



Clean Energy Transition and Carbon Emission Reduction -

Chinese Cities' Contribution to Fight Climate Change

January 11, 2024



Why city decarbonization matters

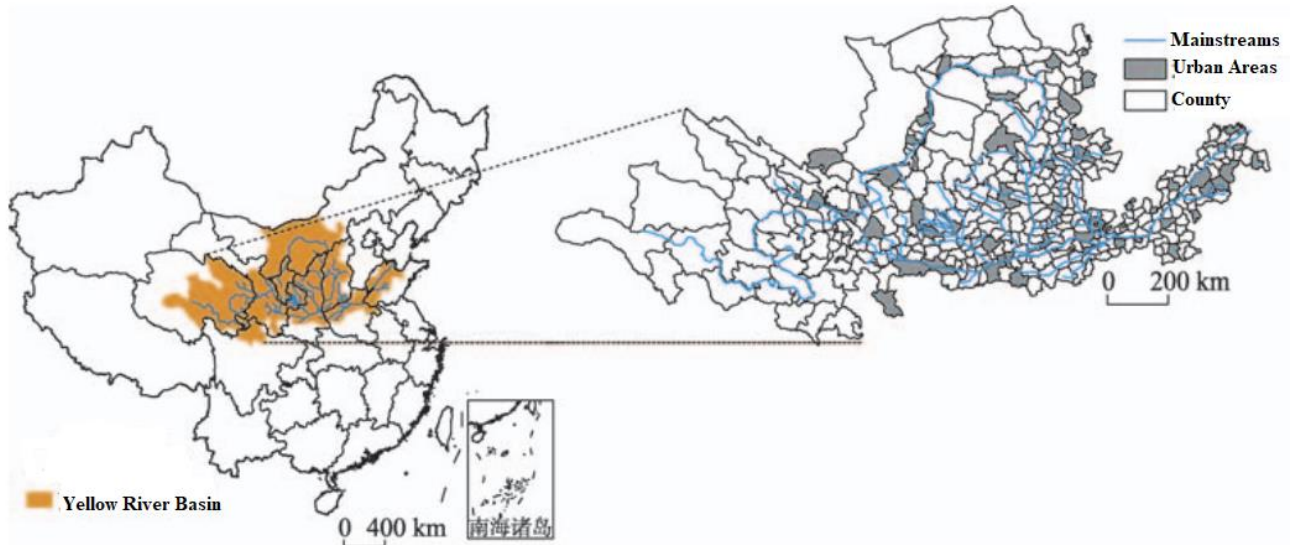
- Require a continuous energy supply, consuming 75% of global primary energy.
- Increasing population growth, rapid urbanization and expanding economic development are putting pressure on limited energy supply
- China's rapid urbanization
 - Urbanization rate last year >65%
 - Urban energy consumption accounted for 88% of total energy consumption.
 - The proportion of carbon emissions also reached 85%, and the total amount has not yet reached its peak.



COP28, City and Inclusivity

- Announced new partnerships and initiatives to advance sustainable urban development, spanning buildings, waste, transport, water, and nature.
- Emphasized the crucial importance of an inclusivity in climate decision-making, policy and action.

EDF's work in Yellow River Basin



Location of the Yellow River Basin and administrative units

Why Yellow River Basin?

Location, size, and application of existing coal plants in China
中国现有煤电厂的位置、规模和应用领域

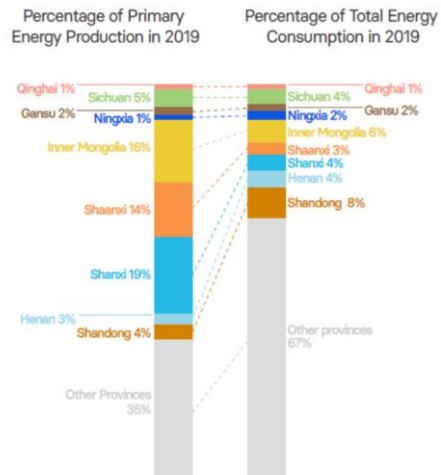


Clean energy bases planned in 14th FYP
第十四个五年规划中计划建设的清洁能源基地

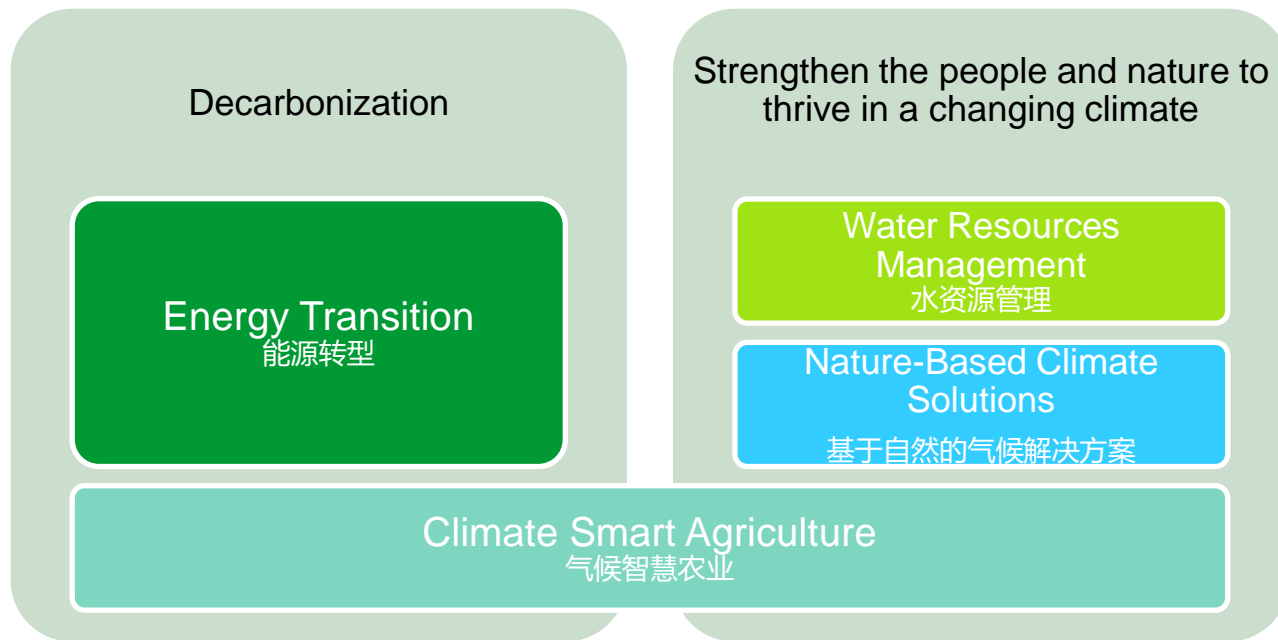


图1 “十四五”大型清洁能源基地布局示意

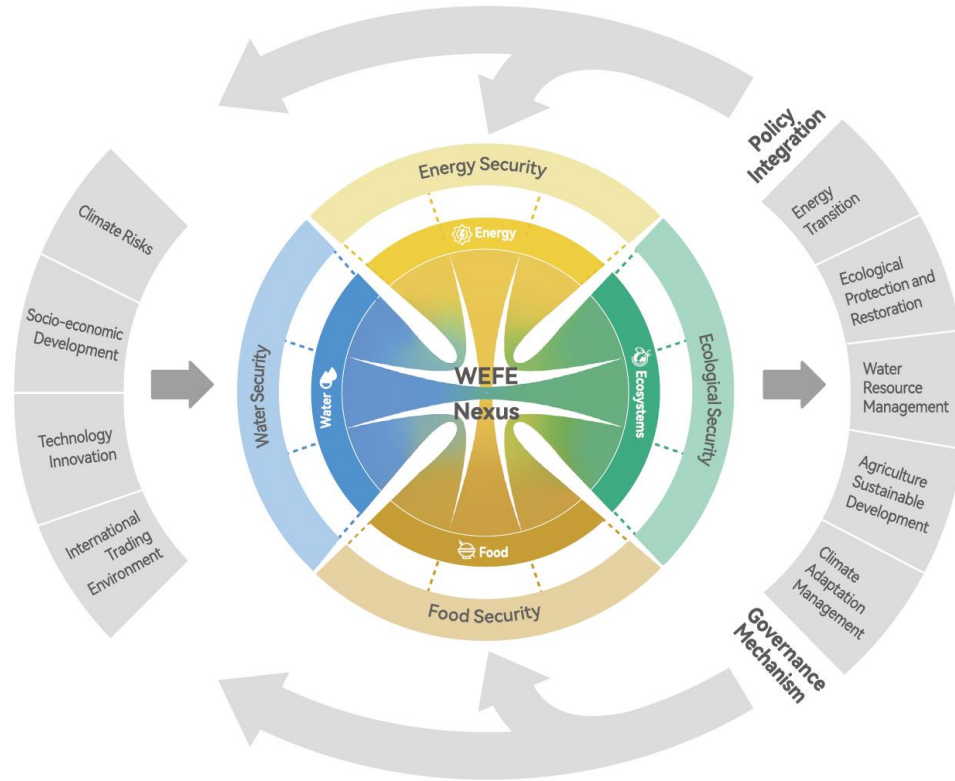
黄河九省区2019年能源生产消费



Beautiful Yellow River Basin Initiative



EDF's Work in Yellow River Basin



EDF's Work in Yellow River Basin



Analyze the WEFE Nexus in-depth to determine synergies among multiple policy targets.



Investigate the green and low-carbon development pathways in the Yellow River Basin using modeling techniques, maximizing nexus synergies, and carefully managing trade-offs.



Differentiated development paths will be developed to strengthen integrated nexus governance and achieve climate mitigation and resilience goals in the Yellow River Basin based on the provinces' prioritized development goals.



Collaborate with top domestic media to launch a series of thematic reports on good practices of integrated nexus management in the Yellow River Basin.



Establish the Carbon-Neutral Integrated Governance Alliance for the Beautiful Yellow River to facilitate knowledge exchange and learning among stakeholders.



Propose policy recommendations on improved integrated governance in the Yellow River Basin in order to pursue high-quality development and ecological protection in line with the climate mitigation and resilience goals.



EDF's Work in Yellow River Basin

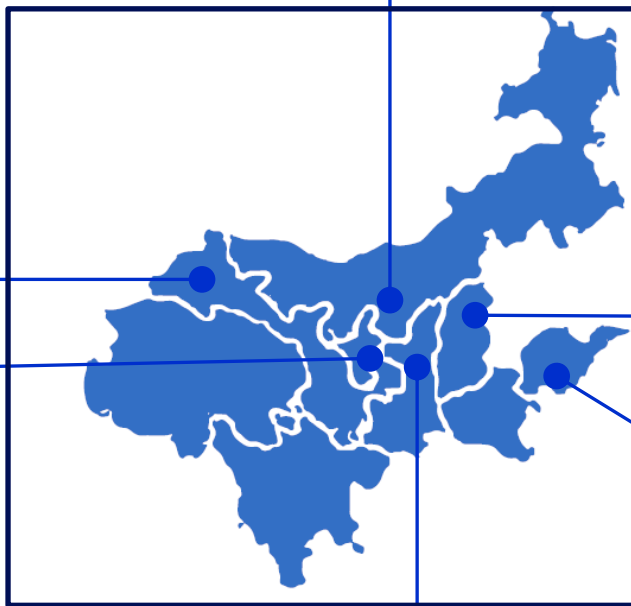
Integrated assessment modeling and research for place-based transition pathways

黄河流域九省区差异化转型路径综合评估建模和研究

- Water-Carbon Balance in Ningxia-Mongolia Region. 宁蒙地区水碳平衡研究
- Optimization Pathway of Synergizing Pollution Control and Carbon Reduction in Ordos 鄂尔多斯市减污降碳优化路径分析

- Study on the Impacts of Photovoltaic Industry Development on Ecosystem and Regional Well-being. 光伏产业发展对生态系统和区域福祉影响的研究

- Research on the Economic and Social Impacts of Low-carbon Transition in Ningxia. 宁夏低碳转型的经济社会影响研究



- Spatial Analysis of Water-Energy-Food Nexus in the Yellow River Basin. 黄河流域水-能-粮关联系统的空间格局分析
- Model-based Analysis of Energy Transition and Industrial Transfer in the Yellow River Basin. 基于模型的黄河流域九省区能源-水转型路径研究

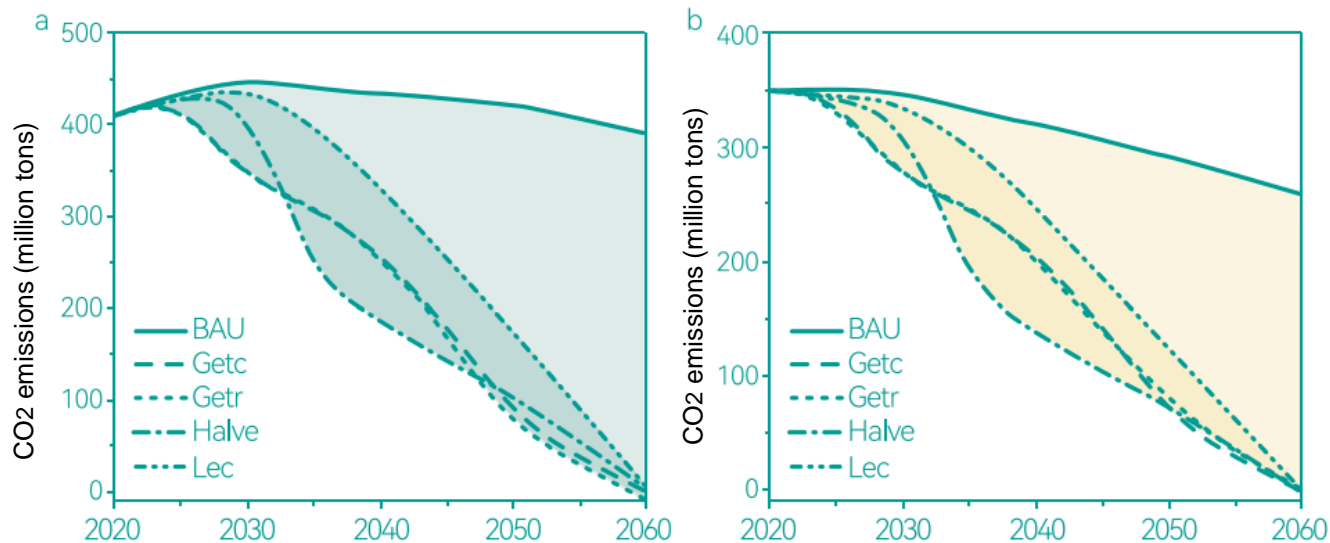
- Research on Water Resources and Energy Transition under Dual Carbon Goals in Shanxi Province. 山西省双碳目标下的水资源和能源转型研究

- Implications of Carbon Dual Control Policies on Industrial Upgrading in Industrial parks. 碳双控对黄河流域工业园区产业升级的影响分析

- Synergy of Water and Energy System in Shaanxi Province. 陕西省水能协同路径分析

EDF's Work in Yellow River Basin

1. Shaanxi Province's Carbon Emission in 2020-2060



(Figure a includes CO₂ emissions from exported energy; Figure b does not include CO₂ emission from exported energy)

- * Getc - Great challenge - electricity-coal policy
- Getr - Great challenge - renewable energy policy
- Halve – Emission halve in 2035 (compared to BAU peak)
- Lec - Low challenge- electricity-coal policy



EDF's Work in Yellow River Basin

2. Inclusive Energy transition in Shanxi

Employment Displacement Forecasts for Key Sectors in Shanxi, 2017-2035

Sector	Displaced people (in thousand)
Coal Mining Products	419.6
Electricity and heat production and supply	264.5
Metal smelting and rolling products	66.8
Non-metallic Mineral Products	20.5
Petroleum, Coking and Nuclear Fuel Processing Products	13.9

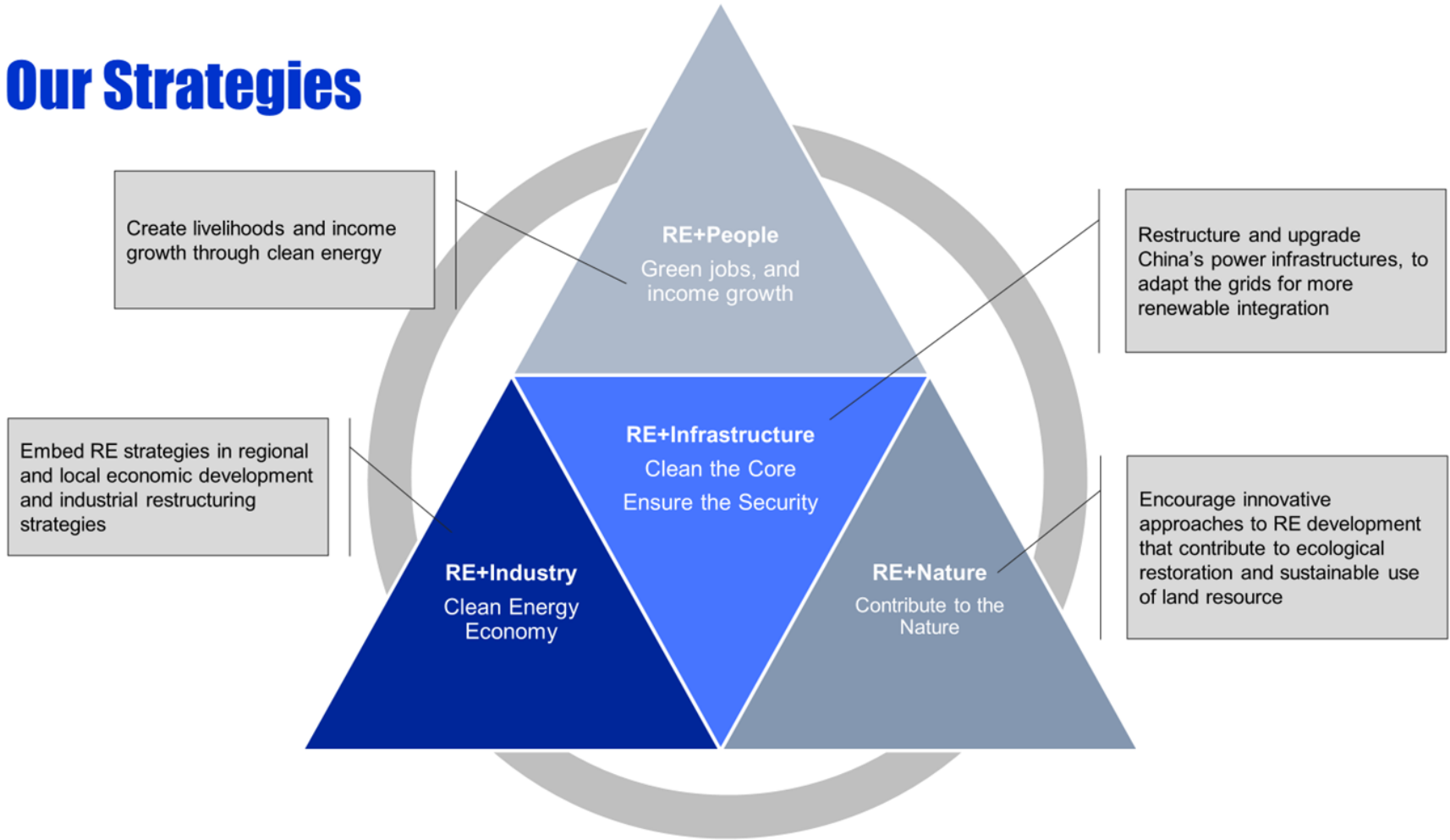
Source: China Energy Modeling Forum Research Team



Future Work Direction

- Enhance the monitoring and evaluation mechanisms for carbon emissions reductions in YRB cities
- Promote differentiated and locally tailored decarbonization pathways for YRB cities
- Incorporate inclusive development into city planning and urban regeneration

Our Strategies



An aerial photograph showing a winding asphalt road with a red-paved shoulder, curving through a dense forest of green trees. To the right of the forest is a large, calm body of water with a vibrant turquoise color. The text 'Thank You!' and 'Email: jgao@edf.org' is overlaid on the right side of the image.

Thank You!

Email: jgao@edf.org