
我国风电发展展望

Prospect of Wind Power in China

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内容 Content

- 新时期能源发展总体形势
The overall situation of energy development
in new period
- 风能发展的机遇
Opportunities of wind energy development
- 风能发展的挑战
Challenges of wind energy development
- 总结
Summary

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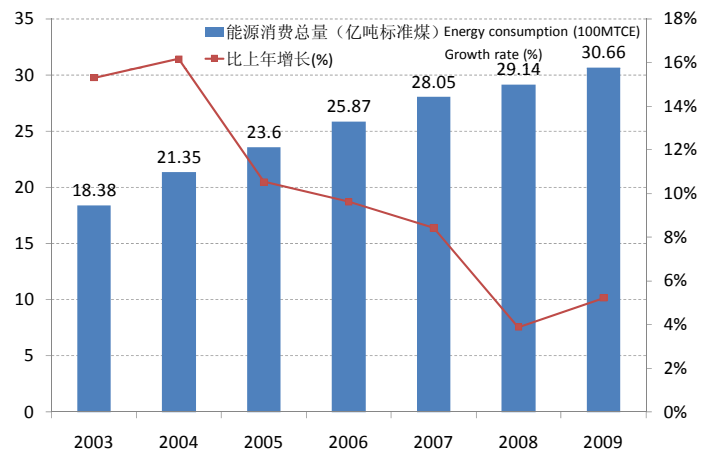
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能源快速增长的势头——2020年我国15%的宏观目标

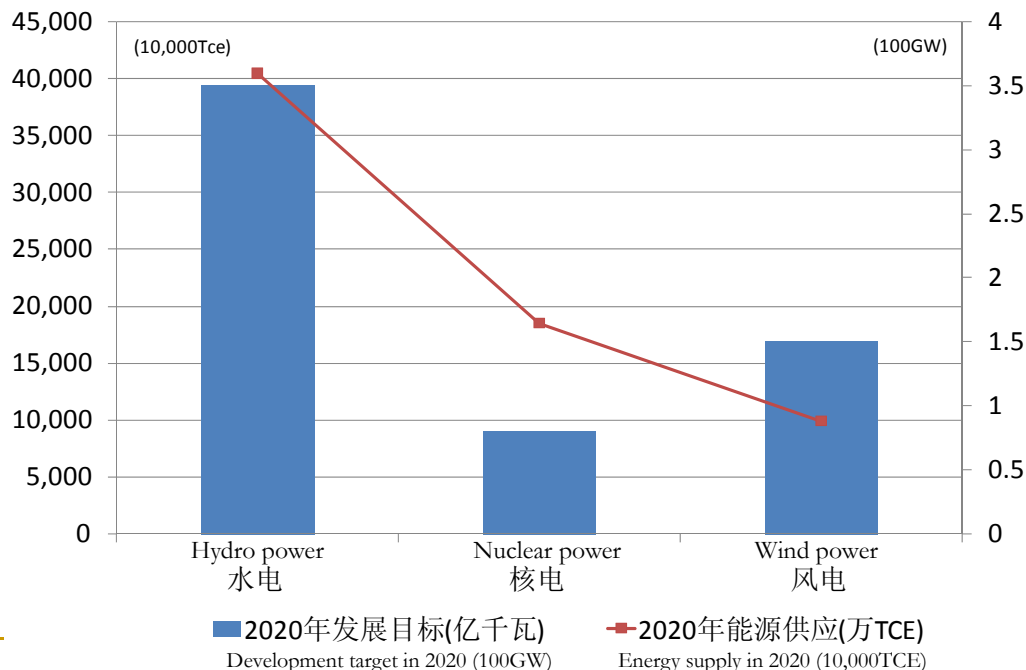
Rapid growth of energy——15% of macro-objectives by 2020 in China

- 经济的快速增长带来能源需求的快速增长
Rapid economic brings about rapid growth of energy demand
 - 超过预期 exceed expectation
- 清洁能源的需求相应加快
The clean energy demand increased accordingly.
 - 必须也超过预期的发展 must also exceed expectation
- 清洁能源的增长速度，必须大大超过新增能源需求的增长速度
The growth speed of clean energy must highly exceed the growth rate of new added energy demand



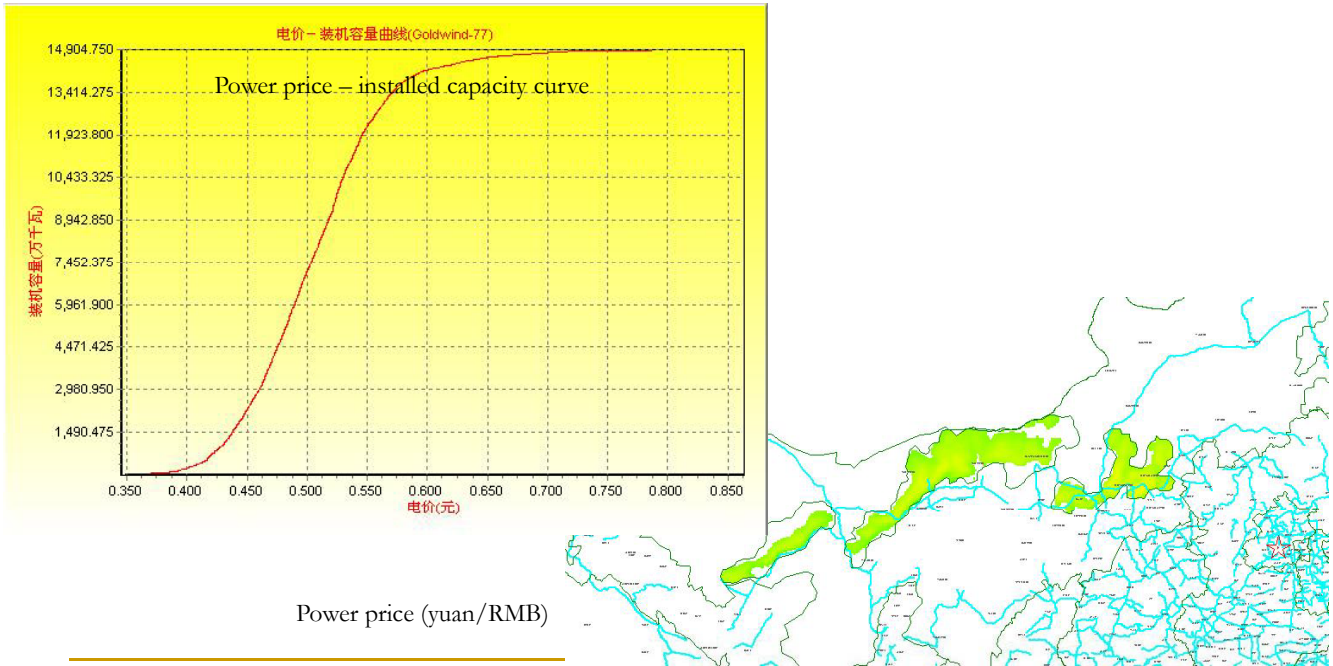
非化石能源目标对风能发展提出了更高期望

Non-fossil energy targets put forward a higher expectations to wind energy development



风能资源——足够支撑风能大规模发展

Wind resources——abundant enough to support large-scale wind energy development



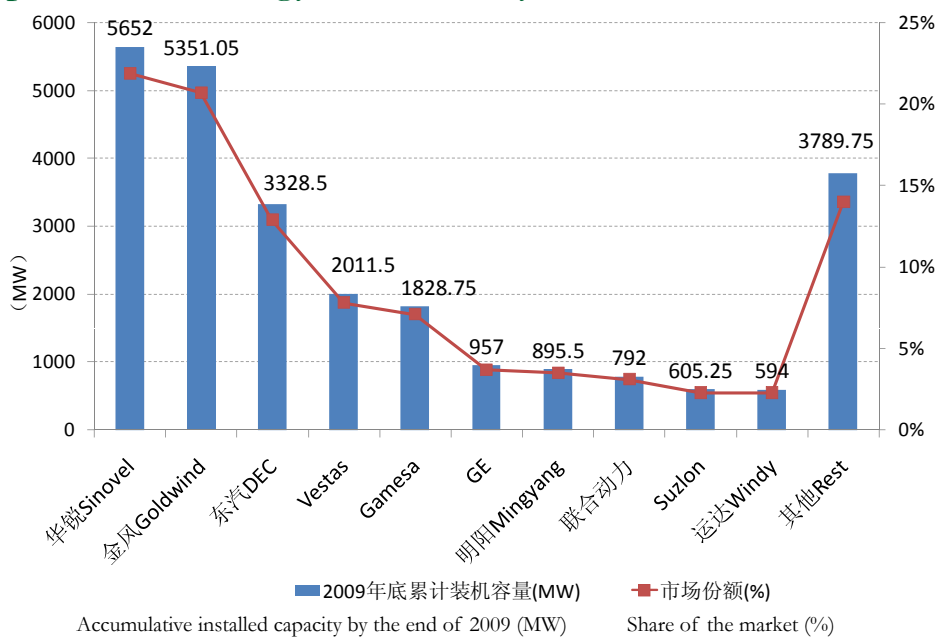
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风电技术和产业——已经建立起基础

Wind power technology and industry—— foundation built



2009年我国十大风电设备制造商
Top ten wind turbine manufacturers in China 2009

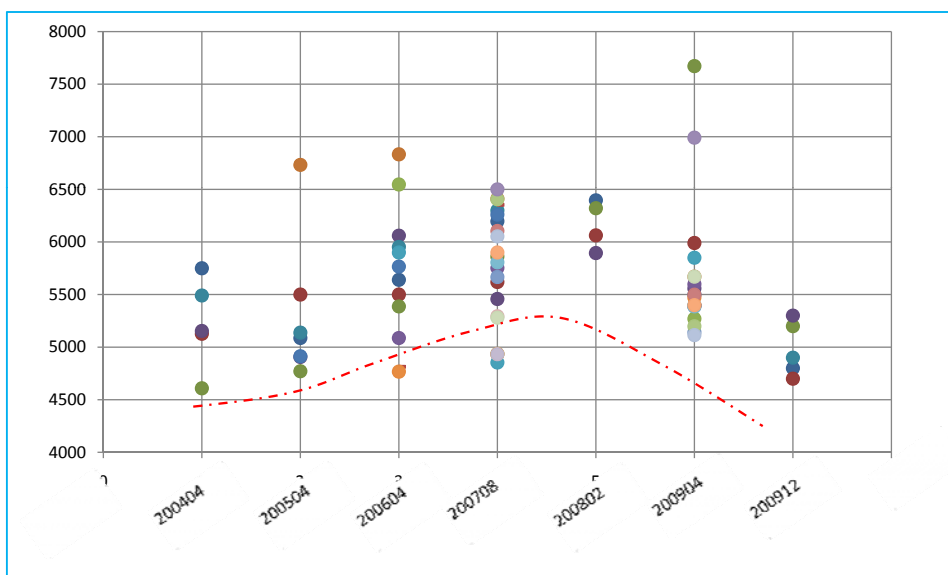
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经济性——风电装备的价格不断降低

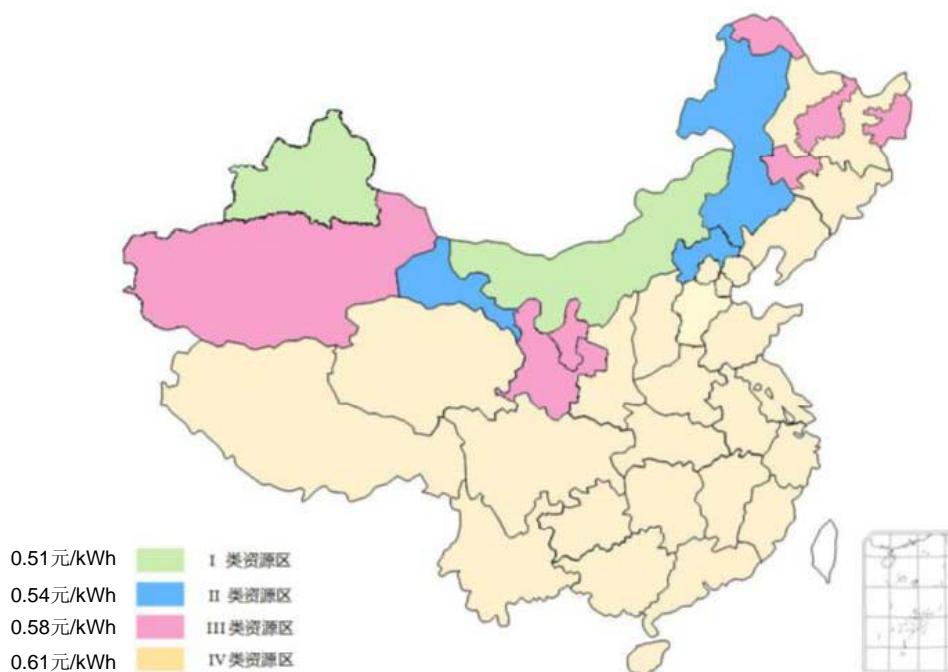
Economy—— the price of wind turbine continue to decrease



国内风电机组市场价格走势 (来源：CWEA)
Market price trend of domestic wind turbines market

风电政策——趋于稳定

Wind power policies——to be stable



风电的挑战——区域格局不会发生大的变化，并网和消纳问题日益突出

The challenge of wind power – Regional development structure will not be changed, grid integration and accommodation issues will be increasingly eminent.



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十二五成为关键的发展时期

“12th five-year” is a critical period of development

- 建立初步适应大规模可再生能源发展的电网等重大基础设施体系

Establishing major infrastructure systems including power grid to preliminary adapt large-scale renewable energy development.

- 推动可再生能源装备制造业的壮大和升级

Promoting the growing and upgrading of renewable energy industry and manufacture.

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十二五成为关键的发展时期

“12th five-year” is a critical period of development

■ 促进可再生能源市场的不断扩大

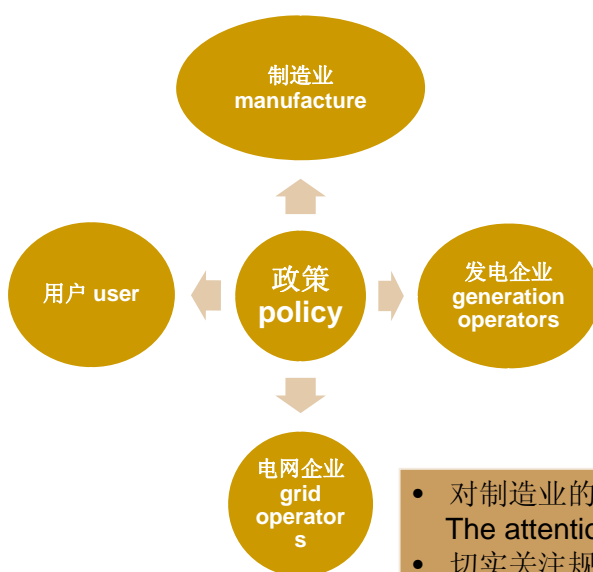
Promoting the expansion of the renewable energy market

■ 争取在2015年将非化石能源在能源消费中的比重提高到11%以上

Increasing the non-fossil energy consumption rate among energy consumption to more than 11% by 2015.

风电产业的变化

The change of wind power industry



- 对制造业寄予厚望
High expectation to industry.
- 对实质性的能源贡献并不期望
Substantial contribution to energy consumption is not expected so much.

- 希望加快清洁能源的实际贡献
Hope to accelerate the actual contribution of clean energy.
- 制造业的成长加快
The growth of industry will accelerate.

- 对制造业的关注从“量”转变为“质”
The attention on industry change from ‘quantity’ to ‘quality’.
- 切实关注规模化发展的并网问题
Practically concern on grid integration issues of large scale renewable-development.

中国可再生能源中长期发展规划

China Medium- and Long Term RE Development Plan (by 2020)

可再生能源发电目标汇总(GW) Power targets summary (GW)

	2005	2010	2020
水电 Hydro	117	190	300
生物质发电 Biomass	2	5.5	30
风力发电 Wind power	1.26	10	150
太阳能光伏发电 Solar power	0.07	0.3	20

Source: China Medium- and long term RE planning, 2007, National Development and Reform Commission

国外的经验1

International experiences 1

- 开发模式——分散地开发风电和太阳能，就地消纳
Development mode -- develop wind power and solar power dispersedly, consume power output locally.

- 技术细节 Technical details
 - 注重功率预测，提高了电网电力调度的灵活性
Pay much more attention on power prediction, enhance the flexibility of power grid dispatch.
 - 确立了并网技术标准，提高风电场适应电网安全稳定运行要求的能力。
Establish Grid Code, enhance the wind farm capability to fulfill the safe and stable operation requirement of grid.
 - 加强电网的强连接，建设大量可灵活调节的发电装机，增强了电网吸纳大规模风电的能力
Strengthen grid inter-connection, install more generators with flexible power regulation capability, enhance the ability of power grid to accommodate large-scale wind power.

PV Market Segments 光伏市场细分



国外的经验2

International experiences 2

■ 发展阶段 Development stage

- 欧洲大规模的电力建设已经基本结束，风电等新兴清洁能源主导了未来新增电力的发展方向

Large-scale power construction is completed in Europe, but wind power and other new rising clean energy will lead the new added electrical power development in the future.

■ 制度扶持 Institutional support

- 建立成熟的电力市场，充分利用市场机制和行政措施两种手段解决风电发展中的各种问题

Establish mature electricity market, make full use of market mechanism and administrative measures to solve various problems of wind power.

国内外比较

Domestic and International Comparison

发展阶段的差异——能源的总量增加和结构调整

Difference of development stage -- the total energy consumption increase and energy structure modification.

开发模式的差异——资源分布的禀赋决定了集中式

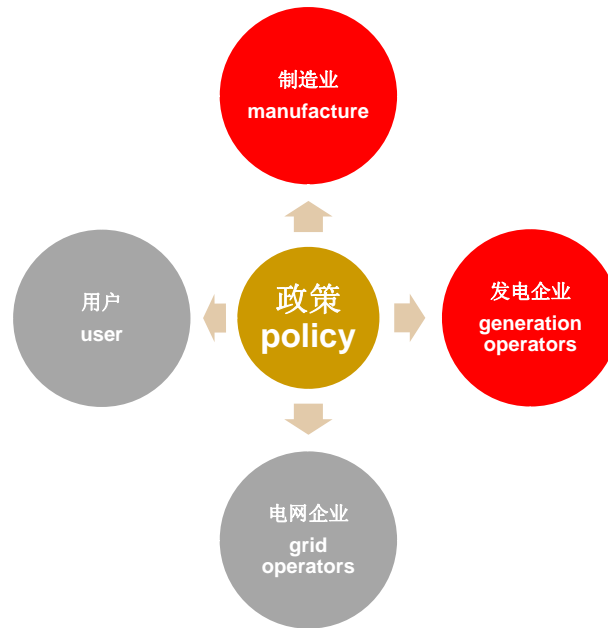
Difference of development mode -- The centralized development is determined by the characteristics of resource.

充分挖掘技术和制度上的潜力

Fully exploit the potential of the technology and institution.

促进风电发展的制度

Policy of promoting wind power development



结论 Summary

- 气候变化产生更多对清洁能源的期望
More expectation to clean energy due to climate change
- 风电具有得天独厚的优势，具有较好的前景
Wind power has a unique advantage and better prospect.
 - 稳定的政策导向
Stable policy-oriented
 - 稳定的市场需求
Stable market demand

结论 Summary

- 形势发展要求风能产业同样走升级的道路

Wind power industry is required to be upgrading according to the situation and development need.

- 从重视数量转向重视质量和开发先进技术

Concentration is changing from 'quantity' to 'quality' as well as 'advanced technology development'.

- 需要重视制度创新

Focus on institutional innovation needed.

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