

# China Energy Policy Newsletter: November 2018

## 1. Recent project activities

### China Renewable Energy Outlook 2018 released

China Renewable Energy Outlook 2018 was released on the International Forum on Energy Transitions, held in Suzhou, on October 18<sup>th</sup>. Key messages of CREO 2018 are:

- An ambitious, Paris-compatible Energy system is cost-efficient, secure, and above all realizable.
- It is possible for China to achieve the Below 2 Degrees scenario provided the China energy transition accelerates.
- This acceleration requires an increase in wind, solar, and hydro installations. While the projected rate of wind and solar installations needed from 2020-2030 appears large, it is attainable given past growth rates for these power sources.
- According to CREO, stopping new coal is vital to achieving the Below 2 Degrees scenario. This requires not only central government policy on coal, but also power market reforms to promote trading of renewable energy between provinces.
- Efficiency and electrification have to play a key role in the Chinese Energy Transition. CREO contains projections for electrification of steel and other industries as well as transport.

Mr. Wang Zhongying, Acting Deputy Director General of the Energy Research Institute of National Development and Reform Commission (ERI of NDRC), previewed several CREO findings, in particular under the Below 2 Degree scenario. Clean, low-carbon, secure, efficient and cost effective consumption are the five goals for renewable energy which differ between the Stated Policies scenario and the Below 2 Degrees scenario. "In order to achieve the Below 2 Degrees scenario, the government still has to deepen the revolution of current renewable energy policies, accelerate the revolution of state-owned energy industries, and promote solar PV and wind power development under guidance of the 14th Five-Year Plan."



Mr. Thorsten Herdan, Director General Energy of the German Federal Ministry for Economic Affairs and Energy (BMWi), emphasized that for Germany, the energy transition goes beyond the electricity sector, and includes the whole society's transition towards low-carbon development. "This means that the decarbonization of industry and transportation also represents a key element of the energy transition," he said. He noted that for both Germany and China, it is important to recognize that the energy transition requires that coal and other plants cease acting as "baseload" resources and transition to flexible operation.

Researcher of the ERI of NDRC, Mr. Han Wenke, agreed that predicted pathways of in CREO are reasonable regarding to descending energy consumption, transition from coal and other fossil based generation system to renewable energy. Predicting that reform and new regulations will bring significant changes after 2020, Dr. Han said he was convinced that the Below 2 Degrees scenario of CREO is "very likely to come true."

## CNREC experts present at China Power System Modelling Workshop

On 20 October 2018, the China power system modelling workshop took place in Suzhou. CNREC and the State Grid co-organized the workshop, aiming to build greater understanding of how the transition to clean electricity systems is empowered by advanced power sector modeling tools, with the specific goal of building stronger bridges between the modeling community and policy makers. In the renewables integration session, Han Xue and Lars Bregnbæk from CNREC gave a presentation regarding CNREC power system model EDO and results from the Centre's China RE Outlook 2018. The EDO model is a least-cost dispatch model and



least-cost investment model for the Chinese power system at the province level. Hence, it gives good opportunity for modelling the integration of variable production from wind and solar power plants and also to model the impact of the development of Chinese power markets, based on least-cost marginal pricing. During the discussion it was emphasised that the presented models are very useful tools for the policy makers in the Chinese energy transition process and the results from the analyses should be disseminated to a larger audience.

## CNREC and project partners speak at CNECC conference

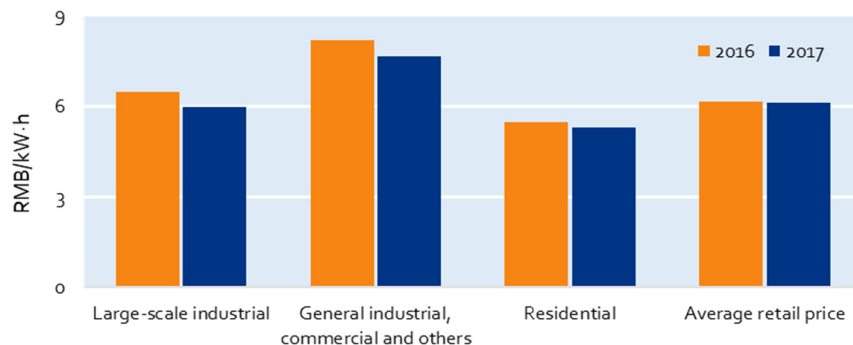
Several key officials and project partners of the China National Renewable Energy Centre (CNREC) spoke at the China New Energy Chamber of Commerce conference in Beijing on 30 October 2018. Wang Zhongying, Acting Deputy Director General of the ERI of NDRC presented the findings of CREO, emphasizing that China has sufficient geographical area to develop large amounts of wind and solar capacity in support of meeting the Paris Climate Accords. Mr Anders Hove, Project Director of the German Energy Transition Expertise for China project of GIZ, discussed international trends in renewable energy deployment, mentioning the introduction of renewable auctions as well as the increasing trend towards pairing energy storage with renewable energy. Dr. Shi Jingli, Researcher of the ERI of NDRC, spoke about the phase out of subsidies for solar and adoption of new policies on auctions and renewable obligations. Dr. Zhao Yongqiang, Deputy Director of CNREC, spoke about China's ongoing electric power market reforms.



### NEA released the annual electricity prices supervision report

The National Energy Administration (NEA) issued the *National Electricity Price Supervision Report 2017* on 09 October 2018.<sup>1</sup> It publishes the statistic data of provincial average feed-in tariffs of each power generation technology and average retail electricity prices in four typical categories. The average national feed-in-tariff (FiT) in 2017 is RMB 0.376/kWh, of which solar is the highest (RMB 0.940/kWh) and hydro is the lowest (RMB 0.259/kWh). On the electricity retail side, the average price in 2017 is RMB 0.609/kWh. All four categories show a decrease compared to 2016.

### 2016 and 2017 average retail electricity prices in four different categories



Source: NEA, 2018

### Solar PV is approaching price parity, while wind faces more difficulty

The average wind power FiT is RMB 0.562/kWh, a decrease of 0.43% year-on-year, still 50% higher than the average tariff of coal (RMB 0.371/kWh). The researcher of ERI, Dr. Shi Jingli, emphasized that China has difficulty to achieve the 2020 target of wind power grid parity.<sup>2</sup> Although during the 13th Five-Year Plan period, the government has reduced wind power benchmark FIT in four different price zones by about 30%, due to the obstacles of policy implementation, the decreases in the FIT did not exceed the decline in costs. CNREC expects the onshore wind power FIT in North China is expected to drop to RMB 0.32/kWh by 2020. By comparison, solar PV has the potential to achieve grid parity on supply side before 2025. Shi attributes this to the greater decline in solar cost. Realized PV FIT payments have risen for solar, but only due to the shift in new installations to higher FIT regions in East China.<sup>3</sup> Since 31 May 2018, when the government issued new policies on quotas for solar FITs, the price of PV products and PV power generation have dropped significantly.

<sup>1</sup>“国家能源局关于 2017 年度全国电力价格情况监管通报”, National Energy Administration, 9 October 2018, accessed at [http://www.nea.gov.cn/2018-10/09/c\\_137519800.htm](http://www.nea.gov.cn/2018-10/09/c_137519800.htm).

<sup>2</sup> Zhang Zirui, “中国能源报风电平价上网任务量尚有 7 成待完成, 接下来两年该咋干?” China Energy News, 25 October 2018, accessed at [https://www.sohu.com/a/271189785\\_468637](https://www.sohu.com/a/271189785_468637).

<sup>3</sup> The average FiTs are weighted average.

## The first large-scale commercial CSP demonstration project put into operation

On 10 October 2018, China General Nuclear Power (CGN Power) Delingha 50 MW trough concentrating solar power (CSP) demonstration project was officially put into operation in Qinghai province. The project is one of the first 20 large-scale commercial CSP demonstrations approved by NEA in 2016, and it is also the first CSP plant supported by the low-interest loan of Asian Development Bank. The project includes a thermal energy storage unit that can provide 24 hours of electricity storage.<sup>4</sup> The current CSP benchmark FIT is RMB 1.15/ kWh. Solar equipment enterprises believe that provided curtailment issues are resolved, CSP could achieve price parity in around 10 years.<sup>5</sup>

## China has fully prepared for gas supply in the coming heating season

Due to shortages of residential gas supplies last winter, the Chinese government has increased gas supplies and gas storage. Available gas supply is 265.3 billion cubic meters, a 9.4% year-on-year increase. NDRC announced that it is able to fully cover residential gas demand in the coming heating season, which is around 40% of national gas consumption.<sup>6</sup> Natural gas imports have played a major role in building China's gas reserves in 2018. Earlier in September, the Chongqing Oil and Gas Exchange completed the first cross-country LNG transaction.<sup>7</sup> The International Energy Agency (IEA) reported that China may become the world's largest natural gas importing country in October.<sup>8</sup> The government has also requested that projects enabling fuel switching from coal to gas be based on available gas inventory. Existing heat supply facilities should not be decommissioned before the retrofit is complete and the gas resources are prepared.<sup>9</sup>

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<sup>4</sup> "我国首个大型太阳能光热发电示范电站正式投运," Xinhuanet.com, 11 October 2018, accessed at

[http://www.xinhuanet.com/energy/2018-10/11/c\\_1123543069.htm](http://www.xinhuanet.com/energy/2018-10/11/c_1123543069.htm).

<sup>5</sup> Zhang Zirun, "光热示范项目静待“破茧成蝶”,四个方面,道尽“建设艰难”背后的原因!" China Energy News, accessed at <http://guangfu.bjx.com.cn/news/20181023/936156.shtml>.

<sup>6</sup> Su Nan, "国家发改委:今年供暖季已落实资源超过1200亿立方米,居民用气可以全额保障," China Energy News, 24 October 2018, accessed at [https://www.sohu.com/a/270974200\\_468637](https://www.sohu.com/a/270974200_468637).

<sup>7</sup> "境外天然气首次通过交易中心投放国内市场," Energy Observer, 29 October 2018, accessed at <http://www.china-nengyuan.com/news/130721.html>.

<sup>8</sup> "10月份中国或成全球最大天然气进口国," Sputniknews, 10 October 2018, accessed at <https://finance.sina.com.cn/stock/usstock/c/2018-10-10/doc-ifeuwws2644724.shtml>.

<sup>9</sup> Wang Yi, "供暖季来临,国家发展改革委表示今冬供暖季居民用气可全额保障," China Power News Network, 24 October 2018, accessed at [https://www.sohu.com/a/271079920\\_257413](https://www.sohu.com/a/271079920_257413).

### 3. Expert interview



#### Malte Luks

Renewable Energy Sources, Federal Network Agency

Mr. Malte Luks has been working at the Federal Network Agency's Renewable Energy Sources since 2013. His main responsibility includes the monitoring tasks of the Federal Network Agency within the framework of the EEG as well as the development and implementation of the various auctions.

#### QUESTION 1

**Current German renewable energy auctions allow participation of bidders without preference for the country of origin of participants. How has that worked in practice, how much competition is there and how much foreign participation?**

So far, we have seen the highest level of in solar, and the lowest in biomass. For solar, we observe a continuous important oversubscription (two times) of the tendered volume. For wind, the picture is different. While a very high level of competition was given for the first three rounds of 2017, we are now observing a continuous decline in the number of bids submitted. The wind auctions have for the first time been undersubscribed in May 2018. Most recent auctions are confirmed this trend. The proportion of non-German bidders is low, however the equipment, especially for PV panels, may come from abroad, as there is no local content requirement. The reason for not including a local content requirement, primarily, was to ensure competition, to ensure adequate participation in auctions, and achieve the lowest price. However, there are other obstacles. For solar, a company would have to ensure that it has access to land before participating in the auction, and it would need to have started the building permitting process. For wind, in contrast, companies must have a building permit first, which takes in average up to 4 years and already important sunk investment costs. Thus, the entry barrier for the participation in wind auctions is much higher than for solar auctions.

**What were the major obstacles to launching the Germany-Denmark 50 MW solar auction? How was a level playing field created? What are prospects for cross-border auctions going forward?**

#### QUESTION 2

First, we had to learn a lot about each other: how renewable subsidies and quotas work in both countries, how permitting and land-use permissions differ, and how taxes and other levies differ. Then we had to identify the most important differences, which included the type of locations that can be chosen for new solar installations, different taxes, and pre-conditions for receiving support. This was the first RES related cross-border auction in the EU, and showed that there are nevertheless differences in the pre-conditions. Namely, the auction showed there were slight advantages for the Danish projects. The main factor probably was relatively easy land access in Denmark, where solar companies can have access to agricultural land. Another important factor is that Danish solar projects only had the possibility of gaining support through this auction, whereas German solar projects could participate in other German auctions. The EU would like to see more such auctions and this is included in the revised renewable energy directive (Art. 5), where all member states are encouraged to open their auctions for a share of RES installations located in other MS. The type we applied was an open auction, where Germany holds an auction round (50 MW solar) open to projects from both countries and Germany pays the support no matter where the project is located. The size of each auction was based on the percentage of the markets that have to be open to cross-border participation.

### QUESTION 3

Currently, auctions in Germany feature evaluation based solely on price criteria, but this might evolve. How could network constraints being incorporated in the future?

Auctions are still based on price as the only evaluation criteria. But to equalize the regional differences in a technology neutral auction, we have introduced a distribution network component, which is basically the ratio between energy production and consumption within a single district. This ratio, which can be seen as a bonus or a malus, is then added to the bid value, but only for the final ranking of the bids—thus, it does not influence the level of support paid to the winning bids. I expected the network component could influence the result, but the price bid range is much wider than Euro 0.01/kW. Hence, depending on the location, the differences will be much higher than this factor. Network aspects will probably play a more important role for future innovative auctions.

### 对话译文

#### 问题一

— 现在德国可再生能源拍卖允许各国投标方参与到无国别歧视的竞争中。这在实际工作中是如何实现的？竞争程度如何？外国投标方的参与状况是怎样的？

竞争程度因技术而异，目前看来光伏竞争程度最高，生物质最低。我们注意到光伏发电投标受到市场追捧，始终能获得 2 倍左右的超额认购。而风电投标的状况有所不同，尽管 2017 年前三轮的竞争程度很高，但提交上来的投标数目却在持续减少。2018 年 5 月，风电投标第一次出现认购不足的情况，且近期大部分拍卖都验证了这一趋势。非德国投标占比不多，不过由于拍卖没有设置当地成分要求，一些项目的设备，尤其是光伏板，可能是进口产品。不设置当地成分要求的意图主要是想保证较高的竞争程度和足够的拍卖参与度，以得到最低的价格。不过拍卖中还存在其他问题。参与光伏发电投标的公司须预先获得土地使用权，建筑许可的申请已开始进行即可。而风能投标却要求公司必须已经取得建筑许可。在德国建筑许可申请过程平均长达 4 年，投资的沉没成本相当高。因此风电拍卖的进入门槛远高于光伏拍卖。

主办德国-丹麦 50MW 光伏发电拍卖的过程中，主要的障碍有哪些？如何创建公平竞争的环境？跨境拍卖的前景如何？

首先我们需要深入了解对方，包括两国可再生能源的补贴和配额，土地使用权细则和审核内容的差异，以及税务方面的差别。然后我们需要特别选出一些主要的不同点特别关注，例如新建光伏发电设施地点的类型，不同的税项，获得支持的前提条件等。这是欧盟第一次尝试可再生能源跨境拍卖，过程中确实出现了两国参与企业条件不完全对等的情况，丹麦公司略微有些优势。主要原因一是在丹麦取得土地使用权相对容易，光伏项目开发商有资格申请使用农业用地；二是丹麦光伏发电项目只有通过参与德国的拍卖才能得到支持，而德国的太阳能项目还有参加其他国内拍卖的机会。欧盟希望今后能够看到更多类似的拍卖，在修订版的可再生能源指令中(Art.5)，欧盟鼓励所有成员国向其他成员国开放部分本国可再生能源设施拍卖的份额。这次我们使用了公开拍卖的形式，德国负责主持 50MW 太阳能拍卖，拍卖向两国的企业同时开放，并且无论最终项目地点在哪里，都由德国提供支持款项。拍卖项目的规模取决于国家对境外企业开放的百分比。

#### 问题三

— 目前德国拍卖的评价标准仅有价格一项，这样的标准将来很有可能改变。您认为电网约束条件将以何种形式成为新增的评价标准？

拍卖现在还是以价格作为唯一评价标准。但是为了降低技术中性拍卖的地区性差异，我们引入了一个配电网系数。这个系数基本上就是某一地区内能源生产和消耗的比率。这个比率会被换算成一定的数额（欧元/kW）计入到竞标价格排序中。但这个价格仅用于排序，并不计入得标人最终所得的价格支持水平。我希望配电网系数能够影响最终结果，不过由于从比率换算出的数额约为 0.01 欧元/kW，而原本竞标价的浮动范围远大于这个数字，因此地区性因素导致的价格差异无法完全被抵消。

#### 问题二