

沈阳市低碳发展的挑战与对策

Challenges and Solutions to Low Carbon Development in Shenyang



中国·沈阳

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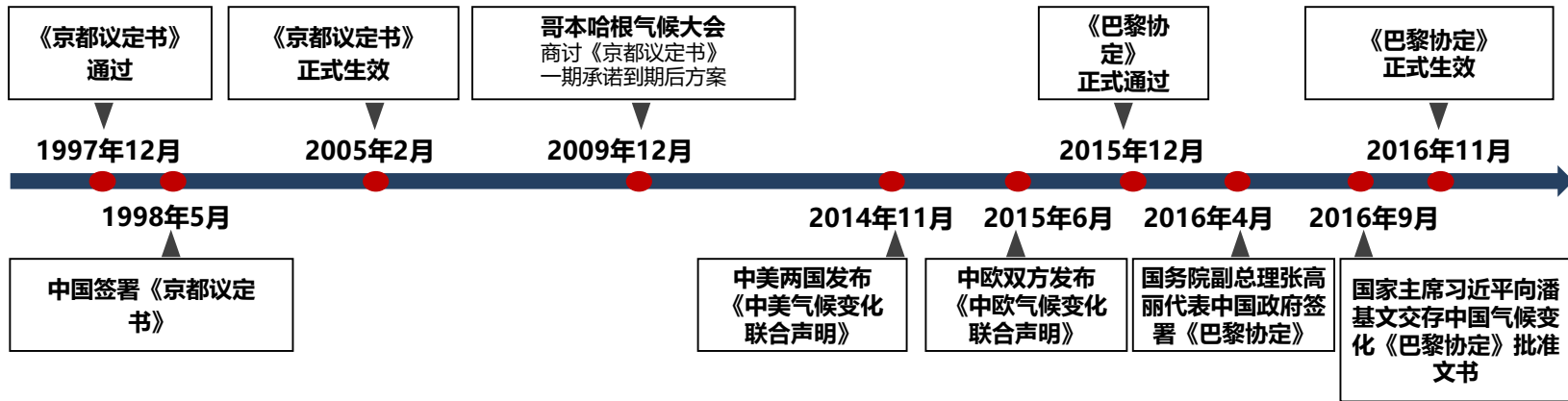


一、国际形势与中国的承诺

International Trend and China' s Commitment



一直以来，中国每个地区和城市都在按照政府在国际上作出的减排承诺，积极承担减少碳排放的责任和义务。Over the years, cities in China have been taking proactive measures to cut carbon emission to fulfill China's commitment.



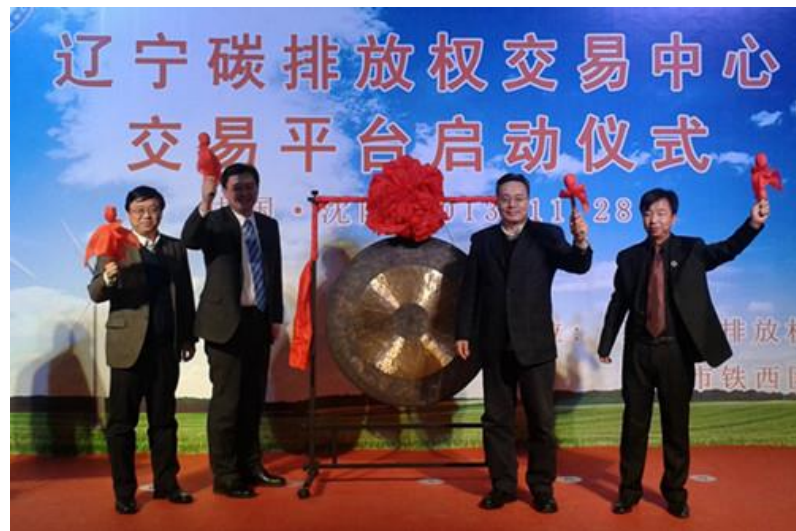
2011年，我国开始研究通过开展碳排放权交易帮助实现减排目标。

2013年起，深圳、上海、北京、天津、重庆、广东、湖北等7个碳交易试点相继启动。

2017年12月19日，全国碳排放权交易市场（发电行业）正式启动运行。

拟于2019年开展发电行业配额模拟交易。

- 拟于2020年在发电行业交易主体间开展配额现货交易。
- **As** early as 2011, China has started the research in carbon emission reduction through carbon trading.
- **Staring** from 2013, pilot programs of carbon trading kicked off in sucession in 7 cities and provinces.
- **The** National Carbon Emissions Trading Market (electricity sector) was offically launched in December 19th, 2017. It is planned that quota simmulated trading in electricity sector would be conducted in 2019 and spot trading in 2020.



二、沈阳市基本情况

About the City of Shenyang



二、沈阳市基本情况 About the City of Shenyang

沈阳位于中国东北部，总面积约1.3万平方公里，常住人口约830万人，城镇化率超过80%。沈阳是中国东北地区最大的中心城市，是中国“一带一路”向东北亚、东南亚延伸的重要节点。Shenyang is located in northeast China. Population: 8.3 million; Total land area: 13,000 sq km. Shenyang is an important link on Belt and Road, connecting with Northeast Asia and Southeast Asia.



沈阳对接“一带一路”示意图



沈阳区位图

(一) 区位优势明显，中心城市地位突出 A Regional Central City with Location Advantage

沈阳地处东北亚经济圈和环渤海经济圈的中心，是我国通向东北亚、连接欧亚大陆桥的重要节点，是长三角、珠三角、京津冀地区通往关东地区的综合枢纽中心。Shenyang is located in the center of Northeast Asia Economic Circle and Bohai Economic Ring, an important link connecting China with Northeast Asia and Euroasia. Shenyang is also the hub connecting Northeast China with Yangtze River Delta, Peral River Delta and Beijing-Tianjin-Hebei.



沈阳已同世界185个国家和地区实现经贸往来，有美、日、法、德等7家驻沈总领事馆，以及多家国外（境外）驻沈官方机构。Shenyang has conducted trade with 185 countries and regions in the world. Seven countries including US, Japan, Russia, Germany and France set up consulates in Shenyang, many other countries has trade offices in Shenyang.

(二) 工业基础雄厚，产业配套能力较强 Firm Industrial Foundation and Strong Supporting Capacity

全国重要的装备制造业基地，有着“共和国长子”和“东方鲁尔”的美誉。工业门类达165个。德国宝马、美国通用、法国米其林等87家世界500强企业已在沈阳设立企业150余家。

Shenyang is a major equipment manufacturing base in China with 165 sub-categories. Large numbers of Fortune 500 companies has establishments in Shenyang including BMW, General Motor and Michelin.



(三) 科技资源丰富，人才聚集效应明显

Strong Scientific Research Capability and Large Talent Pool

- 中国科学院和中国工程院院士25名；
- 专业技术人员60余万人；
- 高等院校47所，各类职业院校129所；
- 市级以上科研院所107个
- 国家级工程实验室等创新平台41家。

- 25 academicians from Chinese Academy of Engineering and Chinese Academy of Sciences
- Over 600,000 professional technicians
- 47 universities and colleges, 129 vocational schools
- 107 municipal level and above research institute
- 41 innovation platforms including national level engineering labs



东北大学 Northeastern University



中国科学院自动化所 Institute of Automation

三、沈阳市绿色低碳发展的理念、做法和成绩

The Concept, Practices and Accomplishments Of Low Carbon Development in Shenyang



(一) 坚持规划引领，明确低碳发展路径

Stick to Plans, Identify the Path of Low Carbon Development

《沈阳振兴发展战略规划》 *The Strategic Plan for Rejuvenation*

《沈阳市建设东北亚国家化中心城市规划（2018-2035年）》

*The Plan for Developing Shenyang into a Central City of Northeast Asia
(2018-2035)*

《沈阳市低碳发展“十三五”规划》

The Thirteenth Five Year Plan for Shenyang's Low Carbon Development

《沈阳市生态文明建设“十三五”规划》

The Thirteenth Five Year Plan for Shenyang's Ecological Development

《沈阳市循环经济发展“十三五”规划》

The Thirteenth Five Year Plan for Shenyang's Circular Economy Development

“四个中心城市”
总体战略
Strategy of
“Four
Centers”

绿色低碳发展
顶层设计
Top design for
green and low
carbon
development

(二) 坚持创新引领，积极开展先行先试

Stick to Innovation, Proactively Carry Out Pilot Programs

相关试点示范 Pilot Programs

- ◆ 国家全面创新改革综合试验区 The National Comprehensive Pilot Zone for All Around Innovation and Reform
- ◆ 国家循环经济综合示范市
The National Demonstrative City for Circular Economy
- ◆ 国家生态文明先行示范区
The National Pilot Zone for Ecological Civilization
- ◆ 国家低碳城市试点
The National Pilot City for Low Carbon Development
- ◆ 中国（辽宁）自由贸易试验区沈阳片区
Shenyang Area of China (Liaoning) Pilot Free Trade Zone
- ◆ 沈阳市经济技术开发区获批建设国家低碳工业试点园区 Shenyang Economic and Technology Development Zone has been approved to build a national pilot park of low carbon industry
- ◆ 沈阳法库经济开发区获批建设国家循环化改造试点园区 Shenyang Faku Economic Development Zone has been approved to build a national pilot park of Circular Economy



沈阳市经济技术开发区 Economic and Tech Development Zone



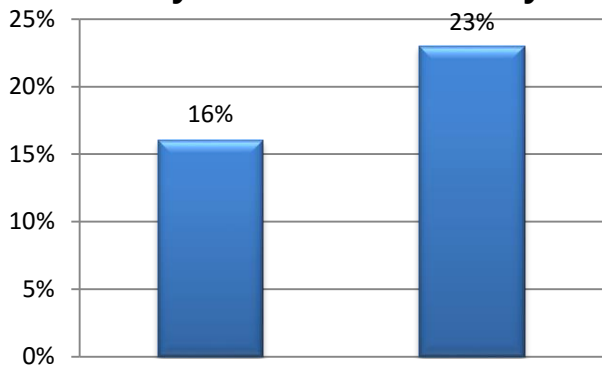
中国（辽宁）自贸区沈阳片区 Shenyang FTZ

(三) 坚持绿色引领，结构调整初见成效

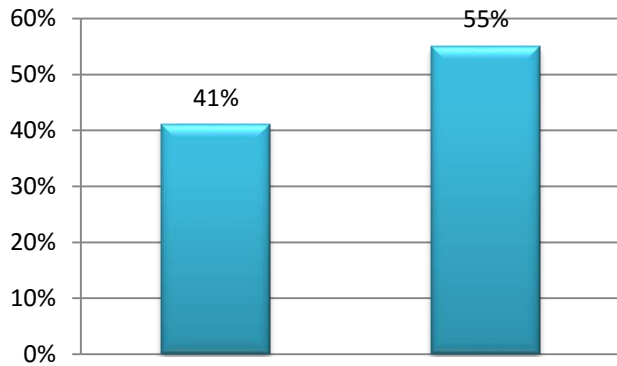
Stick to Green Development, Structural Adjustment Starts Showing Effects

• 出台《关于加快生态文明建设的意见》、《关于促进产业转型升级三年行动计划》，大力推动产业结构转型升级和能源结构、交通结构优化调整。Shenyang has published *Several Opinions on Boosting Ecological Development and Three-Year Plan for Industrial Transformation and Upgradation* and made enormous efforts to promote the transformation and upgradation of industrial structure, and the optimization of energy structure.

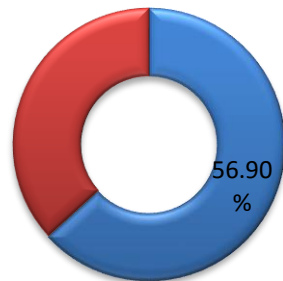
产业结构方面：加快制造业向中高端发展，推进战略性新兴产业和服务业发展。Industrial structure Aiming at medium and high end manufacturing, promoting the development of strategic emerging industry and services industry



高端装备制造业产值占规模以上工业总产值比重
Proportion of high-end manufacturing in gross output value



高新技术产品产值占规模以上工业总产值比重
Proportion of high tech production in gross output value



服务业占GDP比重
Proportion of services sector

能源结构方面： 严格实施燃煤总量控制，大力推广风能、太阳能、生物质能等可再生能源开发利用。2017年底建成风电厂27座、光伏发电项目80个、生物质发电厂3座，再生能源发电总装机规模159万千瓦，减少煤炭消耗100万吨。

Energy Structure: Strict control in coal burning. Promote renewable energy, including wind power, solar power and bioenergy. By end of 2017, Shenyang has built 27 windmill projects, 80 photovoltaic projects, 3 bioenergy projects, cutting 1 million ton of coal consumption



沈阳风力发电项目
Wind power project in Shenyang



沈阳光伏发电项目
Photovoltaic power project in Shenyang

交通结构方面：淘汰黄标车及老旧车辆8.9万辆，新增清洁能源和新能源公交车2360台。

Transportation: Shenyang has abandoned 89,000 high emission and old vehicles, and newly put to use 2,360 clean energy or new energy buses



**黄标车提前报废
可获 5000 至
18000 元
补贴**

按照《沈阳市人民政府关于增设环保绿标区的通告》(以下简称《通告》)要求,淘汰黄标车并享受补贴政策的时间从9月1日至12月31日,之后不能享受补贴。但淘汰黄标车的工作力度将越来越大,直至2017年底全部淘汰。昨日,沈阳晚报、沈阳网记者在沈阳市政府新闻办召开的发布会上了解到,沈阳市安排5亿元专项资金,将对符合条件提前报废的黄标车,根据车辆的不同情况给予5000元—18000元/辆的补贴。

申请时间为今年9月1日至12月31日,9月起四环内全为绿标区,违法行驶将被罚款200元

沈阳出台政策淘汰黄标车 government announcement on forbidding the use of high emission vehicles



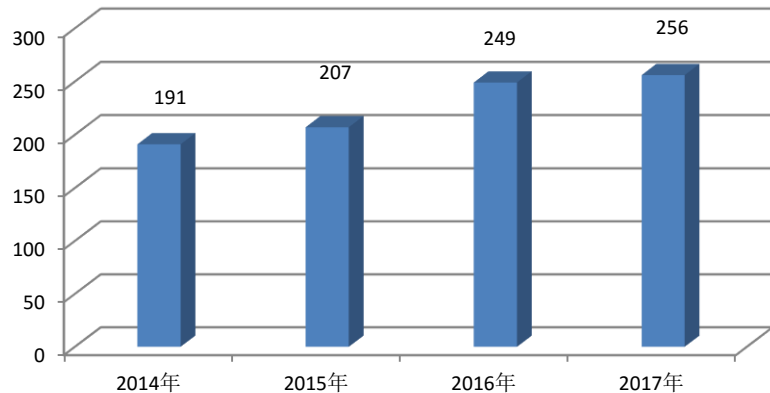
沈阳新能源公交车 New energy buses in Shenyang

改善空气质量方面：成立生态环保委员会，加大资金投入，开展拆除燃煤锅炉等多种举措，并严格督促落实。沈阳市整体空气质量逐年改善，优良天数整体呈上升趋势。

Improving air quality: set up environment protection committee, stronger funding support, abandoned the use of coal burning boilers. Air quality in Shenyang has been improving year by year.

年份 year	拆迁锅炉台数 (座) Number of boilers demolished	总蒸吨数 (蒸吨) stream ton	燃煤量减少(万 吨) reduction in coal burning(10,0 00 tons)	减排(万吨) emission reduction (unit: 10,000 tons)	
				二氧化硫 SO2	颗粒物 PM
2016	2603	7967	358	1.8	1.2
2017	1115	4116	185	0.8	0.5
2018	300	680	247	0.2	0.1
总计	4018	12763	568	2.8	1.8

2016-2018年拆迁锅炉房燃煤量及污染物减排量统计表



2013-2017年沈阳市优良天数分析图
number of good air quality days in Shenyang (2013-2017)

四. 沈阳市绿色低碳发展面临的困难与挑战

Challenges to Shenyang Low Carbon Development in Shenyang



困难与挑战challenges

1.工业占比特别是重化工业占比仍然偏高，二氧化碳排放规模较大，转型需要一个过程。

High proportion of heavy industry.

2.可再生能源规模较小，水能与核能不具备开发条件，非化石能源中仅可开发风能、太阳能等，预计“以煤为主”的能源消费结构将长期持续。

Limitations in energy diversification.

3.对开发利用太阳能、风能等新能源的优惠政策和对“煤改气”“煤改电”等低碳发展的新机制还需要尽快建立和完善。

New mechanism for low carbon development needs improvement

五、沈阳市绿色低碳发展的有关对策

Solutions to Low Carbon Development In Shenyang



(一) 科学规划空间布局 Scientific Planning of Urban Spatial Layout

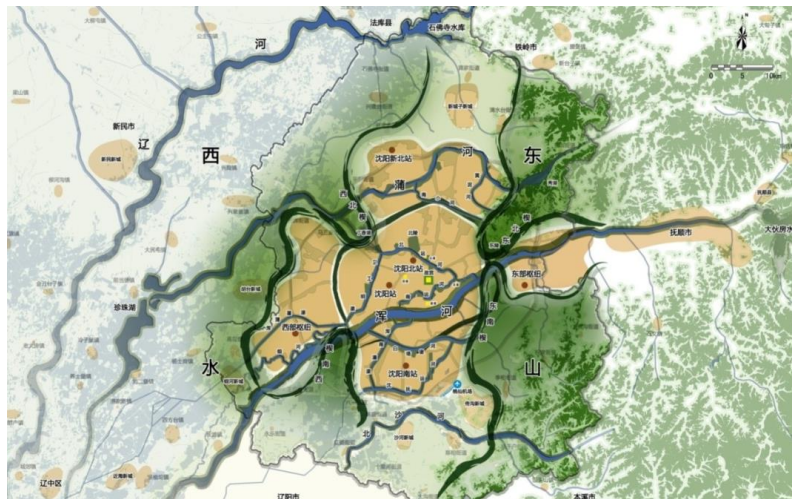
构建“东山西水、一河两岸、一主三副”的城市空间结构 Hills in east and waterways in west, one river two riverbanks, one center and three sub-centers

按照主体功能区划分实施分类管理，确保人口、经济、资源环境相协调

Classification management according to different area functions, assuring the coordination of people, economy, resources and environment

落实生态红线战略，实施生态补偿，到2020年生态红线面积占比达到19%以上

Implement the strategy of Ecological Red Line including ecological compensation, increasing the red line area to more than 19% of the total land area



沈阳城市空间结构

沈阳全域国土总面积1.28万平方公里。Shenyang has a total land area of 12,800 square kilometers
规划区总面积3471平方公里，建设控制区1233平方公里，主城建成区面积约602平方公里，生态红线面积1397平方公里（占比11%）。
Planned area 3,471 square kilometers, construction area 1,233 square kilometers, red line area 1,397 square kilometers (11%)

(二) 着力推进转型升级 Promoting Industrial Transformation and Upgradation

构建“**五大板块**”协调发展的现代产业体系
Build a coordinated modern industrial system

打造12个千亿产业链

加快完善促进低碳转型的市场化机制

improve market mechanism for low carbon transformation

- 加快出台配套法规制度；
- 建立沈阳碳排放权交易所；
- 培育相关碳服务业机构。

逐步建立高耗能、高排放产业退出机制

phase out high energy consuming and high emission industries step by step

- 严格执行强制性标准；
- 清理产能过剩建设项目；
- 压缩高能耗、高排放行业产能。

传统产业

- 汽车及汽车零部件
- 机械装备(通用石化重矿)
- 现代建筑
- 农产品深加工
- 电力装备

新兴产业

- 机器人及智能装备
- 航空制造
- 新一代信息技术
- 生物制药及高性能医疗器械

服务业

- 金融服务
- 现代物流
- 旅游会展

(三) 积极优化能源结构 Optimize the Energy Structure

严格控制煤炭总量 strictly control the amount of coal

- 拆除小型燃煤锅炉 discard small coal-fired heating boiler
- “煤改气” “煤改电” shift from using coal to gas and electricity
- 新增煤炭项目实行严格“等量置换”制度 strictly abide by the principle of ‘equal amount replacement’ concerning newly added coal-related programs
- 实现煤炭消耗逐年下降 consumption of coal going down year by year
- 到2020年能源消费总量中煤炭占比降低至65%以下

提高燃煤利用效率 improve coal efficiency

- 大幅提高原煤洗选比例和使用效率 improve coal washing and coal efficiency
- 大力推广使用型煤、清洁优质煤 encourage the use of clean and high quality coal
- 研究推广超超临界发电、整体煤气化联合循环、大型循环流化床等高效、清洁发电技术 promoting efficient and clean power generation techniques including ultra supercritical power generation, integration gasification combined cycle, large circulating fluidized bed

加快气源引入设施建设 speed up the construction of gas facilities

- 加大天然气供应 increase natural gas supply
- 实现天然气管网城区基本覆盖 to realize the coverage of natural gas pipeline in urban area
- 科学合理开发其他气体燃料 develop gas fuels in scientific approaches
- 到2020年，天然气等气体燃料在一次能源结构中的比例达到10%以上 gas fuels including natural gas will account for more than 10% in primary energy structure

开发非石化能源 develop non-fossil fuels

- 积极开发风能、太阳能光伏发电 take proactive measures to develop wind power, solar power and photovoltaic power
- 加快发展沼气发电 take proactive measures to develop biogas power
- 合理布局建设高环保标准的城市生活垃圾发电项目 garbage power generation with environmental standards

推广新能源汽车 encourage the use of new energy vehicles

- 以公共服务领域为突破口 to start from public service sector
- 新增和更新的公交、出租、物流、环卫车辆中新能源汽车比例不低于30% new energy vehicles take up to more than 30% in new buses, taxis, and other vehicles for logistic and sanitation
- 充电桩建设数量达到停车位的10% charging piles covering 10% of the parking lots

我们将树立和践行绿水青山就是金山银山的理念，建立健全绿色低碳循环发展的经济体系，更加自觉地推动绿色发展、循环发展、低碳发展！

Clear waters and green mountains are invaluable assets. Shenyang will take active measures to promote green development, circular development and low carbon development!



谢谢! **Thank you!**

