

中国能源结构转型

Transformation of Energy Structure in China

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中国能源结构转型的三个历史阶段

Three Historical Stages of Energy Structure Transformation in China

以煤为主
Dominated by coal

多元发展
Diversified development

非化石能源为主
Non-fossil energy-based

Current
目前

（化石能源与非化石能源）多元发展、协调互补、此消彼长，向绿色、低碳、安全、高效转型，实现电气化、智能化、低碳化、核心是**低碳**。

(Fossil energy and non-fossil energy) **Diversified development, coordination and complementarity, trade-offs, and green, low-carbon, safe, and efficient transition, realizing electrification, intelligentialization and decarbonization, with **decarbonization** as the core.**



2

煤炭的清洁、高效利用：控煤 Clean and Efficient Use of Coal: Coal Control



以清洁取暖替代散烧煤；
Replace bulk coal burning with **clean heating**;



通过产业结构调整和技术进步，减少工业用煤；
Reduce **industrial coal consumption** through industrial restructuring and technological progress;



Coal-fired power
煤电

高效、洁净改造； Efficient and clean transformation;
灵活性改造，助推可再生能源；
Transformation of flexibility to promote renewable energy;

The above three technological progress

上面三项技术进步

将导致
will lead to

煤炭总量逐步减少
gradual decrease in total amount of coal



3

大力发展可再生能源

Vigorously Developing Renewable Energy

是能源供给安全的要素

It is an element of **energy supply security**

是能源环境安全的要素

It is an element of energy and **environmental security**

是能源气候安全的要素

It is an element of energy and **climate security**



资源丰富
Abundant
resources

是中国能源资源禀赋的重要组成部分；
It is an important part of China's energy resource endowment;

技术可行 Technically
feasible

已成现实，多项储能技术也在进步；
It has become a reality, and many energy storage technologies
are also progressing;

经济可行
Economically
viable

成本大幅下降。
The cost has dropped significantly.



中国一次能源结构中，非化石能源占比：

The proportion of non-fossil energy in China's primary energy structure:

2020	2030	2050
15 %	> 20 %	> 50 %



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中国东部能源发展的思路

Conception on Energy Development in Eastern China

“身边取”与“远方来”
"Fetch from beside" and "come from afar"

相结合、强化前者
Combine and strengthen the former

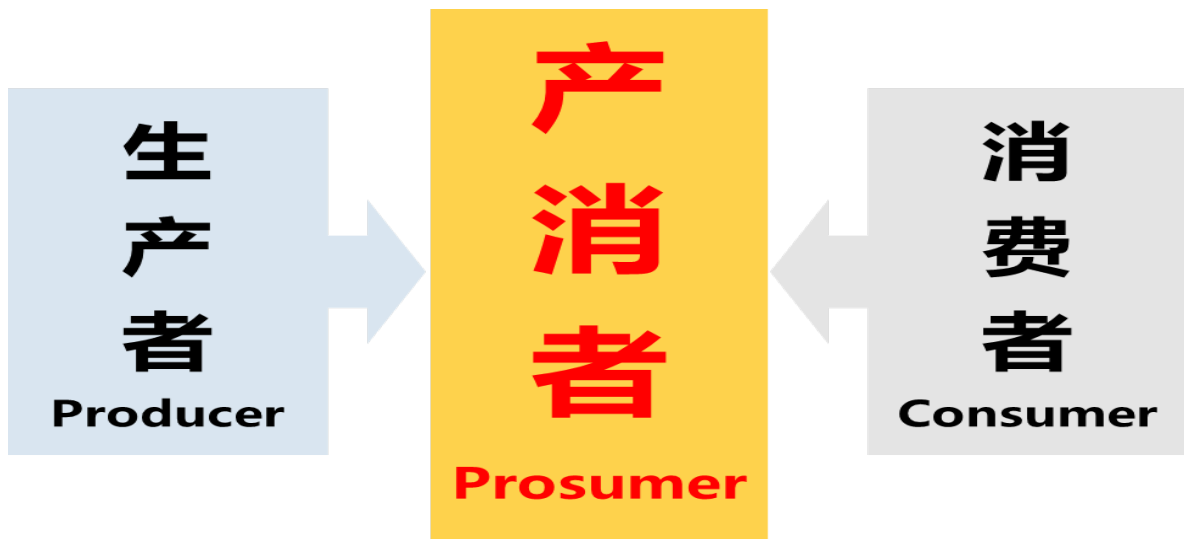
“分布式”与“集中式”
"Distributed" and "Centralized"



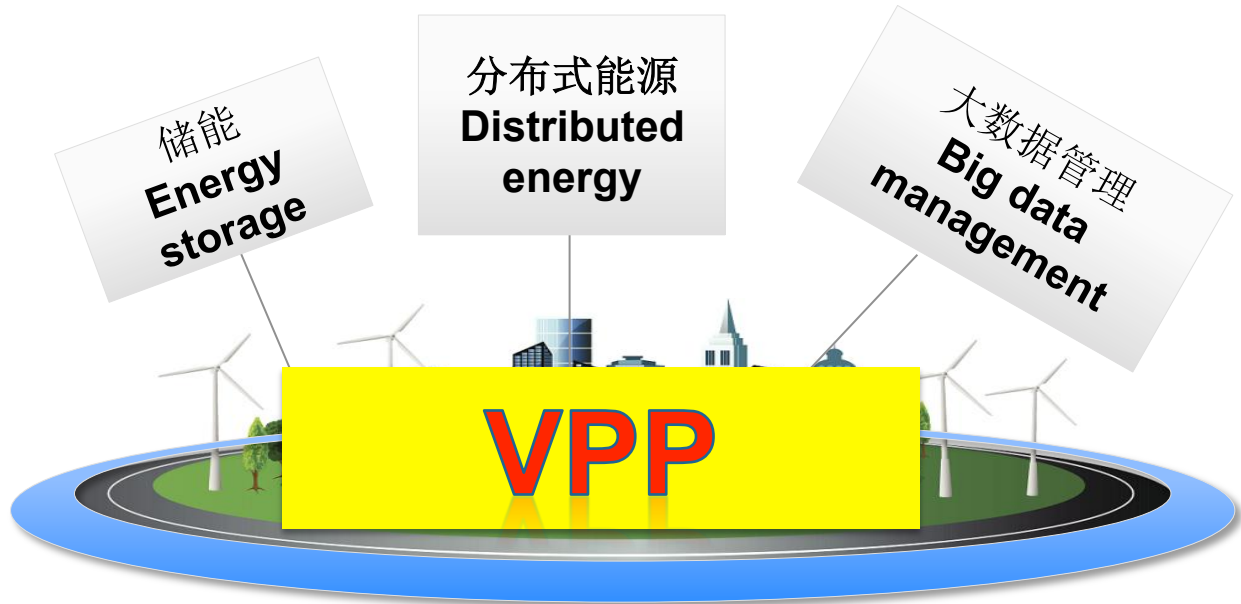
能源负荷者，也可承担生产能源的责任，成为“产消者”
Energy users can also assume responsibility for energy production and become "prosumers"

【培养大批“产消者”，如：BIPV列入建筑标准】

【Cultivate a large number of "prosumers", such as: incorporating BIPV into building standards】



Within the region
区域里



大批VPP可减轻集中电网的负担。论证表明：

A large number of VPPs can reduce the burden on centralized power grids. It is demonstrated that:

1KWh的电力，东部自发电的成本比西电东送的成本低

For 1KWh of electricity, the cost of self-generation in the eastern region is lower than the that of west-east power transmission



东部能源做到高比例自给，可减缓“西电东送”和“北煤南运”的压力。
A high proportion of energy self-sufficiency in the eastern region can alleviate the pressure of “west-east power transmission” and “north-south coal transportation”.



东部大批“产消者”和“VPP”将创造中国电力系统的新形态
A large number of "prosumers" and "VPPs" in the eastern region will create new forms of power system in China



相耦合
Coupling

能源空间格局
的优化
Optimization of energy
spatial pattern

中国
能源
转型
Energy
Transformation
in China

能源结构
的优化
Optimization of energy
structure

共同推动
Jointly promote





Thank You!

谢谢!

