructions, traffic emissions, and some foreign projects	Most industrial enterprises, most of buildings, traffic emissions, and ITMO covered sectors
Emission Coverage	~ 30%	~ 50%	70% and up
Total Emission Control	Benchmark and total emission control	Bottom-up coupled with national emission budget	Top-down coupled with national emission budget
Allocation	Combine benchmark and grandfathering, should not overemphasize the superiority of benchmarking method	Increase the percentage of paid allocation step by step to encourage better performances	Maintain a certain level of paid allocation, and include emission budget allocation into the broader policy control system
Key Policy Points	Unified rules, steady launch, policies synergistic effect, dominate by free allocation, carbon finance pilot, international cooperation pilot.	Explore demand side emission control through carbon market, increase the proportion of auction, consider demand side quota, promote carbon finance service, and deepen international cooperation.	Explore carbon market operation in the context of rapid decline of absolute emission, high proportion of auction, expand demand side quota, improve carbon finance, and fully participate in international cooperation

Market Size of National ETS

	2017-2020 Phase I	2021-2030 Phase II	After 2030 Phase III
Market Size	~ 3 billion ton CO ₂ e per year	4.5 to 5.5 billion ton CO ₂ e per year	6 to 7 billion ton CO ₂ e per year, size gradually shrink afterwards
Turnover Rate	3-5% (reference to pilot programs in China)	10-15%	20-30%
Spot Trading Volume	0.09-0.15 billion ton CO ₂ e per year	0.45-0.825 billion ton CO ₂ e per year	1.2-2.1 billion CO ₂ e per year
Average Spot Price	50 CNY per ton CO ₂ e	100 CNY per ton CO ₂ e	200 CNY per ton CO ₂ e
Carbon Spot Size	4.5-7.5 billion CNY	45-82.5 billion CNY	240-420 billion CNY
Spot Ratio	0-2	5-10	20-30
Carbon Futures Scale	0-15 billion CNY	225-825 billion CNY	4800-12600 billion CNY

Strategies & Positioning at Phase I

- **Infrastructure First.** Unify rules and buildup a framework. Focusing on the basic structure of the national carbon market and building the necessary legal, institutional and information base for the operation of the carbon market, including pushing legislation, developing and implementing quota allocation schemes, establishing a reporting and accounting system, establishing a carbon trading registry and a carbon market trading platform, and strengthening capacity building.
- **Key Industries First.** Progressive; focus on the main contradictions, target on high energy-consuming industries that have large emissions, high concentration, better data qualities, low export sensitivity and excess capacity in the first phase, to power these high energy-consuming industries to upgrade and transformation, sustainable development.
- **Policy Co-benefit First.** Create synergistic effect and positive incentives. Do not overemphasize the destructive nature of the carbon market. Carbon market should help eliminate excess production capacity, adjust industry structure, and promote renewable energy. Carbon market should provide additional or replace the overcapacity elimination fund and renewable energy subsidies.
- **All Participation First.** Minimum risk and best practice oriented. Do not set participation threshold too high , carefully look forward to the development of carbon market expectations, extensively learn from the pilots, gradually improve the awareness and capability of all parties, reduce the risk of error as far as possible, and ensure that the national market launch as scheduled.

	GDP Proportion	CO ₂ Emission Proportion	Total Carbon Market Transaction Proportion	
	2015	2015	2015	2018 (estimate)
China	14.9%	29.5%	0.3%	5.5%
EU	22%	9.6%	77.5%	73.5%
North America	26.4%	15.9%	22%	20.9%

Allowance Allocation at Phases

- **A reasonable allocation of carbon quotas should meet the following standards:** Set quotas, reflect scarcity, deliver a firm emission reduction signal, facilitate the realization of emission peak; provide positive incentives, forcing transformation and upgrade of traditional enterprises to encourage low-carbon industry development; reduce the cost of emission reduction, optimize the allocation of carbon emissions resources; have political acceptance, taking into account regional and industry equity.
- **Allowance allocation in different phases:** Gradually shift from free allocation dominated to high proportion of auction; gradually link bottom-up and industry benchmark approach with national emissions reduction target; use different allowance allocation methods for productive emissions and consumption emissions.

	Allocation Method		Existing Facilities			Newly added facility	Emission Control Coefficient	Quota	CCER	Acceptance Consideration
	Productive Emissions (Industry)	Consumptive Emissions (New Energy Vehicles and electrical devices)	Historical Method	Reference Line Method	Auction Method					
2017-2020 Phase I	Homogeneous baseline method, the historical strength of the law free distribution of the main, appropriate auction	Explore the life cycle of products based on manufacturing enterprises Homogeneous baseline method	For Industries that not fit the reference line method	For Industries that meet the requirements	Reserve 5% -10% of the quota for auction (mainly in excess capacity industries, emissions, cost transmission smooth, no carbon leakage)	First come first serve, allocation is based on reference line method or advanced value method	Drop year by year	Bottom-up	Stock items are effective, offset the proportion no more than 8%	Taking rural areas into account
2021-2030 Phase II	Homogeneous baseline method, the historical strength of the law free distribution of the main, increased proportion of auction	Explore the life cycle of products based on manufacturing enterprises Homogeneous baseline method; appropriate auction	For Industries and construction and transportation sectors that not fit the reference line method	For industries that meet the requirements and construction and transportation sectors; set reference line according to similar products	Quota of auction is extended to 20%-30%	70% first come first serve; 30% for auction	Drop year by year	Mix	Offset by no more than 5%	Encourage advanced technology
After 2030 Phase III	High Proportion Auction	High Proportion Auction	For Industries and construction and transportation sectors that not fit the reference line method	For industries and transportation and construction sectors that do not participate auction and are not qualified	00% auction for electricity; Quota of auction is extended to 50%-60%	100% Auction	Drop year by year	Top-down	Offset by no more than 3%	Reflect international fairness

Impact of National ETS on Industries

	Electricity	Building Materials (cement)	Non-ferrous (Electrolytic Aluminum)	Aviation	Steel	Petrochemical Industry	Chemical Engineering	Papermaking	Consumer-controlled enterprises (electrical appliances, new energy vehicles)	Other Industries	Large construction, transportation enterprises
2017-2020 Phase I	Depending on performance costs	Depending on compliance costs, competitiveness damage is high			Not covered by in Phase I						
2021-2030 Phase II	Free quota part is expected to get excess profits	Depending on the transfer and compliance costs, competitiveness damage is high				Depending on the transfer and compliance costs, competitiveness damage is moderate		Low-carbon products manufacturing enterprises can be profitable	Depending on the transfer and compliance costs, competitiveness damage is low	Depending on the transfer and compliance costs,	
After 2030 Phase III	Cost to pass, little effect	Depending on the transfer, allocation and compliance costs, competitiveness damage is high				Depending on the transfer and compliance costs, competitiveness damage is moderate		Low-carbon products manufacturing enterprises can be profitable	Depending on the transfer and compliance costs, competitiveness damage is low	Depending on the transfer and compliance costs,	

Government Supervision of National ETS

Government should play a decisive role in the allocation of quota in the market; government regulation should be open and transparent, and should not put too much intervention in the market; government should avoid excessive arbitrary regulatory behaviors which has appeared in some pilots.

Key Factors	Main Supervisors	Regulatory Borders	Supervisory Measures
Carbon Market System Design	Central Government (NDRC)	Set reasonable carbon trading system arrangements to ensure the smooth operation of the market and manage of third-party institutions to ensure the market fair and transparent	Establish different Institutional adjustment mechanism for different phases
Quota total and allocation	Central Government (NDRC) & Local Government	NDRC determines the total quota, distribution rules, regional benchmark quotas and high concentration of key industry quotas. The local government is responsible for the specific implementation	Establish quota adjustment mechanism and carbon price fluctuations prevention mechanism
Carbon Finance	Central financial sector	Protect the orderly and healthy development of carbon finance Prevent and respond to possible systemic financial risks	Establish data monitoring and analysis mechanism for transaction activities of financial institutions; and establish foreign institutions carbon trading funds entry and exit monitoring mechanism
Transactions and performance	Local Government	Reasonable setting of carbon trading compliance process and specification The use of comprehensive penalties to strengthen law enforcement supervision, improve the cost of default	Establish compliance supervision and early warning mechanism



Thanks for Your Attention!

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