

China's Climate Change Policies After the Paris Agreement

<Contents>

1. The Outline of China's INDC
2. The Progress Status and Perspective towards Achieving the INDC in China
3. Strengthening International Cooperation After the Paris Agreement in China

李志東 Li Zhidong

(zhidong@kjs.nagaokaut.ac.jp)

長岡技術科学大学大学院教授 Professor, Graduate School, Nagaoka University of Technology
日本エネルギー経済研究所客員研究員 Visiting Researcher, The Institute of Energy Economics, Japan
中国国家發展改革委員会能源研究所客員教授
Visiting Researcher, Energy Research Institute, National Development and Reform Commission

**Session 3: Is it possible to reconcile economic prosperity
with climate sustainability?**

IEEJ 50th / APERC 20th Anniversary Joint Symposium 2016
26-27 May 2016, Hotel CHINZANSO, Tokyo, Japan

1. The Outline of China's INDC

★ China submitted the Intended Nationally Determined Contribution (INDC) to the UN on June 30, 2015.

★ The Key Points of China's INDC:

First, China recognized and declared that, tackling climate change is the intrinsic requirement of China's sustainable development as well as the international obligation of a responsible major country.

Second, China has nationally determined its overall targets by 2030 as follows:

- To lower carbon dioxide emissions per unit of GDP by 60% to 65% from the 2005 level;
- To increase the share of non-fossil fuels in primary energy consumption to around 20%; and
- To increase the forest stock volume by around 4.5 billion cubic meters on the 2005 level;
- To achieve the peaking of carbon dioxide emissions around 2030 and making best efforts to peak early.

1. The Outline of China's INDC

Third, in order to achieve these action objectives, China has nationally determined an comprehensive policy package with 15 measures including introduction of Emission Trading Market as well as achievable numerical targets in detail for low-carbon energy development.

For instance,

the State Council released the “Energy Development Strategy Action Plan (2014-2020)” on November 19, 2014, which sets the targets by 2020 to expand the installed capacity of hydropower, wind and solar PV to 350 GW, 200 GW and 100 GW, respectively. The targets for nuclear power are set at 58 GW for operating capacity and a minimum of 30 GW for construction capacity.

However, the INDC does not mention the hydropower and nuclear targets specified in the Strategy Action Plan; perhaps due to rising uncertainty in development and to avoid losing face before the international community in case of missing these numerical targets. This shows the difficulty of developing an energy plan that can meet international commitments without fail.

**Development of hydropower is facing issues such as migrants and rising costs associated with dam construction, while nuclear development is facing problems such as repeated delays in the construction of the US third-generation reactor AP1000 and public opposition to inland NPP construction.

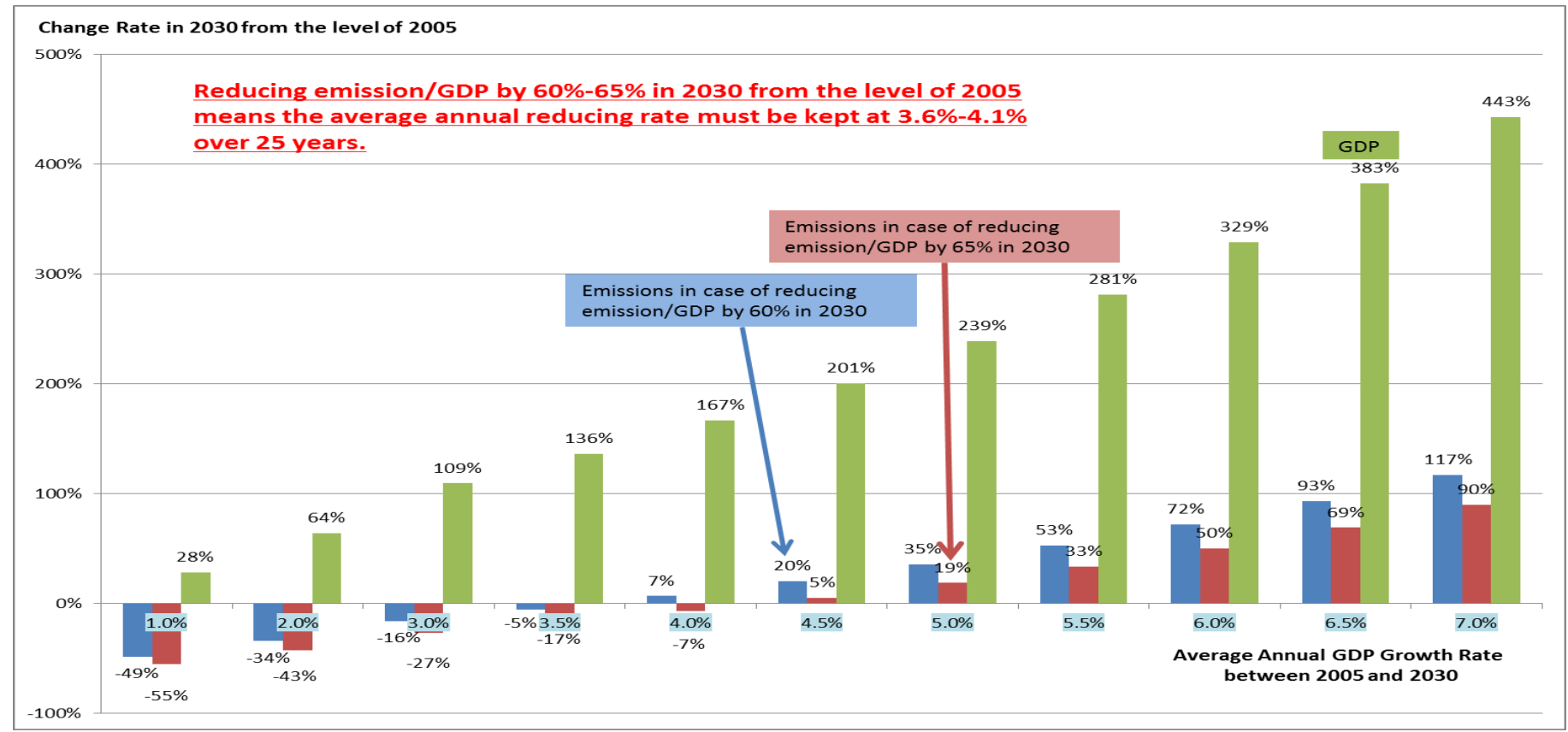
★ Many points of view for evaluating INDCs

For example: How much will it cost to achieve the INDC targets?

According to Xie Zhenhua, China's Special Representative for Climate Change Affairs, achieving the targets in China is expected to require the investment 30 trillion RMB yuan (approx. 4.62 trillion dollar) from 2016 to 2030.

This amount is equivalent to 44% of China's GDP in 2015.

What's the meaning of reducing emissions per unit of GDP by 60% to 65% by 2030 from the 2005 level?



★ What should we do after the Paris Agreement?

● To make a good understanding of INDCs, and then **tolerate the differences** among INDCs, taking into account the differentiated historical responsibilities and distinct national circumstances, the differences of development stage and capability.

● **To realize the targets** by “living up to its word”, **respectively.**

● **To keep working to increase ambition over time, respectively, and make some successful models and best practices as early as possible.**

Cumulative Total and Per Capita Emissions in China and the World(2012)

	Cumulative Total Emissions from 1890				Cumulative Total and Per capita Emissions from 1990 to 2012					
	to 1990		to 2012		Total Emissions		Per Capita Emissions			
	Gt-CO ₂	シェア	Gt-CO ₂	share	Gt-CO ₂	share	t-CO ₂	Index		
World	778	100.0	1,295	100.0	538	100.0	80	100.0	41.0	21.6
OECD	498	64.0	737	56.9	250	46.5	195	244.0	100.0	52.8
USA	239	30.7	349	27.0	115	21.4	369	462.2	189.4	100.0
Japan	29	3.7	53	4.1	25	4.6	180	225.6	92.5	48.8
EU	211	27.1	287	22.1	80	14.8	149	186.0	76.2	40.2
Non-OECD	280	36.0	557	43.0	286	53.3	53	65.8	27.0	14.2
India	13	1.7	36	2.8	24	4.4	21	26.1	10.7	5.7
China	42	5.4	135	10.4	95	17.7	70	87.5	35.9	18.9

Notes: The cumulative total emissions are calculated based on data from IEA “World Energy Outlook 2009” and EDMC/IEEJ “Handbook of Energy & Economic Statistics in Japan 2015”. The cumulative per capita emissions are estimated by [Cumulative Emissions / Cumulative population * the number of years].

Per Capita Index on GDP, Energy Consumption and CO2 Emissions in China and the World (2012)

	Per Capita GDP			Per Capita Primary Energy			Per Capita CO2 Emissions		
	\$/Person	OECD=100	USA=100	Toe/Person	OECD=100	USA=100	T-CO ₂ /Person	OECD=100	USA=100
World	10,377	27.8	20.1	1.79	42.7	26.2	4.63	48.2	28.3
OECD	37,356	100.0	72.2	4.19	100.0	61.4	9.60	100.0	58.7
USA	51,736	138.5	100.0	6.82	162.9	100.0	16.37	170.5	100.0
Japan	46,391	124.2	89.7	3.53	84.3	51.8	9.53	99.3	58.2
EU	32,893	88.1	63.6	3.25	77.6	47.7	6.74	70.2	41.2
Non-OECD	4,523	12.1	8.7	1.27	30.3	18.6	3.55	37.0	21.7
India	1,530	4.1	3.0	0.52	12.5	7.6	1.59	16.5	9.7
China	6,091	16.3	11.8	2.00	47.7	29.3	6.71	69.9	41.0

Sources: Compiled by Li Zhidong, based on EDMC/IEEJ, Handbook of Energy & Economic Statistics in Japan, 2015.

Population, Energy Consumption, CO2 Emissions and GDP in China and the World (2012)

	Population		Primary Energy		CO2 Emissions		Nominal GDP	
	Million	%	Mtoe	%	Mt-CO ₂	%	Billion \$	%
World Total	7,033	100.0	12,578	100.0	32,562	100.0	72,983	100.0
OECD	1,254	17.8	5,250	41.7	12,038	37.0	46,845	64.2
USA	314	4.5	2,141	17.0	5,139	15.8	16,245	22.3
Japan	128	1.8	452	3.6	1,220	3.7	5,938	8.1
EU	506	7.2	1,644	13.1	3,408	10.5	16,644	22.8
Non-OECD	5,779	82.2	7,328	58.3	20,524	63.0	26,138	35.8
India	1,237	17.6	645	5.1	1,961	6.0	1,893	2.6
China	1,351	19.2	2,696	21.4	9,067	27.8	8,229	11.3
China's Ranking	Largest		Largest		Largest		Second Largest	

Sources: Compiled by Li Zhidong, based on EDMC/IEEJ, Handbook of Energy & Economic Statistics in Japan, 2015.

2. The Progress Status and Perspective towards Achieving the INDC in China

2.1 China's Targets for 2020 and the Achievements by 2015

★China's Targets for 2020

At the end of January 2010, the Chinese government answered the question on whether China will participate in the Framework for post Kyoto Protocol by submitting a voluntary action plan to the UN. China announced internationally the following targets for 2020:

●To reduce CO₂/GDP by 40% to 45% from the 2005 level; ●To increase the share of non-fossil fuels in primary energy consumption to about 15%; ●To increase the forested area by 40 million hectares and the forest stock volume by 1.3 billion cubic meters compared to the 2005 levels.

★China's Actions towards Achieving the targets for 2020

In this connection, China has enacted and implemented the following action plans:

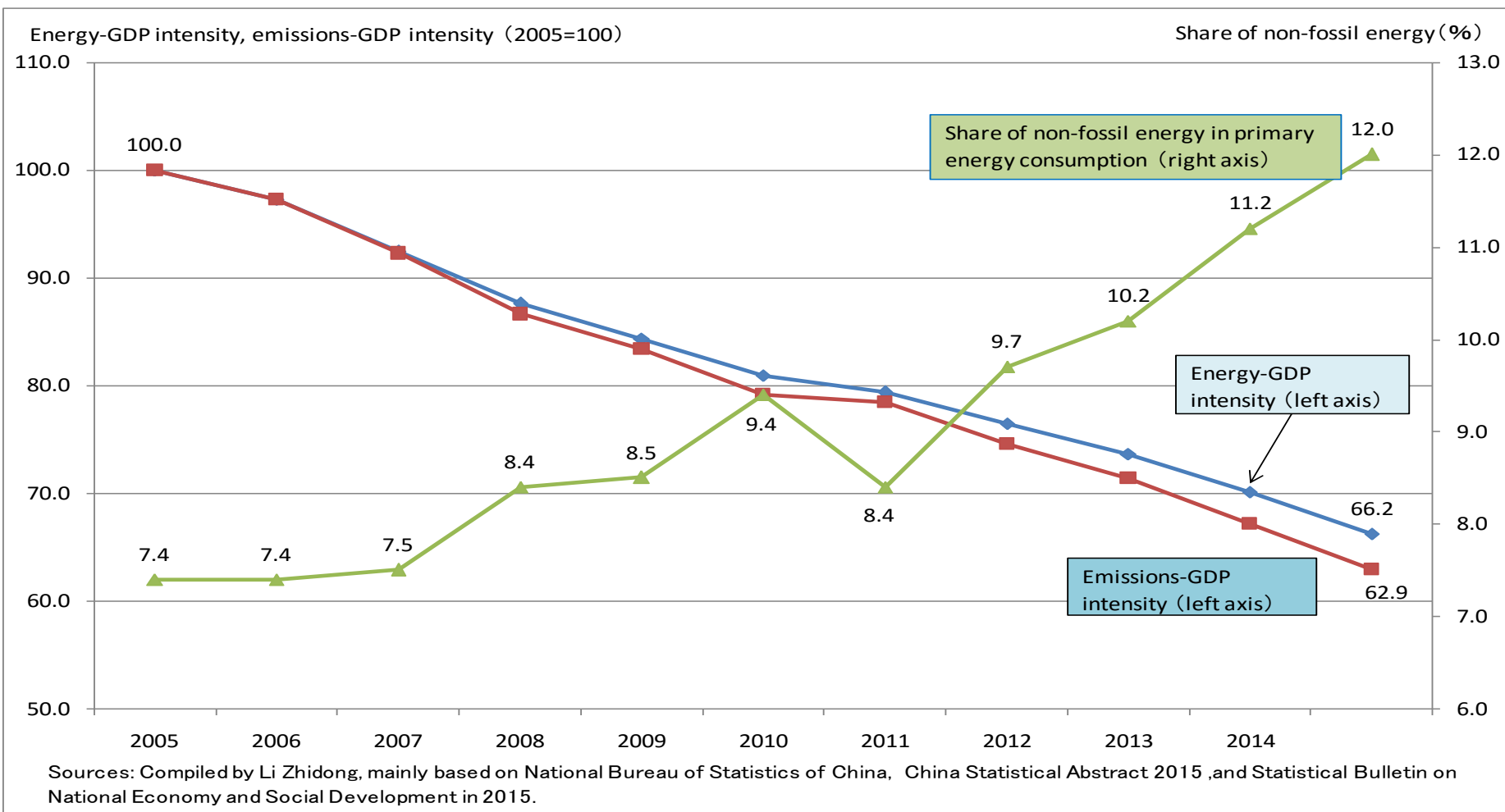
●National Program on Climate Change; ●the Work Plan for Controlling Greenhouse Gas Emissions during the 12th Five-Year Plan Period; ●the Comprehensive Work Plan for Energy Conservation and Emission Reduction for the 12th Five Year Plan Period; ●the 12th Five Year Plan for Energy Conservation and Emission Reduction; ●the 2014-2015 Action Plan for Energy Conservation, Emission Reduction and Low-Carbon Development; ●the National Plan on Climate Change (2014-2020).

China has accelerated the adjustment of its industry and energy structures and invested great efforts in improving energy efficiency, lowering carbon emissions and enhancing the ecosystem. China has initiated carbon emission trading pilots in 7 provinces and cities and low-carbon development pilots in 42 provinces and cities to explore a new mode of low-carbon development consistent with its prevailing national circumstances.

2.1 China's Targets for 2020 and the Achievements by 2015

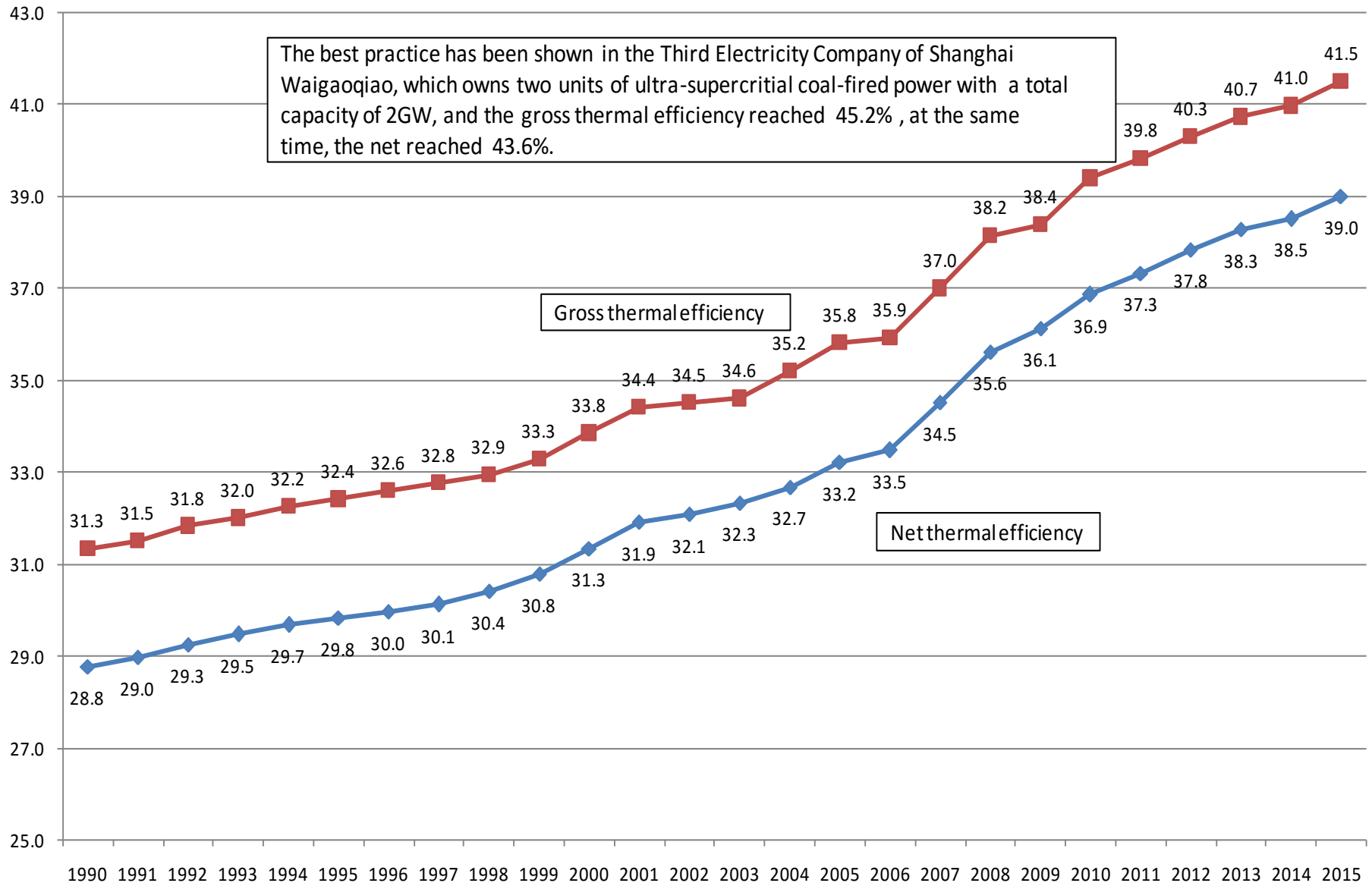
★ China's Achievements by 2015 (compared to the 2005 levels)

- ★ **Energy-GDP intensity** decreased by 33.8%;
- ★ **Non-fossil energy share** increased by 4.5 points to 12% (*target is 15% in 2020);
- ⇒ **Emissions-CO2 intensity** decreased by 37.1%, reaching to 92.8%-82.4% of the targets.
- ★ The forest stock volume are increased by 2.681 billion cubic meters, exceeding the target.



Energy efficiency continued to improved.

The average thermal efficiency (%)

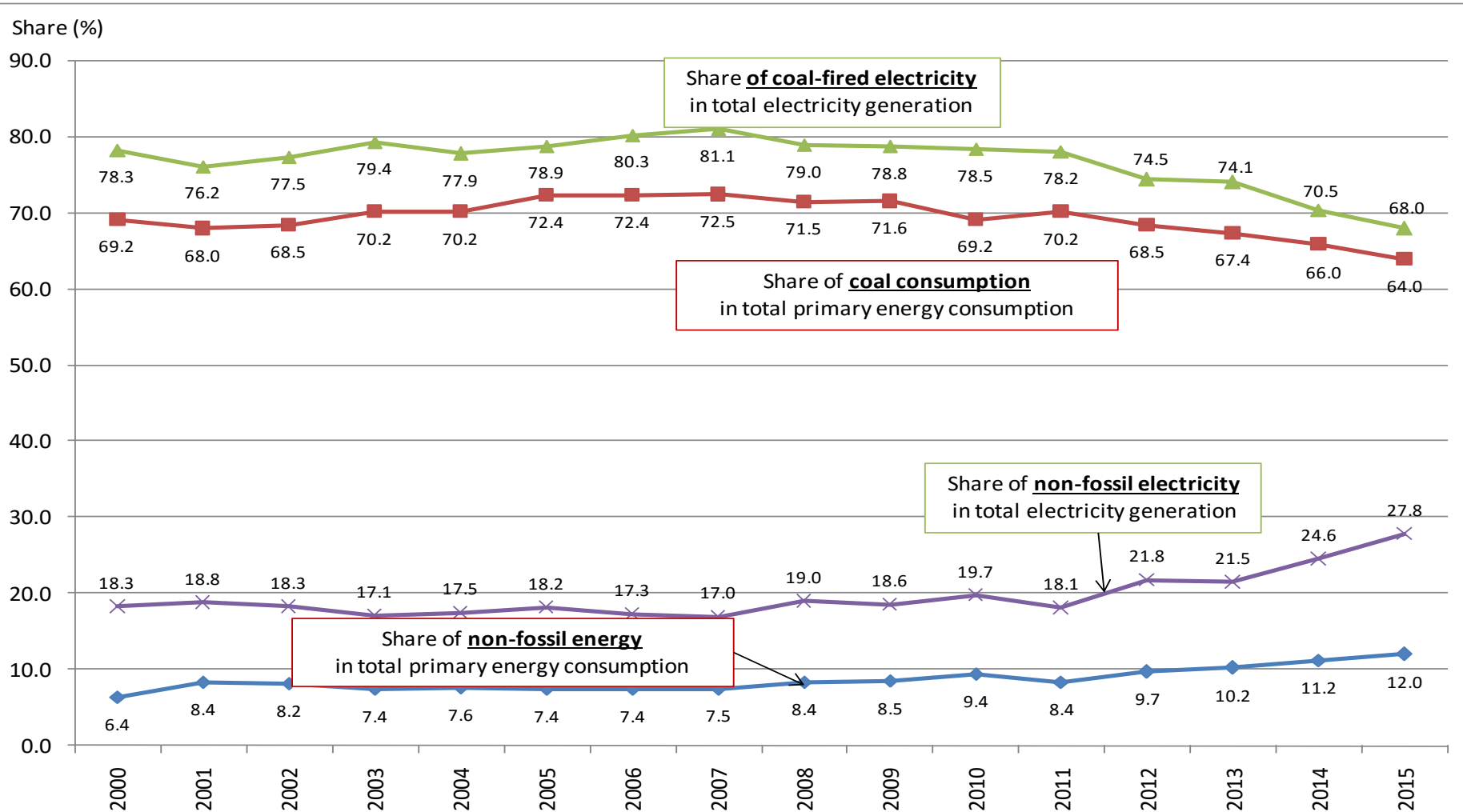


Sources: The National Energy Administration, China; China Electricity Council.

Notes: The gross thermal efficiency in 2014 and 2015 is estimated by assuming the own use ratio in plant didn't change from 6.01% of 2013.

Energy mix improved a lot in both primary energy and electricity

★ By 2015, in primary energy consumption, share of coal decreased to 64%, and non-fossil energy increased to 12%. ★ In electricity generation, share of coal-fired electricity decreased to 68%, and non-fossil electricity increased to 27% (of which, **19.9% for hydropower**, **3.3% for wind**, **3.0% for nuclear**)



Sources: Compiled by Li Zhidong, based on official statistics issued by National Bureau of Statistics of China and China Electricity Council, except coal-fired electricity shares in 2014 and 2015.

2.2 The After Paris Agreement Perspective towards Achieving the INDC Targets in China

● Promoting Energy Revolution and International Cooperation

On June 13, 2014, President Xi held the sixth meeting of Central Leading Group for Economic and Financial Affairs, in which he announced promoting a four-part “energy revolution” and international cooperation.

★ Without “energy revolution”, the INDC couldn’t be achieved effectively !!!

Energy revolution strategy promoted by Xi Jinping leadership (issued in June, 2014)

- Consumption revolution: Controlling overall energy consumption by implementing exhaustive energy saving measures in all phases of socio-economic development and all consumption areas, firmly holding the strategic priority of energy saving
- Supply revolution: Diversifying energy sources by developing energies other than coal, while strongly promoting the clean and efficient use of coal; At the same time, strengthening the development of transportation, electricity transmission and distribution infrastructure and storage facilities
- Technological revolution: Enhancing the development of green and decarbonization technologies, and reinventing the relevant industries into a new industry that can drive economic growth and elevate the level of the overall industry
- Management system revolution: Developing a competitive market by highlighting the commercial aspects of energy, focusing particularly on building the market-driven pricing mechanism and improving the legal system
- Stronger international cooperation: While domestic issues remain the highest priority, strengthening international cooperation in all possible areas related to energy production and consumption, to use international resources efficiently

Sources: Li Zhidong compiled.

Ambitious, but Achievable National Targets in Related Plans

Medium- to Long-Term National Strategies and Targets in China

China's National Plan on Climate Change for 2014–2020 , issued in September 2014; Action Plan on Energy Strategies for 2014–2020 , issued in November 2014	Overall target	<ul style="list-style-type: none"> -To reduce CO₂-GDP intensity by 40 to 45% from 2005 levels by 2020
	Targets for energy supply/demand, and energy mix	<ul style="list-style-type: none"> -To keep energy consumption below 4.8 billion tce and coal consumption below 4.2 billion tons by 2020 -To increase domestic energy production to about 4.2 billion tce by 2020, and keep the self-sufficiency ratio around 85% -By 2020, to raise the percentage of non-fossil energy (renewable energy plus nuclear energy) in primary energy consumption to 15%, the share of nature gas to above 10%, and reduce the share of coal to below 62%
	Targets by energy sources	<ul style="list-style-type: none"> -By 2020, expanding general <u>hydropower</u> capacity to 350 GW; expanding <u>wind</u> power generation capacity to at least 200 GW, and decreasing the electricity sales price to match that of coal-fired thermal (on average 0.41 yuan/kWh nationwide as of October 2014); Expanding <u>solar</u> power generation capacity to at least 100 GW, and decreasing the sales price (currently 0.9–1.0 yuan/kWh) to match that of the electricity tariff (consumer purchase price of electricity from electricity transmission companies) -By 2020, increasing <u>nuclear</u> power capacity to 58 GW, and the capacity under construction to 30 GW -By 2020, reducing the distributed use of <u>coal</u> in residential and industrial sectors, and using it centrally in the power generation sector, where the ratio of coal is increased to above 60% from 50% in 2013. At the same time, all new coal-fired thermal power plants must have a net thermal efficiency of at least 41% and fulfill an emission standard equivalent to that of gas thermal plants, while existing plants must improve the net thermal efficiency to at least 39.6% by 2020 from 38.3% in 2013.
		<ul style="list-style-type: none"> -By 2020, expanding the supply capacity of <u>nature gas</u> to 400–420 billion m³ (consumption was at 167.6 billion m³ for 2013), including 30 billion m³ of shale gas and coal-bed methane, respectively.
<ul style="list-style-type: none"> -To reduce Energy-GDP intensity in manufacturing sector by 18% by 2020 and 34% by 2025 from 2015 levels -To reduce CO₂-GDP intensity in manufacturing sector by 22% by 2020 and 40% by 2025 from 2015 levels 		
“Made in China 2025” plan issued on May 19, 2015		

Sources: Li Zhidong compiled.

13th Five-Year Plan and Roadmap towards targets for 2020 and 2030

	Level					Cumulative change rate				Rate of change from 2005		
	2005 ^a	2010 ^a	2015 ^a	Targets for 2020 ^{a,b}	Targets for 2030 ^c	10/05	15/10	20/15	30/20	2015	2020	2030
Energy-GDP intensity	100.0	80.9	66.2	56.3		-19.1%	-18.2%	-15.0%		-33.8%	-43.7%	
Share of non-fossil fuels in total primary energy consumption	7.5%	8.3%	12.0%	15.0%	20.0%							
CO ₂ -GDP intensity	100.0	80.2	62.9	51.6	35.0	-19.8%	-21.6%	-18.0%	-32.1%	-37.1%	-48.4%	-65.0%

Notes: a) Figures for 2015 and earlier years are actual, based on official releases, and figures for 2020 are targets set in the 13th Five-Year Plan. b) Targets for 2020 set in China's voluntary action plan submitted to the UN in 2010 is to reduce the CO₂-GDP intensity by 40-45% from 2005 level. Fulfilling the target in the 13th Five-Year Plan will result in a 48.4% reduction of the CO₂-GDP intensity, exceeding the target submitted to the UN. c) Even the target in the 13th Five-Year Plan has been reached, an average annual reduction of 3.8%, or a cumulative reduction of 32% between 2020 and 2030, is needed for reducing emissions by 65% in 2030 from the level of 2005, which has been set as the upper limit of reduction targets in China's INDC.

Sources: Compiled by Li Zhidong.

Going forward, attention will focus on:

- ◎how the binding target for energy consumption should be allocated to each region;
- ◎whether the global warming prevention plan will include a target for CO₂ emissions;
- ◎how the trading system for energy consumption and CO₂ emissions to be introduced in 2017 will be designed, etc.

2.3 Some Long-term Projections on China's Low-Carbon Roadmap

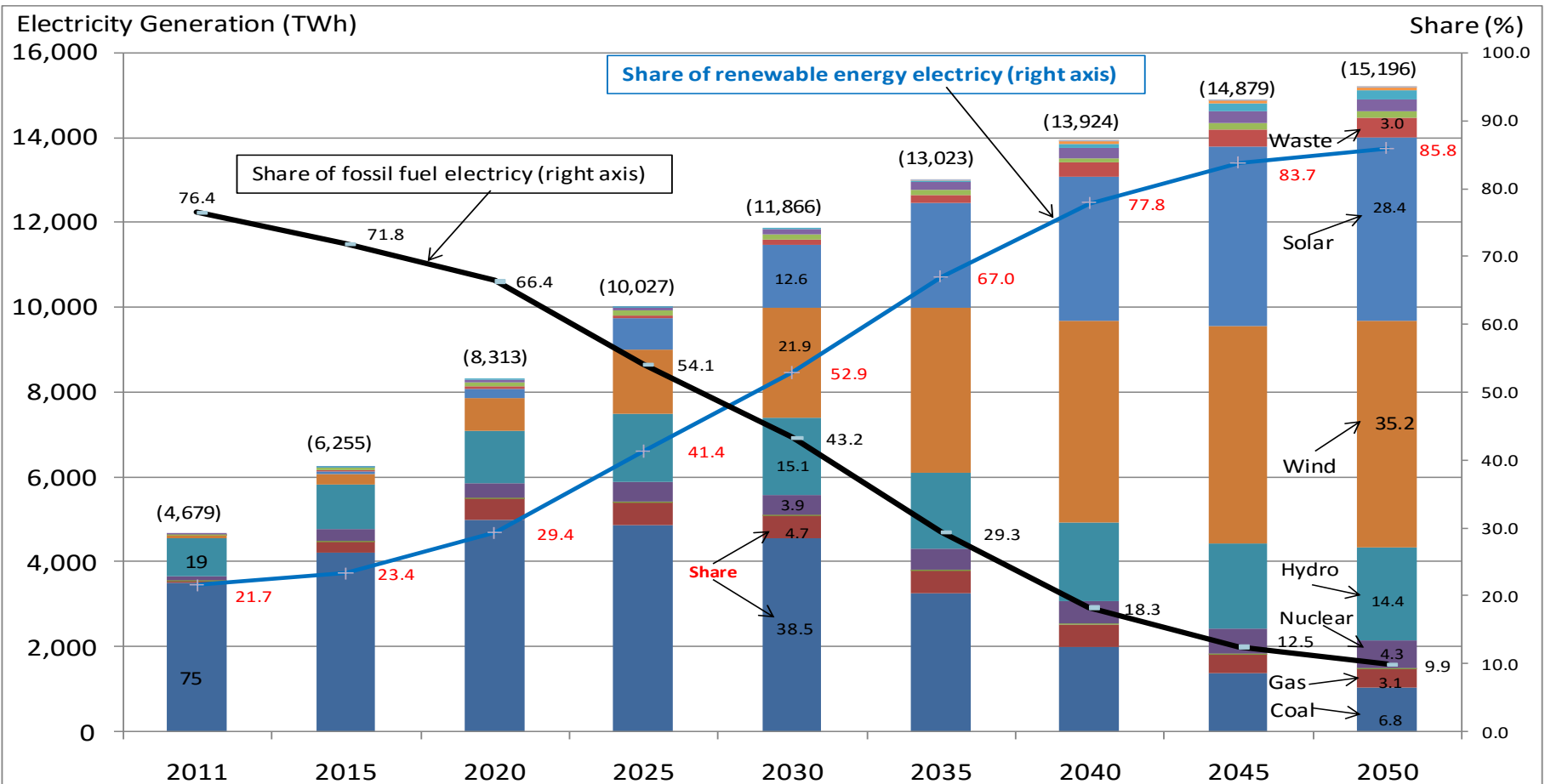
☆China Electricity Council's 「The Status and Outlook on China's Power Generation Industry」 (March 2015) suggests that non-fossil electricity will account for 29% by 2020, 37% by 2030 and 50% by 2050 in terms of power generation, or 39%, 49% and 62% in terms of capacity.

China Electricity Council's 「The Status and Outlook on China's Power Generation Industry」 (March 2015)

	Capacity; Electricity				Share (%)			
	2014	2020	2030	2050	2014	2020	2030	2050
Power generation capacity (100GW)	13.60	19.6	30.2	39.8	100.0	100.0	100.0	100.0
Non-fossil energy power	4.53	7.6	14.8	24.7	33.3	39.0	49.0	62.0
Renewable power	4.33	7.1	12.8	20.7	31.8	36.0	42.4	51.9
Hydropower	3.02	4.2	6.3	8.0	22.2	21.4	20.7	20.1
of which: General hydro	2.80	3.6	4.8	5.0	20.6	18.4	15.7	12.6
Pumped hydro	0.22	0.6	1.5	3.0	1.6	3.1	5.0	7.5
Wind, solar and others	1.31	2.9	6.5	12.7	9.6	14.6	21.7	31.8
of which: Wind	0.96				7.0			
Solar power	0.27				1.9			
Waste and others	0.09				0.7			
Nuclear power	0.20	0.6	2.0	4.0	1.5	3.0	6.6	10.1
Fossil fuel thermal power	9.07	12.0	15.4	15.1	66.7	61.0	51.0	38.0
Coal-fired	8.25	11.0	13.4	12.0	60.7	55.9	44.4	30.2
Natural gas-fired	0.56	1.0	2.0	3.0	4.1	5.1	6.6	7.5
of which: General		0.6	0.8	1.0		3.1	2.6	2.5
Distributed		0.4	1.2	2.0		2.0	4.0	5.0
Oil-fired	0.26	0.0	0.0	0.1	1.9	0.0	0.0	0.3
Electricity generation (TWh)	5.55	7.7	10.3	12.5	100.0	100.0	100.0	100.0
Non-fossil energy power	1.42	2.2	3.8	6.3	25.6	29.0	37.0	50.0
Fossil fuel thermal power	4.13	5.5	6.5	6.3	74.4	71.0	63.0	50.0

Sources: Compiled by Li Zhidong, based on <http://www.cec.org.cn/yaowenkuaidi/2015-03-10/134972.html> 「The Status and Outlook on China's Power Generation Industry」 issued by China Electricity Council, and other related sources.

☆ **ERI/China's China 2050 High Renewable Energy Penetration Scenario and Roadmap Study**, conducted by more than ten organizations of China, issued April 2015, estimates that: **● non-fossil electricity could account for up to 90% by 2050**, and the high renewable energy penetration power system can be built at a small or non-incremental cost. The average cost of electricity will rise from RMB0.672/kWh in 2030 to RMB0.685/kWh, while in the reference scenario it will stay flat around RMB0.67/kWh between 2030-2050; **● CO₂ emissions will peak by 2025** and decrease to 3 billion tons by 2050.

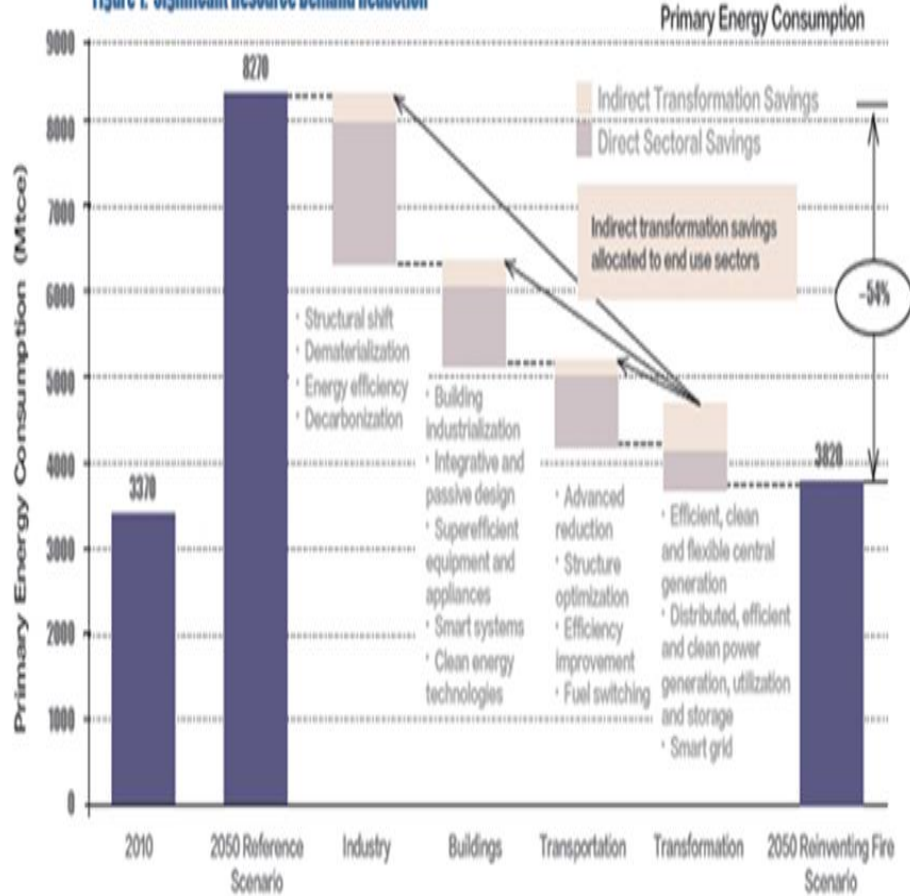


Source: Compiled by Li Zhidong, based on Energy Research Institute, China, "China 2050 High Renewable Energy Penetration Scenario and Roadmap Study: Executive Summary", April 2015.

Foundation China) (2016/3/9):

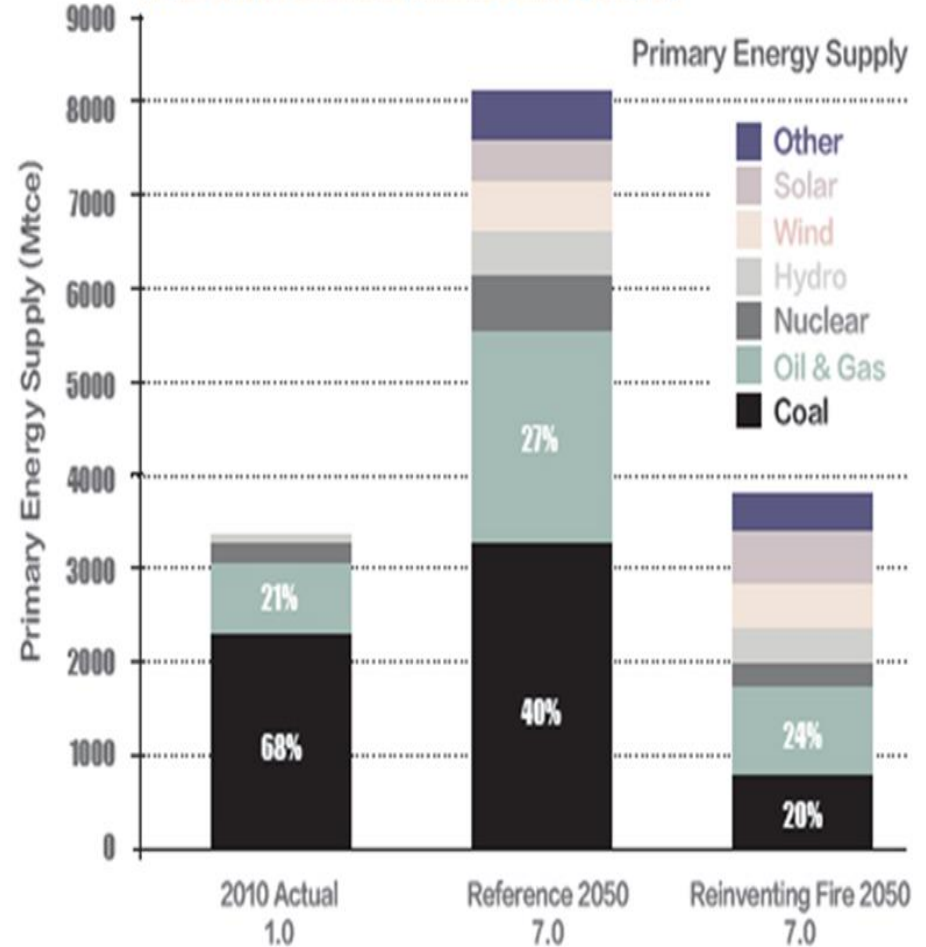
①China can grow its GDP seven fold by 2050 while using only slightly more energy in 2050 than in 2010; ②The share of non-fossil energy in primary energy consumption will increase to about 50% by 2050; ③Carbon emissions would fall below 2010 levels by more than one-third; ④The upfront investment of 46 trillion RMB—about 1–2% of GDP—returns 68 trillion RMB in savings, for a net-present-value benefit of approximately 22 trillion RMB.

Figure 1. Significant Resource Demand Reduction



Source: Reinventing Fire China Team Analysis
Primary electricity converted using direct equivalent method.

Figure 2. Restructuring China's Energy Supply



Primary electricity converted using coal power plant conversion convention.
Source: Reinventing Fire: China Team Analysis, 2015.

IEJ: June 2016 © IEJ 2016

3. Strengthening International Cooperation After the Paris Agreement in China

☆ China has played an important role in securing an historic climate agreement in Paris - the Paris Agreement - on December 12, 2015.

☆ After the Paris Agreement, China will continue to strengthen international cooperation as follows:

(1) Cooperation for achieving the early entry into force of the Agreement

Zhang Gaoli, Chinese vice premier and special envoy of President Xi Jinping, signed the Paris Agreement, and announced on Friday that China aims to finalize domestic legal procedures to ratify the pact before the G20 Hangzhou summit in September this year, at the United Nations headquarters in New York April 22, 2016.

(2) Cooperation based on China SSCCF

China announced in September, 2015, the establishment of an RMB 20 billion **South-South Climate Cooperation Fund** (approx. **3.1 billion dollars**) on its own mainly for small island nations and the poorest countries in Africa and elsewhere.

In 2016, China will launch cooperation projects to set up **10 pilot low-carbon industrial parks** and start **100 mitigation and adaptation programs** in other developing countries and provide them with **1,000 training opportunities** on climate change. China will continue to promote international cooperation in such areas as **clean energy**, disaster prevention and mitigation, ecological protection, **climate-smart agriculture, and low-carbon and smart cities**. China will also help other developing countries to **increase their financing capacity**.

Source: http://www.chinadaily.com.cn/world/XiattendsParisclimateconference/2015-12/01/content_22592469.htm Full text of President Xi's speech at opening ceremony of Paris climate summit

(3) To promote low-carbon energy cooperation in the "One Belt, One Road"

Initiative as one of its pillars (March 2015)

Priorities: ☆ Promoting green and low-carbon infrastructure construction and operation management, taking into full account the impact of climate change on the construction;
 ☆ Promoting the connectivity of energy infrastructure including oil and gas pipelines, cross-border power supply networks and power-transmission routes, and cooperate in regional power grid upgrading and transformation; ☆ Increasing cooperation in the exploration and development of coal, oil, gas and other conventional energy sources; cooperation in hydropower, nuclear power, wind power, solar power and other clean, renewable energy sources; cooperation in the processing and conversion of energy.

⇒ To make an environment-friendly OBOR



China's advantages in Low-carbon energy cooperation:

☆ high competitiveness, especially in term of cost-performance;

☆ growing capability on international development finance through AIIB(100 billion USD), Silk Road Fund (40 billion USD), Green Silk Road Fund(4.6 billion USD), etc.

Appendix: The Outline of China's INDC

★ **China submitted** the Intended Nationally Determined Contribution (**INDC**) to the UN on **June 30, 2015.**

Outline of China's INDC: Enhanced Actions on Climate Change (June 30, 2015)

Targets after 2020	Overall targets	<ul style="list-style-type: none"> • Achieving the peaking of CO₂ emissions around 2030 and making best efforts to peak as early as possible • Reducing the CO₂-GDP intensity in 2030 by 60-65% from 2005 (reducing the 2020 intensity by 40-45% after cutting the 2015 intensity by 37.1% actually)
	Individual targets	<ul style="list-style-type: none"> • Raising the share of non-fossil energy in primary energy consumption to around 20% (against the actual share of 11.2% in 2015 and the target of 15% for 2020) • Increasing forest CO₂ storage in 2030 by 4.5 billion m³ from 2005 (actual storage in 2015 at 15.137 billion m³, up 2.681 billion m³ from 2005) • Creating arrangements and capacity to effectively mitigate climate change risks in agriculture, forestry, water resources and other priority areas, urban regions, coastal regions and regions with vulnerable ecological environments, and developing forecasting, warning and disaster prevention/reduction systems steadily
Policy measures for accomplishing targets	1. Proactive implementation of national strategy for preventing climate change	
		<ul style="list-style-type: none"> • Enhancing the development of climate change prevention laws • Incorporating behavior objectives into national economic and social development plans to create a long-term low-carbon development strategy and a roadmap • Breaking down targets and missions (by region, major industry, priority enterprise, etc.) to improve the system for holding specific parties responsible for accomplishing targets
	2. Improving regional climate change prevention strategies. Setting targets, missions and paths for reducing gaps and adapting to climate change based on regional characteristics	
	3. Attempting to decarbonize energy mix	
		<ul style="list-style-type: none"> • Coal: Attempting to implement the total amount control on coal consumption, enhance clean coal use and raise the share of concentrated and highly-efficient electricity generation from coal. Cutting the sending-end intensity to around 300 gce/kWh for new coal power plants (raising the thermal efficiency to around 40.95%) • Gas: Expanding natural gas use to raise natural gas's share in primary energy consumption to 10% or more in 2020 and increasing coal-bed methane output to 30 billion m³ • Hydro power generation: Proactively promoting the development of hydro power, on the premise of ecological and environmental protection and inhabitant resettlement • Nuclear power generation: Developing nuclear power generation in a safe and efficient manner • Wind power generation: Promoting wind power generation development powerfully to expand the installed capacity to 200 million kW in 2020 (against 12,900 kW in grid-linked capacity in 2015) • Solar energy: Accelerating solar photovoltaics and thermal power generation development to expand solar power generation capacity to 100 million kW in 2020 (against 43.18 million kW in actual capacity in 2015) • Geothermal energy and others: Developing geothermal, biomass and marine energy proactively. Expanding geothermal energy use to 50 million tce in 2020. • Promoting distributed energy development powerfully and enhancing smart grid construction
	4. Building an energy-saving, low-carbon industry system	
	5. Reducing emissions in building and transportation sectors	
	6. Attempting to increase carbon sinks	
	7. Developing low-carbon lifestyles	
	8. Attempting to generally improve climate change adaptation capacity	
	9. Creating low-carbon development models	
	10. Enhancing support in terms of low-carbon technology development	
	11. Enhancing financial and policy support	
	12. Promoting carbon emission trading market	
	13. Improving statistical and accounting system for GHG emissions	
	<ul style="list-style-type: none"> • Improving statistical GHG emission data quality continuously by attempting to develop GHG emission statistics and statistical indicator systems and enhance human resources development • Enhancing GHG inventory creation projects to regularly prepare national and provincial emission inventories, establishing GHG calculation standards for priority industries and enterprises, introducing a system for GHG emission reports by priority enterprises 	
14. Improving social participation systems		
15. Promoting international cooperation proactively		
	<ul style="list-style-type: none"> • Maintaining the principles of common but differentiated responsibilities, equity and respective responsibility, encouraging developed countries to substantially reduce emissions and fulfill obligations to provide developing countries with financial, technical and capacity-building assistance, winning fair opportunities for sustainable development and more financial, technical and capacity-building assistance for developing countries, promoting north-south cooperation • China will take on international commitments that match its national circumstances, current development stage and actual capabilities by enhancing mitigation and adaptation actions and further strengthening south-south cooperation on climate change • China will establish the Fund for South-South Cooperation on Climate Change, providing assistance and support, within its means, to other developing countries including the small island developing countries, the least developed countries and African countries to address climate change • Attempting to expand international dialogue and exchange, to enhance policy cooperation and working-level cooperation, to share positive experiences and good practice and to diffuse low-carbon and adaptation technologies 	

Source: Prepared by Li based on official releases by the National Bureau of Statistics, and China's INDC: Enhanced Actions on Climate Change, as compiled by National Development and Reform Commission