



Bachelor Thesis

Historical growth rates of energy technologies

As Germany and Europe approach the target years for their energy system transformation, the growth rates of technology adoption required to meet these goals are increasing. Critical questions arise regarding the adequacy of current installation rates of onshore wind farms and gas turbines. Additionally, the sufficiency of conversion rates of gas storages to hydrogen storages and the pace of transmission line construction warrant examination. Understanding whether these growth rates can be achieved, and under which conditions, is fundamental.

It might be worthwhile to analyze past growth rates of energy technologies in generation, storage, transmission, and conversion. Understanding the economic and political conditions—such as market prices, investment programs, regulatory frameworks, and policy incentives—that existed during these periods of growth can help to identify the factors that facilitated or hindered progress.

The primary aim of this thesis is to analyze historical growth rates of energy technologies, focusing on generation, storage, transmission, and conversion technologies. By examining past growth rates and the associated economic and political conditions, this study aims to identify the factors that have influenced the successful deployment of these technologies. The insights can be used to discuss current transformation targets.

Key tasks and objectives of the thesis

- Find a comprehensive notion of growth rates in energy technologies
- Collect historical data on relevant energy technologies and illustrate corresponding growth rates
- Identify conditions and systematically structure the growth rates relating them to current transformation targets

Your profile

- Economics major, best with a focus on energy
- Analytical thinking and the ability to carry out independent scientific work

Literature

- Smil, V. (2019). Growth: from microorganisms to megacities. Mit Press.
- Umweltbundesamt (2024): Zeitreihen zur Entwicklung der erneuerbaren Energien in Deutschland
- International Energy Agency (IEA, 2024): IEA Electricity Information Statistics. URL: https://stats.oecd.org/BrandedView.aspx?oeid_bv_id=elect-data-en&doi=data-00460-en#

Contact



Philipp Theile

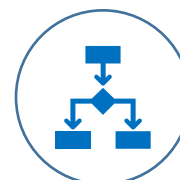
E-Mail: Philipp.theile@ewi.uni-koeln.de

Topics



- Growth rates
- Energy technologies

Methods



- Literature review
 - Data collection
-