



Report

Outcomes of the Sino-German Study Camp on *Energy and Technology Transition Pathways*

2025



10 – 22 Aug 2025, Sino-German Study Camp



Acknowledgements

The Sino-German Study Camp „Energy and Technology Transition Pathways“ , a collaborative program organized by the Technical University of Munich in collaboration with the Tsinghua University. took place at the Technical University of Munich’s School of Politics and Public Policy and the Environmental Center, Benediktbeuern from 10-22 August, 2025.

The study camp was the second of two study camps financed by the GIZ project “Climate Partnership”, which is commissioned by the German Federal Foreign Office. The study camp would not have been possible without this financing. The Technical University of Munich supported the project with the provision of a classroom, technical equipment, secretarial assistance, and financial administrative and reporting support. In addition, TUM Professors Stefan Wurster, Florian Egli, and Dongsheng Wen volunteered lectures.

The study camp was further enriched by presentations from external guest scholars and practitioners: TUM-visiting professors (Noelle Selin, MIT and Henrik Selin, Boston University), Prof. Dr. Peter Hennicke (former president, Wuppertal Institute and Club of Rome), Dr. Jörg Radtke (RIFS, Potsdam), Prof. Valerie Karplus (Carnegie Mellon University), Arvea Marieni (EIC), and TUM doctoral candidates Tianrong Pan and Sibylle Reitz (who self-financed her stay – thanks!).

The group was impressed by the guided tours at the Pinakothek der Moderne Museum, the Alpen Museum and the Walchensee Kraftwerk.

Special thanks go to Mrs. Simona-Mirela Iaceniuc for her tremendous help in dealing with the many administrative issues associated with organizing the study camp and for preparing the Handbook. Her outstanding organizational support were critical to the smooth running of the summer camp. Mrs. Nadia Mohammed provided additional secretarial support, helping deal with the many applications to the program.

Student assistant, Ms. Aylin Dingli, helped with preparing the Study Camp and making sure it ran smoothly over the course of the two weeks. She is also a primary author of this report, organizing the photos and much of the content – from the eyes of the student participants.

The Tsinghua University sent two faculty members (Professor Hu Bin, Professor and Vice President of ICCSD, Zhang Jian) a program assistant, Jia (Cecilia) Longzhizi to support the program. Tsinghua University’s Global Alliances of Universities on Climate Youth Leader, Alice Ho visited the program at her own cost.

I am also grateful for the support provided by the GIZ China office prior to and during the study camp. The participation during the study camp of Dr. Janto Hess, Project Director of the Sino-



German Cooperation on Climate Change, Mr. Sebastian Ladnorg, Project Advisor, and Meixen Gao, Team Support, added an invaluable opportunity for the students to learn more about the work of the GIZ. Also to be named are Yun Cao, Savas Ates and Nannag Wang for their contributions in facilitating and supporting this unique collaboration.

A special treat was the voluntary participation of several of the 2024 Study Camp students. They offered a brief introductory session (experiences from the 2024 study camp) and joined in on various cultural events. They included Anna Kammerer, Laurin Riem, Franziska Golibrzuch, Than Long Nguyen, Susan Wolf, and Manyu Shuk.

Finally, my sincere thanks go to all participating students, whose openness, intellectual curiosity, and collaborative spirit brought the camp to life.

The 2025 **Sino-German Climate Study Camp**, taking place from **August 10 - 22** at the **Munich School of Politics and Public Policy at the Technical University of Munich** is a collaborative program organized by the Technical University of Munich in collaboration with the **Tsinghua University**.

The study camp is financed by the **GIZ project “Climate Partnership”**, which is commissioned by the German Federal Foreign Office.

Miranda A. Schreurs

Professor of Environment and Climate Policy
Technical University of Munich



Introduction

The Sino-German 2025 Study Camp brought together 44 master's and doctoral students – 25 from the Technical University of Munich (TUM) and 19 from Tsinghua University - for an intensive two-week program focused on the interplay of technology and the energy transition, climate policies and international collaboration.

The camp represented a joint collaboration between the Technical University of Munich, Tsinghua University, and GIZ, building together the next generation of climate leaders, researchers, and innovators with the aim of examining climate change and energy and technology transitions.

Climate mitigation and adaptation are inherently international endeavors. Therefore, to succeed, governments, institutions, universities, researchers, and students must collaborate, share technological and social innovations and know-how, and strengthen bilateral cooperation on policymaking and climate strategies.

Building on last year's Sino-German study camp held at Tsinghua University in September 2024, the 2025 study camp at the Technical University of Munich and the Environmental Education Center at Benediktbeuern aimed to deepen cross-cultural knowledge exchange and foster long-term research collaboration between two leading universities in China and Germany.

Both Germany and China play a pivotal role not only in global climate action but also in demonstrating a successful energy partnership that has been evolving over many decades.

This partnership is important if these countries are to achieve their climate targets under the Paris Agreement - Germany's goal of carbon neutrality by 2045 and China's commitment to reach net-zero emissions by 2060.

The study camp provided Masters students and doctoral candidates from the two universities opportunities to interact and exchange ideas with each other and professors, external experts and GIZ representatives. They talked intensively about energy systems, food systems, the water-energy nexus, climate policies, and the technological innovations that drive the energy transformation in both countries.

By showcasing up-to-date research and development across a wide range of energy- and technology-related issues, the camp fostered cross-national collaboration, interdisciplinary learning, and research-oriented networking.

It enhanced not only students' individual competencies but also contributed to the broader goal of building networks that can foster Sino-German energy and technology cooperation long into the future.

Each day was filled with students exchanging perspectives, sharing knowledge, and drawing comparisons and similarities on Sino-German energy pathways leading students to reflect on



the interconnected nature of climate policy dialogue and decarbonization pathways.

Lectures, seminars, workshops, and simulations were complemented by field trips, museum visits, and intercultural activities. This gave students the chance to connect the content learned in lectures and workshops to real-world examples, creating lasting memories.

This report provides an overview of the activities, outcomes, and insights gained from the Sino-German Study Camp 2025, demonstrating the tangible value of such an international joint partnership.

The experiences documented here demonstrate the value of continuing and expanding such collaborative efforts between Germany and China at the university level, and beyond. The long-standing Sino-German partnership serves as a model and a catalyst for innovation and joint bilateral action toward global decarbonization and the achievement of net-zero goals.

The Study Camp in Numbers

The study camp included a mix of lectures, interactive projects, and excursions, providing both theoretical knowledge and real experience on German and Chinese energy and technological advancements.

Bringing together 59 participants - including 25 TUM Masters and Doctoral students, 19 Tsinghua Masters and Doctoral students, 3 TUM professors, 2 Tsinghua professors & staff, and 3 visiting lecturers – this year’s camp broadened perspectives and strengthened the research partnership between TUM and Tsinghua. Students from both universities engaged directly with lecturers, exchanging the latest updates on energy and technology developments in their respective countries.

Table 1: Overview of Participants and Institutions

Total (number female)

Role	TUM	Tsinghua	Visiting Lecturers	Total
Professors/Lecturers	4 (1)	3 (2)	6 (3)	16 (7)
PhD Candidates	2 (1)	2 (1)	2 (2)	9 (4)
Master’s Students	21 (11)	17 (11)	-	38 (22)



In total, the camp featured 34 activities, including 19 lectures, 3 interactive workshops, 6 excursions, 8 intercultural activities, and a joint 4-day stay at the Centre for Environment and Culture (ZUK) at Benediktbeuern Abbey, dedicated to nature and conservation.

Table 2: Overview of Program Activities

Activity Type	Number of Activities
Lectures	18
Interactive Workshops	3
Excursions and Field Trips	6
Intercultural Activities	8
Group Presentations	10
Total	35

Table 3: Overview of Lectures & Workshops

Date	Theme	Lecture / Workshop Title	Speakers	Institution
Aug 11	Climate Policy	Climate Change and the Energy Transition Challenge: Comparative China-US-EU Perspectives	Prof. Miranda Schreurs	TUM
Aug 12	Energy Policy	Renewable Energy Politics	Praval Sharma, PhD Candidate	TUM
Aug 12	Climate Finance	Climate Finance: A Global Perspective	Prof. Florian Egli	TUM
Aug 13	Digital Solutions	Digital and Sustainable: Digitainability	Prof. Stefan Wurster	TUM
Aug 13	AI	AI and the Climate Crisis: Solution or New Challenge?	Prof. Jian Zhang	Tsinghua
Aug 13	Green Deal Mechanisms	Industrial Transition in Action: New Smart Specialisation Trajectories	Arvea Marieni	European Innovation Council Accelerator
Aug 14	Climate Simulation	ENROADS Workshop	Noelle Selin & Henrik Selin	MIT / Boston Univ.
Aug 14	Industrial Decarbonization	Challenges to the Deep Decarbonization of Global Industrial and Manufacturing Supply Chains	Prof. Valerie Karplus	Carnegie Mellon



Aug 15	Energy Systems	Thermodynamics	Prof. Dongsheng Wen	TUM
Aug 15	Local Conflicts	Unpacking Local Energy Conflicts: Drivers, Narratives, and Dynamics	Prof. Jörg Radtke	TUM (Zoom)
Aug 15	Climate Diplomacy Simulation	Geovania Energy and Climate Diplomacy Simulation	Prof. Miranda Schreurs	
Aug 16	Coal Phase-Out	Phasing Out Coal	Sybille Reitz, PhD Candidate	TUM
Aug 16	Water Governance	Trans-provincial Water Cooperation in China	Tianrong Pan, PhD Candidate	TUM
Aug 16	Circular Economy	Dealing with Plastic	Suchithra, PhD Candidate	TUM
Aug 17	Ecology	Transboundary Migration and Habitat Shift of Mongolian Gazelles	Lin Fengze, PhD Candidate	Tsinghua
Aug 17	Climate Economics	Evaluating the Global Economic Impact of Extreme Weather	Wang Bowen, PhD Candidate	Tsinghua
Aug 17	Governance	How Multiple Stakeholders Strategically Communicate to Promote Just Transition in China	Xiaotong Chen	Tsinghua
Aug 17	Architecture	Multi-Scale Spatial Climate-Responsive Design and Visualization	Feng Biyin, M.Arch Candidate	Tsinghua
Aug 18	Sustainability	Earth for All Deutschland: A Transformation to a Net Zero, Circular and Well-Being Economy	Prof. Peter Hennicke	Wuppertal Inst.
Aug 18	Climate Solutions	Climate Change and Sustainable Development	Prof. HU Bin, Associate Professor	Tsinghua
Aug 18	Climate Karaoke	Climate Karaoke Lightning Talk	Tsinghua PhD Students	Tsinghua

Covering a mix of engineering and policy issues, including energy, technology, and climate issues, the interdisciplinary lectures and workshops offered students the opportunity to exchange ideas and discuss research developments on energy and low-carbon technologies across Germany and China. The interdisciplinary nature of the lectures and workshops enabled students from different backgrounds – political science, policy studies, engineering, and communication to consider the different questions, viewpoints, and inputs each discipline offers.



Table 4: Overview of Excursions and Field Trips

Date	Focus	Activity / Excursion / Field Trip	Location
Aug 12	Tress & Climate Change	Exhibit on Trees and Architecture	Pinakothek der Moderne
Aug 13	Climate Change Impacts on the Alps	Alpine Museum	Munich
Aug 13	Cultural & Historical Exploration	Walk along Isar River to Marienplatz	Munich
Aug 16-20	Sustainability & Collaboration	Joint Stay and Activities	Jugendherberge Don Bosco / Kloster Benediktbeuern
Aug 19	Hydropower, Climate, Water Management	Walchensee Hydropower Facility Tour	Kochel am See
Aug 19	Cultural & Environmental Learning	Klostergut Schlehdorf visit and hike up to Walchensee	Schlehdorf/Walchensee

Various excursions and walking tours/hikes/boat trips complemented the lectures and workshops. The field trips and excursions connected lecture content to a wider range of climate and environmental challenges faced in the real world. Visits ranged from the Pinakothek der Moderne, exploring the role of trees and architecture in climate adaptation, to the Alpine Museum and walks highlighting the impacts of global warming on the Alps, and to the Walchensee hydropower facility, demonstrating Bavarian water management and renewable energy in practice.

The stay at Jugendherberge Don Bosco was a highlight. It allowed students to fully immerse themselves in group work and to interact in informal settings. The stay provided opportunities for students to bond over shared breakfasts, lunches, dinners, coffee breaks, hikes, and bonfires. The informal environment fostered cross-cultural connections, idea exchange, and lasting memories, laying the foundation for future collaborations.

Table 5: Intercultural Activities

Date	Theme / Focus	Activity / Event	Location
Aug 11	Cultural Experience	Dinner at Taxisgarten	Taxisgarten, Munich
Aug 12	Cultural Experience	Summer Festival	Olympic Park, Munich
Aug 12	Cultural Experience	Teatron Music Festival	Olympic Park, Munich
Aug 13	Cultural Experience	Olympia Fireworks	Olympic Park, Munich
Aug 14	Cultural Experience	Dinner at Hirschgarten	English Garden, Munich
Aug 15	Cultural Experience	Evening Picnic at English Garden	English Garden, Munich
Aug 17	Team-building & Collaboration	Group Hike	Benediktbeuern area



Aug 18	Public Speaking, Climate Awareness	Climate Karaoke Lightning Talk	Jugendherberge Don Bosco
Aug 18-20	Collaborative Research Practice	Group Project / Policy Briefs	Jugendherberge Don Bosco

Numerous intercultural activities were organized – some of these by the program team and several by the students themselves. These primarily after-dinner events, provided students with the opportunity to explore the Munich environment and enjoy some leisure time together and recharge for the next days lectures. The collaborative problem-solving, late-night discussions, and moments of laughter created a sense of community and mutual understanding that went far beyond the classroom, laying the foundation for long-lasting friendships and future collaboration

Week 1 centred around lectures and workshops at TUM’s main campus, exposing TUM and Tsinghua students to a wide spectrum of energy and technology transition challenges faced by both China and Germany. Beyond country-specific perspectives, the lectures also tackled universal climate issues, prompting students to reflect on how both countries position themselves in global debates.

The lectures provided insights into technology, climate policy and governance, the role of AI in sustainability, climate simulations, climate finance, climate diplomacy, and industrial decarbonisation pathways.

The diverse input provided students with a holistic understanding of the intersections between all the aforementioned issues, encouraging them to connect global challenges with the specific contexts of their own countries. Finally, the discussions underscored not only the opportunities to deepen Sino-German energy cooperation but also highlighted the importance of joint engagement on the international stage.

At the end of Week 1, students brainstormed key energy- and technology-related issues, selected those that interested them most, and then formed groups to refine their research questions while exploring the status quo, challenges, and opportunities in both Germany and China.

At the end of the first week the group moved by train (approximately one hour) to Benediktbeuern for a four-day stay at the Centre for Environment and Climate. As the monastery had been badly damaged by a hale storm, the students were able to see first had the ravages extreme weather events can have.

Week 2 included lectures by Professor Peter Hennicke on the recent work of the Club of Rome (Earth for All Deutschland: A Transformation to a Net Zero, Circular and Well-Being Economy) and Professor Hu Bin on Climate Change and



Sustainable Development. In addition, students made their own presentations and prepared their group presentations.

The tranquil and collaborative environment of Benediktbeuern, combined with shared meals and nature activities, enabled students to exchange ideas more freely, bond with each other, and work efficiently on addressing common sustainability challenges and opportunities. The group work, primarily taking place during this second phase, was the centerpiece of the program. Students engaged in constant exchange, discussing (1) how technological developments unfold in both countries, (2) which existing policies are in place, and (3) the opportunities arising from bilateral collaboration.

At the end of these intensive, iteratively structured sessions, students presented their key findings on major energy and technology issues in Germany and China. The program challenged them to deliver their research in a 45-minute lecture-style format, followed by a Q&A session. Policy briefs were also an integral part of the program, with Chinese students drafting briefs on German content and German students drafting briefs on the Chinese context. This exercise proved to be one of the most fruitful, as it required students to step into the perspectives of the other country, deepening their understanding of cross-cultural approaches to energy and technology challenges.

As part of the group exercise, Tsinghua students focused on Germany's challenges and TUM students examined China's. This encouraged bilateral collaboration and fostered a deeper mutual understanding of both countries' policy, communication, and technological challenges and responses. Thus, Chinese students developed greater expertise in their chosen field related to Germany, while German students became more familiar with China. At the end of Week 2, all groups presented their findings and synthesized insights, proposing ways in which bilateral cooperation could be strengthened.

Day by day overview:

10 August – Arrival of TUM Students

Introduction & Welcome

Students from TUM arrived in Munich, where they were warmly welcomed and picked up upon arrival. This initial meeting provided an informal opportunity for students to settle in, meet their peers, and prepare for the week ahead. The welcome laid the groundwork for the intercultural exchange and collaborative learning between TUM and Tsinghua Students.

11 August – Welcome Session & Climate Change

The following day, the camp officially opened with welcome remarks from representatives of TUM, Tsinghua University, and GIZ, who introduced the programme's structure, expectations,



and objectives. This session provided participants with a clear overview of the camp's fits.

GIZ elaborated on its mission, explaining that its primary work is to facilitate Sino-German collaboration on climate protection, sustainable infrastructure, law, and trade. They further highlighted how they support political dialogue, accelerate the energy transition in both countries, promote fairness in business and data governance, and provide regulatory and legal guidance to strengthen China's low-carbon transition. This session gave participants a clear overview of both the camp's focus and GIZ's on-site missions.

Immediately after the welcome session, students jointly discussed major obstacles to climate action, including societal awareness, conflicting interests, and energy systems dominated by non-renewables. Besides key global issues, the students discussed and compared national perspectives, comparing Germany's and China's approaches to energy transitions, the pathways to net zero targets, climate policy, and global responsibilities.

Lectures & Discussions

Climate Change and the Energy Transition Challenge: Comparative China-US-EU Perspectives – Prof. Dr. Miranda Schreurs

The morning session with GIZ was followed by a lecture from Prof. Miranda Schreurs on "Climate Change and the Energy Transition Challenge: Comparative China-US-EU Perspectives." Prof. Schreurs' lecture explored the international architecture of climate governance and the significance of international climate cooperation. The session introduced the concept of global commons and highlighted the historical evolution of international environmental governance. Key issues discussed included the Montreal Protocol's regulation of ozone-depleting substances, the Kyoto Protocol's role in advancing European sustainability goals, and the Paris Agreement's establishment of Nationally Determined Contributions (NDCs) as a mechanism for monitoring and adjusting national commitments to global decarbonisation.

Intercultural

The day concluded with dinner at Taxisgarten, providing an informal setting for participants to network and reflect on the day's discussions and insights on Sino-German energy and tech developments.

12 August – Renewable Energy & Climate Finance

Building on the welcome and introductory discussions from 11 August, Day 2 focused on the opportunities and challenges in energy policy, governance, and climate finance.



Lectures & Discussions

Renewable Energy Politics – Praval Sharma, PhD Candidate (TUM)

PhD candidate Praval Sharma (TUM) examined how political institutions, governance structures, and stakeholder interests shape the deployment of renewable energy. He contrasted multi-level governance in India, where authority is distributed across local, regional, national, and international levels, with Germany's federal system, in which states and districts share knowledge through horizontal learning.

The presentation highlighted the evolution of solar power in both countries. In Germany, small-scale rooftop installations initially drove growth, supported by feed-in tariffs, later replaced by auctions for larger projects. In India, early off-grid and rural electrification programs were followed by the National Solar Mission, with a focus on both large solar parks and smaller-scale installations.

Sharma also discussed differences in market structure and policy orientation: Germany relies on competitive electricity producers and strong cooperative participation, while India has more state-owned producers and uses energy policy as a tool for social equity

The session encouraged students to discuss solar energy development in both China and Germany, exploring lessons that could be drawn from the governance of energy subunits in India.

Climate Finance: A Global Perspective – Florian Egli, Professor of Public Policy for the Green Transition, TUM

Following the renewable energy policy landscape in India's subunits, Prof. Florian Egli examined the financial dimensions of climate action. The lecture highlighted why finance is essential for mitigation, adaptation, and recovery. Dr. Egli outlined three main forms of climate finance: (1) investments that generate value; (2) resilience measures to adapt to climate impacts; (3) and relief funding for losses caused by extreme events.

The session compared global climate finance flows and explored international obligations under the Paris Agreement, including commitments for developed countries to assist developing nations.

To make these concepts more tangible, students participated in the Climate Game by Financial Times, which simulated investment decisions for climate action. The game offered a practical insight into human behavioral tendencies: It revealed how even minor hesitations can deter early and bold investments, slowing down climate mitigation and adaptation efforts.



By engaging with the simulation, students better understood the importance of proactive and ambitious climate strategies and the behavioral shifts necessary to implement them effectively. The session helped students understand that hesitation in investing in climate initiatives can lead to long-term repercussions.

Excursion

In the afternoon, students visited the “Trees and Architecture in a Climate-Changing World” exhibit at the Pinakothek der Moderne. The exhibit highlighted innovative approaches to integrating natural systems with urban architecture, demonstrating how sustainable design can mitigate climate impacts and enhance resilience in cities.

Students observed examples of green infrastructure, climate-adaptive building strategies, and interdisciplinary solutions bridging architecture, ecology, and the built environment together.

In particular, the exhibit showcased how wood is utilized as a construction material and integrated into urban living spaces, emphasizing its role in sustainable building.

Intercultural Activities

At the Summer Festival in Munich’s Olympic Park, TUM and Tsinghua students strolled through the festival together, sampled Bavarian food and drinks, and experienced local traditions. This was followed by the Teatron Music Festival, offering an opportunity to engage with contemporary music.

13 August – Digital Tools, AI, and Alpine Impacts

On Day 3, students engaged in discussions, posed questions, and debated the implications of digitalization and AI for both policy and practical applications.

Lectures & Discussions

Digital and Sustainable: Digitainability – Prof. Stefan Wurster (TUM)

Prof. Wurster highlighted how digital innovations and applications can serve as powerful tools to tackle environmental challenges and support a sustainable transformation of lifestyles. Professor Dr. Wurster further discussed the enormous potential for positive synergies, including using digital tools to address resource limitations, developing new mobility concepts, and tackling social inequalities. Students engaged in discussion about the trade-offs of digitalization, such as increased energy consumption, CO₂ emissions, and ethical implications.

The lecture emphasized the need for purposeful guidance to integrate technology effectively, an approach the course refers to as “Digitainability”.



AI and the Climate Crisis: Solution or New Challenge? – Prof. Jian Zhang (Tsinghua)

Prof. Zhang explored the role of artificial intelligence in climate action, highlighting its potential to enhance climate modelling, energy optimization, and environmental monitoring, while also addressing the ethical and practical challenges of technology-driven solutions.

Students discussed jointly how AI can complement policy measures, the limits of AI, and the social implications of AI applications. In particular, the session encouraged students to reflect on how these insights could inform Sino-German energy collaboration, exploring opportunities for shared research.

Industrial Transition in Action: New Smart Specialisation Trajectories – Arvea Marieni, EIC

Ms. Marieni highlighted how innovation thrives through collaboration and knowledge sharing, showing how digital technologies such as virtual and digital twins accelerate energy and industrial transitions.

TUM and Tsinghua students were encouraged to apply entrepreneurial thinking and innovative approaches to energy and technology challenges. Drawing on her experience with the BEAM startup, Ms. Marieni illustrated how digital tools can provide practical, real-time solutions for multiple stakeholders. Ms. Marieni's lecture demonstrated how both Germany and China can leverage digitalization, public-private partnerships, and systemic innovation to enhance efficiency, resilience, and clean technology integration

Excursion

In the afternoon, students visited the Alpine Museum, focusing on the visible effects and negative impacts of global warming in alpine regions. Exhibits illustrate environmental changes such as glacial retreat, biodiversity loss, and ecosystem disruption, offering a tangible reminder of the urgency of climate action.

The importance of the 1.5°C target and historical temperature trends, emphasized in previous sessions, made the exhibition particularly eye-opening. The decarbonization pathways pursued by China and Germany, students realized, extend beyond bilateral goals, contributing to broader alignment with the Paris Agreement.

Intercultural Activities Students took a walk along the Isar River to Marienplatz, exploring Munich's urban landscape, architecture, and cultural heritage. To continue, students visited the Viktualienmarkt, strolled through the city centre, and enjoyed some silent moments in the iconic Frauenkirche.

The day concluded with fireworks at the Olympic Park, providing opportunities for informal networking, group bonding, and cross-cultural exchange.



14 August – ENROADS Workshop and Deep Decarbonization

The fourth day of the programme emphasized applied learning through a combination of workshops, group work, and expert lectures. Participants engaged in the ENROADS Workshop led by Professor Dr. Noelle Selin and Professor Dr. Henrik Selin, complemented by Prof. Valerie Karplus's lecture on the **challenges of deep decarbonisation in global industrial and manufacturing supply chains** with examples from China's energy system governance.

Lectures & Discussions

Challenges to the Deep Decarbonization of Global Industrial and Manufacturing Supply Chains – Prof. Dr. Karplus, Carnegie Mellon University

Dr. Karplus examined the intersection of industrial production, trade, and climate policy, focusing on the challenges of achieving deep decarbonization in global manufacturing. The lecture explored barriers such as high energy intensity, international competition, and the complexity of supply chains, while also discussing strategies including technological innovation, carbon pricing, and international collaboration.

Further, Dr. Karplus provided students with an in-depth understanding of China's energy system, governance, and the management of resources and environmental practices in firms operating across diverse national and industry contexts.

Workshop & Groupwork

ENROADS – Prof. Dr. Noelle Selin (MIT) & Prof. Dr. Henrik Selin (BU)

During the EN-ROADS workshop, led by Prof. Noelle Selin and Prof. Henrik Selin, students worked with the En-ROADS Climate Solutions Simulator, an interactive model for exploring global climate pathways. In mixed groups of TUM and Tsinghua students, they experimented with the tool to examine how changes in energy systems, land use, consumption patterns, agriculture, and technological innovations could shape global CO₂ emissions and temperature trajectories.

In their groups, students experimented with different policy and investment scenarios, including shifts in global GDP, energy efficiency improvements, deployment of carbon removal technologies, and carbon pricing. Each group developed distinct scenarios, which highlighted the scale of cooperative measures required to mitigate global warming.

ENROADS allowed students to break down the complexity of global climate action into tangible pathways for reaching the Paris Agreement's 1.5°C target.

By simulating these interventions, participants could observe their long-term impacts on climate outcomes, testing both incremental and bold strategies. This hands-on exercise provided a tangible understanding of the systemic consequences of climate policies and the trade-offs involved in global decarbonisation efforts.



Group Work

Towards the end of the day, students brainstormed individually on potential research topics related to energy and technology transition pathways in Germany and China, as preparation for their group presentations. Through mind-mapping their ideas on paper and clustering them on a whiteboard, they formed thematic groups such as renewable energy technologies, nature-based solutions, climate finance, sustainability communications, and urban environments.

Within their groups, participants narrowed down their research focus, examining existing bilateral partnerships, current policies, and the status quo in each country. This structured brainstorming and prioritization provided a solid foundation for the collaborative projects that would continue throughout the study camp.

Intercultural Activity

In the afternoon, students visited the English Garden, experiencing one of Munich's green spaces – the go-to spot. The visit highlighted the integration of natural landscapes into urban life and emphasized the role of green spaces in climate adaptation and sustainable urban planning. Students enjoyed a relaxed evening by the Isar, rounding off the day together.

15 August – Thermodynamics, Local Energy Conflicts & Geovania Simulation

Day 4 integrated technical, social, and policy perspectives on energy transitions. Prof. Dongsheng Wen provided insights into thermodynamic principles relevant for energy systems, while Prof. Jörg Radtke explored local energy conflicts and the dynamics of right-wing populism and resistance to renewable projects in Germany.

The day also included the Geovania Energy and Climate Diplomacy Simulation, a geopolitical game on renewables where students engaged in interactive decision-making and diplomacy exercises.

Lectures & Discussions

Chair of Thermodynamics, Prof. Dongsheng Wen

Prof. Wen presented the technical fundamentals underpinning energy transitions, covering thermodynamic principles and their application to energy systems.

Students gained insights into developments in Germany's hydrogen strategy. Furthermore, Dr. Wen emphasized that Germany and China have different starting positions with regard to the energy transition.

Nonetheless, both countries face similar challenges, such as integrating renewable energy into the grid, transforming the consumption sector,



building a market for hydrogen, and fostering international collaboration. While their paths differ, they share common solution spaces. Both countries can use fossil fuels more efficiently and rapidly develop renewable energy sources.

This is particularly important as green hydrogen is expected to become significantly cheaper than blue hydrogen by the middle of the decade.

Unpacking Local Energy Conflicts (Online) - Prof. Dr. Jörg Radtke

Dr. Radtke examined local energy conflicts in Germany, highlighting how right-wing populism and community concerns shape resistance to renewable projects. He also discussed the potential of digital tools for citizen engagement - issues highly relevant to Sino-German Energy Cooperation, where exchange on social and political dimensions complements technical collaboration on energy transitions.

Costs play the dominant role in shaping perceptions: the transition is often seen as (too) expensive, while questions of fairness and justice are secondary. Interestingly, worries decrease the more local people view the issue. When zooming in on their own municipality, concerns about negative impacts fade, and the importance of citizen responsiveness and being heard grows stronger.

"Energiewende populism" is less about facts than about mood and ideology, correlating closely with right-authoritarian attitudes. At the same time, perceptions of one's immediate social environment are a powerful driver of individual views. Society is, in fact, more progressive on the energy transition than it often believes itself to be.

To conclude, Dr. Radtke emphasized that: (1) populist framings tend to amplify conflicts rather than create them; (2) participants must share power, not just information; (3) while the energy transition enjoys broad societal support, many people remain dissatisfied with how it is being implemented. Workshop

In the afternoon, students participated in the Geovania Energy and Climate Diplomacy Simulation, a role-playing exercise illustrating the complexities of coordinating renewable energy transitions at an international level.

By negotiating strategies across four hypothetical countries, participants gained first-hand insight into the dynamics that also play out in real forums such as the COPs and in negotiations occurring in Sino-German Energy Cooperation, where diplomatic dialogue serves as a crucial means of successful partnership.

Students assumed various responsibilities connected to energy, food production, industrial and urban development, and other societal sectors. The exercise highlighted the trade-offs, negotiations, and interdependencies inherent in national and international energy transition



planning, providing a practical understanding of how decisions in one sector or country affect others.

Intercultural

Over lunch, students shared food and reflected on their camp experiences.

16 August – Journey to the Centre for Environment and Climate at Benediktbeuern

The day started with all participants travelling together from Munich Central Station to Benediktbeuern, where the group would stay for the next five days. After lunch at the Jugendherberge Don Bosco, Sybille Reitz introduced the challenges of phasing out coal in Germany, linking them to broader decarbonisation debates within the Sino-German Energy Cooperation.

This was followed by Tianrong Pan's presentation on trans-provincial water cooperation in China, offering comparative insights into governance and resource management. Following a coffee break and a visit to the Salisianer Arnes, Suchithra gave a lecture on plastic and waste management. The day concluded with dinner, intercultural exchange between students and professors, and group work to prepare presentations.

Lectures & Discussions

Phasing out Coal - Sybille Reitz, TUM PhD Candidate

Sybille Reitz presented her PhD research on factors driving sudden shifts from resistance to rapid progress in coal phase-outs in Germany and Poland, focusing on compensation mechanisms that balance stakeholder conflicts and enable consensus.

Trans-provincial Water Cooperation in China - Tianrong Pan, TUM PhD Candidate

Tianrong Pan presented her research on low-carbon community construction in Germany and China, highlighting Germany's community-driven versus China's government-led approach.

In the Q&A, students discussed how these governance and cultural differences shape citizen engagement, linking the insights to Sino-German Energy Cooperation and informing both social and technical pathways for energy transition.

Dealing with Plastic – Suchithra, TUM PhD Candidate Suchithra presented on plastics, highlighting ongoing international negotiations in Geneva on a legally binding plastics agreement and the importance of this still-developing agenda on plastic law and policy.

Suchithra emphasized how addressing plastics intersects with conventional energy and technology challenges, broadening the discussion beyond energy transitions



Groupwork

In the evening, students focused on their group challenge, refining their chosen energy and technology topics. They exchanged ideas, formulated their research aims and goals, and analyzed existing policies in China and Germany.

Intercultural

During the excursion to the Ordensgemeinschaft of the Salesianer Arnes, students toured the religious rooms, the prayer rooms, the special dining area, and learned about the way monks live within the monastery. At the same time, students learned about the daily routines of the monks and the history of Don Bosco, and his global commitment to youth and the environment.

The visit showed how communities like Don Bosco realize sustainability in practice living in harmony with nature, preserving resources, and integrating environmental responsibility into education to inspire young people and staff to take action for a livable future

Aug 17 – Benediktbeuern

Lectures & Discussions

Transboundary Migration and Habitat Shift of Mongolian Gazelles on the Inner Mongolian under Extreme Climate Conditions, Lin Fengze, Tsinghua PhD Candidate

Lin Fenze presented his current research findings on the transboundary migration and habitat shifts of Mongolian gazelles in Inner Mongolia under extreme climate conditions. Fenze further shared his on-site findings, highlighting ecological responses to climate change and lessons for transboundary conservation relevant to both China and Germany.

Evaluating the Global Economic Impact of Extreme Weather: Direct and Indirect Losses Attributable to Anthropogenic Climate Change - Wang Bowen, Tsinghua PhD Candidate

Wang Bowen discussed in her presentation the global economic impacts of extreme weather, examining direct and indirect losses from anthropogenic climate change.

How Multiple Stakeholders Strategically Communicate to Promote Just Transition in China: Evidence from In-depth Interviews with Key Communicators - Xiaotong Chen, Tsinghua PhD Candidate

Xiaotong Chen explored how stakeholders strategically communicate to promote a just transition in China. During the Q&A session, both PhD Candidates engaged with the students' questions and got some feedback on their research from GIZ and the professors.

Multi-Scale Spatial Climate-Responsive Design and Visualization -Feng Biyin, M.Arch Candidate in the Institute of Future Human Habitats

Feng Biyin presented her research on climate-responsive design and visualization. Together with her research team, she developed a game that allows players to design urban surroundings in



an energy-efficient and sustainable way. She demonstrated the game during the session. The game serves as a tool to familiarize people with sustainable best practices and to visualize a smart, climate-responsive city.

Intercultural Activity

In the afternoon, students went on a group hike around Benediktbeuern, winding down the day while enjoying the German landscape and learning about local conservation and hiking culture.

The walk also provided time to talk informally with lecturers, get to know them better, and discuss insights from the day's sessions.

After the hike and dinner, students and professors gathered for a bonfire, enjoying the evening together, reflecting on the day, and sharing informal conversations in the scenic surroundings.

Week 2

Aug 18 – Benediktbeuern

Lectures & Discussions

["Earth for All Deutschland" - A Transformation to a Net Zero, Circular and Well-Being Economy is Possible - A Vision of the Club of Rome.](#) – Prof. Peter Hennicke, former President of the Wuppertal Institute for Climate

Professor Peter Hennicke (**former President** of the Wuppertal Institute for Climate, Environment, and Energy) presented *"Earth for All Deutschland" – A Transformation to a Net Zero, Circular and Well-Being Economy is Possible*.

Drawing on his work with the Club of Rome, his talk provided first-hand insights from one of Germany's most prestigious research institutes and served as both a wake-up call and a roadmap for action in areas such as poverty reduction, gender equality, agriculture, the energy transition, and resource conservation.

Students witnessed first-hand how Dr. Hennicke's ambitious measures can be effectively put into practice to achieve net-zero goals. His presentation provided powerful lessons and actionable insights for advancing energy and technology transitions in both Germany and China.

[Prof. HU Bin - Associate Professor at the Institute of Climate Change and Sustainable Development, Tsinghua](#)

Prof. HU Bin from Tsinghua University discussed climate change and sustainable development, highlighting policy and technological approaches in China. Intercultural Activity

The Climate Karaoke Lightning Talk



Designed by Tsinghua students, the lightning talks challenged participants to explain climate-related keywords in just 60 seconds after two minutes of preparation. Paired with a student from the other university, they practiced thinking on their feet and communicating clearly. The activity tested students' knowledge from the past week of lectures and workshops, reinforced key terms, and added a fun, interactive element that strengthened both research communication and cross-cultural collaboration during the study camp.

In the evening, after a full day of learning, exchanging ideas on Sino-German energy pathways, and brainstorming during group work, students enjoyed some sports activities, a barbecue prepared and shared together, and another night under the stars around the bonfire.

Aug 19 – Benediktbeuern

Excursion

On the last day at Benediktbeuern, students headed to the Walchensee Facility at Kochelsee. The Walchensee Power Plant is a living example of how all forms of renewable energy are essential for Germany's energy transition.

Operational since 1924, it remains a landmark of German engineering, generating enough electricity for around 100,000 households. Despite being a protected industrial monument, it is fully operational. Seeing the massive machines in action was a particular highlight for both engineering and policy students.

The tour showed TUM and Tsinghua students how historic infrastructure can play a vital role in modern renewable energy strategies, offering lessons for integrating legacy energy systems into contemporary energy transitions in Germany and China. Afterwards, students enjoyed a scenic boat ride while some other students decided to go for a hike to Klostersgut Schlehdorf, before concluding the day with the return journey to Munich.

Aug 20 – Groupwork

Groupwork

Returning from Benediktbeuern with fresh ideas, students continued working on their presentations and synthesizing findings on Germany and China, refining their presentation design, reviewing the facts and graphs, and rehearsing for the day ahead.

Aug 21 – Group Presentations

Presentations

Energy Storage Solutions – Alexander Cougler, Aylin Dingil, Julia Weiss, Niklas Klingel (TUM), Mengh Xu, Hao Yang, Yi Cheng (Tsinghua)

The team dealt with Sino-German energy curtailment issues, where energy storage plays a pivotal role as a cornerstone of the global energy transition. Both China and Germany face growing shares of intermittent renewables that challenge



grid stability and security of supply. Germany struggles with north–south transmission bottlenecks, social opposition, and import dependence, while China contends with large-scale curtailment, coal reliance, and provincial fragmentation.

The decisive challenge ahead is governance and legitimacy: Germany must overcome incrementalism, while China must reduce coal reliance, improve transparency, and balance regional disparities.

Further presentations included the following themes:

Nature-Based Solutions – Leon Birkholz, Jonas Jaggy, Sebastian Weisenfeld, Marco Kaupp, Fengze Lin, Zhu Ruijia, Jiaotao Chen

The group examined the role that nature-based solutions can play in addressing environmental pollution problems and climate change.

Climate Adaptation for Elderly Populations in Germany and China: Urban and Rural Perspectives – Duc Huy and Liu Yuqiu

The team tackled the need for climate adaptation to protect aging populations in Germany and China. It highlights that despite national strategies, significant gaps remain in protecting older adults from extreme heat and floods, particularly differentiating between urban and rural settings. The brief proposes specific, targeted measures, such as mandatory heat-health plans and a national heat register in Germany, and village cooling refuges and digital early-warning systems in China. The aim is to strengthen resilience and advance social justice for these vulnerable populations.

Small Rooftop Photovoltaic – Clara Bandszus, Praval Sharma, Ziyi Wang, Wenbo Qiang

Praval, Ziyi, Wenbo, Clara have been working on a comparison of Small Rooftop PV on private households in China and Germany. Both countries face similar challenges of grid overcharge and an increasing need for redispatch. We discussed a technological solution from Tsinghua University to overcome this common problem, as well as the German model of Energy Cooperatives for greater citizen involvement in PV deployment in China!

China's and Germany's Narratives and Cooperation with the Global South on Renewable Energy
Anna Bindl, Hailan Wang, Xinwen Huang, and Xiaotong Chen

This group examined how narratives around climate change have changed with time and what this means in politics and for society. It highlighted theoretically and empirically developments in both German and China.

Climate Resilient and Environmentally Sustainable Healthcare Systems – Leonie Foth, Weiyi Liao, Suchitra



The Group worked on the topic of “Climate Resilient and Environmentally Sustainable Healthcare Systems”. The Healthcare Sector is faced with a dilemma, where on the one side it is affected by climate change, through weather phenomena, influx of patients, and on the other hand itself contributes to climate change, through Scope 1-2 emissions. They analysed the two cases of China and Germany, with regard to their Healthcare Systems’ contributions to CO2 emissions, the measures taken to combat these and make the system more emission-friendly, as well as climate resiliency policies and implementations. Aug 22 – Final Day

Farewell

On the last day, students reflected on the past two weeks, discussing what they had learned and how to apply the knowledge gained through interactive sessions on the development of Sino-German energy and technology transitions.

After reflecting on their key takeaways and discussing future research collaboration, an official certificate ceremony was held to formally recognize the students’ participation and achievements during the study camp.

Special thanks were extended to Professor Dr. Schreurs and Professor Dr. Hu Bin for organizing and guiding the study camp. Students from both TUM and Tsinghua exchanged memorabilia and souvenirs and expressed their wishes to visit each other’s campuses in the future. Before departing for the airport, Tsinghua students shared pictures, exchanged contacts, and reminisced about the experiences from the study camp. The program concluded with a final lunch at the main campus cafeteria and heartfelt farewells at the HfP building.

Student Reflections (by Aylin Dingli)

The Sino-German Study Camp offered a truly unique experience. It not only connected us with lecturers from TUM, Tsinghua, and other international experts who taught cutting-edge research in the energy, technology, innovation, and climate policy sphere, but also exposed us to the Chinese perspective on how they perceive and tackle the energy transition. At the same time, from the very beginning, Chinese students were exposed to the German approach to addressing the challenges of the energy transition, creating a truly reciprocal exchange. From the start, we engaged with complex topics such as coal phase-out, grid stability, technological bottlenecks, and the crucial role of cooperation and policy dialogue - gaining a comprehensive understanding of global energy transition pathways.

Within lectures, workshops, and field trips, students and PhD candidates, all pursuing the shared goal of contributing to decarbonisation, discussed key developments, bottlenecks, opportunities, and strategies, engaging with one another in ways that no paper or article could fully capture. Coffee breaks, early morning meetups, and shared lunches proved crucial in creating opportunities for connections and friendships to form, fostering bonds that went beyond academic collaboration and leaving lasting memories. Through these moments, we discovered how Chinese researchers think, how they operate, and how they approach challenges. At the



same time, they explored our ways of reasoning and our approaches to policy and technology. Together, we exchanged perspectives, synthesised knowledge, and practised translating complex challenges into actionable solutions.

In this sense, the study camp was more than just two weeks of lectures on recent technological and energy developments. German and Chinese approaches to the energy transition came together throughout the programme: we learned both the German and Chinese ways of breaking down complex problems into concrete components and how to connect challenges with possible solutions. In doing so, we not only compared major developments for achieving net-zero targets, but also practised explaining the main challenges of both countries in simple and understandable terms.

Beyond the knowledge gained from field trips, workshops, and lectures, the most valuable aspect of the camp was its collaborative nature. The Sino-German energy and technology partnership was not just theoretical; we experienced it directly.

One of the most fruitful parts of the camp was the group work, which brought this joint partnership to its fullest. In these sessions, we fully immersed ourselves in the perspectives of the other country: as TUM students, we stepped into the position of Chinese experts, grappling with coal phase-out, grid stability, and technological challenges, while Chinese students explored Germany's energy transition. Although we tackled different challenges, we discovered remarkably similar solution spaces. This shows that, despite different starting points, Germany and China can -and in the future should - adopt joint strategies and policies collaboratively.

Moreover, the group work trained us to become proficient in specific energy and technology fields. Working on policy briefs, identifying key barriers and commonalities, and proposing tailored strategies for decarbonising energy systems allowed us to connect policy and technology pathways into actionable recommendations.

Ultimately, the camp highlighted that without policy-making and joint energy and tech collaboration - such as the joint Sino-German partnership - meeting decarbonization targets is difficult to achieve.



Student Testimonials

The following reflects a compilation of student testimonials, paraphrased to capture the key insights and experiences shared during the study camp

“During my first semester, I focused heavily on the energy transition and the global efforts required to achieve a net-zero future. One country stood out, as it took center stage in nearly every class I attended: China. Naturally, I wanted to learn more and the Summer School was the perfect opportunity.”

“The Study Camp overall conveyed a sense of being on the right track in terms of Sino-German cooperation. By bringing together master’s and PhD students from different fields, it allowed us to exchange perspectives, gain first-hand insights into each other’s approaches, and build connections with researchers in China & Germany. This experience will influence and shape my future work.”

“A key takeaway for me is that cooperation across borders is essential for advancing sustainable energy pathways. Working with students from both technology and policy backgrounds illustrated that neither technical solutions nor policy frameworks alone will be sufficient; instead, the collaboration between countries, institutions, and individuals is vital to ultimately drive the transition forward.”

“The mix of lectures, workshops, field trips, and evening activities was super balanced. I not only bonded academically but also became friends, and I honestly felt a bit emotional once the Tsinghua students left. Beyond the friendships, what benefited me most was the opportunity to learn directly from key experts, connect my policy knowledge with the tech students to explore ways to improve the current energy efficiency situation in both Germany and China. It was really rewarding to finally apply my knowledge in a real-world setting.”

The majority of students highlighted the personal and direct exchange with Chinese students. What stood out mostly to students was the fact that they acquired “knowledge that cannot be found in textbooks, but only in ‘confidential’ conversations with other students on an equal footing.” The shared experience of living, learning, and collaborating - particularly during the four days in Benediktbeuern - was described as transformative. Students noted that it encouraged them to consider future travel to China, “exploring the country, gaining a better understanding of the culture, and meeting friends again.”

Further, one student reflected on the variety of backgrounds represented: “from fashion and architecture to satellite-based climate modeling and national park management,” which enriched discussions on climate change and energy transition. Interactive activities, such as simulation games and group projects, helped students appreciate the complexity of climate solutions:



“These exercises demonstrated just how interconnected climate solutions are, and that tackling a single issue in isolation is not enough.”

Likewise, students observed “how different the Chinese and German approaches are, and which strengths and limitations each side has.” For instance, China’s top-down approach enabled rapid, nationwide deployment of EV charging infrastructure, while Germany emphasized circular economy and producer responsibility, such as through battery recycling and waste separation schemes. One student noted that “developing common ground could not only improve environmental outcomes, but also help to build trust and a more pragmatic understanding between both countries.”

In the same manner, students highlighted having cross-cultural teamwork as a standout experience.:

“Working closely with peers from Tsinghua University showed how different perspectives can lead to creative, out-of-the-box problem-solving and how much common ground exists when tackling global issues such as climate change.”

Another student noted that:

“Working with students from both technology and policy backgrounds illustrated that neither technical solutions nor policy frameworks alone will be sufficient; instead, the collaboration between countries, institutions, and individuals is vital to ultimately drive the transition forward.”

Beyond the academic components, informal activities contributed significantly to the experience. Events such as the “Climate Karaoke” evening were described as “both educational and a lot of fun,” helping consolidate knowledge while fostering intercultural dialogue and teamwork. Living and working together in a confined setting, including evenings around the campfire and shared meals, strengthened interpersonal bonds, with students emphasizing that this environment enabled honest dialogue and trust.

Taking everything into consideration, the camp was valued not only for expanding energy and tech knowledge yet also for shaping students’ perspectives on international cooperation and research collaboration.







