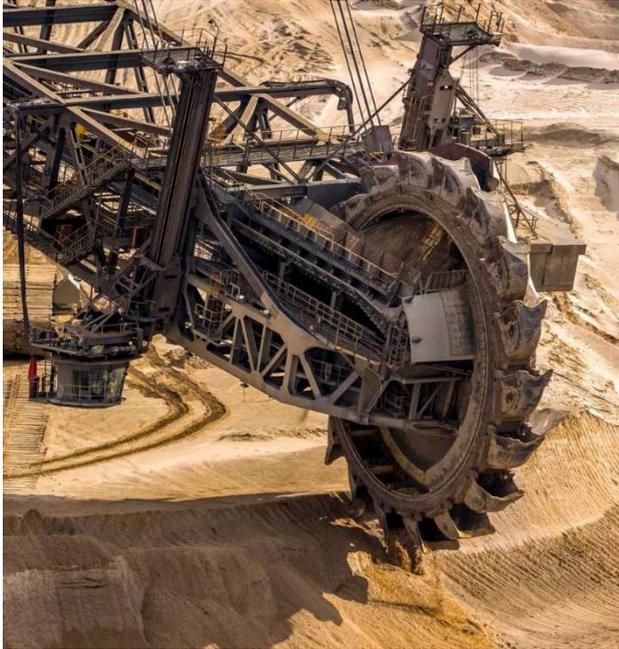


On behalf of



of the Federal Republic of Germany



WORKSHOP REPORT

# A JUST TRANSITION TOWARDS CARBON NEUTRALITY

CHINA AND GERMANY SHARE EXPERIENCES

25 MARCH 2021, 4-6 pm GMT+8

# AGENDA

**FACILITATOR:** Yang Fuqiang, Research Fellow, Institute of Energy, Peking University

TIME	SESSION
16.00 – 16.10	<b>WELCOME</b> <ul style="list-style-type: none"><li>• <b>Clemens von Goetze</b>, Ambassador of the Federal Republic of Germany in Beijing</li></ul>
16.10 – 16.45	<b>SESSION I: HOW WILL CHINA AND GERMANY ACHIEVE CARBON NEUTRALITY?</b> <p>This session explores how reducing greenhouse gas emissions to net-zero impacts the development of the energy sector in China and Germany and how the two countries can enhance their collaboration to accelerate the energy transition.</p> <ul style="list-style-type: none"><li>• <b>Sun Zhen</b>, Deputy Director General, Department of Climate Change, Ministry of Ecology and Environment of the People's Republic of China</li><li>• <b>Norbert Gorißen</b>, Deputy Director General, International and European Policy, Climate Policy, Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, Germany</li></ul> <p><b>Q&amp;A</b></p>
16.45 – 17.45	<b>SESSION II: LOCAL CHALLENGES AND OPPORTUNITIES OF A JUST TRANSITION - EXPERIENCES FROM GERMANY AND CHINA</b> <p>This session focuses on how local governments in China and Germany can advance the energy transition by aligning short-term targets with long-term net-zero commitments, ensuring a just transition and scaling up renewables and green hydrogen.</p> <p><b>Lessons from Germany's hard coal mining phase-out in the Ruhr area (10 min)</b></p> <ul style="list-style-type: none"><li>• <b>Manfred Fishedick</b>, Scientific Managing Director, Wuppertal Institute for Climate, Environment and Energy</li></ul> <p><b>Challenges and opportunities of achieving a green, low-carbon and inclusive transition in Shanxi Province (10 min)</b></p> <ul style="list-style-type: none"><li>• <b>Zhang Fang</b>, Consulting and Project Research Manager, ESG Investment Research Center, Institute of Finance and Sustainability</li><li>• <b>Guo Hongyu</b>, Assistant Program Director, Greenovation Hub</li></ul> <p><b>Panel discussion: How can innovative policy, finance and stakeholder approaches ensure a just energy transition in China's and Germany's coal regions?</b></p> <ul style="list-style-type: none"><li>• <b>Jianfeng Gao</b>, Head of the 3rd research department of Academy of Social Sciences of Shanxi Province, Development Research Centre of Shanxi Provincial Government</li><li>• <b>Marie-Luise Schaller</b>, Innovation Project Manager, Regional Development Agency Rhenish Lignite Mining Area</li><li>• <b>Yan Zhang</b>, General Manager of Strategic Synergy Department of Shanxi Financial Investment Holdings Limited</li></ul>

TIME	SESSION
	<ul style="list-style-type: none"> <li>• <b>Manfred Fishedick</b>, Scientific Managing Director, Wuppertal Institute for Climate, Environment and Energy</li> <li>• <b>Alvin Lin</b>, Climate and Energy Policy Director, China Program, Natural Resources Defense Council</li> </ul>
17.45 – 18.00	<b>Q&amp;A and Summary</b>

This event was part of a series of events on coal transitions in China, Japan, South Korea in the run up to COP26. It was funded by the German Federal Foreign Office.

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## 以公正转型迈向碳中和未来：中国与德国的经验分享

A just transition towards carbon neutrality: China & Germany share experiences

2021年3月25日 25 MARCH 2021



**From left to right,**  
**Yang Fuqiang**, Distinguished Research Fellow, Institute of Energy, Peking University  
**Clemens von Goetze**, Ambassador of the Federal Republic of Germany in Beijing  
**Sun Zhen**, Deputy Director General, Department of Climate Change, Ministry of Ecology and Environment of China  
**Norbert Gorißen**, Deputy Director General, International and European Policy, Climate Policy, Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, Germany  
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**Zhang Yan**, General Manager of Strategic Synergy Department of Shanxi Financial Investment Holdings Limited  
**Alvin Lin**, Climate and Energy Policy Director, China Program, Natural Resources Defense Council  
**Gerd Leipold**, Program Director of the Climate Transparency Initiative

杨富强，北京大学能源研究院特聘研究员

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孙桢，生态环境部应对气候变化司副司长

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Manfred Fishedick，乌珀塔尔气候、环境与能源研究所科研管理主任

郭虹宇，创绿研究院助理项目总监

张芳，北京绿色金融与可持续发展研究院 ESG 投资中心 咨询与课题研究负责人

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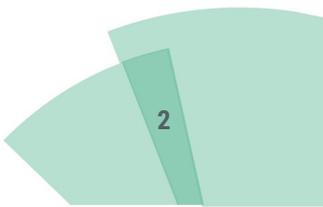
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张艳，山西金控集团战略协同部总经理

林明彻，自然资源保护协会中国气候与能源政策主任

Gerd Leipold，气候透明度组织项目总监

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## EXECUTIVE SUMMARY

In September 2020, President Xi Jinping announced at the UN General Assembly that China aims to peak CO<sub>2</sub> emissions before 2030, and to achieve carbon neutrality before 2060. This historic announcement sent a clear political signal for an economy-wide transition. It also imposed higher requirements on China's high quality and sustainable development in the 14<sup>th</sup> Five-Year Plan (2021-2025). The next five years will be critical to accelerate the implementation of a green, climate-resilient and inclusive transition towards carbon neutrality and will require China's national and local governments to adopt ambitious and innovative policies to ensure an early CO<sub>2</sub> peak. However, challenges remain as economic development in many provinces relies on energy-intensive industries and carbon-intensive energy supply.

The workshop presented several recommendations how the resource-based province **Shanxi** – a major energy supplier for the country – can embark on a just transition towards carbon neutrality. These include: 1) the formulation of a provincial carbon neutrality plan, 2) a guided transformation of high-carbon industries including a financial mechanism to phase out coal power plants, the creation of alternative employment opportunities as well as support for the development of new business models (e.g. green technologies in steel and iron production), 3) the identification and promotion of markets for low-carbon products, and 4) strengthening the climate-related financial risk management and disclosure policies of financial institutions (For a detailed list of recommendations see pages 9-11).

**North Rhine-Westphalia (NRW)**, Germany's most populous state, has gained experiences with structural reform processes in the **Ruhr hard coal mining area** since the 1960s. These included the development of universities, technology parks, regional renaturation programmes and multi-stakeholder initiatives to drive technology change in industry sectors. The success of the transition of the Ruhr area has been marked by the following factors: 1) a strongly steered transformation based on an underlying vision and clear organizational structure, 2) the participation of a wide range of stakeholders, and 3) a good balance between top-down and bottom-up strategies and measures.

Currently, North Rhine-Westphalia (NRW) implements the nationally planned coal phase-out in its **Rhenish lignite mining district** by 2038. The implementation of a development agency as a systemic intermediary has helped the coal region in its transition. It functions as a platform that creates a vision, develops strategies, mediates between stakeholders and plans and executes projects. In line with the targets of the European Union and Germany, the state NRW committed to achieve carbon neutrality by 2050. The workshop discussion revealed several steps NRW needs to take to achieve this target including: 1) implementing the coal phase-out and speeding up the deployment of renewables, 2) increasing energy and resource efficiency, 3) improving infrastructures to import green electricity from neighboring countries, 4) scaling up the development of green markets and products (including the implementation of a green hydrogen strategy), and 5) enhancing the European Emission Trading system and applying new financial instruments such as carbon contracts for difference to allow for the transformation of high-carbon and energy-intensive industries.

During the event, government representatives and stakeholders from China and Germany confirmed their interest and need to continue and expand the bilateral dialogue on a just transition towards carbon neutrality.

### **On the national level, the following areas for Sino-German collaboration were identified:**

- Continuous update of the 2030 climate targets (NDCs) with the aim to identify short-term actions needed to achieve the long-term carbon neutrality targets
- Monitoring of annual sectoral emission targets and creating compliance mechanisms (e.g. the German Federal Climate Protection Law sets out binding targets for all sectors. If targets are missed, the respective sectoral ministry has to set up an ad-hoc action plan to get back on track.)
- Implementation of coal exit strategies and just transition measures such as the creation of jobs and retraining the workforce in fossil fuel industries

- Development of green and sustainable finance systems
- Development of sustainable supply chains in order to address the biodiversity crisis
- Continuation of the high-level EU-China dialogue on environment and climate change with the aim to achieve interim results ahead of COP26
- Continuation of the Sino-German Track II Dialogue (T2D) on climate change and sustainable development

**On a regional level, the following areas for Sino-German collaboration and knowledge exchange by local actors have been identified:**

- Development of regional/local carbon neutrality plans with interim steps and a clear organisational structure and underlying vision
- Governance mechanisms such as concepts for stakeholder participation and exchange, the establishment of a development agency and cross-regional learning platforms
- Financial mechanisms to support the transition such as emission trading schemes, contracts for difference, transition funds, coal transition bonds, auctioning systems for the decommissioning of coal power plants and climate and environmental disclosure policies
- Incentives to promote carbon neutral technologies (e.g. using green hydrogen in the production of steel and chemicals)
- Scaling up renewable energy and enhancing grid flexibility (storage capacities and integration of IT) to improve security of energy supply

## OPENING REMARKS

### **Clemens von Goetze, Ambassador of the Federal Republic of Germany in Beijing**

Both China's and Germany's economies are experiencing enormous structural changes. In the energy sector, we have seen the growth of renewables in both countries, but the transformation away from coal also implies societal challenges. Engaging in an in-depth discussion on the just transition to pursue carbon neutrality comes at the right moment. China pledged to achieve carbon neutrality before 2060 and the EU pledged to reduce emissions to net-zero by 2050. The US rejoined the *Paris Agreement* and is likely to announce a higher 2030 climate target (NDC) in the upcoming weeks.

Still, the world is far away from reaching the goals of the Paris Agreement. Just two weeks ago, the International Energy Agency stated that CO<sub>2</sub> emissions are rising rapidly again worldwide and according to the UN Environmental Programme, Covid recovery plans in most countries are not green enough or not green at all.

Germany strongly believes that reaching the net-zero target is not a burden, but a chance for economic innovation and sustainable long-term growth and resilience. Of course, reaching carbon neutrality is not an easy task and it will involve structural changes in the regions dependent on carbon-intensive industries and the extraction of fossil fuels. In order to properly manage the transition, comprehensive long-term plans with specific targets will be key. It is very important that our two countries continue to cooperate on the development and implementation of long-term strategies. I therefore very much welcome today's discussions.

## PART I: HOW WILL CHINA AND GERMANY ACHIEVE CARBON NEUTRALITY?

### **Sun Zhen, Deputy Director General, Department of Climate Change, Ministry of Ecology and Environment of the People's Republic of China**

In his keynote speech Mr. Sun Zhen addressed the following four issues: 1) international climate policy, 2) China's plan to achieve carbon neutrality before 2060 and to peak emissions by 2030, 3) priorities in tackling climate change in the 14<sup>th</sup> Five-Year Plan (FYP) and 4) an outlook of Sino-German cooperation.

1. *International climate policy*: The ongoing pandemic renders human society and the ecosystem more vulnerable than ever. It is urgent for all countries to take joint actions to implement the Paris Agreement. Current actions worldwide are far from being sufficient to reach the Paris Agreement targets. Developed countries are lagging behind to provide the financial support to developing countries they committed to.
2. *China's plan to achieve carbon neutrality before 2060 and to peak emissions by 2030*: China's President Xi Jinping referred to the 2030 and 2060 targets in several speeches recently. On March 15<sup>th</sup> this year, he once again emphasized that reaching these targets requires extensive and profound social and economic reforms. As to the questions of whether the targets can be achieved and whether China can peak CO<sub>2</sub> emissions even before 2030, it has to be acknowledged that this takes more efforts and is more challenging for China as a developing country compared to developed countries. Still, as late starters China can leverage the latest technologies and benefit from international best practices, saving time and efforts in the transition. This requires an open world economy, access to technology and international cooperation. If China can achieve the 2030 target based on the set pathway, we are also optimistic to achieve the 2060 target.

3. *Priorities in tackling climate change in China's 14<sup>th</sup> Five-Year Plan (FYP)*: The 14<sup>th</sup> FYP (2021-2025) is based on the successful implementation of the 13<sup>th</sup> FYP. Despite the impact of the pandemic in 2020, China has overachieved its target of reducing carbon intensity from its 13<sup>th</sup> FYP. Renewable energy and electric vehicles have also seen rapid growth.

With the 14<sup>th</sup> FYP, China is firmly committed to limit the approval of new energy-intensive projects. The provinces need to transform their economic structure with the support of the central government. China will also focus on adaptation measures, starting by establishing an early-warning mechanism and developing an adaptation strategy.

Moreover, China will enhance its management capacity, particular with regards to climate legislation, improving GHG emission data management and development of key policy tools. Improved data management will serve three purposes: 1) enhancing the set-up of the national GHG emissions inventory, and consequently, contributing to data transparency at the global level; 2) helping to assess the GHG performance of provinces and 3) providing a basis for the carbon trading of companies. In terms of policy tools, it is important to break down the overall targets in the 14<sup>th</sup> FYP into yearly targets and include these in the provincial energy plans. In addition, the carbon market will play a key role in reducing CO<sub>2</sub> emissions.

4. *Sino-German cooperation*: The collaboration between Germany and China on climate change through various exchanges and policy dialogues, e.g. on NDC enhancement, has been very fruitful. The Ministry of Environment is keen to deepen and expand the collaboration in the future. We hope that actors at the local level in China and Germany (local governments, think tanks, enterprises etc.) can form a partnership to discuss common challenges. We also aim to continue the Sino-German Track II Dialogue (T2D) on climate change and sustainable development that is based on expert dialogues and complements the official government dialogues.

**Norbert Gorißen, Deputy Director General, International and European Policy, Climate Policy, Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, Germany**

Both China and Germany acknowledge that climate change is already a reality. We have to work together to achieve the targets we have set up. The next ten years are particularly crucial in this regard. We acknowledge the long-term targets which have been set by many countries, including China. However, short-term actions are essential to achieve the Paris Agreement and have to be included in updated NDCs. We hope that China will come forward with an updated NDC in time before COP26. In 2016, Germany committed to achieve net-zero emissions by 2050, and we have accordingly set up a 2030 target to reduce emissions by 55% compared to 1990. Equally, the European Union has committed to achieve carbon neutrality by 2050 and reduce emission by 55% by 2030 compared to 1990. This means that Germany will have to decrease its emissions even more, we expect by 65% by 2030 compared to 1990.

This requires a drastic transformation of all sectors. 1) In the energy sector, the share of renewable energy must be increased also to account for the expected increase of electrification in the transport sector and the production of green hydrogen. We have to rigorously implement our coal exit strategy. The first auctions to decommission hard coal power plants in Germany have already resulted in a quicker phase out of newly built plants than has been anticipated. 2) We need to scale up the electrification of our transport system. Incentives such as bonuses to increase the share of electric vehicles and investments into appropriate infrastructure such as charging stations have to be increased. Electrification of logistics and public transport systems will also have to be expanded. 3) In the industrial sector, we need to employ new production technologies, e.g. using hydrogen for the production of green steel and decarbonizing cement production and chemical industries. 4) In the building sector, we have to further scale up the renovation schemes to improve energy efficiency of our

building stock. In addition, we have to promote the use of new heating systems like heat pumps and renewable energy sources for heating, cooling and electricity generation. 5) In the agricultural sector, farmers have to drastically cut their fertilizer use and at the government level, we have to reform our subsidy system.

In general, we have to ensure that climate policies are designed in a socially acceptable way. Regions that still depend on energy-intensive industries need to have a perspective for a good future.

To address this huge challenge ahead of us, Germany has set numerous policies. For example, the German Federal Climate Protection Law sets out binding targets for all sectors. If targets are missed, the respective sectoral ministry has to set up an ad-hoc action plan to get back on track. This is an area, where we would be very glad to intensify our exchange with China.

In the 2030 Climate Action Programme, key elements are the coal exit strategy and a carbon price for transport and heating. Our Covid-19 recovery package shows that climate action contributes to economic modernization and innovation, and one key pillar of that is our hydrogen strategy focusing on green hydrogen.

China and Germany can learn a lot from each other how to overcome challenges in the transition towards climate neutrality.

#### **Questions:**

#### **Mr. Sun Zhen, how will China align its energy and environment targets with the climate-related target in the 14<sup>th</sup> FYP?**

China needs to accelerate its energy transition by vigorously decarbonizing its energy mix and raising energy efficiency across all industries and provinces. Carbon and pollution reduction need to be tackled together. This requires consistency between targets, synergies of policy tools and enhanced transparency and information of company action.

#### **Mr. Norbert Gorißen, as Germany plans to phase out coal and nuclear, how will it ensure that its future energy system is not only in line with its net-zero announcement but also cost-efficient and reliable?**

Germany will gradually phase out coal power by the 2030s and nuclear power by 2022, being conscious of the risks of nuclear power and its waste. Both coal and nuclear power experience rising costs and are becoming economically unviable. In 2020, 45% of Germany's electricity came from renewable energy. To ensure security of supply, it is important to further develop the power grid in Germany to transport energy from the North to the South and to expand the European grid system. Germany is also aiming to enhance the flexibility of its grid (e.g. improving storage capacities, including using electric vehicles as storage device, and integrating IT-technology). This energy system is also cost-efficient: The costs of renewables have fallen dramatically over the last years.

#### **Mr. Sun Zhen, given that energy-intensive provinces such as Shanxi and Inner Mongolia face similar challenges in managing a just transition as Germany's coal regions, how could a cooperation look like?**

This reminds me of my working experience in early years as a national land resource planner. At that time, I studied the transition of the Ruhr area in Germany. Exchanges between regional actors on technology development and policies to accelerate a low-carbon industrial transformation would be crucial.

#### **Mr. Norbert Gorißen, how can Germany and China together raise climate ambition towards COP26? What are fields of cooperation?**

China and Germany have been working together for years, and currently there are many ongoing joint projects and dialogues on climate action. This cooperation should be continued. We would be interested, for instance,

to work on coal exit strategies and the just transition on a local level with China, e.g. with provinces such as Shanxi. We should also consider working more closely and intensively together in the area of finance, developing green and sustainable finance systems, as well as in the area of sustainable supply chains in order to address the biodiversity crisis.

During the German EU Presidency in 2020, a high-level EU-China dialogue on environment and climate change was initiated. Achieving interim results in this dialogue ahead of COP26 would be important.

## PART II: LOCAL CHALLENGES AND OPPORTUNITIES OF A JUST TRANSITION - EXPERIENCES FROM GERMANY AND CHINA

### Manfred Fishedick, Scientific Managing Director, Wuppertal Institute for Climate, Environment and Energy

The Ruhr district is located in the middle of Germany and is one of Europe's largest industrial clusters. It was the coal mining heart of Germany, more than 500,000 people worked in the coal sector. The mining industry prospered during the 1950s-1970s causing rampant air pollution leading to serious health problems. Air pollution became a driving force for the energy transition.

Ever since the introduction of structural reform policies in the 1960s, hard coal production in the Ruhr district has declined. The structural transformation can be divided into four phases:

- Phase 1 (1966-1974) – Integrated structural policy: During this period, imported coal became cheaper than domestic coal. The Federal Government implemented the first active structural policy programme nationwide which focused on the expansion of research and education, mobility and leisure infrastructure, e.g. the establishment of universities as knowledge basis.
- Phase 2 (1975-1986) – Centralized structural policy: This period was characterized by the steel and oil crisis. The Federal Government focused on policies for technology promotion, which also involved regional actors, e.g. the establishment of technology parks side by side of universities.
- Phase 3 (1987-1999) – Regional structural policy: Efforts during this period were mainly focused on technology promotion on the basis of regional development concepts and cooperating with international players.

One of the main achievements during this period is the *International Building Exhibition held in Emscher Park*. This social-ecological program focused on the renaturation, conversion and repurposing of old buildings. Enabling conditions included the availability of public funds, an appropriate time frame of ten years and the creation of a professional development agency to execute the program. The long-term development of the city Essen benefitted from the International Building Exhibition in Emscher Park. In 2017, the city won the title of the “European Green Capital”.

- Phase 4 (2000-present) – Competence-field-oriented structural policy: This period includes the end of coal subsidies and the closing of the last hard coal mine in 2018. The structural policy focuses on lead sectors and PPP joint venture initiatives for green technologies in industries and urban agglomerations.

*Innovation City Ruhr* (2010-2020) is an example for a competence-field-oriented structural policy measure. The initiative is driven by the largest 70 companies in the region, committed to reducing the CO<sub>2</sub> emissions of the pilot city Bottrop by 50% within a decade. To achieve this target, the initiative has developed 300 projects to demonstrate innovative technologies. This transition practice has generated tremendous job opportunities for locals.

Another example is the initiative *In4Climate*, a cooperative platform launched in 2018, involving industries, scientific research institutes and the government of North Rhine-Westphalia. It aims to develop strategies for achieving the climate targets set out in the *Paris Agreement*, while maintaining the competitiveness of energy-intensive industries in the state, and to set technology development impulses.

In summary, the success of the transition of the Ruhr area has been marked by the following factors: 1) it was a strongly steered transformation with a clear structure and underlying vision (e.g. a blue sky vision), 2) it involved the participation of multiple stakeholders, and 3) it balanced top down and bottom up strategies and measures.

For detailed information please consult the workshop presentation [here](#).

### **Guo Hongyu, Deputy Program Director of Greenovation Hub**

Shanxi is both a resource-based province and an energy supply center for China. The energy mix of Shanxi is dominated by coal and its economic growth is accompanied by serious air pollution. Shanxi's GDP growth rate per capita has fallen below the national average in the past decade.

Driven by international and domestic trends, Shanxi is faced with an urgent need for transformation. The global response to climate change is gaining momentum. 29 countries have already committed to achieving carbon neutrality by mid-century. Against this background, governments and development finance institutions around the world are increasingly committed to phase out fossil fuels, particular coal. Over 20 countries have agreed to end coal use by 2030. Meanwhile, green technology has become a highly competitive sector globally. At the domestic level, China has also set ambitious climate targets, sending a clear political signal to decarbonize all sectors of the society. Affected by the pandemic and the impeded international trade, China advocates a "dual circulation" economic development pattern, in order to develop renewable energy while ensuring energy security. All these factors show the need for Shanxi to embark on a green, low-carbon transition.

Shanxi faces several opportunities and challenges in the transition. Regarding the opportunities, Shanxi has been implementing resource reforms in all sectors over the past five years, which has promoted green industry development and laid the foundation for a high-quality transition in the future. However, several challenges remain: First, environmental pollution in Shanxi has not been fundamentally addressed, with air pollution and water pollution remaining very serious. Second, Shanxi's industrial structure is still relatively homogeneous. As mentioned in the 14<sup>th</sup> FYP, Shanxi still faces many structural and institutional problems, including the inadequate development of emerging green industries, weak incentives for innovation and technology development and insufficient pipelines of high-quality projects to support the transition. Moreover, Shanxi needs to enhance its incentive structure to attract skilled workers, as well as to improve recruitment and training. Third, Shanxi is still planning new coal power projects in 2020. A lack of a thorough understanding of the implications of the country's carbon neutrality target may lead to bad strategic planning in the coal industry. Fourth, the existing financial system needs to be further improved to support the transition of Shanxi towards carbon neutrality.

The next five years (14<sup>th</sup> FYP) will become a key period for Shanxi to accelerate its low-carbon, high-quality just transition. Actions can be taken at three levels:

- 1) **Policy:** Shanxi should draft a provincial carbon neutrality plan based on the 2030 and 2060 targets.
- 2) **Industry:**
  - a) Shanxi should identify and promote key sectors and technologies for a green, low-carbon transition, incl.:
    - Expansion of renewable energy, development of smart and flexible grids incl. storage development
    - Development of hydrogen and cooperation with leading enterprises in hydrogen storage and transportation technologies
    - Development of new energy vehicles, especially hydrogen-powered commercial vehicles such as large passenger buses and heavy-duty trucks, as well as green logistics
    - Application of digital technology in the green industry
    - Increased support for green agriculture, green tourism and green consumption
  - b) Shanxi should accelerate the transition of high-emissions and carbon-intensive industries.
    - End investments into any new coal power plants during the 14<sup>th</sup> FYP (2021-2025)
    - Establish a financial mechanism to support the orderly exit of the traditional coal industry and to ensure the just transition of existing coal mines and coal power enterprises, thereby preventing social risks like unemployment and financial risks like non-performing loans caused by a disorderly exit
    - Introduce policies to promote the green, low-carbon transition of industries and technologies with potential.
- 3) **Finance:** Shanxi should increase the support for a low-carbon transition using fiscal, taxation and other financial incentives.

For detailed information please consult the workshop presentation [here](#).

### **Zhang Fang, Consulting and Project Research Manager, ESG Investment Research Center, Institute of Finance and Sustainability**

Carbon neutrality requires a long-term stable funding for an industrial transition and thus the support from financial institutions. Shanxi Financial Investment Holdings Limited is the largest financial investment company in Shanxi Province. Its internal green reform may, on the one hand, contribute to the economic and socially just transition of Shanxi, and on the other hand, improve its own risk assessment to timely identify and eliminate environmental and climate risks.

To facilitate the transition, the company should develop an integrated strategy. Specific measures include:

1. Increase support for green-low carbon industries, projects and green technology and help enterprises improve green low-carbon management and innovation
2. Guide enterprises to exit from high-emission business models, and advance low-carbon transformation of carbon-intensive industries e.g.
  - a. Promote R&D and application of green technologies in the iron and steel industry and support cooperation between iron and steel enterprises and cement enterprises
  - b. Explore the possibility of issuing coal power transformation bonds to encourage earlier retirement of coal power projects
3. Strengthen environment and climate risk management and disclose environment and climate information
  - a. Develop a carbon neutrality plan for loans and investments based on the 2030/2060 targets
  - b. Calculate the amount of carbon emissions of the projects supported by loans or investments to prevent the risk of stranded assets

- c. Step up environment and climate information disclosure, disclosing green and brown assets

The financial institutions in Shanxi face the following major challenges in supporting the green, low-carbon transition:

1. A lack of sustainable green projects to invest in
2. Insufficient funds currently available to support the transformation
3. A lack of relevant incentive mechanisms to guide the transformation of financial institutions
4. A shortage of green finance experts and a lack of expertise on green finance tools

For detailed information please consult the workshop presentation [here](#).

#### **Panel Discussion:**

#### **Gao Jianfeng, Head of the 3rd research department of the Academy of Social Sciences of Shanxi Province, Development Research Centre of Shanxi Government**

**Question:** It is very important for Shanxi to create new jobs and foster economic growth during the transition. What are the challenges of the transition and how could they be overcome?

**Answer:** A just transition is very important for Shanxi. The challenge is how to align short-term actions with the long-term objective of carbon neutrality so that the resilience of the economy and a just transition can be ensured. A sound carbon trading mechanism on the local level will play a crucial role, so do conventional energy sources to ensure energy security. We have to recognize and acknowledge the historically and still currently important contribution of traditional coal mining to our energy supply.

#### **Marie-Luise Schaller, Innovation Project Manager, Regional Development Agency Rhenish Lignite Mining Area**

**Question:** Germany is phasing out coal by 2038 the latest. This requires an industrial transformation in the Rhenish lignite mining area in North Rhine-Westphalia. What are the strategies to finance innovation and address the loss of jobs in the lignite mining sector?

**Answer:** The Rhenish lignite mining region is a rural area with 2.5 million inhabitants, where coal mines and power plants employ 10,000 people. However, the availability of cheap lignite attracted many energy-intensive industries which provide more than 90,000 jobs. In 2020, the German government adopted the Act on Structural Change in Coal Mining Areas (together with the Act on the Phase-out of Coal). It includes the provision of up to 40 billion Euros for Germany's four lignite regions to push economic diversification and the creation of jobs in these regions. The Regional Development Agency Rhenish Lignite Mining Area serves as a main coordinating body in managing the structural change process and implementing the federal funds. It develops transition strategies together with affected stakeholders and selects and technically advises projects in the region. One main goal is to create 6,000 new high-quality jobs by the end of the decade in future industries such as circular economy, new mobility and renewable energy.

**Question:** What are the key challenges and learnings you have made so far while implementing this structural reform process?

**Answer:** The development of innovative transition strategies requires that different actors join forces. A combination of top-down and bottom-up approaches has been central for the transition of the Rhenish lignite mining area. During this process, we have invited the participation of all stakeholders such as the state and local authorities, regional institutions, trade unions, enterprises and citizens to jointly develop an innovative

strategy that creates new jobs. A stakeholder network can lower prejudices towards sustainable transition efforts.

**Zhang Yan, General Manager of Strategic Synergy Department of Shanxi Financial Investment Holdings Limited**

**Question:** How can the finance sector in China support the transition towards carbon neutrality? What are the practices and learnings of Shanxi Financial Investment Holdings Limited?

**Answer:** As for the finance industry, the efforts to promote a low-carbon and just transition have just started, and there are plenty of challenges. First, there is insufficient innate motivation within the financial sector to develop green finance policies and products. Green finance strategies need to be systemically designed to play a stronger role in addressing market failure and incentivizing action. Second, there is a mismatch between supply and demand: to achieve the targets of carbon neutrality and just transition, larger funds and more extensive financial services are needed to satisfy diversified investment and financing needs. Third, there is a lack of mechanisms for green information disclosure. To this end, financial institutions should develop unified information disclosure standards, form an environmental information sharing mechanism between different parties concerned and increasingly develop green financial products.

**Manfred Fishedick, Scientific Managing Director, Wuppertal Institute for Climate, Environment and Energy**

**Question:** North Rhine-Westphalia, the most populous German state, is committed to reach net-zero by 2050. What are the challenges and the current strategy to reach this target?

**Answer:** First of all, we have to organize the coal phase-out programme until the 2030s. Second, we have to speed up the deployment of renewable energies, mainly photovoltaics and wind energy and a bit of biomass. Third, we also have by far not exhausted the potential for energy efficiency and material efficiency (circular economy). Fourth, we have to improve our infrastructures to be able to import electricity from neighboring states like the Netherlands or the Scandinavian states to serve the high energy needs of the chemical and steel industry of North Rhine-Westphalia (security of electricity supply). Fifth, the government is at the moment focusing on technology and infrastructure development. We need to scale up the development of green markets and products, e.g. cars and bridges that are produced by green steel. Sixth, the European Emission Trading system needs to be enhanced as a carbon price will also play a crucial role to achieve net-zero. Seventh, there is a huge discussion on new financial instruments in particular carbon contracts for difference. The idea is to make a contract with industry companies to enable them to put a lot of money in new processes to become carbon neutral in the future.

**Question:** What role does green hydrogen play for the future industry development in NRW? Do you think producing hydrogen from coal is a good method?

**Answer:** Germany and NRW will go for green hydrogen at least in the mid or long-term. There are no plans to make use of coal because if you want to become carbon neutral, the process of coal-based hydrogen production must be combined with carbon capture and sequestration (CCS) technology. There is a lack of acceptance in Germany and other European countries regarding this technology. Maybe in the mid-term hydrogen production based on methane could come into play. But the focus is to produce and import hydrogen solely produced by renewables.

**Alvin Lin, Climate and Energy Policy Director, China Program, Natural Resources Defense Council, China Office**

**Question:** What is the biggest challenge for Shanxi in your opinion to transition to carbon neutrality and how could it be overcome?

**Answer:** Shanxi has been actively learning best practices from other provinces in terms of a cap on coal consumption and energy transition over the past few years. In the future, it is expected to further strengthen communication and coordination among all relevant stakeholders within the province, including governments, financial institutions, enterprises and scientific research institutes and to develop plans tailored to local conditions and achieve high-quality growth on the basis of a just transition. Shanxi can learn from German regions how to ensure the stability of the grid and transform industries such as the steel and chemical industry. The EU is supporting the transition of European coal regions by contributing to mutual learning between the regions and providing funds. Mutual learning processes and support mechanisms can also be developed among China's domestic coal provinces to jointly tackle issues arising from the transition process.