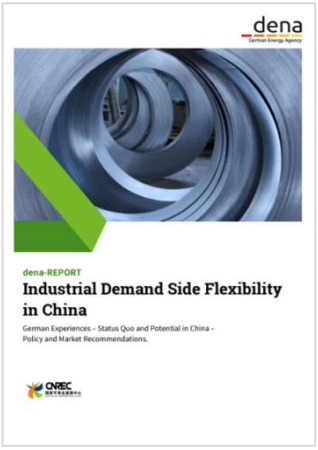
China Energy Policy Newsletter: December 2019

1. Project activities

CNREC-dena publish joint research report about industrial demand side flexibility

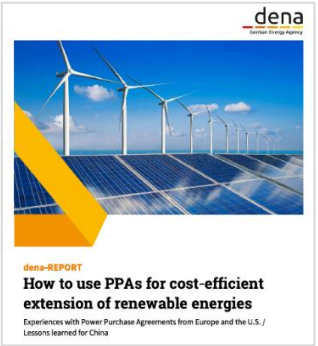
To better integrate variable renewable energies (RE) and to ensure the stability of the power system, more flexibility within the power system is needed. One option for providing more flexibility in the electric power system is to use the flexibility potential of large-scale consumers such as industrial companies called industrial demand side flexibility (DSF).

The example of Germany shows that smart integration of industrial loads not only enhances grid and system stability in a decentralized energy system based on RE: industrial companies can also benefit economically from marketing their flexible loads. China's present approach to integrating the industrial demand-side management is based on a highly regulated, static framework that includes so-called orderly power consumption and peak-valley time-of-use electricity prices. However, a number of pilot projects in different provinces provided positive experiences with a more dynamic integration of industrial DSF based on market mechanisms. The report suggests continuing on this road. Among the recommendations are the further development of the peak-valley pricing model, the scaling-up and implementation of experiences with bidding mechanisms from recent pilot projects and the establishment of short-term power and ancillary service markets that enable the participation of DSF. Please download the full English report here.



dena launches report about PPA implementation

A power purchase agreement (PPA) is a financial mechanism that allows utilities and corporations to procure renewable energy (RE) from producers with minimal to no upfront capital cost in order to meet their RE goals. This report comprises a literature review on the evolving practices in PPA implementation in the U.S. and Europe, including PPA types, key factors enabling PPAs, as well as challenges and limitations associated with PPA applications. Built on the experience and lessons learned from the U.S. and Europe, this report sheds light onto feasible options that could be adopted by China to enable the implementation of PPAs for RE investments. Please download the full English report here.



Agora launches German Coal Commission report in Beijing

GIZ and Agora Energiewende (also known as Agora), a Berlin-based energy transition think tank, jointly hosted a report launching event in Beijing on 21 November 2019 to release the Chinese version of Agora's report *The German Coal Commission: A Roadmap for a Just Transition from Coal to Renewables（中文译名:《德国煤炭委员会 - 从煤炭到可再生能源的公平转型路线图》)*. In the summer of 2018, Germany established a Commission on Growth, Structural Change and Employment, otherwise known as the Coal Commission. Following in-depth deliberations between key stakeholders, in January of 2019, the Commission presented a comprehensive roadmap for the phase out of coal-fired power generation in Germany by 2038. In its new report, Agora analysed the Commission's recommendations with regards to their anticipated impact on the German electricity sector, carbon emissions, and economic development in coal-mining regions.

During the workshop, the expert from Agora, Mr. Philipp Litz, presented the main research findings. The report suggests that implementing the measures recommended by the commissions will enable Germany to meet its 2030 emissions target for the energy sector and avoid around 1 billion tonnes of CO_2 emissions by 2038.

The recommendations also represent a pragmatic compromise between industrial manufacturers, energy providers, trade unions, and environmental associations. It offers coal regions concerned and related investment in energy, infrastructure, and research should enable the regions to enjoy sustainable economic development. Lower electricity prices due to gradual reduction of coal-fired power generation in combination with the expansion of renewable energy will benefit both energy-intensive industrial firms and commercial consumers. The energy sector will also be able to take advantage of new investment and growth opportunities. The report is available to download in English.

2. China energy transition updates

China achieves 2020 carbon emissions intensity targets ahead of schedule

The State Council released the *2019 Annual Report on China's Policies and Actions to Address Climate Change (中文原名: 《中国应对气候变化的政策与行动 2019 年度报告》)* in November 2019.[1] The report summarized the policies, actions and achievements China has taken to address climate change in 2018, including in fields of agriculture, water resources, forests, oceans, human health, and disaster prevention. As a result, carbon emission per unit GDP (also known as intensity) declined by 4.0% in 2018. China's history of rapid greenhouse gas (GHG) emission growth has reached its end, and China has achieved the 2020 carbon emissions intensity reduction target of 40-45% (compared to 2005) ahead of schedule.

The topic of human health was added to the 2019 report which stated that the Chinese government is actively establishing a health monitoring, investigation and risk assessment system as well as standards related to climate change. China also strengthening the prevention and control of related diseases and epidemic monitoring, and formulating relevant early warning systems, emergency plans and rescue mechanisms. In addition, the government continued to carry out the Low-Carbon Day campaign to encourage the participation of young people in climate change.

MEE lists China's five main climate change tasks for 2021-2025

The Ministry of Ecology and Environment (MEE) has explicitly included addressing climate change to the 14th Five-Year National Economic and Social Development Program Outline and the 14th Five-Year Ecological Environmental Protection Plans.[2] The five priority tasks listed are:

1. Encourage local government and major industries to formulate clear targets, roadmaps and implementation plans for carbon emission peaking. The government will improve the statistical, accounting and management mechanisms for GHG emissions data.
2. Achieve stable and effective operation of the national carbon market.
3. Improve formulation of climate change laws and regulations and strengthen the capacity of local authorities and officials.
4. Promote global climate governance under the principle of fairness, joint but differentiated responsibilities and respective capabilities, while continuing to provide support to developing countries.
5. Place equal importance on climate mitigation and adaptation and update China's national adaptation strategy.

Progress in building China national carbon market in 2018

In 2018, China made a steady progress in building the national carbon market in terms of the design of policies, technical solutions, trading systems, and capacity building.[3] Led by MEE, the legal basis of carbon trading, *Interim Measures for the Administration of Carbon Emission Permit Trading (中文原名: 《碳排放权交易管理暂行条例》)*, was opened for public comment. The government also started to formulate monitoring, reporting and verification (MRV) regulations to support the operation of carbon markets. Meanwhile, MEE organized local governments to submit lists of key emitters in power sector and invited experts to optimize the existing registration and trading systems such as the emission permit registration. Given the lack of experience in carbon trading in local ecological and environmental departments and power generation companies, MEE also conducted training campaigns in a large scale. In the future, the government will speed up to publish the MRV management measures to form a relatively complete institutional system. At the same time, it will promote the compilation of two basic documents on the construction and operation of the carbon market, namely, the *National Plan for Setting and Distributing Carbon Emission Allowances (中文原名: 《全国碳排放权配合总量设定和分配方案》)* and the *Technical Guide for Quota Allocation in Power Generation Industry (中文原名:《发电行业配额分配技术指南》)*. MEE will also promote the construction of

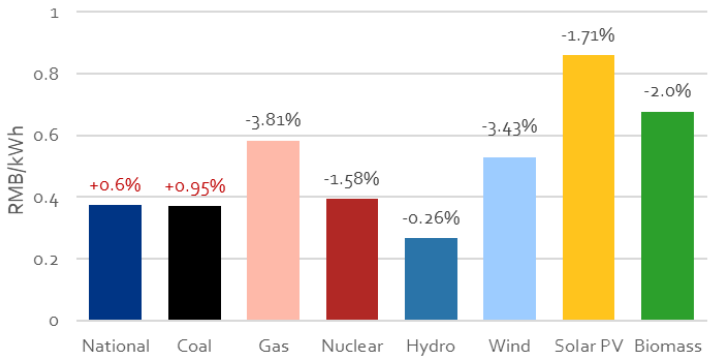
[1] "《中国应对气候变化的政策与行动 2019 年度报告》发布会图文实录," State Council Information Office, 27 November 2019, accessed at http://www.scio.gov.cn/xwfbh/xwbfbh/wqfbh/39595/42117/wz42119/Document/1668867/1668867.htm.
[2] "《中国应对气候变化的政策与行动 2019 年度报告》发布会图文实录," State Council Information Office, 27 November 2019, accessed at http://www.scio.gov.cn/xwfbh/xwbfbh/wqfbh/39595/42117/wz42119/Document/1668867/1668867.htm.
[3] "《中国应对气候变化的政策与行动 2019 年度报告》发布会图文实录," State Council Information Office, 27 November 2019, accessed at http://www.scio.gov.cn/xwfbh/xwbfbh/wqfbh/39595/42117/wz42119/Document/1668867/1668867.htm.

registration and trading systems to identify key emitters in the power sector as early as possible.

NEA releases 2018 electricity price report

The National Energy Administration (NEA) issued the *National Electricity Price Supervision Report – 2018* on 5 November 2019.[4] The report contains the statistical data of the national average on-grid tariffs of each power generation technology and average retail electricity prices in three typical categories. The average national on-grid tariff in 2018 is RMB 0.374/kWh, a 0.6% year-on-year increase mainly mainly because the reduction of hydropower and water conservation funds made room for increasing coal power on-grid tariffs. Increasing end-user power prices and capacity cuts are also factors leading to the increase of on-grid tariffs. Among all technologies, solar PV has the highest average on-grid tariff (RMB 0.86/kWh, reflecting legacy payments to earlier projects as opposed to present prices for new PV projects) and hydro is the lowest (RMB 0.267/kWh), while wind power and gas power show the largest percentage drops year-on-year.

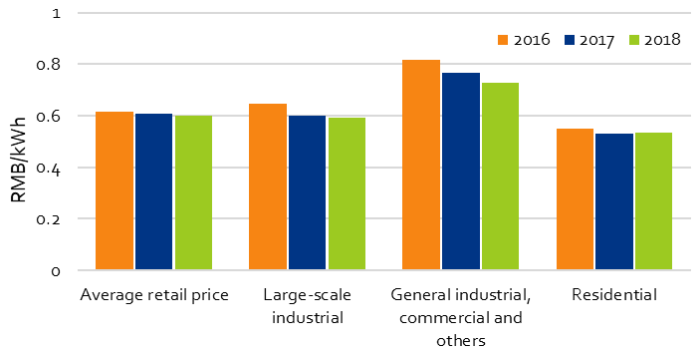
2018 average feed-in tariff by power generation technology



Source: National Energy Administration (NEA), November 2019

On the retail side, the average price in 2018 was RMB 0.599/kWh, the year-on-year change increased from -0.93% in 2017 to -1.61% in 2018. The residential electricity price was the only category showing an increase (0.76%). The increase of demand of residential electiricty and the step tariff system all contributed to the increase of residential electiricty price. On local level, Shenzhen had the highest average retail electricity price of RMB 0.747/kWh and Qinghai in the Northwest China had the lowest of RMB 0.373/kWh.

2016, 2017 and 2018 average retail electricity prices in four different categories



Source: NEA, accessed in November 2019

New Energy Vehicle policy roadmap 2025

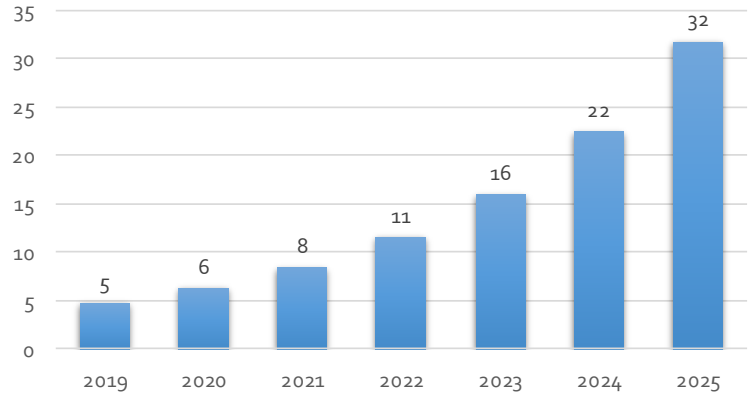
The Ministry of Industry and Information Technology (MIIT) has released a request for comment regarding the New Energy Vehicle Industry Development Plan (2021-2035) (*中文原名：新能源汽车产业发展规划（2021-2035 年）》（征求意见稿）*) on December 3[5]. The plan's purpose is to promote the market for battery electric vehicles and make progress toward commercialization of fuel cell vehicles. The plan follows the principles of market-oriented, innovation-driven, coordinated and open development, and thus represents a transition from more administrative measures and subsidies contained within the previous plan.

[4] "国家能源局关于 2018 年度全国电力价格情况监管通报", National Energy Administration, 5 November 2018, accessed at http://www.nea.gov.cn/2019-11/05/c_138530255.htm.

[5] "新能源汽车产业发展规划（2021-2035 年）》（征求意见稿）,", Ministry of Industry and Information Techonology, 29 November 2019, accessed at http://www.miit.gov.cn/n1278117/n1648113/c7553623/content.html.

The plan sets a requirement of 25% market share for new energy vehicles in annual vehicle sales by 2025, which implies around 5-6 million EVs sold per year assuming a steady vehicle market. Assuming EV market share rises in compound-growth fashion to reach this percentage figure, this implies around 20 million EVs on the road by 2025. We calculate the annual electricity consumption from this fleet at around 32 TWh, or six times the present EV charging load of 4.6 TWh per year. Achieving 25% market-share target will also help to save around 10 billion liters of oil per year, which is approximately equal to 2.3% China's petrol consumption in 2017.

Estimated electricity consumption by EVs through 2025 under 25% NEV target, TWh/year



Source: author calculation, GIZ China 2019

NDRC requires power grid companies to fully guarantee purchase of RE

The National Development and Reform Commission (NDRC) has released a request for comment regarding the Supervisory Measures for Grid Enterprises to Fully Guarantee Purchase of Renewable Energy (*中文原名：《电网企业全额保障性收购可再生能源电量监管办法（修订）（征求意见稿）》*) (hereinafter refer as Measures). [6] The measures requires grid companies purchase all on-grid electricity generated from renewable energy generators, except renewable energy traded in the electricity market. The National Energy Administration (NEA) is responsible for supervising the full purchase of RE by grid operators. The measures also clarify the responsibilities for the grid companies, power companies and power dispatch centers to ensure the full purchase of renewable energy.

China has long been suffered from the curtailment of renewable energy. 15% of the energy from wind and 12% of the energy from solar was wasted as of 2015,[7] but these figures have declined sharply in recent years and now reached 4.7% and 2.4% respectively in 1H 2019.[8] In a 2015 report, the Paulson Institute and Regulatory Assistance Project argued that the biggest reason for the curtailment is the lack of economic incentives for purchasing renewable energy, since grid companies at that time did not bear any of the costs of curtailment.[9] The new measures explicitly state that the grid companies shall be responsible for any unjustified economic losses they cause for renewable energy power generation companies and are liable for providing compensation.

[6] "电网企业全额保障性收购可再生能源电量监管办法（修订）（征求意见稿）," National Development and Reform Commission, 22 November 2019, accessed at https://www.ndrc.gov.cn/xwdt/tzgg/201911/t20191122_1204501.html.
[7] Anders Hove, "A New Opening for Clean Energy in China," Paulson Institute, 22 April 2016, accessed at https://www.paulsoninstitute.org/archives/a-new-opening-for-clean-energy-in-china/.
[8] "李创军介绍2019年上半年可再生能源并网运行情况," National Energy Administration, 26 July 2019, accessed at https://www.sohu.com/a/329441579_418320.
[9] Max Dupuy, et al., "Power Sector: Deepening Reform to Reduce Emissions, Improve Air Quality and Promote Economic Growth," Paulson Institute, September 2015, accessed at http://www.paulsoninstitute.org/wp-content/uploads/2015/09/2-Power-Sector-EN-Final.pdf.

NDRC calls for hydrogen and other new energy facility development

Implementing opinions on promoting the in-depth integration of advanced manufacturing and modern service industries, NDRC Industry [2019] No. 1762

2019/11/15

https://www.ndrc.gov.cn/fgsj/tjsj/cyfz/zzyfz/201911/t20191115_1203551.html

The National Development and Reform Commission has called for strengthening the use of new energy by the manufacturing industry, including the development of distributed energy storage services and scaling up hydrogen energy. China will improve and upgrade facilities and services for the manufacture, storage, transportation and refueling of hydrogen. The notice also calls for accelerating the design of electric vehicle charging facilities. It encourages the development of electricity exchange and battery rental services and the establishment of the power battery recycling management system.

NDRC lists biomass projects and equipment as encouraged industries

Amendments to the Catalogue for Guiding Industry Restructuring (2019 edition)

2019/10/30

http://www.gov.cn/xinwen/2019-11/06/content_5449193.htm

The 2019 edition of the catalogue has added 60 terms in the encouraged category, including the whole field of biomass energy engineering projects and equipment manufacturing, such as crop straw comprehensive utilization, rural biomass energy clean heating and biogas power generation, complete equipment for power generation through waste incineration and coal-fired coupled biomass power generation. (See details relative to biomass energy in term 1-17, 1-18, 4-23, 4-26, 5-6, 5-7, 5-8 and 5-9.) The catalogue will take effect in 2020.

24 incremental power distribution reform pilots cancelled

Notice on Cancelling the Incremental Power Distribution Pilots in Some Regions, NDRC Institutional Reform [2019] No.948

2019/09/29

http://zfxxgk.ndrc.gov.cn/web/iteminfo.jsp?id=16527

Since 2016, the government has announced four batches of 404 incremental power distribution reform pilot projects. The NDRC conducted a survey of pilot projects in 12 provinces in April 2019 and found some projects were no longer eligible since the preliminary power load forecast had diverged from actual usage, the projects did not effectively integrate with local power grid planning processes, or the electricity consumers were undetermined. As a result, the NDRC announced the cancellation of 24 incremental power distribution reform pilot projects.

SASAC releases trial measures to cut coal power generation capacity

Trial Measures for Regional Integration of Central Government State-Owned Enterprises in the Coal Power Sector

2019/11/29

https://chinaenergyportal.org/trial-measures-for-the-regional-integration-of-central-government-state-owned-enterprises-in-the-coal-fired-power-sector/

Around half of 474 coal-fired power plants operated by China's Big 5 power companies are turning a loss. The groups' coal assets have an average debt to asset ratio of 73.1%. To cut SOE's coal power generation capacity and integrate regional resources, in late November 2019 the State-owned Assets Supervision and Administration Commission of the State Council (SASAC) released Trial Measures for The Regional Integration of Central Government State Owned Enterprises in The Coal Fired Power Sector (*中文原名：《中央企业煤电资源区域整合试点方案》*). The pilot projects of integrating coal and power resources of the SOEs in the key areas will start in 2019 and will take approximately three years. The project mainly focused on coal power generation capacity cut for the Big 5 Power SOEs, namely China Huneng Group, China Datang Corporation, China Huadian Corporation, State Power Investment Corporation and China Energy. The selected first pilot areas includes Gansu, Shanxi, Xinjiang, Qinghai and Ningxia, which are suffering from overcapacity in coal power generation and continuous losses of coal power enterprises. By the end of 2021, the Big 5 are expected to close down between one quarter and one third of coal-fired capacity in these provinces.