Modeling the Global LNG Market: Assessing Europe's LNG Supply and its Price until 2040

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Abstract

Keywords:

1. Introduction

The world is committed to achieving carbon neutrality by mid-century. Undisputed thereby are measures that increase the share of renewable energy in the energy system and thus replace fossil energy sources. However, the speed on the way there and the specific target year in which net zero emissions are emitted vary between regions. China, for example, has defined 2060 as the target year, while Europe aims to achieve climate neutrality in 2050. For these regions and all others, the question arises of how this sustainable energy transition is shaped in concrete terms. The consensus is that transitional solutions and so-called bridge technologies (or bridge fuels) are necessary if renewable energy cannot fully supply the energy system. A pillar of these bridge technologies, namely liquified natural gas (LNG), is the subject of this paper.

Díe Wichtigkeit von LNG hat sich bisher sehr stark zwischen den Regionen unterschieden.

- bezogen auf europa piped-gas bis vor kurzem
- weshalb Europa als LNG Markt bisher uninteressant war
- durch den Angriffskrieg fundamental geändert

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- LNG steht nun auf der Agenda in EU
- essenziell für die versorgungssicherheit in europa (neue Terminals an den Kusten gebaut)
- krisenmodus lng vergleich mit piped gas nicht möglich da es um versorgungssicherheit geht aber gleichwertig mit dem einsatz von öl its emissions
- aktuell supply möglich weil china sehr geringen verbrauch hat, daher derzeitige situation nicht repesentativ
- deswegen auch für exportländer attraktiv
- unklar wie sich mittel- bis langfristig equilibirum einstellt bzw. willingess to pay sein wird und
- dazu trägt auch bei dass viele länder im jahre 2022 versucht haben sehr kurzfristige verträge abzuschließen im krisenmodus

the core objective of this work...

Declaration of interests

None.

Declaration of Competing Interest

The authors report no declarations of interest.

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References

[1] United Nations Framework Convention on Climate Change (UNFCCC), Conference of the Parties Twenty-first session: Adoption of the Paris Agreement, retrieved on 14.07.2022, https://unfccc.int/resource/docs/2015/cop21/eng/l09r01.pdf (2015).

[2] H. Duan, J. Rogelj, J. Veysey, S. Wang, Modeling deep decarbonization: Robust energy policy and climate action, Applied Energy 262 (2020) e114517. doi:https://doi.org/10.1016/j.apenergy.2020.114517.

[3] H. Auer, P. C. del Granado, P.-Y. Oei, K. Hainsch, K. Löffler, T. Burandt, D. Huppmann, I. Grabaak, Development and modelling of different decarbonization scenarios of the European energy system until 2050 as a contribution to achieving the ambitious 1.5°C climate target–establishment of open source/data modelling in the European H2020 project openENTRANCE, e & i Elektrotechnik und Informationstechnik (2020) 1–13. doi:https://doi.org/10.1007/s00502-020-00832-7.

[4] E. Papadis, G. Tsatsaronis, Challenges in the decarbonization of the energy sector, Energy 205 (2020) 118025. doi:https://doi.org/10.1016/j.energy.2020.118025.

[5] F. Felder, P. Kumar, A review of existing deep decarbonization models and their potential in policymaking, Renewable and Sustainable Energy Reviews 152 (2021) 111655. doi:https://doi.org/10.1016/j.rser.2021.111655.

[6] L. Kotzur, L. Nolting, M. Hoffmann, T. Groß, A. Smolenko, J. Priesmann, H. Büsing, R. Beer, F. Kullmann, B. Singh, et al., A modeler's guide to handle complexity in energy systems optimization, Advances in Applied Energy 4 (2021) 100063. doi:https://doi.org/10.1016/j.adapen.2021.100063.

[7] S. Backe, C. Skar, P. C. del Granado, O. Turgut, A. Tomasgard, Empire: An open-source model based on multi-horizon programming for energy tran-

sition analyses, SoftwareX 17 (2022) 100877. doi:https://doi.org/10.1016/j.softx.2021.100877.