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HDH GROUP RESEARCH · REPORT ON THE GERMAN MITTELSTAND

The companies of the energy transition

Solar, wind and biogas companies: waves of incorporation, regions, stages of the value chain and management

23,273
Corporations of the energy transition

13,911
with photovoltaics in the corporate purpose

15.4%
under a management that runs five or more of these companies

AS OF 23 OCTOBER 2026

HDHGROUP.DE/EN/REPORTS

The companies of the energy transition

Solar, wind and biogas companies: waves of incorporation, regions, stages of the value chain and management

At a glance

23,273	1,910	25.4 ‰	26.7%
corporations related to solar, wind or biogas	photovoltaics companies incorporated in 2023, more than ever before	insolvency rate of solar installers over twelve months, compared with 8.6 ‰ in the total population	of wind companies are under a management that runs five or more of them

- 23,273 corporations have photovoltaics, wind energy or biogas and biomass as their corporate purpose or generate electricity from renewable sources. That is 2.0% of the database. Photovoltaics accounts for 13,911, wind energy for 4,787, biogas and biomass for 2,893.
- Incorporations follow subsidy law. Biogas experienced its wave in the years 2009 to 2011, photovoltaics a first wave around 2010 and a second, far stronger one in 2022 and 2023, with 1,910 incorporations in 2023 alone.
- The second solar wave has been followed by a wave of insolvencies. Among companies that install solar systems, the rate stands at 25.4 ‰, about 3.0 times as high as in the total population. Operators of installations remain below that at 5.3 ‰.
- Wind energy is the field of the project company. 26.0% of wind companies are general partner companies, 53.2% have a management of several people, and a single person manages 150 of them.
- Relative to their corporate population, Mecklenburg Western Pomerania, Bremen and Schleswig Holstein have the densest presence. Wind energy is centred on the coast, photovoltaics in Brandenburg and Bavaria, biogas in Lower Saxony and the agricultural regions of the east.

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Question and design

Within two and a half decades, the transformation of electricity generation in Germany has produced a corporate landscape of its own. Alongside the large utilities, project developers, operating companies, trade businesses, engineering firms and investment companies have emerged, whose number and form are closely tied to the conditions of subsidy. How this landscape is structured today can be inferred only indirectly from market statistics on installed capacity.

This report describes the energy transition from the perspective of the companies. It asks how many corporations plan, install, finance and operate solar, wind and biogas installations, when they were incorporated, where they have their registered office, how they are structured and managed, and how the recent turn in the solar market is reflected in their insolvencies.

The population comprises 23,273 corporations in the database whose corporate purpose names photovoltaics, wind energy or biogas and biomass, or which are assigned to electricity generation from renewable sources. 1,101 companies are active in more than one technology and are counted in each.

Population and stages of the value chain

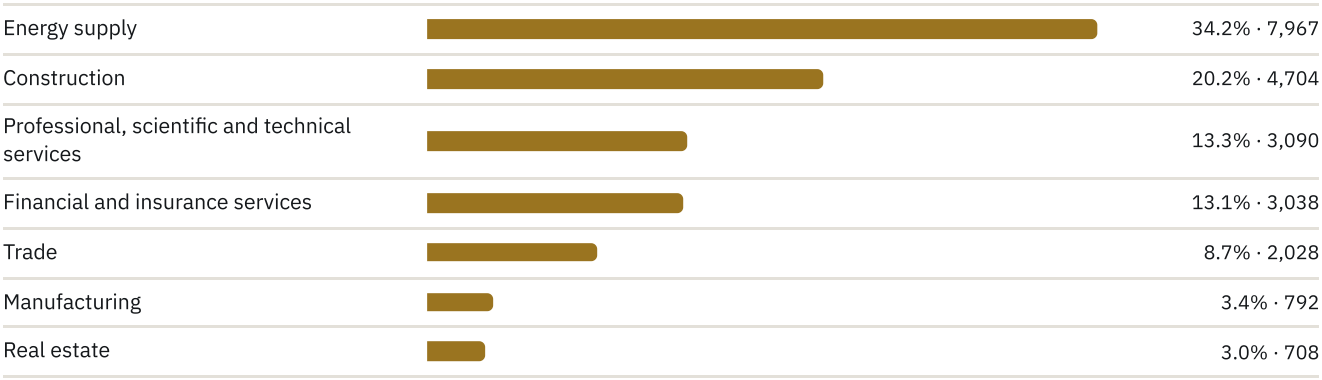
Photovoltaics accounts for by far the largest part, with 13,911 companies. Wind energy follows with 4,787, biogas and biomass with 2,893. A further 2,904 companies generate electricity from renewable sources without naming a technology in their corporate purpose; these are predominantly operating companies and subsidiaries of municipal utilities. 870 companies combine photovoltaics and wind energy.

The three technologies differ less in the number of their companies than in their position in the value chain. In photovoltaics, installation predominates: 32.7% of solar companies belong to construction, 13.1% to trade and only 22.1% to energy supply. The rooftop solar system is a product of the skilled trades, and its market is shaped by electrical and roofing businesses, solar installers and specialist dealers.

Wind and biogas, by contrast, are fields of operation and finance. Among wind companies, 31.5% belong to energy supply, 27.1% to financial and holding companies and 25.6% to planning and engineering services. A wind farm comes into being over years through a sequence of companies that secure sites, obtain permits, arrange finance and operate; the construction itself is carried out by a few manufacturers and their service providers.

FIGURE 1

Companies of the energy transition by sector



Share of all companies of the energy transition with a known sector; the number of companies follows the dot.

Source: HDH Group, database as of the reference date, own calculation.

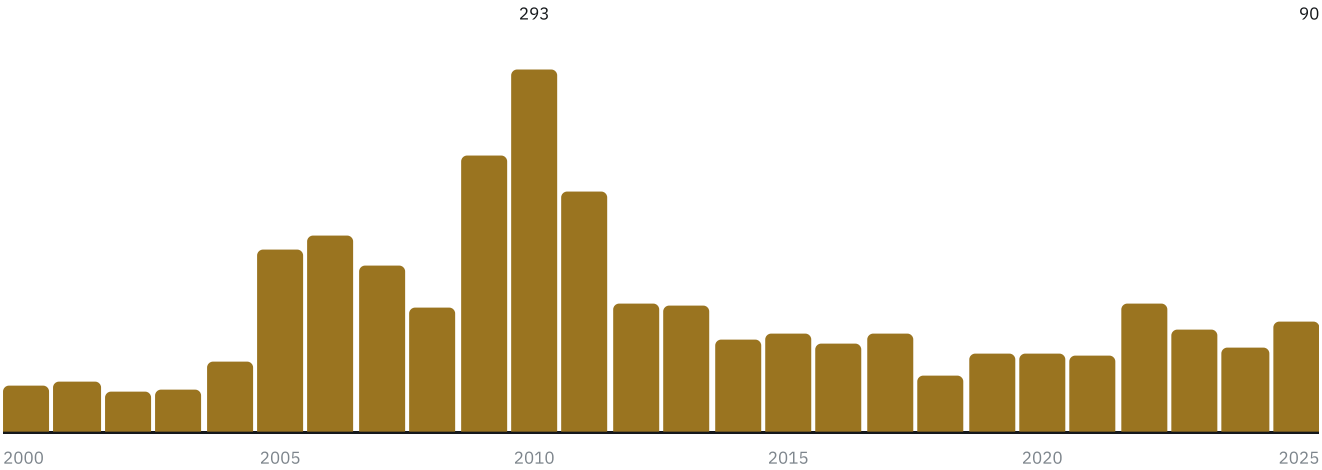
Waves of incorporation and subsidy law

Scarcely any sector traces the history of its regulation as faithfully as this one. The Renewable Energy Sources Act entered into force on 1 April 2000 and guaranteed fixed tariffs over twenty years. In every year since, companies have been formed whose number rose or fell sharply with each amendment.

Biogas experienced its wave after the 2004 amendment and above all after the 2009 amendment, which increased the bonuses for renewable raw materials and manure. Incorporations rose from 57 in 2004 to 293 in 2010. With the 2014 amendment, which tightly capped the annual expansion of biomass, they fell to 74 and have not recovered since.

FIGURE 2

Incorporations of companies with biogas and biomass in the corporate purpose, 2000 to 2025



Companies still registered today, by year of incorporation.

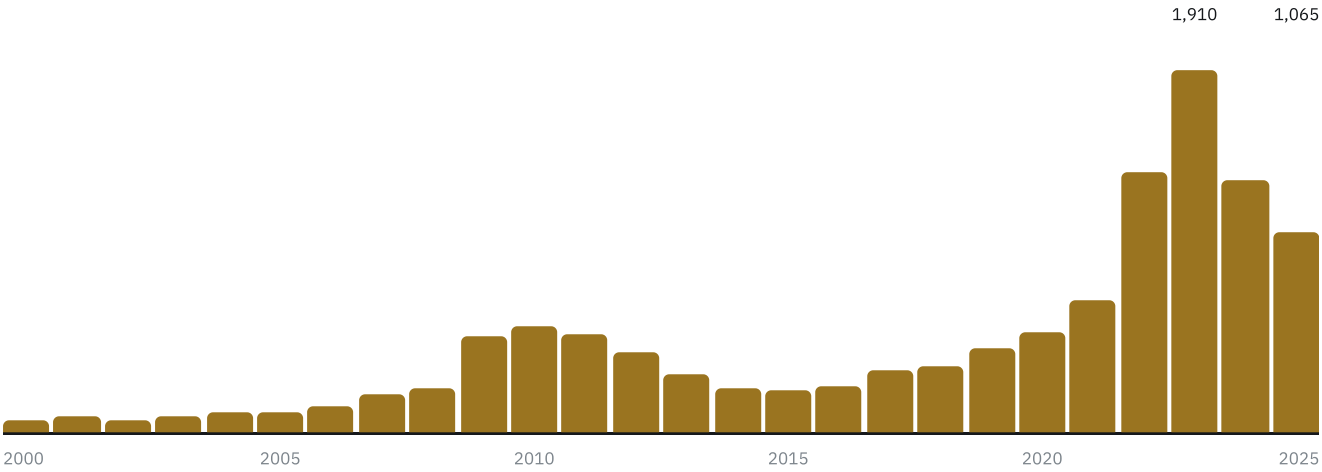
Source: HDH Group, database as of the reference date, own calculation.

Photovoltaics has seen two waves. The first was carried by the high tariffs of 2009 to 2011, with 564 incorporations in 2010; it broke off when the legislator cut the rates drastically in 2012. The second began in 2022 and far exceeded the first. Three causes coincided: rising electricity prices after the beginning of the war against Ukraine, the

exemption of small installations from income tax and VAT at the beginning of 2023, and the amendment of the Renewable Energy Sources Act that entered into force at the same time. In 2023, 1,910 solar companies were formed, 2.7 times as many as in 2021. Since then the number has been falling, to 1,065 in 2025.

FIGURE 3

Incorporations of companies with photovoltaics in the corporate purpose, 2000 to 2025



Companies still registered today, by year of incorporation.

Source: HDH Group, database as of the reference date, own calculation.

Wind energy runs more calmly. Its incorporations reached a first peak in the years 2011 to 2013 with up to 214 a year, declined after the switch to auctions in 2017 and have been rising again since 2022, to 338 in 2024. This reflects the designation of additional sites and the declared overriding public interest in expansion, which has eased permitting procedures since 2022.

Regions

Measured against the number of all companies in a state, the energy transition is most densely represented in the north and east. Mecklenburg Western Pomerania leads with 48.1 companies per thousand, followed by Bremen (42.9) and Schleswig Holstein (39.0). The share is lowest in the city states of Hamburg and Berlin and in Hesse, because the rest of the corporate population there is large.

The technologies have their own territories. Wind energy is most densely represented in Bremen and Schleswig Holstein, with 25.4 and 18.0 companies per thousand; with its ports and engineering firms, Bremen is at the same time a centre of the offshore industry. Outside the large cities, Bremen and Bremerhaven are the most important locations. Photovoltaics reaches its highest density in Mecklenburg Western Pomerania (20.7) and Brandenburg (18.1); in absolute numbers Bavaria leads with 3,012 companies. Biogas, finally, is concentrated in Mecklenburg Western Pomerania, Schleswig Holstein and Saxony Anhalt, regions with large livestock holdings and arable land; among the locations, Dorsten, Münster and Lohne stand out.

TABLE 1

Companies of the energy transition by federal state

STATE	COMPANIES	PER THOUSAND	PHOTOVOLTAICS	WIND ENERGY	BIOGAS
Mecklenburg Western Pomerania	458	48.1	197	144	92
Bremen	456	42.9	131	270	11
Schleswig Holstein	957	39.0	305	441	181
Saxony Anhalt	600	31.4	295	103	121
Brandenburg	889	30.7	525	160	147
Lower Saxony	2,809	30.4	1,170	908	583
Thuringia	450	24.2	281	49	76
Bavaria	4,426	22.0	3,012	420	561
Saxony	918	21.6	558	186	134
Rhineland Palatinate	834	19.8	529	159	92
Saarland	213	19.8	143	41	14
Baden-Württemberg	3,063	18.3	2,116	373	300
North Rhine Westphalia	3,953	15.7	2,527	803	375
Hesse	1,395	14.7	975	204	97
Hamburg	722	13.5	380	231	44
Berlin	1,130	12.4	767	295	65

Per thousand companies of the respective state. Companies with several technologies appear in each column.

Source: HDH Group, database as of the reference date, own calculation.

Structure of the companies

The companies of the energy transition are young. Their median age is 8.0 years compared with 10.3 in the total population, and 46.3% of them were incorporated since 2020. In photovoltaics the figure is 55.7%, among biogas companies only 18.3%.

Their structure reflects the business models. Wind and biogas companies are frequently general partners of limited partnerships (26.0% and 23.1%), because installations of this size are mostly set up in the form of a GmbH & Co. KG and financed with the capital of many limited partners. They more often have a management of several people and more often have participations as their corporate purpose. Solar companies, on the other hand, resemble the rest of the Mittelstand: 13.5% are entrepreneurial companies (UG), 31.4% have more than one person in management.

TABLE 2

Structure of the companies by technology, compared with the total population

CHARACTERISTIC	PHOTOVOLTAICS	WIND ENERGY	BIOGAS	TOTAL POPULATION
Companies	13,911	4,787	2,893	1,158,810
Entrepreneurial company (UG)	13.5%	5.5%	4.9%	12.8%
General partner company	8.0%	26.0%	23.1%	8.2%
Participations in corporate purpose	10.1%	24.3%	17.7%	16.1%
Contractually bound to a parent	2.5%	3.9%	4.7%	2.6%
Management of several people	31.4%	53.2%	38.7%	29.3%
Share capital EUR 100,000 or more	4.3%	5.8%	9.2%	7.9%
Age of the company, median	5.5 yrs	11.3 yrs	16.1 yrs	10.3 yrs
Incorporated since 2020	55.7%	34.6%	18.3%	36.7%

Management relates to active companies with recorded management, capital to companies with known share capital.

Source: HDH Group, database as of the reference date, own calculation.

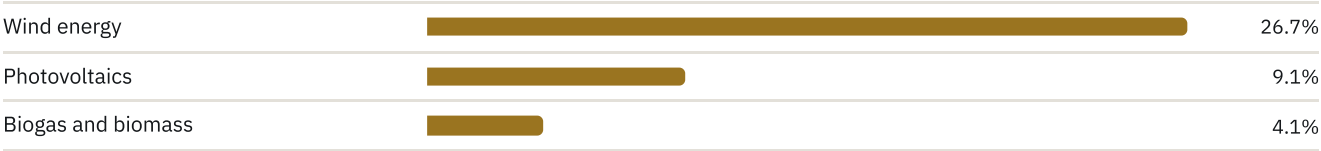
Project companies and concentration of management

Anyone planning a wind or solar park forms a separate company for each project. This shields liability, facilitates financing and allows the finished park to be sold together with the company. The result is a large number of companies managed by a few people.

This is clearest in wind energy. 26.7% of wind companies have a management in which at least one person runs five or more wind companies, 13.9% one in which that person runs ten or more. 44 people each manage ten or more wind companies; the largest number in one hand is 150. In photovoltaics, the share of concentrated management is 9.1%, among biogas companies 4.1%, because biogas plants are predominantly run individually by agricultural businesses.

FIGURE 4

Share of companies whose management includes a person with five or more companies of the same technology



Relative to companies with recognised management.

Source: HDH Group, database as of the reference date, own calculation.

The address also reveals the project company. 13.6% of wind companies share their business address with twenty or more other companies; in the total population the figure is 5.8%. Only 3.4% of the companies of the energy transition, by contrast, are contractually bound to a parent company. Among the parent companies with the most recorded agreements are the large utilities and some mid sized project developers.

TABLE 3

Parent companies with the most contractually bound companies of the energy transition

PARENT COMPANY	REGISTERED OFFICE	COMPANIES, AT LEAST
Vattenfall Europe Windkraft GmbH	Hamburg	22
Vattenfall Solar GmbH	Hamburg	21
EnBW Energie Baden-Württemberg AG	Karlsruhe	11
LichtBlick Renewables GmbH	Hamburg	6
Sellin erneuerbare Energien GmbH	Ötisheim	6
Busmann Umwelt GmbH	Osnabrück	5
energielenker Biogas Eins GmbH	Greven	5
ILOS Projects Holding GmbH	Karlsruhe	4
Biogas Eins GmbH	Steinfurt	3
Rossmann EcoPower GmbH	Burgwedel	3

Only domination and profit transfer agreements with a clearly identified parent company. Groups that hold their parks through shareholdings without such an agreement do not appear.

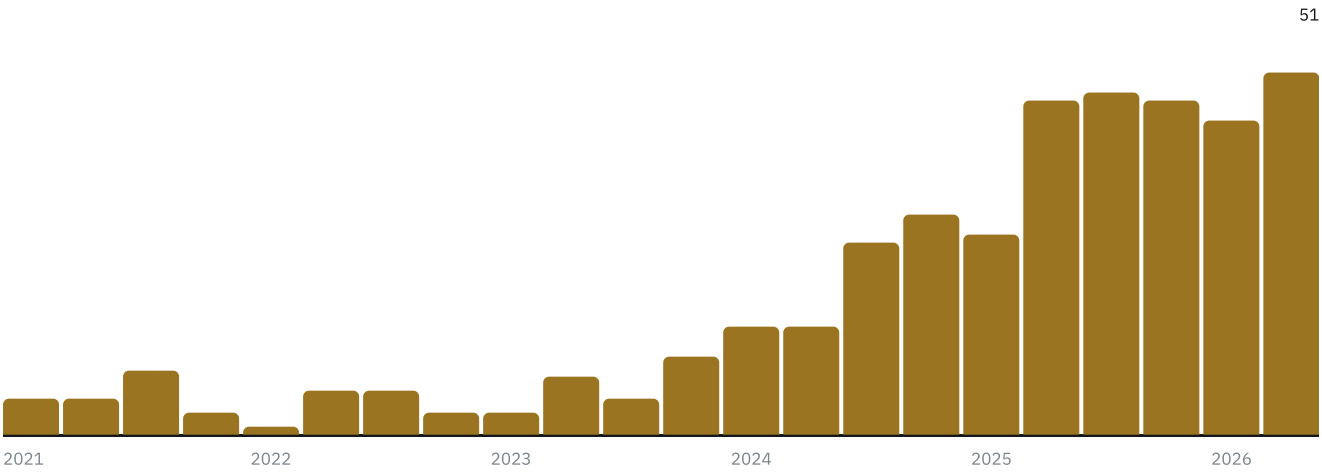
Source: HDH Group, database as of the reference date, own calculation.

Insolvencies after the solar boom

The incorporation wave of 2022 and 2023 has been followed by a wave of insolvencies. In 2023, 27 insolvencies of solar companies were recorded; in 2025 there were 170. Demand for rooftop systems declined when electricity prices fell again after the crisis and interest rates for financing rose. At the same time, module prices fell, so that dealers with inventory bought at high cost realised losses.

FIGURE 5

Insolvencies of companies with photovoltaics in the corporate purpose per quarter, 2021 to Q2 2026



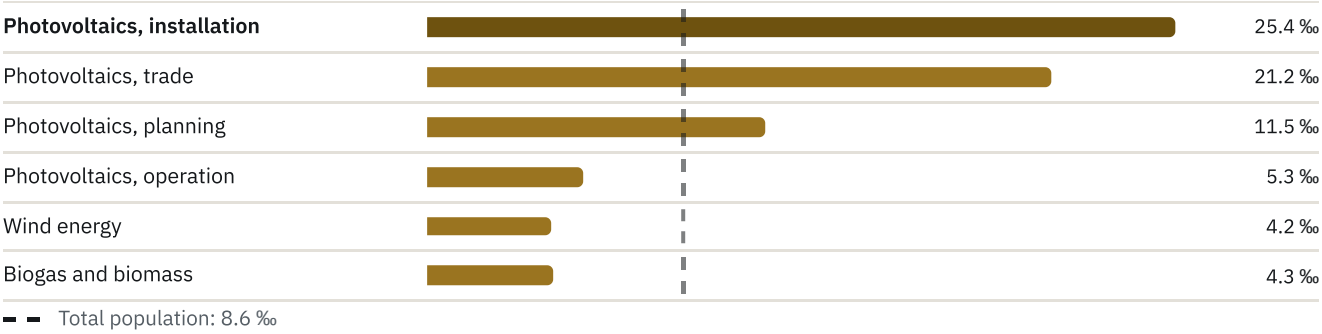
Most recent insolvency entry of the companies registered today.

Source: HDH Group, database as of the reference date, own calculation.

The burden is unevenly distributed across the stages of the value chain. In the twelve months from July 2025 to June 2026, the insolvency rate of solar companies in construction stood at 25.4 ‰ and that of solar trade at 21.2 ‰. Operators of solar installations, whose revenues are remunerated over twenty years, reached 5.3 ‰. Wind and biogas, at 4.2 ‰ and 4.3 ‰, are well below the total population (8.6 ‰).

FIGURE 6

Insolvency rate from July 2025 to June 2026 by technology and stage, per thousand companies



Source: HDH Group, database as of the reference date, own calculation.

The pattern corresponds to what organisational research expects for young companies in a suddenly expanded market. Those who founded during the wave have little capital, little experience and few established customers. With a median age of 4.6 years, solar installers are the youngest group in this report, and 60.3% of them were incorporated since 2020.

Management and origin

The youngest member of management of a solar company has a median age of 47 years, in wind energy 52 and among biogas companies 51 years. In 13.0% of wind companies and 11.8% of biogas companies, the entire management has reached the age of 65. This mainly concerns the community wind farms and farm based plants of the first generation, whose tariffs expire after twenty years. For them, succession, continued operation and replacement by more powerful installations form a single question. 431 biogas companies, 14.9%, explicitly name agriculture in their corporate purpose.

4.9% of management mandates are held by people resident abroad, somewhat more than in the total population (4.5%). Most of them live in Switzerland, Austria, Netherlands, China and Denmark. This reflects the countries of origin of the project developers, manufacturers and investors who serve the German market with companies of their own.

Assessment

The companies of the energy transition fall into two worlds. One is the world of the skilled trades and of trade, in which solar systems are sold and installed. It is young, fragmented, heavily dependent on demand from private households and currently undergoing a shake out. The other is the world of project and operating companies, in which wind, solar and biogas installations are planned, financed and operated over decades. It is secured by long term tariffs, concentrated in few hands and difficult for outsiders to see through.

For suppliers, financiers and service providers, this calls for different approaches. In the solar trades, owners of small, young businesses decide, and their creditworthiness needs to be checked carefully. In wind and biogas, the decision is frequently made by project developers and investment companies that run dozens of such companies; the company with which the contract is concluded is often merely their executing arm. And the installations of the first generation face a wave of handovers and renewals in the coming years.

Method and limitations

Data basis

The basis is the HDH Group database of registered corporations with their registered office in Germany as of 23 October 2026, with 1,158,810 companies.

Definitions

- **Company of the energy transition:** a company whose corporate purpose names photovoltaics, wind energy or biogas and biomass, or a company generating electricity from renewable sources.
- **Technology:** according to the terms in the corporate purpose, for instance photovoltaics, solar park and solar installation, wind energy, wind farm and wind turbine, biogas, biomethane and biomass. A company may belong to several technologies.
- **Stage of the value chain:** the sector of the company according to the classification of economic activities. Installation means construction, operation means energy supply, planning means professional, scientific and technical services.
- **Concentrated management:** at least one member of management runs five or more companies of the same technology. People are recognised across companies where their details allow this unambiguously.
- **Insolvency rate:** companies with an insolvency entry between 1 July 2025 and 30 June 2026 per thousand companies incorporated before this period.

Limitations

- The study covers corporations. Many wind and solar parks are run as a GmbH & Co. KG; they appear here only through their general partner company. The number of project companies is therefore a lower bound, especially in wind energy.
- The assignment to a technology follows the registered corporate purpose. Companies that operate a technology without naming it are missing; companies that mention it only in passing are included.
- Incorporations are counted for companies still registered today. For early cohorts, companies deleted in the meantime are missing; the early waves therefore appear flatter than they were.
- The temporal attribution to subsidy law is descriptive. Incorporations have further causes besides tariffs, such as electricity prices, interest rates and the availability of sites.

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How to cite

> HDH Group (2026): The companies of the energy transition. Solar, wind and biogas companies: waves of incorporation, regions, stages of the value chain and management. HDH Group Research, as of 23 October 2026.
> https://hdhgroup.de/berichte/energiewende

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