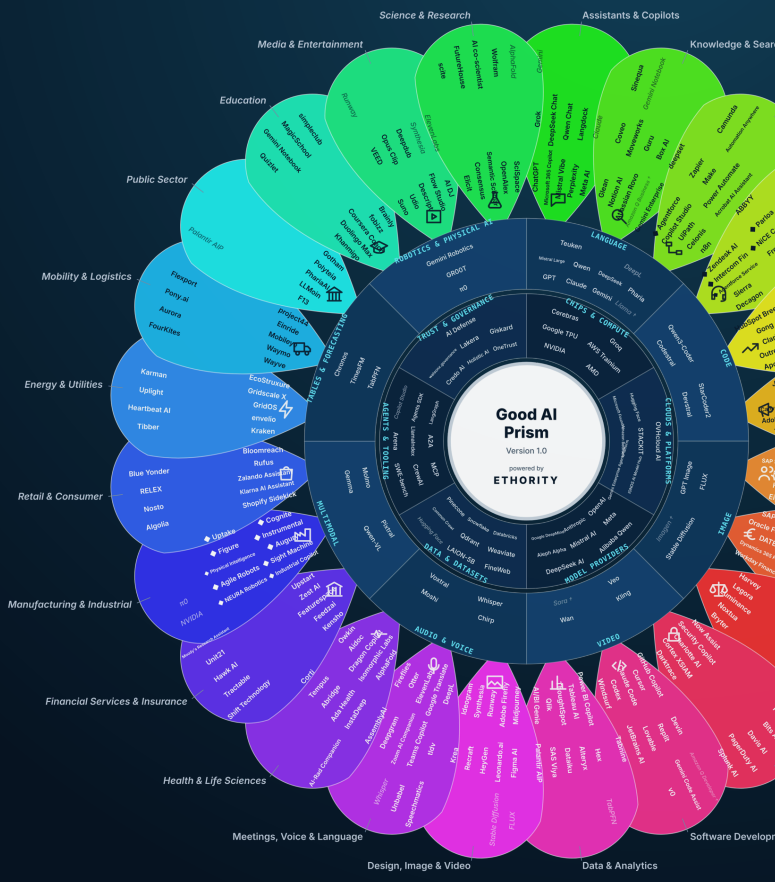
ETHORITY
AI BUSINESS OPERATING SYSTEM



GOOD AI PRISM · SECTOR BRIEF 2026/27 · ENERGY & UTILITIES · GLOBAL EDITION

Put AI to work for the energy transition

Where AI already forecasts, balances and protects energy systems, how much power AI itself needs, what the market offers, and the rules by jurisdiction.

24
AI offerings mapped in Energy & Utilities

415 TWh
used by data centres worldwide in 2024, rising to about 945 TWh by 2030 (IEA)

2 Dec 2027
EU high-risk duties for AI as a safety component in electricity, gas, heat and water supply apply

Created by Sten Franke with a people and governance lens by Severin L. Wilson · October 2026

AT A GLANCE

Energy is where AI meets the physical grid

Energy faces AI from two sides. Utilities use AI to forecast renewables, balance grids and serve customers. At the same time, AI's own data centres become one of the fastest-growing sources of electricity demand.

This brief applies the Good AI Prism Market Study 2026/27 to energy and utilities. It combines the study's market map of 24 AI offerings with current research on adoption, data-centre demand, workforce and rules across major jurisdictions. Europe is ETHORITY's hub market and Germany its home and test market, so both get the closest look. The brief ends with the questions to settle before a pilot and with how ETHORITY helps.

+17%
growth of data-centre electricity use in 2025; IEA expects it to double by 2030

22%
of Ireland's metered electricity went to data centres in 2024, 23% in 2025 (CSO)

79%
of German energy suppliers have introduced AI; 61% of them are still at pilot stage (PwC, 2026)

30–50%
shorter outages with AI-based fault detection (IEA, Energy and AI)

about €3bn
a year for grid congestion management in Germany (Bundesnetzagentur, 2025)

76m
people work in energy worldwide; more than half of 700 organisations report critical hiring bottlenecks (IEA)

About this brief

Market figures come from the Good AI Prism 2026/27 study dataset: every entry is recorded with a dated source from the provider's own pages. Job groups are ETHORITY's classification. External figures name their source, population and date; surveys are labelled and not combined. This brief is not legal advice.

WHERE ENERGY STANDS

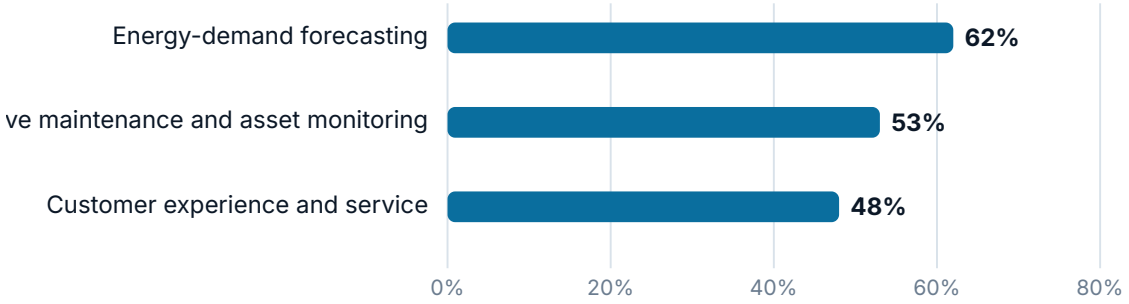
Forecasting first, the grid next

Utilities use AI most for demand forecasting, predictive maintenance and customer service (L.E.K., 2026). The IEA sees large gains where AI is deployed well: 30–50% shorter outages with AI fault detection, up to 175 GW of transmission capacity unlocked without new lines, and incidents detected 500 times faster with satellites and sensors.

Many projects remain pilots. In Germany 79% of energy suppliers have introduced AI, but 61% of them are still at pilot stage (PwC, 2026), and 82% of municipal utilities now see AI as an instrument of their digital transformation, up from 61% a year earlier (BDEW/EY).

Exhibit 1 · What utilities use AI for

Share of utilities using AI for each use case



L.E.K. Consulting, 2025 Global Energy Study, Feb 2026 · more than 300 energy executives; survey

THE OTHER SIDE

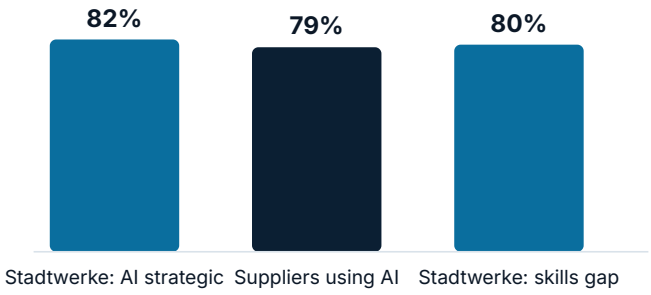
AI needs power, and power needs people

Data centres used 415 TWh in 2024, about 1.5% of world electricity; the IEA projects about 945 TWh by 2030, with the US, China and Europe using 85% today. In Ireland data centres take 23% of metered electricity, and in Germany about 20 TWh a year.

The workforce is the second bottleneck: 76 million people work in energy, but in advanced economies 2.4 workers near retirement for every new entrant under 25, and more than half of organisations report critical hiring bottlenecks (IEA). 80% of German municipal utilities name the skills shortage as a challenge (BDEW/EY).

Exhibit 2 · Test market Germany: AI in energy companies

Share of German municipal utilities and energy suppliers



BDEW and EY, Stadtwerkestudie 2025 (100 municipal utilities); PwC via ZfK, Apr 2026 · surveys

2.4 : 1

workers near retirement per new entrant under 25 in advanced economies' energy sector (IEA, 2025)

20 TWh

used by German data centres in 2024, about 31 TWh expected by 2030 (Bitkom/Borderstep)

THE RULES

Europe sets the reference dates

ETHORITY reads the rules by jurisdiction. Europe is the hub market: the AI Act treats AI used as a safety component in the supply of electricity, gas, heating and water as high-risk, while energy-efficiency law makes data centres report their consumption. Germany, the home and test market, adds cybersecurity, critical-infrastructure and smart-meter rules.

European Union: the hub market

Sep 2024	EED	Data centres from 500 kW report energy and sustainability indicators each year (Energy Efficiency Directive).
2 Feb 2025	IN FORCE	Prohibited AI practices apply; providers and deployers take measures to support AI literacy (Art. 4, as amended).
2 Aug 2026	IN FORCE	Transparency: customers must be told when they interact with an AI system (Art. 50).
2 Dec 2027	ANNEX III	High-risk: AI used as a safety component in managing and operating the supply of water, gas, heating or electricity (point 2). Systems that only assist or optimise are not automatically safety components.

Dates as amended by the Digital Omnibus on AI, Regulation (EU) 2026/1744, in force since 27 July 2026. NIS2 and the Critical Entities Resilience Directive treat energy as a highly critical sector.

Germany, the home and test market, adds its own building blocks

- NIS2 implementation act (Dec 2025): IT security catalogues of the Bundesnetzagentur for energy networks and plants, incident reporting to the BSI.
- KRITIS umbrella act (2026): registration, risk analysis and resilience plans for operators of critical infrastructure.
- Smart-meter rollout: 20% of mandatory cases due by end of 2025; the Bundesnetzagentur opened proceedings against 77 operators (Mar 2026).
- Energy Efficiency Act: efficiency and renewable-power requirements for data centres; an amendment is under way.

RULES BY JURISDICTION

Where you operate decides which rules apply

Rules for AI in energy combine AI law, cybersecurity and grid regulation, and increasingly rules for the power demand of data centres. Status October 2026.

JURISDICTION	INSTRUMENT	APPLIES	WHAT IT MEANS FOR ENERGY
European Union	AI Act as amended; EED data-centre reporting; NIS2 and CER	Annex III from 2 Dec 2027	AI as a safety component in grid operation is high-risk; data centres report energy use; energy is highly critical for cybersecurity.
Germany	NIS2 act; KRITIS act; smart-meter law; Energy Efficiency Act	In force; efficiency amendment pending	Strict cyber and resilience duties; data layer for grid AI; efficiency rules for data centres.
United Kingdom	Ofgem guidance on ethical AI in energy, version 2	May 2026	Expectations on governance, explainability, human oversight and competition; licence conditions apply.
United States	EO 14318; FERC orders on co-location and large loads	Since Jul 2025; orders Dec 2025 and Jan 2026	Faster permitting for data centres and their power supply; rules for loads sited next to generation.
Texas	Senate Bill 6	Since Jun 2025	Large loads of 75 MW or more can be curtailed in emergencies; studies and fees for new large loads.
China	NDRC/NEA opinions on AI+ energy	Sep 2025	Targets for 2027: at least five energy large models, ten demonstration projects and 100 standards.
South Korea	AI Basic Act	Since 22 Jan 2026	Energy supply is a high-impact area with duties for risk management and human oversight.

Sources: statutes, regulators and law-firm briefings (EU, Bundesnetzagentur, Ofgem, FERC, DOE, ERCOT/PUCT, NDRC/NEA). Status October 2026. Not legal advice.

Where the 24 providers are headquartered

14
Europe, of which 5 in Germany

10
North America

Headquarters as of October 2026 from provider pages and public sources. Trane owns BrainBox AI; Hitachi owns Hitachi Energy; Kraken was spun out of Octopus Energy (Dec 2025); Vista Equity Partners agreed to acquire Power Factors.

THE MARKET MAP

24 AI offerings for energy, from the wind farm to the living room

The Good AI Prism 2026/27 places 24 offerings in Energy & Utilities. Seven manage flexibility, demand response and customer energy. Six forecast renewables and trade energy, six plan and operate grids, three optimise buildings and industrial energy use, and two monitor the performance of renewable assets.

Exhibit 3 · The Energy & Utilities map by job

Number of offerings per job group; names alphabetical, not a ranking

7 Flexibility, demand response & customer energy

Bidgely UtilityAI · GridBeyond Point · Heartbeat AI (1KOMMA5°) · Kraken (Octopus Energy) · Sympower · Tibber · Uplight

Art. 50 disclosure to customers; NIS2 for operators; high-risk only if it controls supply as a safety component

6 Forecasting & energy trading

enercast · Fluence Mosaic · Meteomatics AI power forecasts · Rebase Platform · Tesla Autobidder · Volue Data & Forecasts (Insight)

Minimal risk in most uses; market and trading rules apply

6 Grid planning & operation

AiDASH IVMS · envelio · GridOS (GE Vernova) · Gridscale X (Siemens) · Nostradamus AI (Hitachi Energy) · Utilidata

High-risk under Annex III 2 when used as a safety component in grid operation

3 Buildings & industrial energy efficiency

BrainBox AI (Trane) · EcoStruxure (Schneider Electric) · Recogizer energyControl

Minimal risk in most uses; product safety law for building controls

2 Renewable asset performance

Avathon APM for Renewables · Unity (Power Factors)

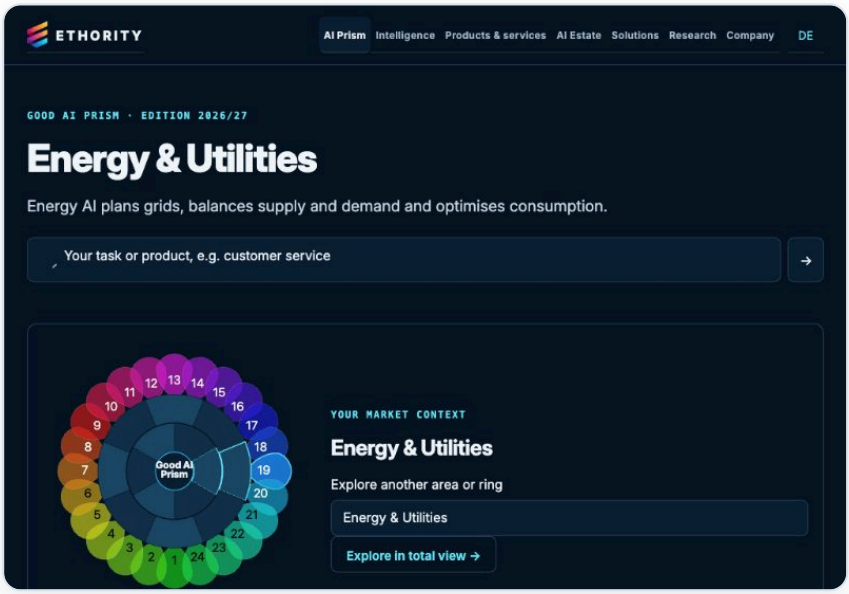
Minimal risk for monitoring; Annex III 2 if it controls safety functions

Good AI Prism 2026/27 study dataset · job groups: ETHORITY classification · The AI Act classifies uses, not products. Whether an offering is high-risk depends on whether it acts as a safety component in supply.

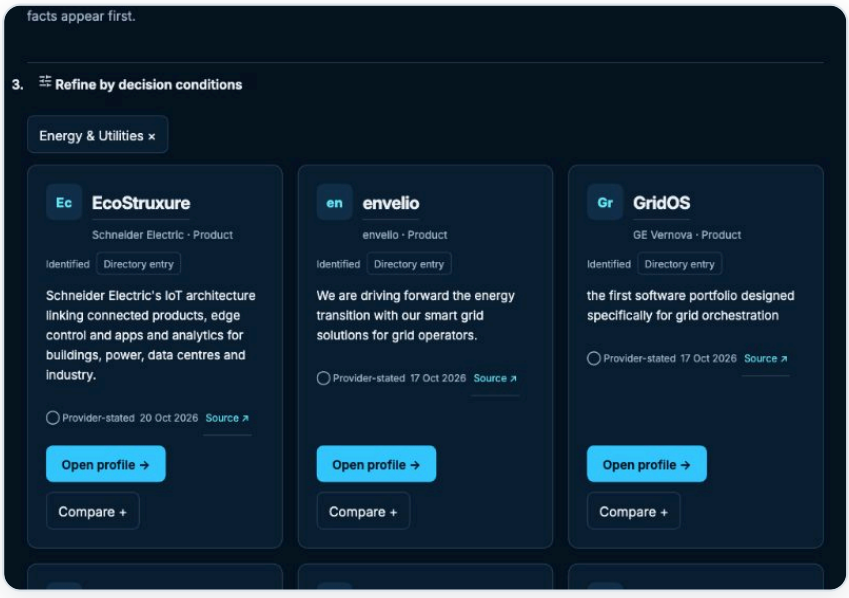
ONLINE VIEW

The Energy & Utilities area in the Good AI Prism

The online Good AI Prism places each offering in its business area and shows the source and date behind every entry. The preview below shows the Energy & Utilities area as it appears in October 2026. Select an area to see the offerings placed there, then open a profile to check the provider's own statement, its date and the decision facts recorded for it, such as pricing basis, data hosting and training on customer data where documented.



Good AI Prism online preview: Energy & Utilities selected, October 2026.



Entries with their source and date. This brief counts all 24 entries recorded for the edition.

NEEDS AND DECISIONS

What energy leaders need, and what to ask before a pilot

What the evidence shows

Grid
About €3bn a year for congestion management in Germany; in the US only 13% of grid connection requests filed 2000–2019 reached operation (LBNL).

Demand
Data-centre electricity use grew 17% in 2025 (IEA).

Resilience
Cyberattacks on utilities tripled in four years; AI fault detection cuts outages by 30–50% (IEA).

Scale
61% of AI uses at German energy suppliers are still pilots (PwC, 2026).

Seven questions before AI touches the grid

1. Does it act as a safety component in supply? Then it is high-risk in the EU from Dec 2027.
2. Which NIS2 and critical-infrastructure duties apply to the system and its provider?
3. Which meter and customer data does it use, and how is privacy protected?
4. How is the model validated, and what is the fallback when it fails?
5. How does it integrate with operational technology, and can we exit?
6. Do customers know when prices, offers or controls are set by AI?
7. Which measures decide scaling: forecast error, congestion cost, outage minutes and energy saved?

WORKFORCE PLAN

Plan the people side with the technology

When agendas change quickly, the people side breaks first: half-adopted tools, skills that lag the system, employees who were not involved, and decisions no one owns. Plan adoption, training, employee participation and accountable oversight as part of every staged commitment, not after it.

Severin L. Wilson, workforce lens in the Good AI Prism Market Study 2026/27

Workforce annex to the pilot charter

Affected roles	Which control-room, field, trading and service roles the pilot touches, and how many people
Baseline workload	Forecast errors, response times, outage handling and service backlogs today
Skills needed	Operating, reviewing and overriding AI; training plan and owner
Staff involvement	Works council and employee representatives from the start
Oversight owner	The named person accountable for decisions that affect supply and safety
Escalation and override	How operators override an AI output, and the response time
Capacity plan	Where returned time goes: grid expansion, maintenance, customer projects or training; who decides
Measured quality	Errors, incidents, safety events and audit findings, tracked with the outcome measure

Saved time is not realised value. Count it when returned time has demonstrably gone into reliable supply, faster connection or better service.

NEXT STEPS

A 90-day start for energy companies

01
Inventory
List every AI use and model, from forecasting to customer service, including tools staff bring themselves.

02
Classify
Mark uses that act as safety components in supply; map all uses to AI, cyber and critical-infrastructure rules.

03
Involve
Bring in operations, IT/OT security, data protection and the works council early.

04
Enable
Document AI literacy measures and name accountable operators with override rights.

05
Pilot
Run one forecasting, maintenance or flexibility use with a baseline and the workforce annex.

06
Decide
Scale only on measured forecast error, congestion cost, outage minutes and customer outcomes.

ETHORITY recommendation, derived from the rules and evidence in this brief.

CONCLUSIONS

What the evidence adds up to

AI can help run a grid with more renewables, more flexibility and fewer people, while its own demand for power keeps rising. Five conclusions for decisions now.

1 **Move from pilots to operations**

Evidence. 79% of German energy suppliers use AI, but 61% of uses are still pilots.

What to do. Pick uses with daily measures, such as forecasting and maintenance, and scale what works. · Where energy stands

2 **Aim AI at the grid bottleneck**

Evidence. Congestion management costs about €3bn a year in Germany; AI fault detection cuts outages by 30–50%.

What to do. Use AI for forecasting, congestion and fault detection where costs are highest. · Needs and decisions

3 **Govern safety and cyber together**

Evidence. Safety-component AI in supply is high-risk from Dec 2027; NIS2 and KRITIS duties apply now.

What to do. Classify each use, secure IT/OT integration and keep operators able to override. · The rules

4 **Plan for AI's own demand**

Evidence. Data-centre electricity use grew 17% in 2025 and may double by 2030.

What to do. Treat data centres as grid customers to plan for, and as flexibility to use. · The other side

5 **Protect know-how before it retires**

Evidence. 2.4 workers near retirement per new entrant; 80% of municipal utilities see a skills shortage.

What to do. Use AI to capture expertise and train new staff, with the works council. · The other side

THE PROBLEM

Energy is not short of AI pilots. It is short of scale, skills and safe integration.

Energy companies must integrate AI into critical systems, prove its value in operations and keep supply secure while experienced staff retire.

THE PROBLEM	WHAT WE SEE IN THE EVIDENCE	WHAT IT COSTS
Stuck in pilots	Most AI uses at energy suppliers are still pilots.	**Cost without operational benefit.**
Critical infrastructure	Safety, cyber and resilience rules apply to grid AI.	**Delays and liability risk.**
IT/OT integration	AI must work with control systems, meters and field data.	**Fragile solutions and vendor lock-in.**
Rising demand	Data centres add large, fast-growing loads.	**Congestion and connection queues.**
Retiring expertise	Many experienced engineers retire within a decade.	**Loss of know-how in operations.**

The question behind every project

What should improve, which options are credible, what evidence is missing, what implementation requires, and who owns the outcome?

HOW ETHORITY HELPS

From AI ambition to a grid that works

ETHORITY helps energy companies choose, govern and prove AI: from independent market evidence to decisions that can be defended to regulators and boards, and outcomes measured in the grid.

01
Discover
Find and qualify the opportunity: options, evidence, constraints and rules.

02
Create
Design and build the solution with your data, systems and people.

03
Run
Operate it responsibly, with owners, controls and support.

04
Improve
Measure against the objective and adjust.

05
Grow
Turn what was learned into new capability and value.

WHERE A PROJECT CAN BEGIN

AI opportunity case
One use, such as renewable forecasting, congestion management or predictive maintenance, assessed against evidence, cost and rules, ending in a decision: pilot, redesign, expand or stop.

Market and evidence review
Good AI Prism research profiles and comparisons of the 24 offerings, with a structured check of performance claims and integration.

AI estate audit
An inventory of AI and models across operations, trading and service, with owners, risks and overlaps.

Governance and AI Act readiness
Each use mapped to the AI Act, NIS2, critical-infrastructure and data rules, with proportionate controls.

AI literacy for energy teams
Role-based training for control rooms, field teams and managers, with named operators who can override AI.

From pilot to operation
A pilot charter with baseline, threshold and stop conditions, then building and running the solution on ETHORITY's AI Business Operating System.

Who we work with

Grid operators, municipal utilities, energy suppliers, renewable operators, data-centre operators, regulators and associations.

Start with one question. Talk to us: sten@ethority.ai · severin@ethority.ai · ethority.ai/ai-prism-study

ABOUT ETHORITY

From understanding markets to building AI capability

ETHORITY connects market intelligence, research and practical delivery to help organisations put AI to work. It is built as an AI1st organisation: humans and AI agents work on one AI Business Operating System, with the research, engineering and operations to build and run AI after the pilot. Its roots lie in the digital intelligence business Sten Franke founded in 2005, which combined monitoring, research and advisory work to help organisations understand changing markets.

The Good AI Prism is the entry point: research profiles, documented relationships and comparisons help users investigate their options. Advisory, governance and transformation work connect those options with an organisation's objectives, data, systems, people and operating conditions.

SELECTED REFERENCES AND PARTNERS SINCE 2005

Bosch · Bayer · BMW · Siemens · Mercedes-Benz · Coca-Cola · Deutsche Bank · T-Mobile · Telefónica o2 · DHL · EDEKA · AIDA Cruises

Selected historical references and partners from the group's market-intelligence and advisory heritage, in projects or through former group companies.

METHOD

Market figures: Good AI Prism 2026/27 study dataset, Energy & Utilities area, 24 entries, each with a dated source from the provider's own pages (October 2026). Job groups and AI Act relevance: ETHORITY classification by intended use. Jurisdictions: status October 2026. External figures as cited; surveys labelled and not combined. Not legal advice.

MAIN SOURCES

- IEA, Energy and AI, Apr 2025; IEA, data-centre electricity use in 2025, 16 Apr 2026; IEA, World Energy Employment 2025
- L.E.K. Consulting, 2025 Global Energy Study, 27 Feb 2026 (survey)
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- NIS2UmsuCG (BGBl. 2025 I Nr. 301); KRITIS-Dachgesetz (2026); EnEfG
- Ofgem, Ethical AI use in the energy sector v2, May 2026; EO 14318 (Jul 2025); Texas SB 6 (2025); NDRC/NEA AI+ Energy opinions (Sep 2025)
- Good AI Prism Market Study 2026/27 and study dataset (ETHORITY, October 2026)

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FROM BUSINESS AMBITION TO AI THAT WORKS

Put AI to work, with evidence.

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06	**The Social Media Prisma 2009–2025**	Historic paper · EN and DE

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