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CHINA ENERGY POLICY NEWSLETTER

Boosting Renewable Energy as Part of China's Energy Revolution

Foreword

Starting in 2020, the Danish Energy Agency and China National Renewable Energy Centre (CNREC) will jointly lead the publishing of the monthly *China Energy Policy Newsletter*. This newsletter is part of CNREC's international cooperation project *Boosting Renewable Energy as Part of China's Energy Revolution*.

Year 2019 marks a milestone in China's low-carbon energy transition process. The government announced the mandatory power consumption mechanism after a decade-long discussion, and it clarified wind and PV tendering rules, which gave a clear policy orientation for renewable energy development after 2020. Additionally, the annual flagship publication of CNREC, *China Renewable Energy Outlook 2019*, reviewed all these major policy changes and was launched by CNREC at COP 25, with high-level presence from China and Denmark.

Coming to 2020, the Chinese government has started to prepare the *14th Five-year Plan for Renewable Development*. China will have increased focus on improving utilization rather than scale expansion, therefore no separate plans for hydro, wind and solar will be made. The *2020 Renewable Power Subsidy Plan* announced in January also shows efforts from the government to speed up subsidy phase out process. Local governments will take over the subsidizing sponsorship for new offshore wind and CSP projects after 2020, and it is still uncertain what the balance will be between opportunities and challenges for these technologies.

Looking forward towards an exciting 2020.

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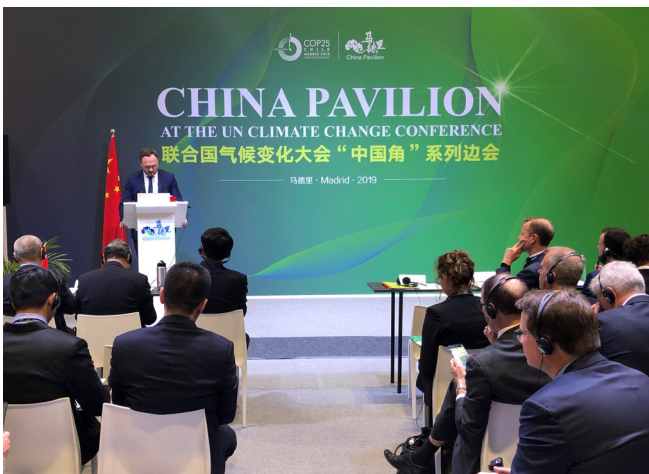
1. Project activities

Launch of the China Renewable Energy Outlook 2019 at COP25 in Madrid

On 12 December 2019, the Chinese Vice Minister of Environment and Ecology, Mr Zhao Yingmin, and the Danish Minister of Climate, Energy and Utilities, Mr Dan Jørgensen, launched the *China Renewable Energy Outlook 2019* (CREO 2019) at COP25 in Madrid, Spain. The launch took place at the China Pavilion and attracted a large international crowd. The report was prepared by the China National Renewable Energy Centre (CNREC) in close collaboration with the Danish Energy Agency, GIZ, German Energy Agency, Agora Energiewende, Energinet and Ea Energy Analyses. CREO 2019 demonstrates how the Chinese energy system can develop in a cost-effective way that is also in accordance with the Paris Agreement.

In fact, the CREO 2019 highlights how long-term energy planning and expansion of renewable energy can enable China to reach the UN below 2-degree target without increasing the cost of energy. In this way, China can reduce its CO₂ emissions by more than 7 billion tons annually in 2050. That is approximately 200 times Denmark's current annual CO₂ emissions.

The report also showcases how China can accomplish its long-term goal of completing a green energy transition while achieving economic growth. To achieve such a scenario, China must expand its installed renewable energy capacity ten-fold – from 699 GW in 2018 to 6,033 GW in 2050. For wind capacity alone, this would lead to an increase from 184 GW in 2018 to 2,636 GW in 2050. This increase is close to 450 times the total wind capacity of Denmark in 2018, and would cement China's position as the largest wind energy market in the world.



Mr Dan Jørgensen, Danish Minister of Climate, Energy and Utilities.
Source: DEA.



Mr Zhao Yingmin, Chinese Vice Minister of Environment and Ecology. Source: DEA.

2. China energy transition updates

China will not make separate 14th Five-Year Plans for hydro, wind and solar power

According to China Renewable Energy Engineering Institute (CREEI), the government will formulate six 14th Five-Year Plans for energy sectoral development.¹ They are coal, oil and gas, power, renewable energy, technological innovation, and institutional reform, implying that the National Energy Administration (NEA) will not carry out separate plans for hydro, wind and solar power. China has almost fully exploited hydropower resources, so a new Five-Year Plan for this sector would not have big impact. Contrarily, wind and solar have dominated the incremental power capacity, therefore for the 14th Five-Year period, the power sectoral planning would integrate wind and solar with focus on expanding pace and deployment in order to provide optimal solutions for the overall power system.

"In the coming five years, we expect that renewables will be the main contributors of incremental electricity consumption, in the meanwhile to gradually dominate the total capacity," said by Mr Zheng Shengan, the president of CREEI, *"therefore, the key to the future is how to transfer from scale development to quality development"*. The 14th Five-Year Plan will focus on the coordination with provincial and other sectoral planning and improving efficiency of renewable utilization. The policy makers will specifically pay attention to the interaction between Five-Year Plans and national spatial land planning, where environmental protection would be the precondition to determine the scale of development.

Local governments will be responsible for offshore wind and CSP subsidies after 2020

In January 2020, the Ministry of Finance (MoF), National Development and Reform Commission (NDRC), and NEA jointly issued the renewable subsidy policy for 2020 and after.² MoF will determine the annual budget for subsidies based on incremental power consumption and amount of renewable surcharge collected. The ministry estimates that the budget for new wind, solar and biomass power projects in 2020 will be around RMB 5 billion. Another major change is that the ministry requires local governments to take over the subsidising sponsorship for new offshore wind and CSP projects after 2020. This is mainly because the deficit of subsidy grew year by year, so the central government has to phase out the national subsidy faster. In addition, the subsidy standard for new offshore wind remains but not for CSP. Please refer to the detailed table below.

From CNREC's perspective, subsidy is still very necessary for both offshore wind and CSP projects. Local incentive policies would provide offshore wind a better market environment as the 11 coastwise provinces are relatively economic developed and have big power consumption potential. The uncertainty would be the actual level of subsidy. On the other hand, it is not feasible to facilitate CSP with local incentives only, as CSP projects are mostly located in west and north regions where are less economic developed. Therefore, local governments should also come up with other specific and strongly effective policies such as flexible power prices and multi-energy complementary pilots to support.

Power source	Year of approval	Year of grid connection	Feed-in Tariff (RMB/kWh)	Sponsorship
Coastwise offshore wind	Prior 2019	Prior 2022	Up to 0.85	MoF
	2019	Prior 2022	Up to 0.8	MoF
	Prior 2020	After 2022	Up to 0.75	MoF -> local governments, not mandatory to provide
	After 2020	-	Up to 0.75	MoF -> local governments, not mandatory to provide
CSP	Prior 2020	Prior 2022	Benchmark 1.15	MoF
	Prior 2020	After 2022	No benchmark	MoF -> local governments, not mandatory to provide
	After 2020	-	No benchmark	MoF -> local governments, not mandatory to provide

Source: National Energy Administration, January 2020

¹ "十四五"不做水风光专项规划，相关行业该如何发展？" China Energy News, 9 January 2020, accessed at <http://news.bjx.com.cn/html/20200109/1035287.shtml>.

² "财政部 国家发展改革委 国家能源局 关于促进非水可再生能源发电健康发展的若干意见，财建[2020]4号，" Ministry of Finance, National Development and Reform Commission and National Energy Administration, 20 January 2020, accessed at http://jjs.mof.gov.cn/zhengcefagui/202001/t20200122_3463379.htm.

The 2020 policy orientation for wind and PV sectors is clear

NEA issued the policy draft of *2020 Wind and Solar PV Construction Plan* to request public comments in January 2020.³ The 2020 roadmap for the two renewable power resources is clear. Major content includes:

1. New subsidy-free wind and PV projects should get approval and start the construction by the end of 2020.
2. New utility-scale onshore and offshore wind, and distributed wind projects approved through tenders should not exceed the construction target by province determined in the *13th Five-Year Plan*.
3. National subsidy budget for new PV projects is RMB 1.5 billion, of which RMB 500 million are for household PV and RMB 1 billion for PV tendering projects. Dr Shi Jingli, researcher at Energy Research Institute NDRC, expects the solar PV generation policies to continue to follow the content of 2019, that is, the tendering projects, subsidy-free projects, poverty alleviation projects, household PV projects and specific pilot projects will follow the separate regulations issued by the NEA.⁴
4. Local governments should guarantee the power transmission and consumption environment for new projects.

2019 national district heating target has been achieved

The share of updated heating systems in district heating regions reached 55% in 2019, 5 percentage points higher than the target.⁵ Updated heating systems include heat supply from natural gas, electricity, geothermal, biomass, solar, exhaust heat from industry, coal power plants qualified with ultra-low emission standard, and nuclear. However, in the *Implementation Status Report of China Renewable Energy Law* published in December 2019, the People's Congress emphasized that China is still lacking supporting policies for renewable heating, which slows down the development pace of solar, geothermal and biomass heating.⁶ In 2019, the first batch of the 12 clean energy heating pilot cities received national subsidy for the last time. After 2020, local governments will take over the sponsorship, which could result in more challenges during the financing process of updated heating systems.

The first foreign invested offshore wind project now in operation

In December 2019, the first offshore wind power project with foreign investment started to operate in China.⁷ The project is located in Yancheng of Jiangsu province, naming the *300 MW Dongtai Phase IV Offshore Wind Projects*. It is a joint venture of China Energy Investment Corporation (CEIC) and Electricite de France (EdF). CEIC was formed in 2017 as a merger of Shenhua and Guodian. In March 2019, EdF announced their intention to invest in two offshore wind projects together with CEIC with a total capacity of 500 MW. The annual wind speed at the site reaches 7.6m/s at 90 meter height and the utilization hours are expected to exceed 2,700 hours/year. The two EdF projects will use turbines from Shanghai Electric and Envision.

³ “国家能源局综合司关于征求对《国家能源局关于2020年风电、光伏发电项目建设有关事项的通知（征求意见稿）》意见的函,” National Energy Administration, 23 January 2020, accessed at http://www.nea.gov.cn/2020-01/23/c_138728958.htm.

⁴ “大加声音 | 时璟丽：2020年光伏政策机制总体思路和框架将保持不变,” Energy News, 2 December 2020, accessed at <http://www.energynews.com.cn/show-55-18057-1.html>.

⁵ “2019年中国清洁供热行业十大新闻,” China Clean Energy Heating Platform, 27 December 2019, accessed at <http://www.chplaza.com.cn/article-5162-1.html>.

⁶ “第十三届全国人民代表大会常务委员会报告指出我国生能源供热发展滞后,” China Clean Energy Heating Platform, 27 December 2019, accessed at <https://www.jinqijian.com/xinwen/hangyeyedongtai/2019122713118.html>.

⁷ “中国首个外资参与海上风电项目投运,” China Energy Investment Corporation, 18 December 2019, accessed at <http://finance.sina.com.cn/roll/2019-12-18/doc-iihnzhfz6816329.shtml>.

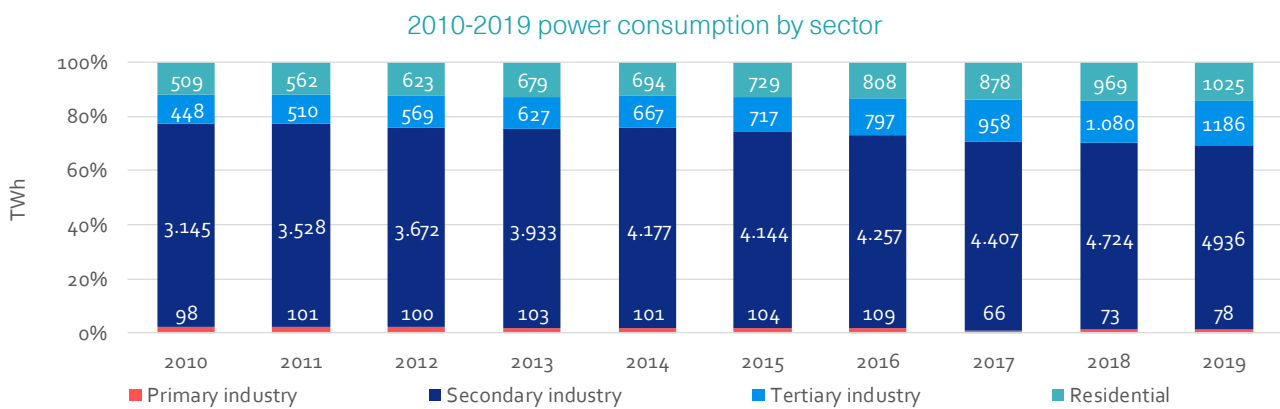
3. 2019 China energy statistic data

Fossil fuel consumption continues to grow

The use of fossil fuels in China continued to grow in 2019. The annual production of raw coal reached 3,750 million tons, a 4.2% year-on-year increase, and the import of raw coal increased to 300 million tons, a 6.3% increase compared to 2018. Natural gas production increased by 9.8% and the import of natural gas increased by 6.9%. The domestic oil production increased by 0.8% in 2019 to 190 million tons, while the import of oil grew by 9.5% to 510 million tons.⁸

Slowdown in the electricity consumption growth

After a significant increase of 8.5% in China's electricity consumption in 2018, the growth slowed in 2019. China's total electricity consumption grew 4.5% in 2019 and reached 7,225 TWh. The electricity consumption grew 4.5% in the primary industry sector, 3.1% in the secondary industry sector, 9.5% in the tertiary industry sector and 5.7% in the residential sector. It reflects the general economic transformation, where the growth rate of the secondary sector is slower than in the tertiary industry and residential sectors. Telecom, software and IT industries continued to show strong growth. Geographically, West China had the highest growth rate in the country, with a year-on-year growth rate of 6.2%.⁹



Source: China Electricity Council (CEC), accessed in January 2020

Renewable energy took up more than half of incremental power capacity

By the end of 2019, China had a total installed capacity of 2,011 GW, a 5.8% year-on-year increase, of which 40.8% is non-fossil fuel. The country added 111 GW of new capacity, with 92% connected to the grid.¹⁰ Wind power increased by 26 GW up to 210 GW (in 2018 new installations amounted to 20 GW). Solar power capacity increased by 30 GW up to 200 GW in total (in 2018 new installations amounted to 45 GW).¹¹ The decrease in new solar power installations is mainly due to the uncertainty of the new PV auction mechanism, so the time left for new projects to be completed in 2019 was short.¹² Nevertheless, renewable energy took up 54.0% of this newly added capacity.¹³ Incremental biomass power capacity was 4.73 GW, a 56% year-on-year increase; the biggest growth in absolute value in its history.¹⁴ The new installations of coal power capacity in 2018 amounted to 29 GW, the same level as in 2018, while new gas power capacity was 6 GW, 2.5 GW less than in 2018.

⁸ "国家统计局发布12月份能源生产情况," National Bureau of Statistics, 17 January 2020, accessed at http://www.gov.cn/xinwen/2020-01/17/content_5470101.htm.

⁹ "中电联发布2019-2020年度全国电力供需形势分析预测报告," China Electricity Council, 21 January 2020, accessed at <http://www.cec.org.cn/guihuayutongji/gongxufenxi/dianligongxufenxi/2020-01-21/197090.html>.

¹⁰ "国家能源局发布2019年全国电力工业统计数据," National Energy Administration, 20 January 2020, accessed at http://www.nea.gov.cn/2020-01/20/c_138720881.htm; "国家能源局发布2019年全社会用电量," National Energy Administration, 20 January 2020, accessed at http://www.nea.gov.cn/2020-01/20/c_138720877.htm.

¹¹ "中电联发布2019-2020年度全国电力供需形势分析预测报告," China Electricity Council, 21 January 2020, accessed at <http://www.cec.org.cn/guihuayutongji/gongxufenxi/dianligongxufenxi/2020-01-21/197090.html>.

¹² "大咖声音 | 时璟丽: 2020年光伏政策机制总体思路和框架将保持不变," 2 December 2019, accessed at <http://www.energynews.com.cn/show-55-18057-1.html>.

¹³ "中电联发布2019-2020年度全国电力供需形势分析预测报告," China Electricity Council, 21 January 2020, accessed at <http://www.cec.org.cn/guihuayutongji/gongxufenxi/dianligongxufenxi/2020-01-21/197090.html>.

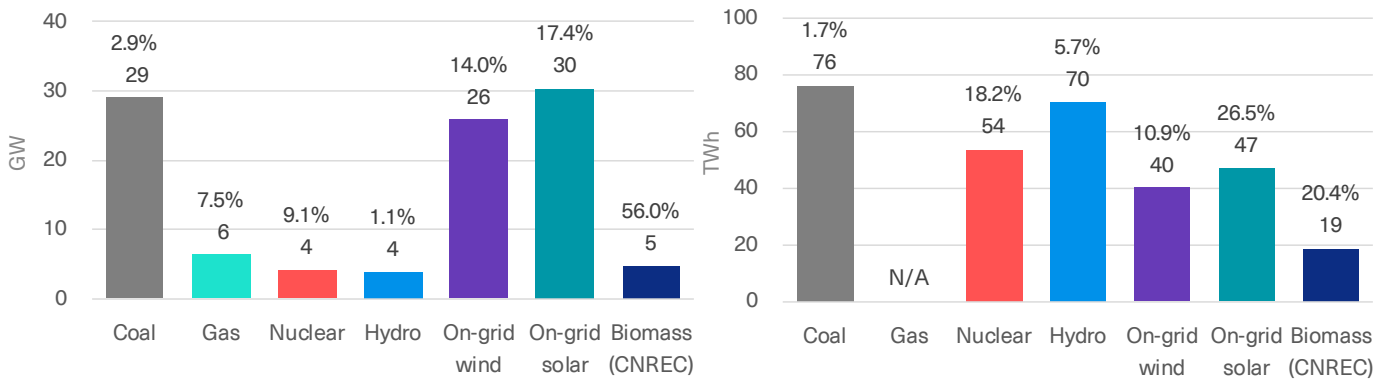
¹⁴ China National Renewable Energy Centre, February 2020.

Increased share of non-fossil fuels in the electricity production

In 2019, the power sector in China generated 7,330 TWh, up 4.7% compared to 2018 (this figure includes own consumption at the power plants). The share of non-fossil fuel power reached 32.6%, a year-on-year increase of 1.7 percentage points. The nuclear and non-hydro renewable power grew more rapidly compared to coal, gas, and hydro power, and this is the key to achieve the 2020 non-fossil fuel target. Solar power production increased by 26.5%, biomass power by 20.4% and wind power by 10.9%. The utilization hours of solar power increased by 55 hours to 1,285 hours, while they dropped for coal, gas, nuclear and wind, which brought the national average down by 54 hours to 3,825 hours.¹⁵

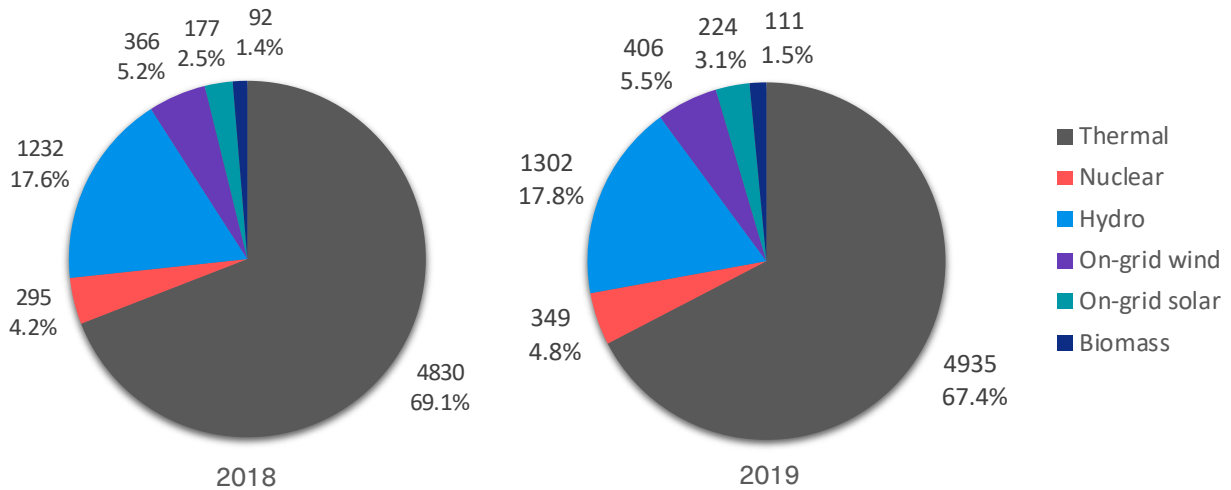
For the complete datasheet, please see the Appendix at the end of this newsletter.

2019 Incremental installed capacity (left) and incremental power generation (right)



Source: Biomass data from China National Renewable Energy Centre (CNREC), January 2020; other data from CEC, January 2020

2018 (left) and 2019 (right) power generation by fuel type in TWh and share



Source: Biomass data from CNREC, January 2020; the rest data from CEC, January 2020

¹⁵ Biomass: China National Renewable Energy Centre, January 2020; other data: "中电联发布2019-2020年度全国电力供需形势分析预测报告," China Electricity Council, 21 January 2020, accessed at <http://www.cec.org.cn/guihuayutongji/gongxufenxi/dianligongxufenxi/2020-01-21/197090.html>.

4. Six major China power system reform policies issued in 2019

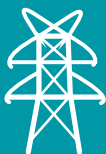
The government continued its effort to formulate new policies to facilitate power system reform in 2019. It was the fifth consecutive year to implement the new round of power system reform in China. By the end of year, the transaction capacity of market-based electricity trading reached 2,834 TWh. That is 39.2% of the total power consumption, and 9 percentage points more than 2018. Mid-to-long term electricity trading reached 2,177 TWh, 93.2% of which was intra-provincial, while 6.8% was inter-provincial trading.¹⁶

April 2019



Reduce industrial and commercial tariffs by 10%: As of 1 April 2019, NDRC has reduced the VAT rate of power grid companies from 16% to 13%. The transmission and distribution tariffs (T&D tariff) in provincial (district, municipal) grids for serving industrial and commercial customers will decrease accordingly. Grid companies should use all savings to reduce industrial and commercial electricity tariffs.¹⁷

May 2019



Exempt partial costs in T&D tariff: NDRC determined the costs that are not allowed to be counted into the T&D tariff of provincial and regional grids, as well as inter-provincial, inter-regional and dedicated power transmission projects. The cost relevant to electric vehicle charging, pumped storage hydropower plants, energy storage facilities and power plants owned by the grid companies, that enjoy dedicated feed-in tariffs (FIT), will not be included.¹⁸

June 2019



Open power market for business-featured consumers: The government has decided to open power markets for all power consumers except residents, agriculture, major utility and public welfare facilities, and mandatory power consumers to serve power generators, so called business-featured power consumers.¹⁹

September 2019



Issue new coal power price policy: Starting in 2020, China's coal power prices will shift from fully government regulated to partially market based. The new pricing mechanism adopts "baseline tariff + market-based floating tariff" instead of the benchmark FIT for coal power plants. The floating tariff can rise by a maximum of 10% (after 2021) and the downside shall not exceed 15% (after 2020).²⁰



Cancel ineligible incremental power distribution pilots: China had big delays in the implementation of four batches of 404 incremental power distribution pilots, announced between 2016 and 2018. NDRC conducted a survey of pilot projects and found that some projects are no longer eligible, because the preliminary power load forecast is divorced from the reality and because some projects did not effectively connect with the local power grid planning or determine electricity consumers. As a result, the NDRC cancelled 24 ineligible projects.²¹

December 2019



Launch eight new spot power market pilot: NDRC and NEA jointly announced eight spot power market pilots in August 2017. They are South (beginning with Guangdong), West Inner Mongolia, Zhejiang, Shanxi, Shandong, Fujian, Sichuan and Gansu. As almost all pilots have faced delays, the government required the pilots to accelerate the research and preparation process and all were supposed to start commissioning by the end of June 2019. All pilots have launched and completed pilot runs of physical transaction.²²

¹⁶ "2019年12月全国电力市场交易信息," China Electricity Council, 21 January 2020, accessed at <http://www.ccc.org.cn/guifuyuyongji/dianliqisige/2020-01-21/167071.html>.

¹⁷ "国家发展改革委关于电网企业增值税税率调整相应降低一般工商业电价的通知,发改价格〔2019〕559号," National Development and Reform Commission, 27 March 2019, accessed at http://www.ndrc.gov.cn/zcfb/zcfbtz/201903/t20190329_931929.html.

¹⁸ "国家发展改革委 国家能源局关于印发《输配电定价成本监审办法》的通知,发改价格规〔2019〕897号," National Development and Reform Commission, 24 May 2019, accessed at http://www.ndrc.gov.cn/gzdt/201905/t20190528_938978.html.

¹⁹ "国家发展改革委关于全面放开经营性电力用户发用电计划的通知,发改运行〔2019〕1105号," National Development and Reform Commission, 22 June 2019, accessed at http://www.ndrc.gov.cn/gzdt/201905/t20190527_939775.html.

²⁰ "国家发展和改革委员会关于深化燃煤发电上网电价形成机制改革的指导意见,发改价格规〔2019〕1658号," National Development and Reform Commission, 21 October 2019, accessed at http://www.ndrc.gov.cn/tzggz/jgg/zcfb/201910/t20191024_1182062.html.

²¹ "国家发展改革委办公厅 国家能源局综合司关于取消部分地区增量配电业务改革试点的通知,发改办体改〔2019〕948号," National Development and Reform Commission, 20 September 2019, accessed at <http://zfxqk.ndrc.gov.cn/web/itemInfo.jsp?id=16527>.

²² "关于健全完善电力现货市场建设试点工作机制的通知,国能综通法改〔2018〕164号," National Energy Administration, 8 November 2018, accessed at http://zfxqk.nec.gov.cn/auto81/201812/t20181217_3496.htm.

5. Policy monitoring

23 January 2020

<http://zfxgk.ndrc.gov.cn/web/iteminfo.jsp?id=16829>

China stops approval of new iron and steel production projects

Notice to Improve the Work in Replacing Outdated Steel Production Capacity and Approval Process of New Projects, NDRC Electricity [2020] No. 19

Local governments should stop approving new iron and steel production projects after 24 January 2020. Newly added projects since 2016 should carry out self-inspection to ensure they are following the environment, safety, energy consumption and land use standards as well as the productivity replacement policy. Unqualified projects should stop their production or construction processes immediately. Since 2016, local governments have announced batches of productivity replacement projects, means to build new iron and steel projects with higher efficiency and lower emission to replace outdated projects. The capacity of the new project cannot be higher than the phased out project.

20 January 2020

http://jjs.mof.gov.cn/zhengcefagui/202001/t20200123_3463604.htm

MoF updates the renewable surcharge regulation

Notice to Issue the Updated Renewable Energy Surcharge Regulation, MoF Construction [2020] No. 5

After 2020, the annual subsidy for newly added renewable power projects should be determined according to incremental income, technological improvement and development pace of the sector. Followed by approving the incremental renewable capacity by fuel type within the budget. The trial regulation (MoF [2012] No. 102) issued on 14 March 2012 is no longer effective.

9 January 2020

http://zfxgk.nea.gov.cn/auto83/202001/t20200116_3972.htm

NEA aims to facilitate energy storage standards

Notice on Issuing the Implementation Plan to Enforce Energy Storage Standardization, NEA Comprehensive and Technology [2020] No.3

The government aims to build up a systemic energy storage standard mechanism, covering energy storage system, equipment and application sections. NEA proposes to carry out R&D, verification and application of these standards in the energy storage demonstration projects. Meanwhile, China will participate in the international standardization of energy storage technology processes by providing actual inputs in order to apply more standards in China.

21 December 2019

http://www.gov.cn/xinwen/2019-12/30/content_5465088.htm

NDRC clarifies content of mid-to-long term electricity contracts

Notice to Implement Mid-to-Long Term Electricity Trading Contract, NDRC Operation [2019] No. 1982

NDRC encourages large-scale hydro, nuclear and coal generators, who enjoyed prior dispatches of inter-provincial and inter-regional power transmissions, to sign 5-year or 10 years above long-term contracts. The contract should consist of a certain trading volume, clear trading price and determined load curve. The contracted volume should be 95% and above compared to the previous year's contract or it should be no less than the average power consumption of the consumer in the past three years. Only qualified market players can participate in spot power markets. Prices should follow the new coal power tariff policy which is a baseline tariff plus floating tariff mechanism.

Appendix - 2019 China Energy and Power Datasheet

	Amount	Year-on-year	Amount	Year-on-year
	Data		Reference	
Energy production				
Crude oil (million tons)	190	0,8%	[1]	[1]
Crude oil processing (million tons)	650	7,6%	[1]	[1]
Natural gas (billion m3)	174	9,8%	[1]	[1]
Raw coal (billion tons)	4	4,2%	[1]	[1]
Energy import (million tons)				
Crude oil	510	9,5%	[1]	[1]
Natural gas	97	6,9%	[1]	[1]
Coal	300	6,3%	[1]	[1]
Electricity consumption (TWh)				
Total	7226	4,5%	[2]	[2]
Primary Industry	78	4,5%	[2]	[2]
Secondary Industry	4936	3,1%	[2]	[2]
Tertiary Industry	1186	9,5%	[2]	[2]
Residential	1025	5,7%	[2]	[2]
Installed capacity (GW)				
Total	2011	5,8%	[2]	[2]
Thermal *	1171	4,1%	[2][4]calculated	[2][4]calculated
of which coal	1040	2,9%	[4]	[4] calculated
of which gas	90	7,5%	[4]	[4] calculated
Non-fossil	840	8,7%	[4]	[4]
Nuclear	49	9,1%	[2]	[2]
Hydro	356	1,1%	[2]	[2]
Grid connected wind	210	14,0%	[2]	[2]
Grid connected solar	205	17,4%	[2]	[2]
Biomass - calculated from CEC data	20	18,6%	[2][4]calculated	[2][4]calculated
Biomass - CNREC data	13	56,0%	[5]calculated	[5]
Electricity generation (TWh)				
Total	7325	4,7%	[2]	[2]
Thermal *	4935	2,2%	[2][4]calculated	[2][4]calculated
of which coal	4560	1,7%	[2]	[2]
of which gas	-	-	-	-
Non-fossil	2390	10,4%	[4]	[4]
Nuclear	349	18,2%	[2]	[2]
Hydro	1302	5,7%	[2]	[2]
Grid connected wind	406	10,9%	[2]	[2]
Grid connected solar	224	26,5%	[2]	[2]
Biomass - calculated from CEC data	110	15,2%	[2][4]calculated	[2][4]calculated
Biomass - CNREC data	111	20,4%	[5]	[5]
Utilization hours (hours)				
National	3825	-54	[2]	[2]
Thermal	4293	-85	[2]	[2]
of which coal	4416	-79	[4]	[4]
of which gas	2646	-121	[4]	[4]
Non-fossil	-	-	-	-
Nuclear	7394	-149	[4]	[4]
Hydro	3726	119	[2]	[2]
Grid connected wind	2082	-21	[2]	[2]
Grid connected solar	1285	55	[4]	[4]

*The figure of thermal power is re-calculated based on CEC's data because the original data includes biomass.

References

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