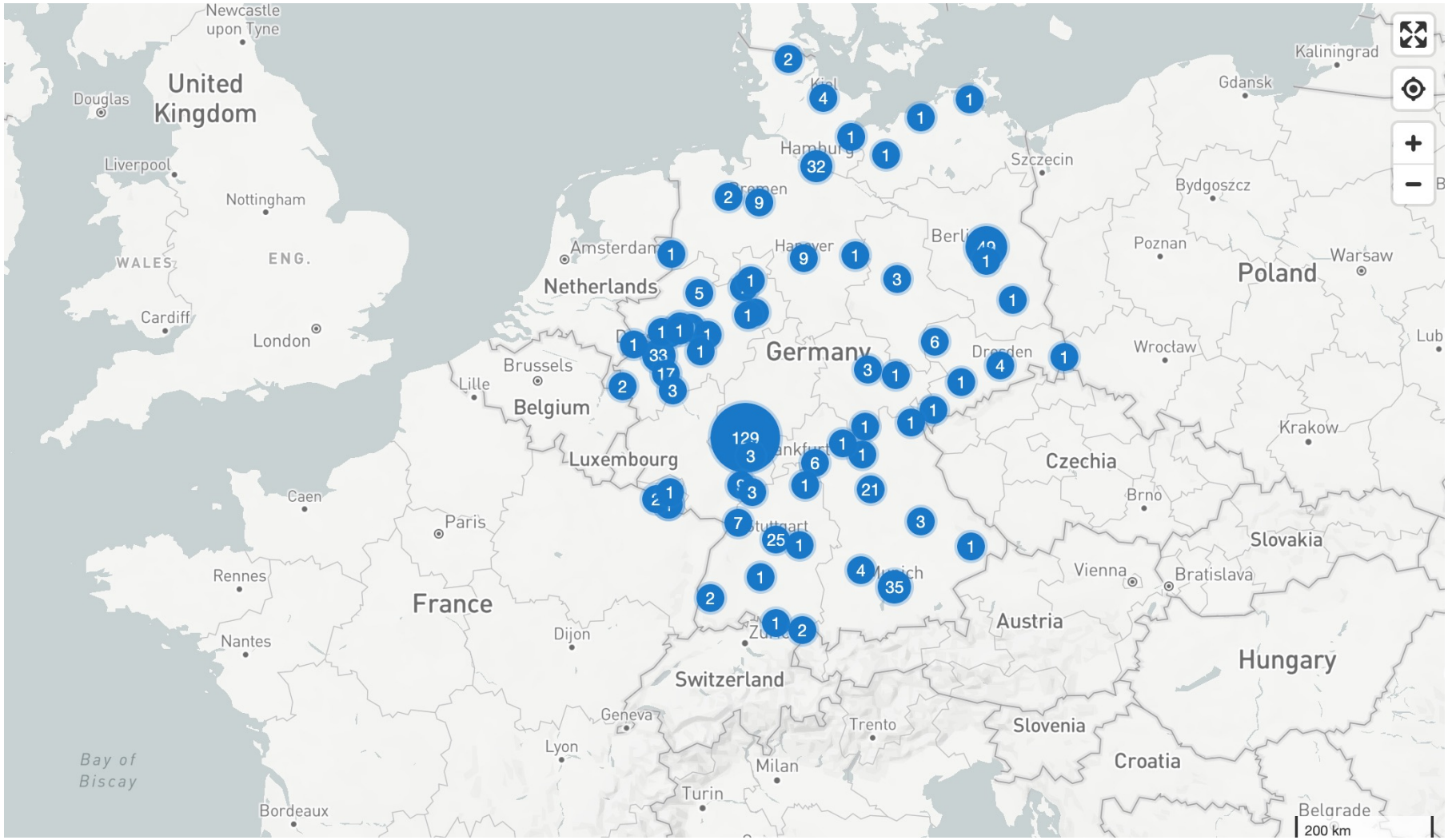
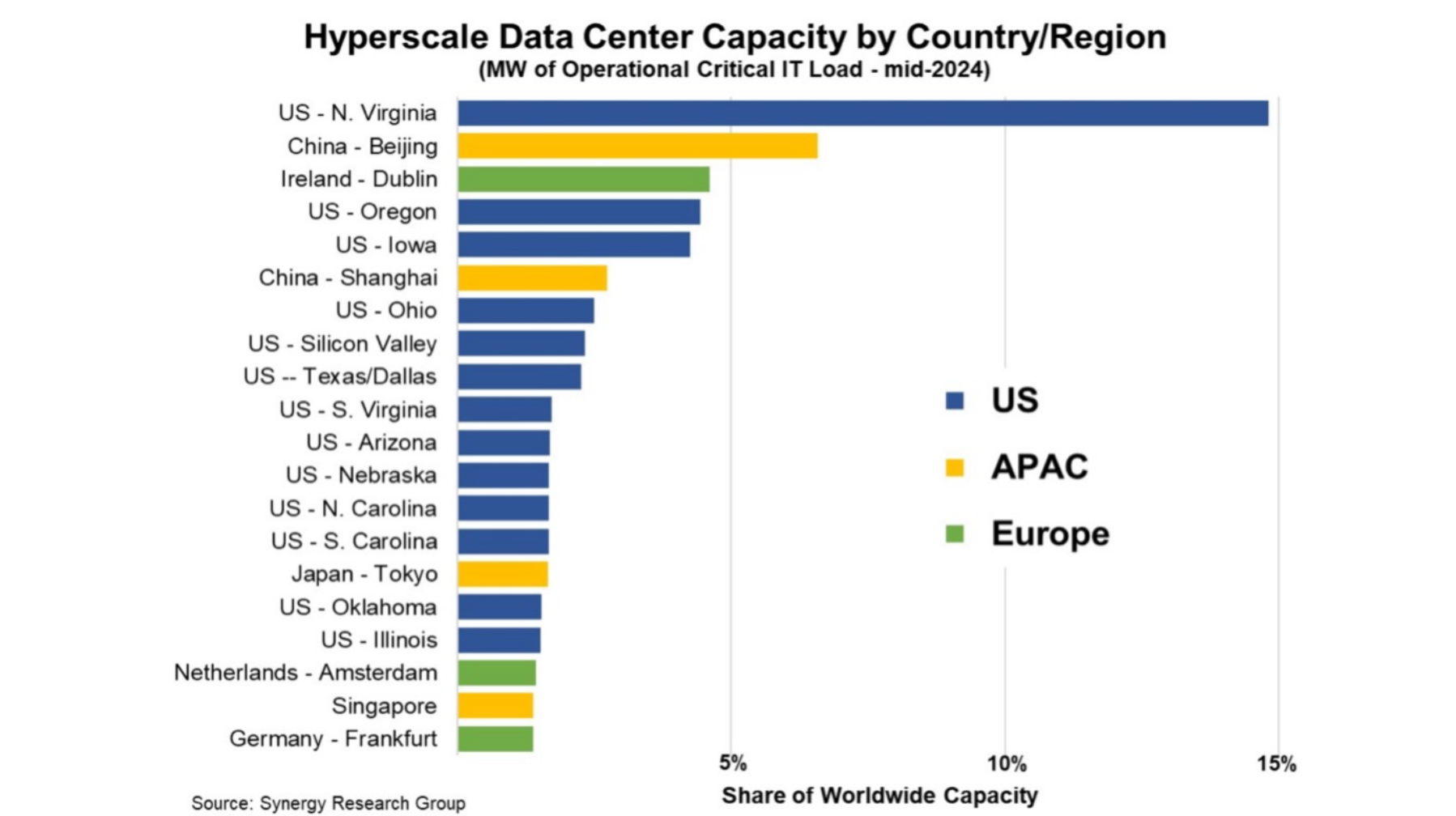
Rechenzentren in Deutschland boomen – und damit auch ihre Energieprobleme

Eine Recherche im Auftrag von AlgorithmWatch

Indra Jungblut

Ecocompute 2025


Newcastle upon Tyne
United Kingdom
Douglas
Liverpool
Nottingham
WALES
ENG.
Cardiff
London
Amsterdam
Netherlands
Brussels
Lille
Belgium
Luxembourg
Germany
Hamburg
Szczecin
Kaliningrad
Gdansk
Bydgoszcz
Poznan
Warsaw
Poland
Wrocław
Krakow
Czechia
Brno
Slovakia
Vienna
Bratislava
Austria
Hungary
Slovenia
Croatia
Belgrade
Caen
Paris
Rennes
France
Nantes
Dijon
Switzerland
Geneva
Lyon
Trento
Milan
Turin
Bordeaux
Bay of Biscay
200 km


Hyperscale Data Center Capacity by Country/Region
(MW of Operational Critical IT Load - mid-2024)
US - N. Virginia
China - Beijing
Ireland - Dublin
US - Oregon
US - Iowa
China - Shanghai
US - Ohio
US - Silicon Valley
US -- Texas/Dallas
US - S. Virginia
US - Arizona
US - Nebraska
US - N. Carolina
US - S. Carolina
Japan - Tokyo
US - Oklahoma
US - Illinois
Netherlands - Amsterdam
Singapore
Germany - Frankfurt
US
APAC
Europe
5%
10%
15%
Share of Worldwide Capacity
Source: Synergy Research Group

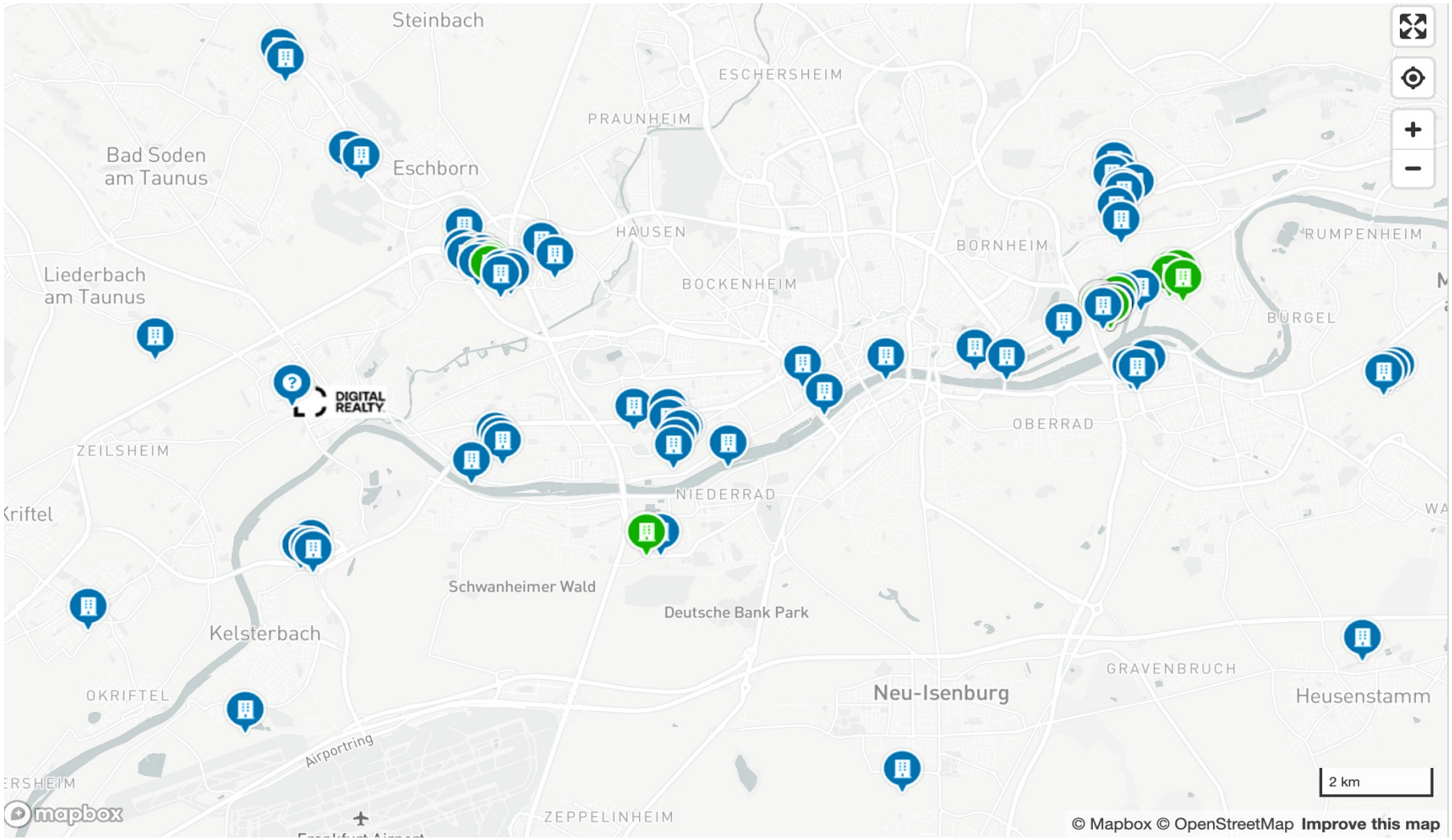
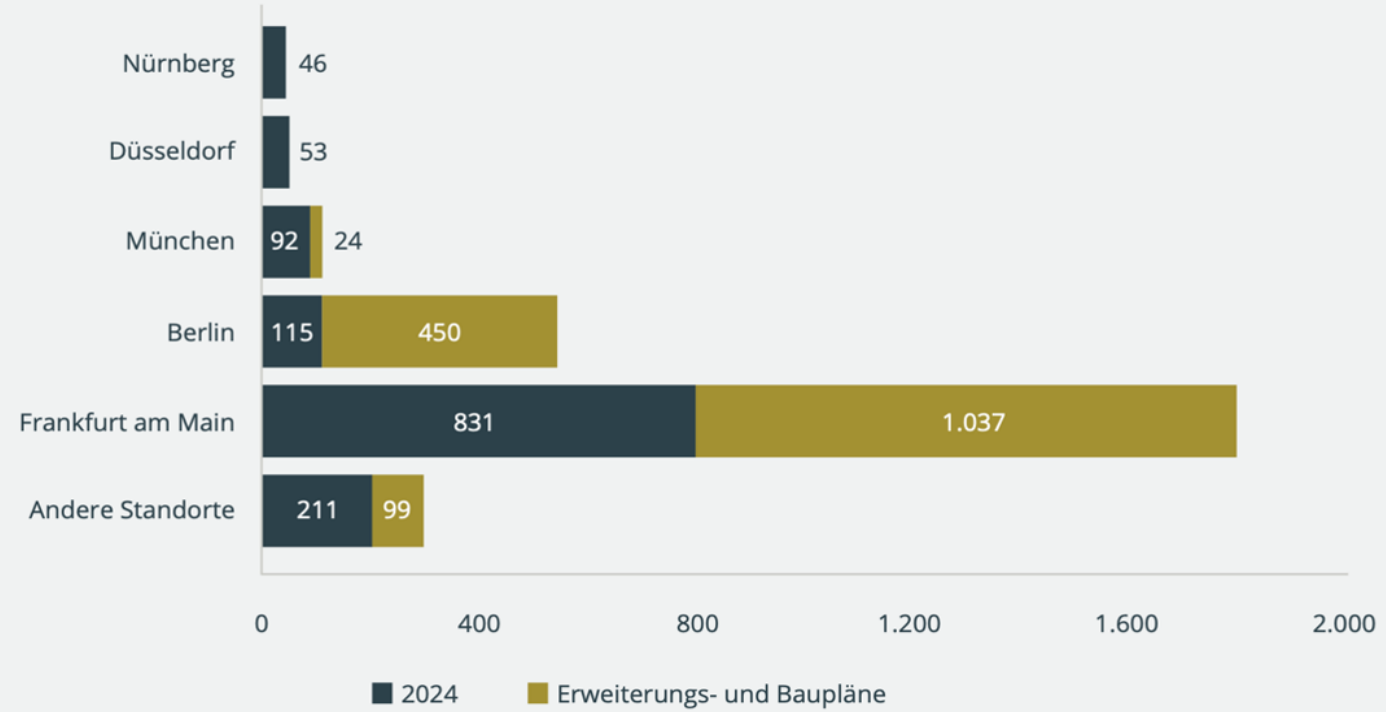
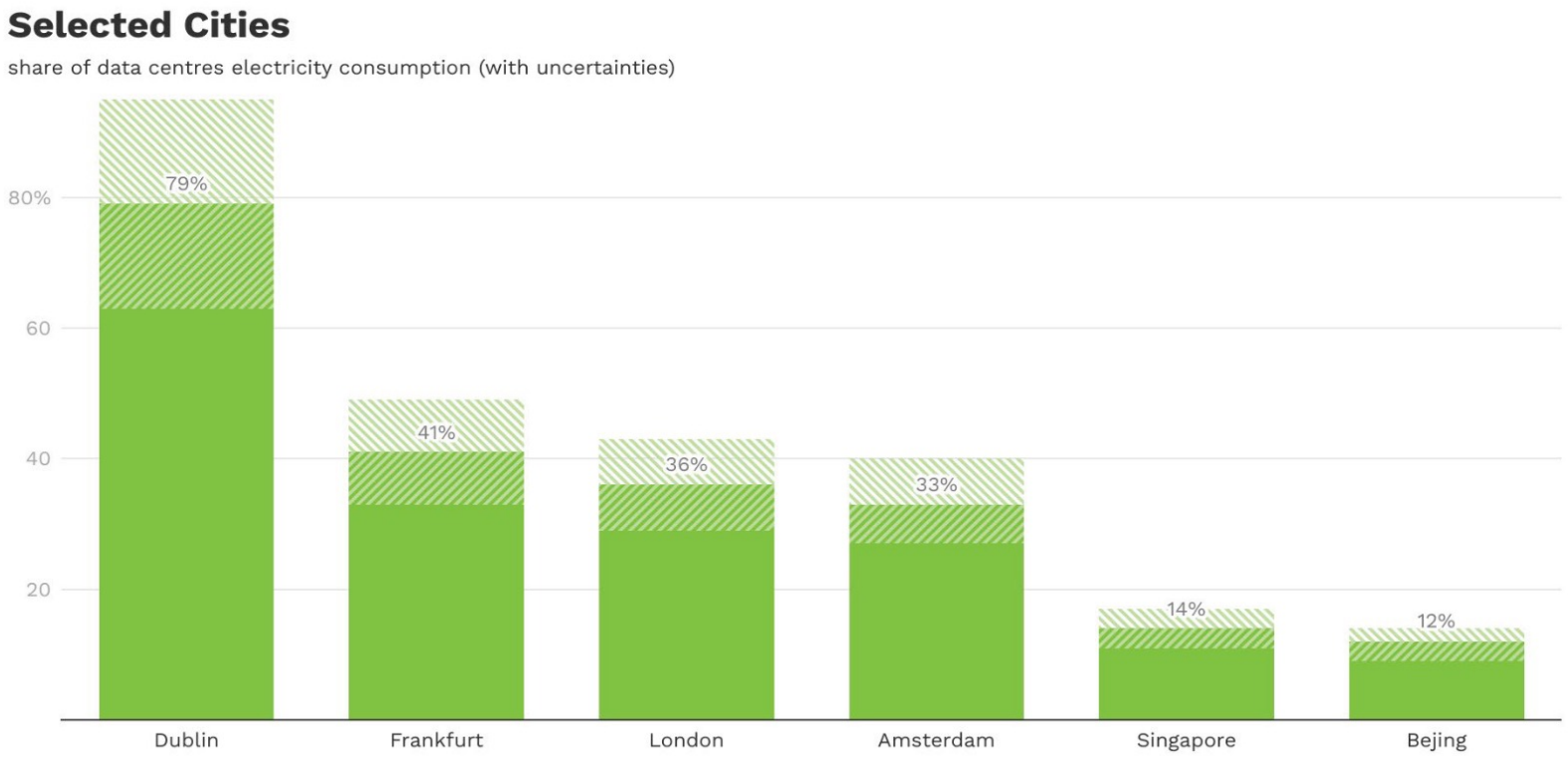

Steinbach
ESCHERSHEIM
PRAUNHEIM
Bad Soden
am Taunus
Eschborn
HAUSEN
BORNHEIM
RUMPENHEIM
Liederbach
am Taunus
BOCKENHEIM
BÜRGEL
DIGITAL
REALTY
OBERRAD
ZEILSHEIM
NIEDERRAD
Schwanheimer Wald
Deutsche Bank Park
Kelsterbach
GRAVENBRUCH
OKRIFTEL
Neu-Isenburg
Heusenstamm
Airportring
ZEPPELINHEIM
2 km
mapbox
© Mapbox © OpenStreetMap Improve this map

ABBILDUNG 10: Bau- und Ausbaupläne nach Metropolregion-Standorten (MW IT-Leistung) gegenüber Stand 1. Januar 2024

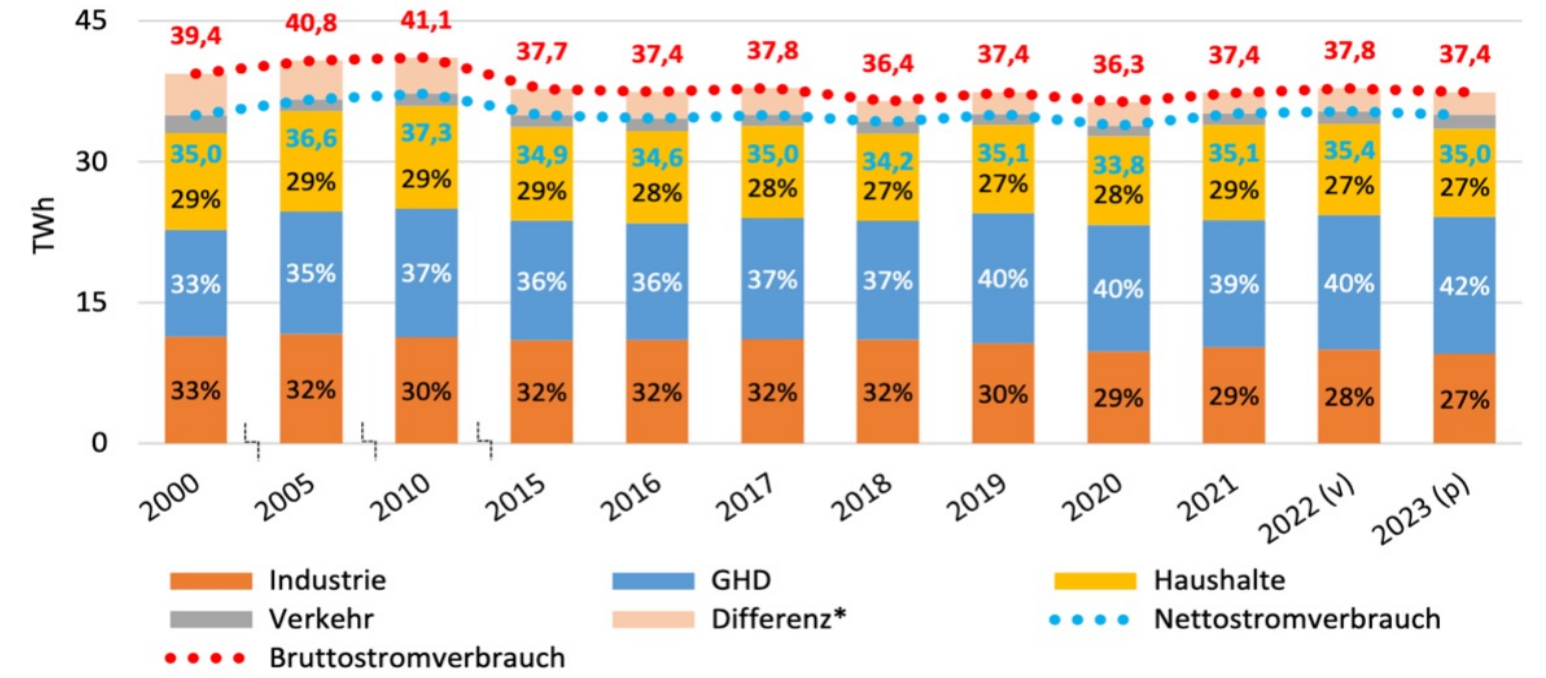


Quelle: Datenbank für Colocation- & Hyperscale-Rechenzentren, 2024



Quelle: Greenpeace (2025): Umweltauswirkungen künstlicher Intelligenz

Abbildung 12: Entwicklung von Brutto- und Nettostromverbrauch 2000-2023 (in TWh, Anteilswerte in %)

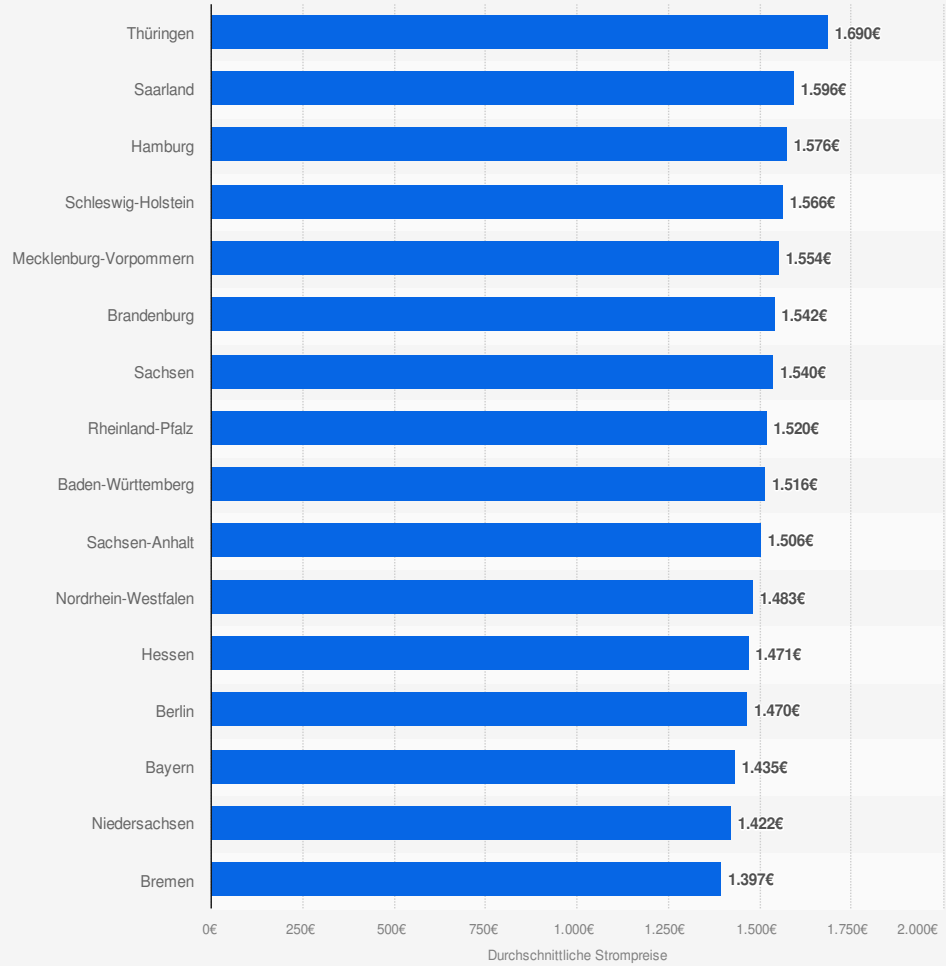


* Verbrauch im Umwandlungssektor / Eigenverbrauch und Übertragungsverluste

Quelle: HSL 2024a, IE-Leipzig 2024; 2022 (v) = vorläufig, 2023 (p) = Prognose.

Aus: ENERGIEWENDE IN HESSEN MONITORINGBERICHT 2024, Hessisches Ministerium für Wirtschaft, Energie, Verkehr, Wohnen und ländlichen Raum

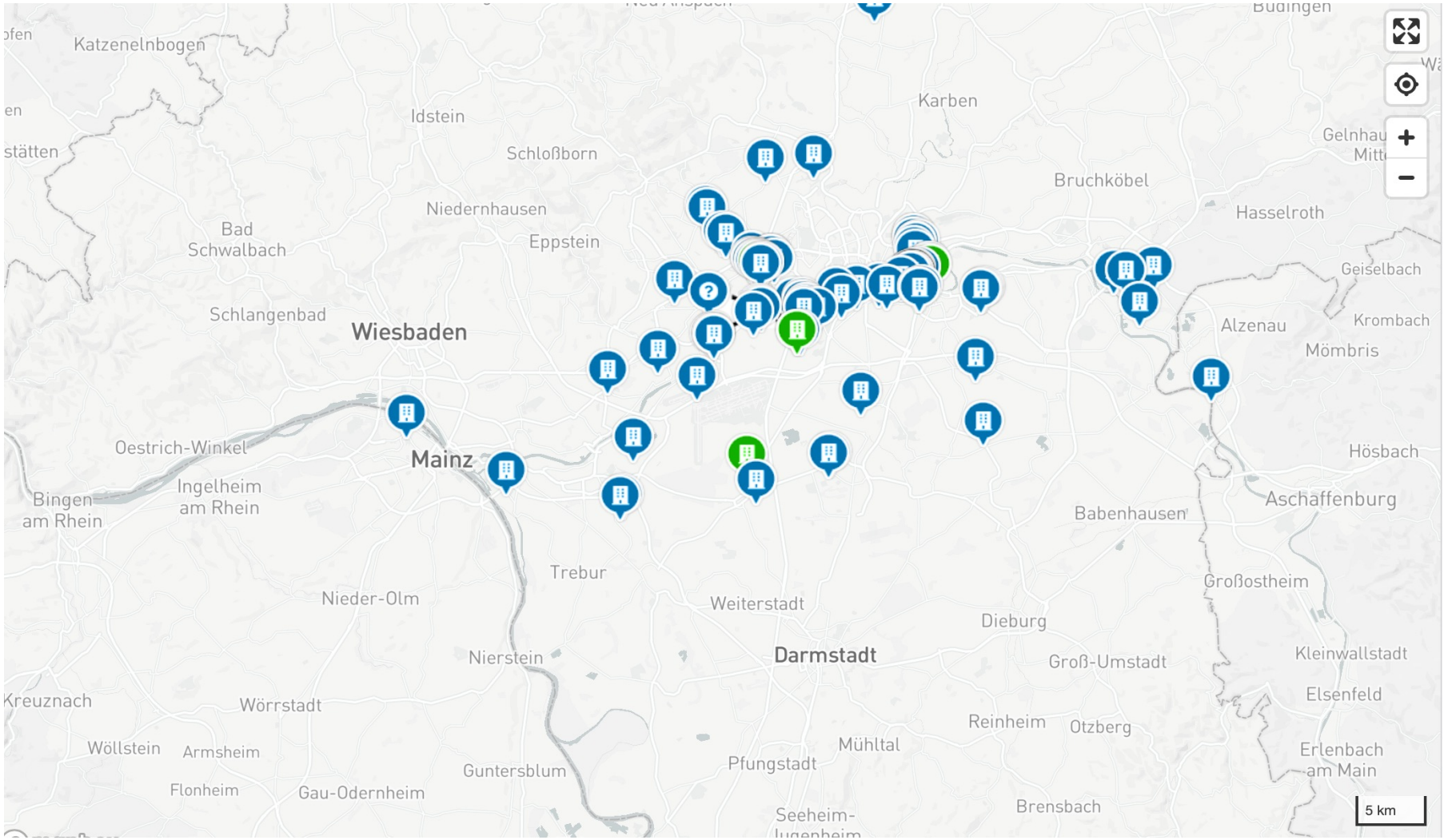
Höhe der durchschnittlichen Strompreise in Deutschland nach Bundesländern im Jahr 2024



Quelle
Verivox

Weitere Informationen:
Deutschland; Stand: Januar 2024

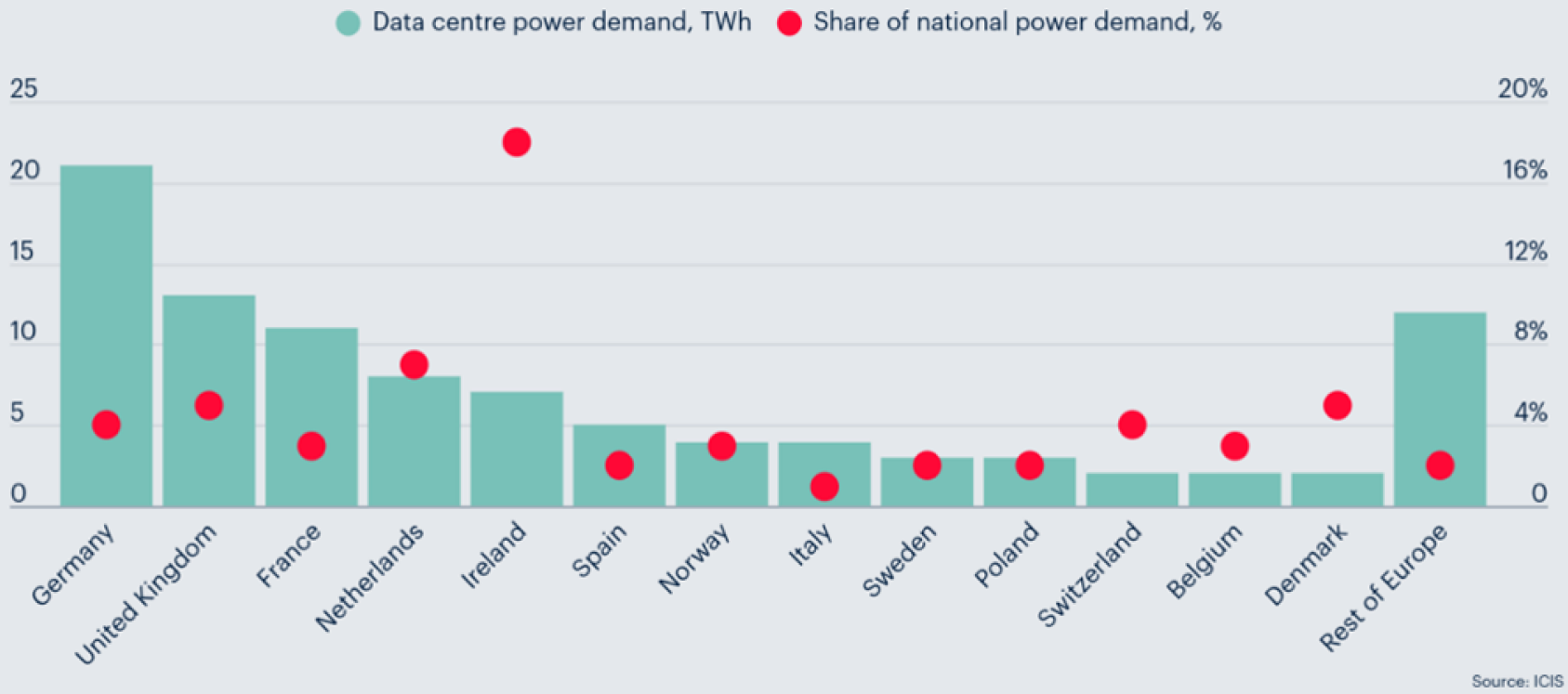
Rechenzentrum „FRA7“ von CyrusOne, Griesheim


Katzenelnbogen
Idstein
Schloßborn
Karben
Bruchköbel
Hasselroth
Gelnhau
Mitt
Niedernhausen
Eppstein
Bad
Schwalbach
Schlangenbad
Wiesbaden
Geiselbach
Alzenau
Krombach
Mömbris
Oestrich-Winkel
Mainz
Ingelheim
am Rhein
Bingen
am Rhein
Hösbach
Aschaffenburg
Babenhausen
Trebur
Nieder-Olm
Weiterstadt
Dieburg
Großostheim
Nierstein
Darmstadt
Groß-Umstadt
Kleinwallstadt
Elsenfeld
Kreuznach
Wörrstadt
Reinheim
Otzberg
Wöllstein
Armsheim
Mühltal
Erlenbach
am Main
Guntersblum
Pfungstadt
Flonheim
Gau-Odernheim
Brensbach
Seeheim-
5 km

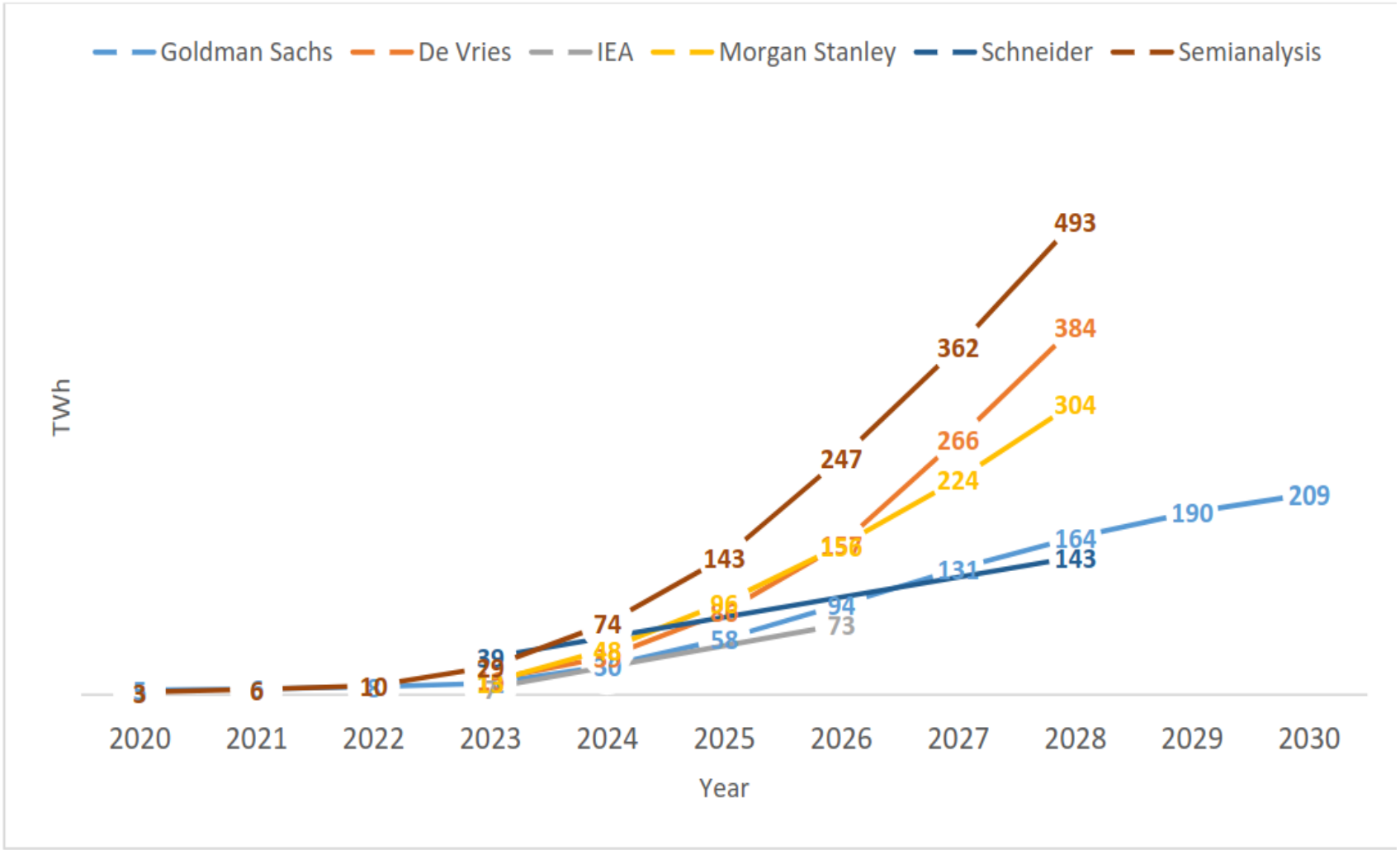
Mit Vertretern der Ratsfraktionen und der Verwaltung freut sich Bürgermeister Andreas Heller (M.) über die geplante Ansiedlung von Microsoft in Elsdorf.

Quelle: https://www.rundschau-online.de/region/rhein-erft/elsdorf/elsdorf-microsoft-baut-weiteres-rechenzentrum-in-rhein-erft-2-1105971

Data centre power demand by country



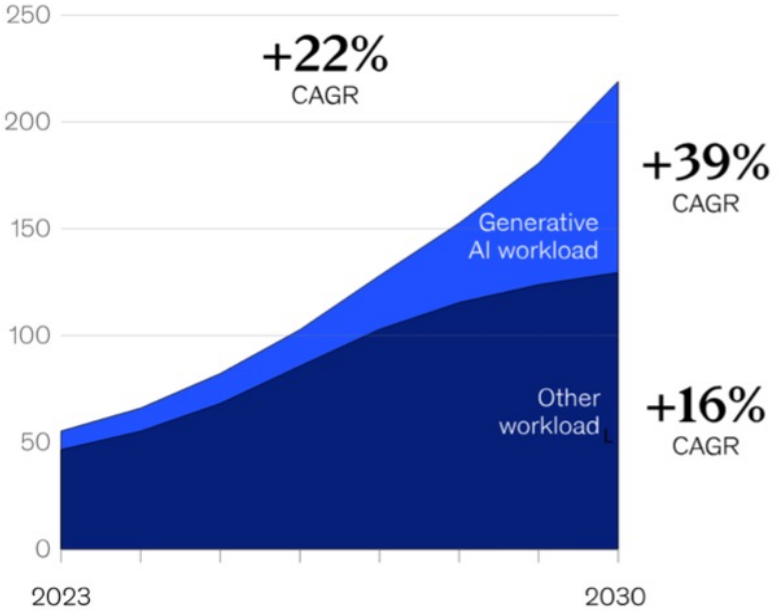
Source: ICIS



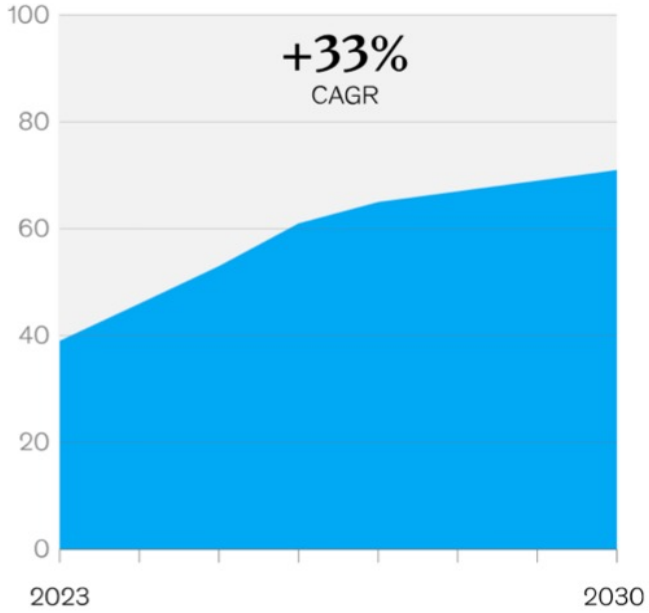
Recent developments and projections for yearly global AI energy consumption. Quelle: UBA, 2025

AI is the key driver of growth in demand for data center capacity.

Estimated global data center capacity demand,[1] gigawatts



Demand for advanced-AI capacity,[1] % of total data center capacity demand



[1]Midrange scenario is based on analysis of AI adoption trends; growth in shipments of different types of chips (application-specific integrated circuits, graphics processing units, etc) and associated power consumption; and the typical compute, storage, and network needs of AI workloads. Demand is measured by power consumption to reflect the number of servers a facility can house.
Source: McKinsey Data Center Demand model

McKinsey & Company