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## **Imprint**

#### **Project**

Sino-German Energy Partnership on behalf of the Federal Ministry for Economic Affairs and Energy (BMWi)

Tayuan Diplomatic Office Building 2-5, 14 Liangmahe South Street, Chaoyang District 100600 Beijing, P. R. China

c/o

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH Torsten Fritsche Köthener Str. 2 10963 Berlin

#### **Project Director**

Yin Yuxia, Anders Hove Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

#### **Editors**

Maximilian Ryssel, Weng Fangping Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

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Weng Fangping Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

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## Foreword

2020 was a difficult year for humanity. The coronavirus pandemic and its tragic toll reminds us of the vulnerability of our societies in the face of natural disasters. While we continue to fight the pandemic, the next crisis—climate change—looms. Against this background, the European Union and the German Federal Government committed to 'green recovery' for stimulating the economy and achieving carbon neutrality by 2050. In September, Chinese President Xi Jinping announced the goal to achieve CO2 neutrality by 2060 and peak carbon dioxide emissions before 2030.

While concrete policy measures have yet to be taken, this signifies a paradigm shift for China's climate policy and 'energy revolution'. During the 13th Five-Year Plan (2016–2020), China reduced the share of coal in primary energy consumption from 64% to below 58%. Today, China boasts more than 530 GW of wind and solar energy capacity, and targets to install 1,200 GW until 2030. However, China is still the world's largest coal consumer and carbon dioxide emitter. Policy decisions in 2021 will determine China's climate policy for years to come. In March, the National People's Congress will adopt the 14th Five-Year Plan (2021–2025) setting course for the next phase of the energy revolution.

Due to pandemic prevention, the activities of the Sino-German Energy Partnership largely relied on digital formats in 2020. Digital workshops and online conferences set new impulses for the development of China's biomethane sector and successfully advanced the exchange on hydrogen strategies, energy efficiency and many other topics. One highlight was the launch of the "Women in Green Energy" initiative with the aim of establishing a women network in China's energy sector and advocating for gender equality.

Last year, both countries achieved important milestones and initiated new cooperation topics. BMWi and NDRC launched the second phase of the demonstration project on energy efficiency in industry and a new demonstration project on energy efficiency in city quarters. Both projects aim at identifying and leveraging large energy saving potentials in China's industry and cities, while engaging both sides private sectors. In addition, the Energy Partnership intensified its work to strengthen Chinese think tanks, thus promoting research into the decarbonisation of the Chinese economy.

The Sino-German Energy Partnership is well positioned to continue supporting China's energy revolution in the coming years, to expand the intergovernmental and technical exchange, and to improve framework conditions for German and Chinese companies alike.

We wish you an enjoyable read, and a happy and prosperous year of the ox!

The Sino-German Energy Partnership

## About the Sino-German Energy Partnership

The Sino-German Energy Partnership is the central platform for institutionalised energy policy dialogue between the two countries. It links **three levels of action**: high-level policy dialogue; business-to-government exchange and an exchange of experiences on technical and regulatory solutions that promote the energy transition.

The main **objective** of the partnership is to foster and advance the far-reaching and profound energy transitions ongoing in both countries by exchanging views, best practices and knowledge on the development of a sustainable energy system, primarily centered on improving energy efficiency and expanding the use of renewable energy.

## Working Group on Energy

- Power sector flexibilization and energy storage
- Electricity market regulation and reform
- Sustainable heating
- Biomethane
- Green hydrogen strategy

Furthermore, the energy partnership aims to encourage think tanks and private sector cooperation and showcase successful technologies, innovative services and business models to drive the energy transition forward. Both sides have agreed to jointly implement demonstration projects promoting energy conservation to demonstrate exemplary solutions for energy efficiency in industry, as well

#### **Overall steering and structure**

For China, the National Development and Reform Commission (NDRC) and the National Energy Administration (NEA) oversee the partnership, while the Federal Ministry for Economic Affairs and Energy (BMWi) takes the lead on behalf of Germany.

Two thematic working groups have been established under bilateral agreements in order to facilitate cooperation as well as intensify the exchange of information, experiences and best practices. On the Chinese side, the working group on "energy" is led by NEA, while the working group on "energy efficiency" is headed by NDRC.

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#### **Working Group on Energy Efficiency**

- Energy efficiency in industry and buildings
- · Energy efficiency in cities
- Energy efficiency networks

as integrated district energy planning to serve as reference for China. The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH was commissioned by the BMWi with the implementation of the bilateral energy partnership with China. A secretariat with full-time advisors in Berlin and Beijing serves as a point of contact and coordination for its activities.

GOAL **Accelerating the Energy Transition in China**  Federal Ministry for Economic Affairs and Energy

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**Working Groups** 

#### **ENERGY**

#### **ENERGY EFFIENCY**



国家能源局



Annual working group meetings between BMWI and NDCR/NEA to exchange on latest energy policy developments and define topics for technical exchange and bilateral cooperation.

**Focal Topics** excerpt

#Power-sector flexibilization #Energy storage #Power market reform #Sustainable heating #Biomethane #Sector coupling #Green hydrogen #Energy efficiency in industry and buildings

#Energy efficiency in cities

#Energy efficiency networks

**Components** 

High-level political dialogue

Policy exchange and research cooperation with think tanks Technical exchange and Capacity building

Private sector cooperation and B2G

Implemented by















In Cooperation with

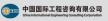












**Formats** 

German Local Business Advisory Council

Roundtables/studies/trainings/pilot projects

Outputs from the Local Business Advisory Council discussions are inputs for roundtables to develop joint solutions with relevant stakeholders.

**Expected** Results

Improved legislative & regulatory framework in China's energy sector

A more effecitive and low-carbon energy system through policy research cooperation

Energy efficiency in industry increased through energy diagnosis and integratedenergy energy concept for cities

Better market environment for private sector cooperation

# **Key Facts and Figures**





## **Focal Topics**

In recent years, China and Germany have been continuously deepening bilateral cooperation on the challenges of and solutions to the energy transition. Working groups meet annually to review the previous year's activities and decide on the focal topics for the upcoming year.

#### **Working Group on Energy**

#### Power sector flexibilization and energy storage

Renewable energy (RE) – mainly wind and solar – are drastically reshaping our energy systems. Where central, fossil generators had delivered a steady energy supply in the past, intermittent and decentralized RE has seen an astronomical growth in installed capacities and record cost decreases over the last decade. As partners, Germany and China share best practices on power–sector flexibilization and energy storage, aiming to achieve efficient system integration of RE. This includes exchange on the right market mechanisms (including spot markets and ancillary services, see below), business models for energy storage, standards, and sector coupling.

#### **Electricity market regulation and reform**

China's power sector is currently undergoing thorough market reform. Today, electricity spot markets are being trialed on provincial level to gain experience for the introduction of a nationwide spot market in the near future. In 2000, Germany's first electricity exchange started trading in Frankfurt. Two decades later, German and European power markets are ever more integrated with numerous products, from futures to intra-day products, offered on the trading floor. Within the Sino-German Energy Partnership, German and international experts share best practices and offer advice for China's efforts to establish effective and efficient spot trading mechanisms.

#### Sustainable heating

To achieve a holistic energy transition and the decarbonization of all sectors, increasing the share of renewable and low-carbon power sources in the heating sector is essential. Today, the Chinese and German heating sectors still largely depend on the fossil fuels coal, oil and gas. However, Germany's push-and-pull approach consisting of such measures as the obligatory use of renewable heating technologies in new buildings and incentives for the retrofitting of existing buildings already paves the way for a sustainable heating future. In China, waste heat utilization, power-to-heat, direct utilization of renewable heat sources and fuel switching from coal to gas are being discussed as viable options for the heat transition. Both countries are actively exchanging on policy and technology aspects of the heat transition.

#### **Biomethane**

With several reforms of the biomass sector underway in China, the Chinese biomethane industry is anticipating accelerated growth in the 2020s. Therefore, China is actively seeking both policy advice and technological upgrading for its biomethane processes. Germany offers years of experience in both biomass policies and world-class technologies for biomethane production. Against this background, the Sino-German Energy Partnership aims to support China's policy framework for biomethane and connect both countries' private sectors.

#### **Green hydrogen**

While renewable energy generation technology has already become competitive in the power sector and is starting to gain a greater share of the heating sector, some sectors are much more difficult to decarbonize. For sectors such as heavy industry, the petrochemical industry and long-distance freight transport, hydrogen

from renewable sources could become a viable solution in the mid-term future. Currently, Germany and China are both looking into possibilities for leveraging the industrial and transformative potential of hydrogen. Within the Energy Partnership, both countries have agreed to exchange on strategies for the production and utilization of green hydrogen.

#### **Working Group on Energy Efficiency**

#### **Energy efficiency in industry and buildings**

Enhancing energy conservation and efficiency in industry and buildings is key to a successful energy transition. As part of the Energy Partnership, the Sino-German Demonstration Project on Energy Efficiency in Industry aims at achieving a significant increase in energy efficiency in China's industry, contributing to the reduction of GHG emissions in China, and strengthening the private sector cooperation between China and Germany. The project's first phase introduced German-style energy audits to Chinese companies, provided training on life-cycle cost analysis (LCCA) and connected German and Chinese companies for joint implementation of efficiency measures. Phase II (2020-2022) aims at further disseminating the results of phase I, drafting technical guidelines on efficiency measures in different heavy industry sectors, and organizing roadshows to showcase German efficiency solutions. Additionally, Chinese and German experts regularly discuss and exchange on policy advancements and best practices for energy efficiency in the building and industry sector, suitable business and financing models.

#### **Energy efficiency in cities**

Integrated city-level energy planning, i.e. an integrated and holistic approach to designing and developing energy generation, transportation and consumption, provides an important baseline for increasing energy efficiency in cities. In the framework of the Energy Partnership, the Demonstration Project Energy Efficiency in City Quarters aims at contributing to climate protection by developing an integrated energy efficiency concept for an urban district or industrial park, supporting the implementation of developed measures, improving framework conditions for energy efficiency solutions and services, and involving German and Chinese companies in the implementation of energy efficiency measures.

#### **Energy efficiency networks**

Energy efficiency networks (EEN) comprise up to a dozen companies with the goal of identifying energy conservation potentials, setting efficiency goals, and regularly exchanging on best practices and lessons learnt. In Germany, EEN have been very successful in enhancing energy efficiency in small and large companies alike. Within the Energy Partnership, German and Chinese experts and practitioners join forces to evaluate and determine guidelines for setting up EEN in the Chinese context.

## Timeline of Highlights 2020



#### May

#### **Expert Roundtable #Energy Storage**

Exchange on energy storage policies and business opportunities in the European Union and China



#### July

#### **Study Launch & Expert** Roundtable #Biomethane

Discussing policies, incentives, solutions, standards and business models for biomethane production and grid injection



#### **August**

#### B<sub>2</sub>G

**August** 

5th meeting of the German Local Business Advisory Council enables industries to communicate challenges and barriers on the Chinese market

#### July

#### **Political dialogue #Energy Efficiency**

Virtual meeting between BMWi and NDRC on the latest energy efficiency strategies and policies in Germany and China



### **Study Launch & Expert Roundtable**

## **#Energy Storage**

Discussing policies, incentives, solutions, standards and business models for energy storage in Germany and China











#### **October**

#### Roundtable **#Green Hydrogen**

Hydrogen strategy and hydrogen development in Germany and China

#### **December**

#### **Political Dialogue** #Energy Efficiency

Sino-German Working Group Meeting on energy efficiency between BMWi and NDRC

#### **December**

#### **Study Launch** #Flexibility

Quantifying power sector flexibility in Germany and China's Jing-Jin-Ji region, for better integration of renewables

#### **October**

#### Cooperation with think tanks

Sino-German Energy Transition Project phase II officially launched

#### **December**

#### **Launch Event #Gender Equality**

"Women in Green Energy" initiative to connect and empower female professionals in China's energy sector



## Highlights 2020



## Political Dialogue

#### July | BMWi and NDRC exchange on energy efficiency policies

On 9 July, BMWi and NDRC held a working-level virtual meeting in the framework of the Sino-German Energy Partnership. The bilateral exchange focused on the latest energy efficiency strategies and policies in both countries as well as the outlook for Sino-German cooperation in the field of energy efficiency. Further topics discussed

included, amongst others, the current economic crisis and its impact on international business operations, green recovery, and China's future energy conservation policy. Both sides agreed to continue and strengthen the bilateral dialogue as well as multilateral cooperation on energy efficiency.

## December | Cooperation on Energy Efficiency deepened - 6th Annual Meeting of the Sino-German Working Group on Energy Efficiency

The Sino-German Working Group on Energy Efficiency convened for the sixth time on 9 December 2020. Headed by BMWi and NDRC, both sides reviewed the progress of the Sino-German cooperation in 2019–2020 and adopted the working plan for 2021. BMWi and NDRC agreed to deepen the exchange on energy efficiency and push forward the Sino-German demonstration projects on energy efficiency in industry, city quarters and the cooperation on energy efficiency networks.

The working group meets once a year to review previous achievements and progresses and to identify areas and activities for future cooperation between BMWi and NDRC. The ongoing exchange on energy efficiency policies, regulations and technological innovations between Germany and China is key for enhancing both countries' energy transitions and facilitate fertile business environments in Germany and China.

## January 2021 | Cooperation on Renewable Energy deepened - 9th Annual Meeting of the Sino-German Working Group on Energy

BMWi and NEA reviewed the Energy Partnership's activities of 2020 and agreed on new activities and focal topics for 2021 during a virtual working group session on January 22. At the meeting, both sides reviewed last year's progress and achievements of the Sino-German cooperation on energy and discussed new activities and focal topics for 2021.

Both sides agreed on deepening the cooperation on power and spot market reform, power sector flexibility, sustainable heating, biomethane, distributed energy, hydrogen and energy storage as well as the cooperation within the Sino-German Energy Transition project in support of Chinese think tanks.

Participants of the ninth meeting of the Sino-German Working Group on Energy





## Cooperation with Think Tanks

#### **April | Launch of China Energy Transition Status Report 2020**

As the Sino-German Energy Transition project embarked on a new 3-year phase at the beginning of 2020, we felt it was a good time to take stock of China's energy transition, to analyze how far China has come and what hot topics need to be addressed in the next phase of our work. The report coincides with the publication of a draft Energy Law, as well as discussions of green economic stimulus in the wake of Covid-19, and both these topics are addressed in this document.



## December | Study Launch & Roundtable: Quantifying power sector flexibility in Germany and China's Jing-Jin-Ji region, for better integration of renewables

On 16 December 2020, the Sino-German Energy Transition team of GIZ hosted a report launch and expert exchange event on power sector flexibility in Germany and China's Jing-Jin-Ji region. Experts from think tanks such as the German Energy Agency (dena), the China National Renewable Energy Centre (CNREC), and the Electric Power Planning and Engineering Institute (EPPEI) exchanged views, and emphasized that system flexibility is key in ensuring energy security. Several organizations and

institutions also expressed clear interest in collaborating with GIZ in further research into the flexibility topic. Next steps include expanding the analysis to cover all of Europe and all of China, including projections to 2025, and adding policy options that represent hybrids of the options considered in the report—for example, combining DSM with energy storage, or coal plant flexibilization with a small amount of energy storage.



Download the report











#### Demonstration Projects on Energy Efficiency

## December | Launch of Sino-German Demonstration Project on Energy Efficiency in Industry and City Quaters

During the 6th Annual Meeting of the Sino-German Working Group on Energy Efficiency, BMWi and NDRC officially launched the Sino-German Demonstration Project Energy Efficiency in City Quarters and a second phase of the Sino-German Demonstration Project on Energy Efficiency in Industry under the framework of the Sino-German Energy Partnership. The second phase focuses on capacity building for energy efficiency measures and energy audits in six energy-intensive industries (pulp and paper, cement, glass fibre, ceramics, airport, power).

The demo project on energy efficiency in city quarters aims at developing and implementing a sustainable energy concept for a Chinese city quarter or industry park while involving German companies. Both demo projects will run until December 2022 and are implemented by GIZ together with the National Energy Conservation Center of NDRC (NECC), the German Energy Agency (dena) and CECEP Consulting.





#### **Energy Storage**

## May | Expert Roundtable: Exchange on energy storage policies and business opportunities in the European Union and China

The European Union and China are dynamic markets for energy storage technologies. The unexpected Covid-19 pandemic has caused challenges for companies such as reduced production capacity, delayed projects, lower sales and a decrease in revenue. To share knowledge on European and Chinese energy storage policies and markets, the Sino-German Energy Partnership, together with European Union Chamber of Commerce in China (EUCCC), the German Energy Storage Systems Association (BVES) and China Energy Storage Alliance (CNESA)

organized an online conference on 12 May 2020. Experts from European and Chinese associations and companies exchanged insights on market frameworks, discussed business challenges under the current circumstances and outlined needed policy changes to revitalize the sector's development. Some key findings and suggestions: introduce policies to reduce the comparative cost of energy storage, e.g. tax exemptions, and market mechanisms, e.g. commercialization of energy system services to enable stronger business cases.

## August | Study Launch & Roundtable: Energy Storage in Germany - Present Developments and Applicability in China

On August 28, the Sino-German Energy Partnership launched a report on energy storage at the 2020 edition of the Energy Storage International Conference and Expo (ESIE). The study "Energy Storage in Germany – Present Developments and Applicability in China" provides insights into the dynamic energy storage market in

Germany, its business models, regulatory framework, and technical standards, and discusses implications for China. In September, the Energy Partnership hosted a separate online expert workshop to discuss the report and its implications with German and Chinese experts.



Download the report









## July | Study Launch & Roundtable: Advancing the biomethane sector development in China - German experiences on policies, markets and business models

On 30 and 31 July, GIZ and the Biomass Energy Industry Promotion Association of China (BEIPA) co-organized a virtual Sino-German Biomethane Workshop. The event aimed at presenting and discussing the German experience in terms of policies, incentives, technologies, standards and business models for biomethane production and grid injection, as well as to discuss its implication and applicability for China. During the event, a comprehensive study conducted by the German Institute for Biogas, Waste Management and Energy commis-

sioned by GIZ on the same topic was officially launched. The report discusses both German best-practices as well as their implications for China. Suggestions for China, drafted by Chinese experts from the Biomass Energy Industry Promotion Association (BEIPA), include a vision for the development of the biomethane sector in China and policy recommendations, such as the improvement of policies and regulations, the establishment of a biomethane monitoring and regulatory system, industry standards, testing and certification systems.







#### Green Hydrogen

#### October | Roundtable: Sino-German Hydrogen Strategy and Cooperation Workshop

Green hydrogen is one of the key elements on the pathway to a future of clean, secure and affordable energy supply and has gained significant importance on the European and international agenda. As one of the key contributions to meet its national climate goal, Germany published the National Hydrogen Strategy in 2020 to provide a coherent framework for the generation, distribution and use of hydrogen. With concrete steps and

measures set out, the strategy aims at creating new value chains for the German economy and stronger energy cooperation on international level. On 19 October 2020, GIZ held the Sino-German Hydrogen Strategy and Cooperation Workshop to exchange on the hydrogen strategy and development status in both countries, and to discuss the challenges and opportunities as well as the cooperation potentials for hydrogen industries.



## Connecting Business and Politics

## August | B2G: Towards a better environment for green technologies in China - 5th Meeting of the German Local Business Advisory Council

On 13 August, the 5th meeting of the German Local Business Advisory Council (BAC) successfully convened virtually. Initiated by BMWi, the BAC is a B2G instrument under the framework of the Sino-German Energy Partnership. It aims at facilitating discussions and exchange between German industry and government on market

challenges and opportunities in China. The bi-annual meeting brings together council members to address emerging market developments and to identify recommendations that help improve the business environment in China's energy and energy efficiency sectors.



## Women in Energy Transition

#### March | Video Campaign: Female power for the Energy Transition

On the occasion of the International Women's Day 2020, the Sino-German Energy Partnership initiated a video campaign on women's power in the energy sector. The video aims at increasing the visibility of female power in the energy sector, in research, government, NGOs, international cooperation or the private sector, supporting and motivating more women to join our cause for shaping a low carbon & sustainable future. The invited outstanding female energy professionals and experts

from both China and Germany shared their passion for and contributions towards a sustainable energy transition. Their voices and backgrounds show that diversity and equality are essential for the success of the global energy transition!

Watch the video on YouTube.



Participants of the "Women in Green Energy" Initiative Launch Event @GIZ/ LI Chenhao

#### December | Launch event: "Women in Green Energy" Initiative

On 7 December 2020, the Sino-German Energy Partnership launched the "Women in Green Energy" initiative in Beijing. The initiative aims at connecting and empowering female professionals in China's energy sector, fostering women's potential and contribution to accelerate the far-reaching energy transitions in both countries. With the initiative, the EP will leverage the advantages of the Sino-German bilateral partnership platform and

work together with interested stakeholders from governmental departments, research institutes, think tanks and enterprises to recognize women's strengths in the energy sector, build dialogue platforms for women in the energy sector, promote knowledge sharing and information exchange at home and abroad, help female practitioners in the energy sector to explore their potential and make a greater contribution to the energy transition.





Yin Yuxia

Project Director Sino-German Energy Partnership

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH



Tayuan Diplomatic Office Building 2-5, 14 Liangmahe South Rd, Chaoyang District, 100600 Beijing, PR China



+86 10 8527 5589 ext. 306



yuxia.yin@giz.de



www.energypartnership.cn. LinkedIn: Sino-German Energy Partnership

Twitter: @gizChina\_Energy



#### Anders Hove

Project Director Sino-German Energy Transition

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Tayuan Diplomatic Office Building 1-15-1, 14 Liangmahe South Rd, Chaoyang District, 100600 Beijing, PR China

+86 10 8532 6646 ext. 20

anders.hove@giz.de

Website



Wechat



Website



Wechat

