# Master's Thesis: Collaborations with Chinese Research and Innovation Institutions in the Energy Sector – Opportunities, Risks, and Strategic Relevance for a European TSO

**Background**

The energy transition, digitalization, and geopolitical changes are driving a profound transformation of energy infrastructure worldwide. European transmission system operators (TSOs) face the challenge of securing their innovation capacity over the long term and gaining early access to relevant technological developments.

Within the scope of this master's thesis, the aim is to examine the research and innovation landscape in China in the fields of energy, power grids, and adjacent technologies, and to identify the subject areas in which collaborations could, in principle, be meaningful or strategically relevant.

At the same time, regulatory, geopolitical, security-related, and technological risks that may argue against cooperation in sensitive areas are to be analyzed.

**Objective of the Master's Thesis**

The objective of the thesis is to produce a structured analysis of the Chinese research and innovation landscape, with a focus on subject areas relevant to European TSOs.

In particular, the thesis should address the following research questions:

- Which Chinese research institutions, universities, government programs, or companies are internationally leading in the field of energy infrastructure, power grids, and energy-related technologies?
- In which research and innovation fields does China possess relevant or potentially superior know-how? Of interest here, for example, are technologies for increasing the utilization and reinforcement of transmission grids, as well as for reactive power optimization.
- Which of these subject areas are strategically interesting for a European TSO?
- Where are there potential opportunities for knowledge exchange or cooperation?
- Which regulatory, geopolitical, security-related, or ethical aspects argue against cooperation in certain areas?
- Which European framework conditions (e.g., critical infrastructure, technological sovereignty, cybersecurity, export controls, data protection) need to be taken into account?
- How do other European infrastructure operators or industrial companies assess cooperation with Chinese actors?

**Methodology**

The thesis may, for example, include the following methodological elements:

- Analysis of academic publications and patent activities
- Literature and document analysis, e.g., analysis of national Chinese R&I strategies
- Benchmarking of relevant research institutions
- Stakeholder interviews

Among other sources, the following should serve as a substantive basis:

- European strategy documents (ENTSO-E)
- Internal corporate research and innovation strategy

**Expected Results**

In particular, the master's thesis should:

- identify relevant Chinese research actors and fields of expertise,
- structure potentially interesting fields of cooperation,
- assess the opportunities and risks of collaboration,
- derive sensitive or non-cooperation-capable areas,
- and formulate recommendations for the future handling of international research collaborations.

The master's thesis can be carried out independently outside the company. We provide the topic, subject-matter supervision, as well as our knowledge and data. **Direct involvement in the company, an internship, or remuneration are not envisaged.**