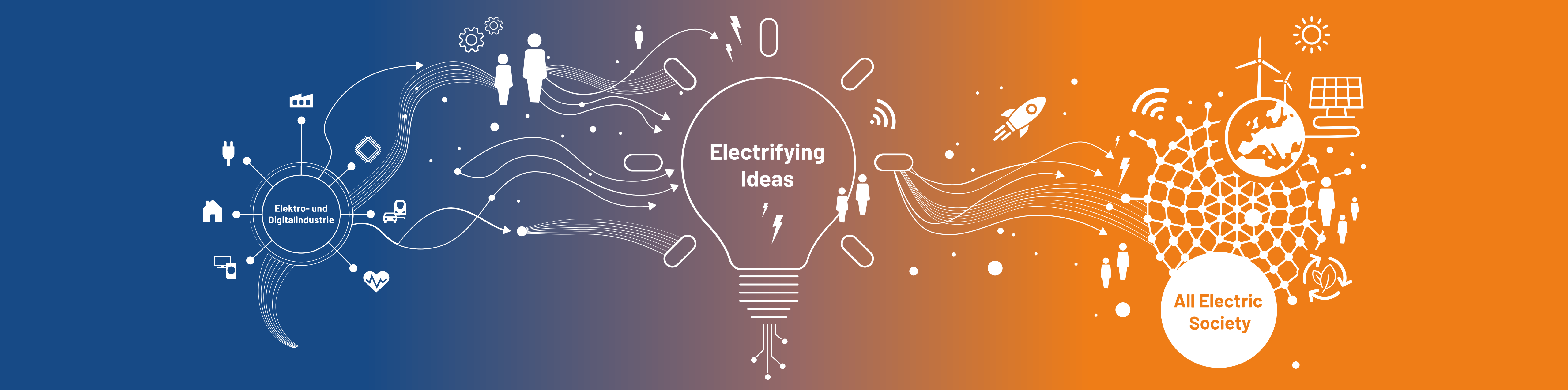

German Electro and Digital Industry – Key Figures on Innovations

May 2024

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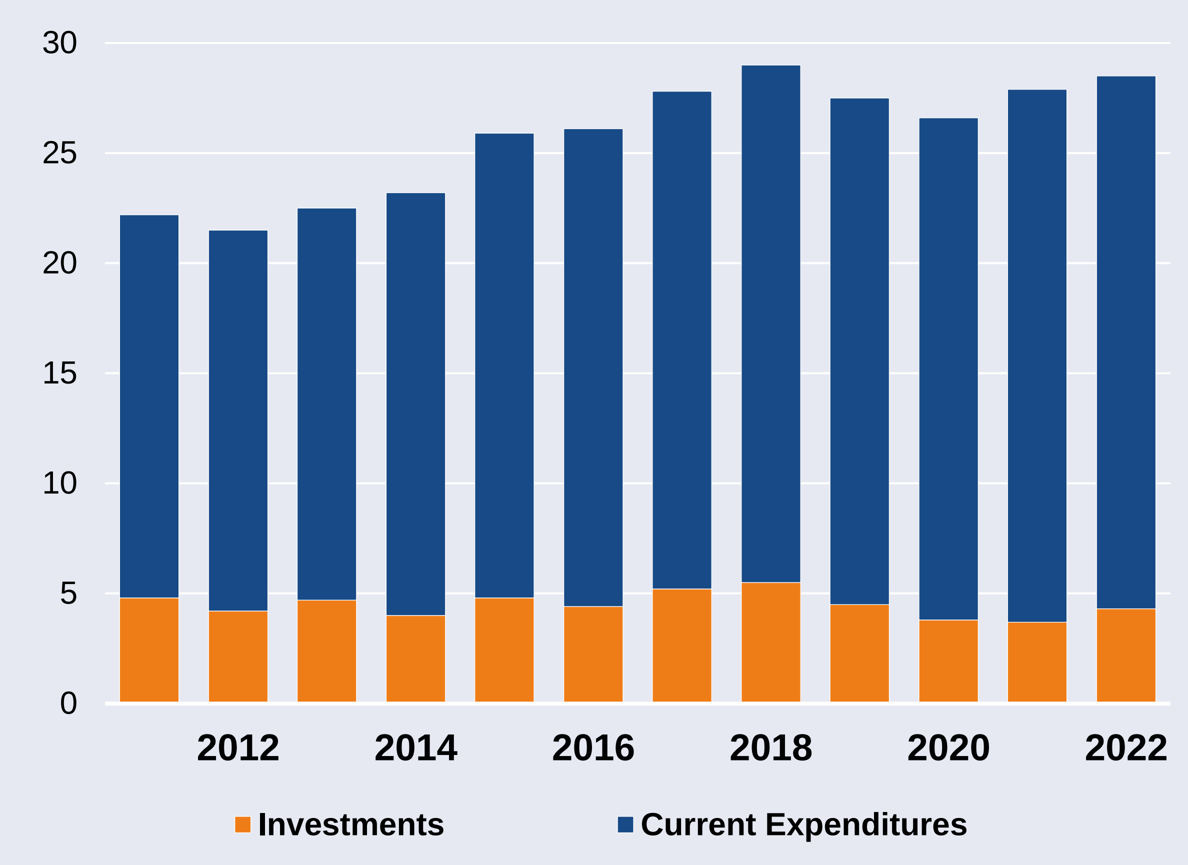
German electro and digital industry
– Innovation expenditures

Innovation expenditures, billion €



Source: ZEW's "German Innovation Survey" and ZVEI's own calculations

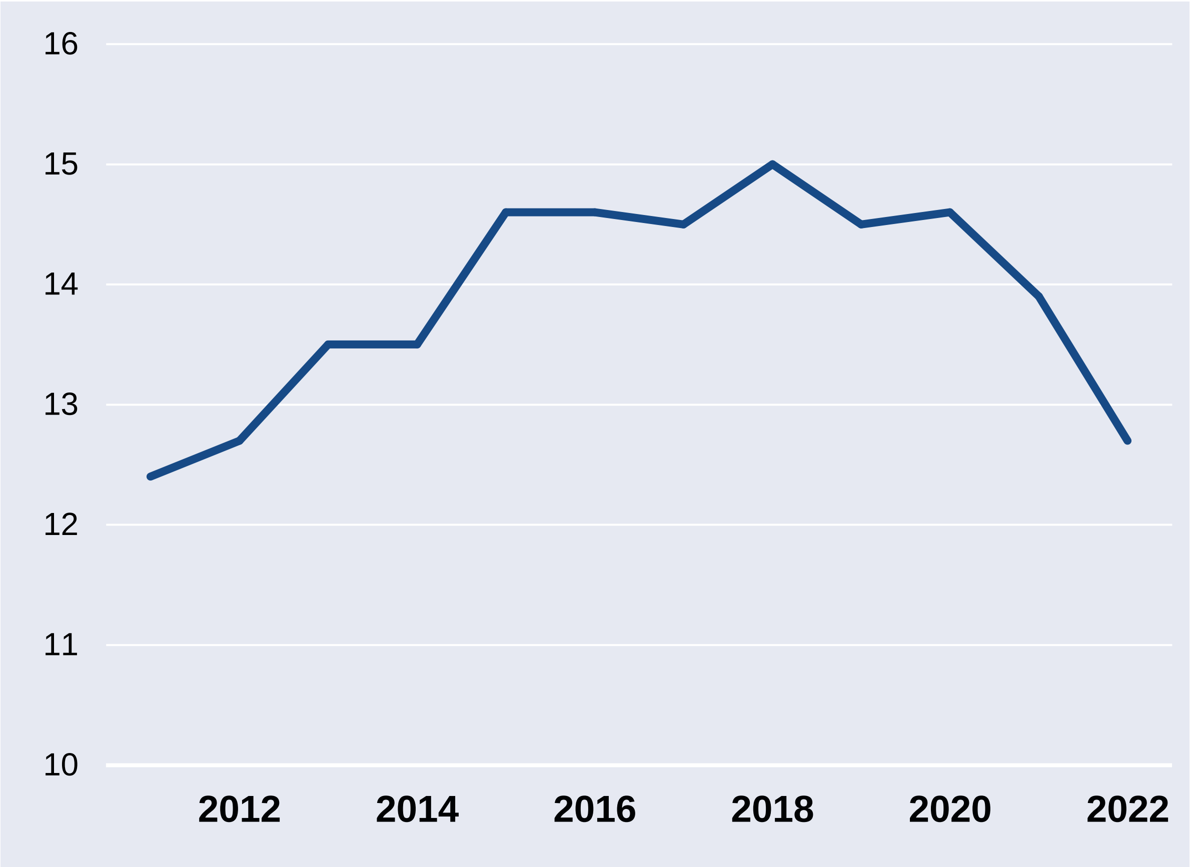
The companies of the German electro and digital industry spent a total of €28.5 billion on innovations in 2022. Compared to 2021, the sum was 4.6 percent up. Of the total, €24.2 billion were allocated to current **innovation expenditures** (including payments for wages and materials as well as service contracts with third parties) and €4.3 billion to investments (e.g., equipment, software, industrial property rights).

According to the companies' **planning figures**, the innovation expenditures in the sector are expected to rise from €29.7 billion (+4.3%) in 2023 to €30.2 billion (+1.8%) in 2024.

Innovation spendings by all companies in Germany increased by 6.8% to €190.7 billion in 2022. According to plan figures, it will rise from €191.6 billion (+0.5%) in 2023 to €192.4 billion (+0.4%) in 2024.

German electro and digital industry
– Innovation intensity

Innovation expenditures, share in turnover, %



Source: ZEW's "German Innovation Survey" and ZVEI's own calculations

The so-called **innovation intensity** (measured as the share of innovation expenditures in turnover) in the domestic electro and digital industry was 12.7 percent in 2022. That corresponds to a decrease of 1.2 percentage points compared to the previous year, as sales increased more than twice as much in percentage terms as innovation expenditure.

This is also one of the key findings of the "**Mannheim Innovation Panel**" of the Centre for European Economic Research (ZEW). The ZEW regularly investigates the innovation behavior of the German economy on behalf of the German Federal Ministry of Education and Research (BMBF).

48.0 percent of all electro and digital companies conducted research and development (R&D) on a continuous basis. 15.6 percent of the firms focused more on occasional R&D activities. The rest made innovations without conducting any research and development.

Sector comparison
– Share of innovators

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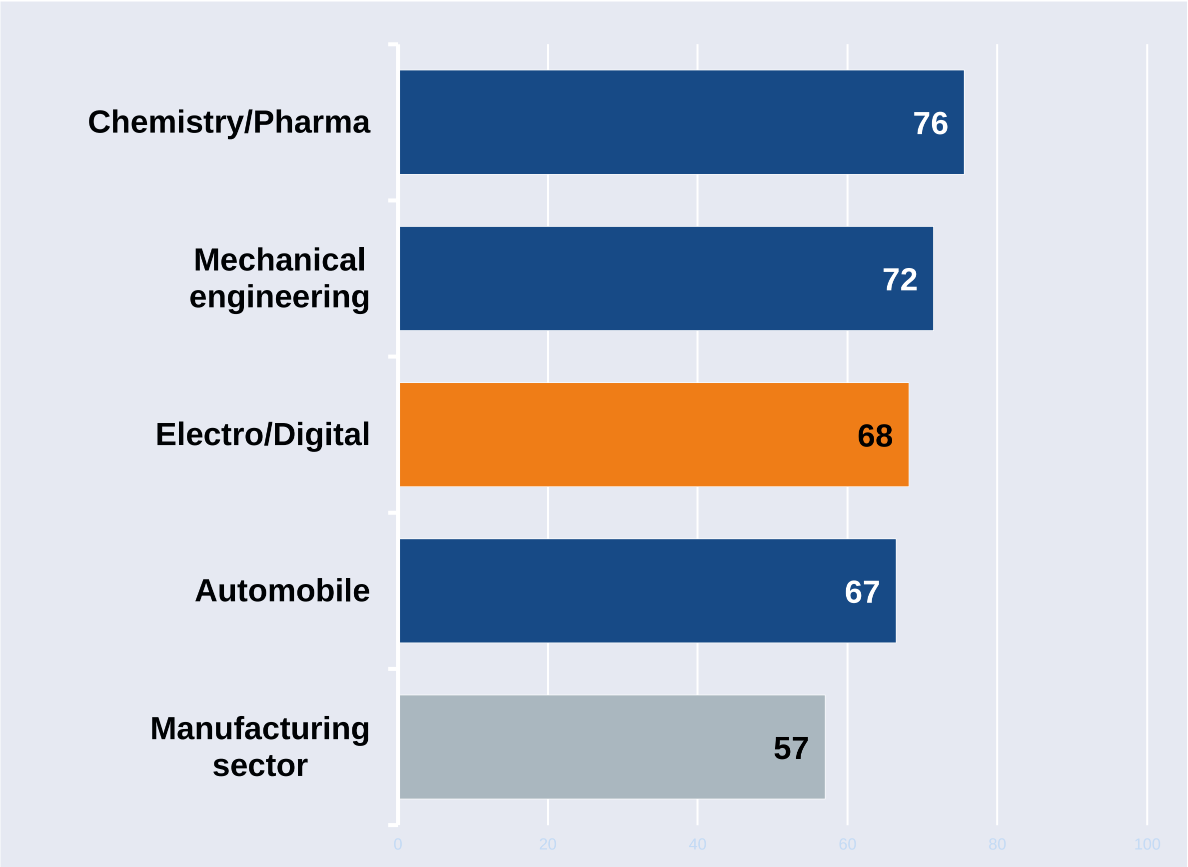
Share of firms with product or process innovations, 2022, %



Source: ZEW's "German Innovation Survey" and ZVEI's own calculations

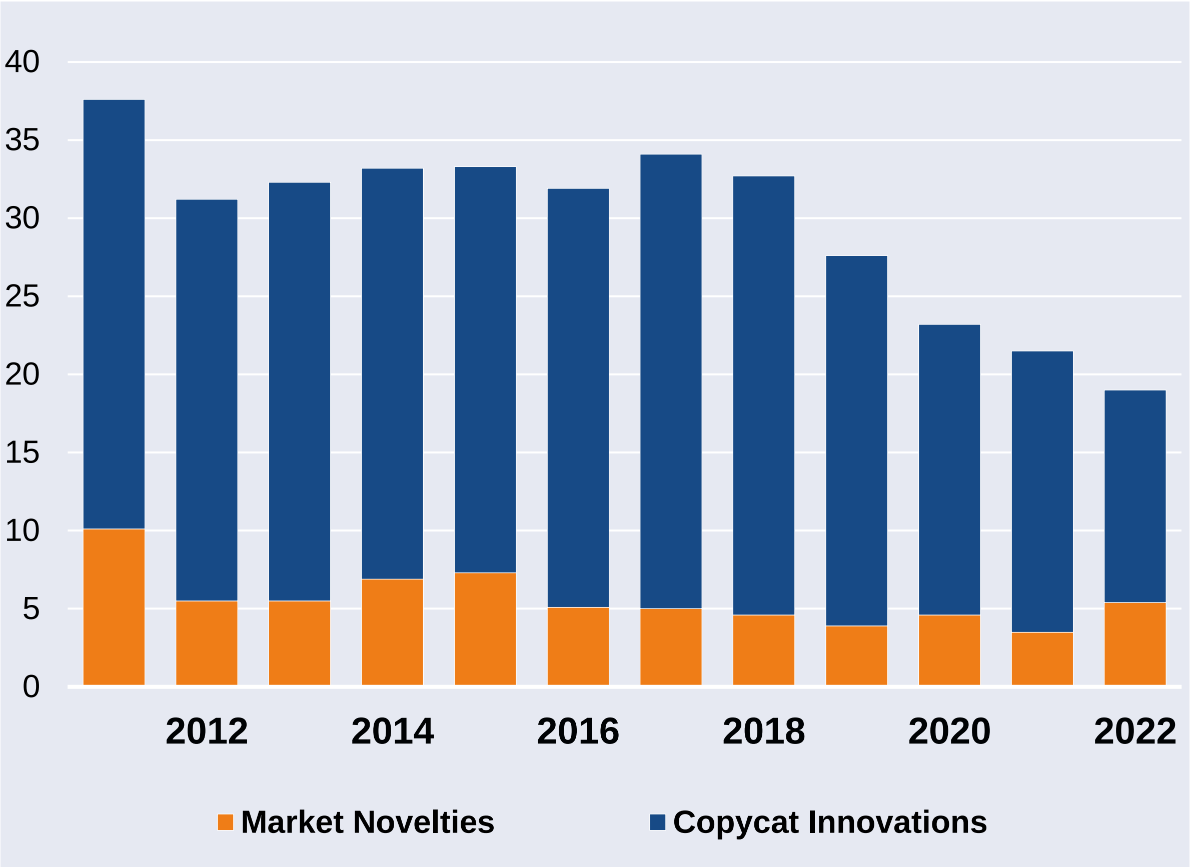
The share of electro and digital companies that have successfully introduced **product and/or process innovations** – and are therefore so-called "innovators" – was at 68.2 percent in 2022.

36.5 percent of the sector's firms have launched both process and product innovations. 21.4 percent implemented only process innovations and 10.4 percent only product innovations.

Nearly 20 percent of the sector's companies have implemented process innovations that have helped **reduce production costs**. Thus, process innovations implemented within the last three years helped bringing down average unit costs by 3.4 percent in 2022.

German electro and digital industry
– Sales with new products

Share of sales with new products, %



Source: ZEW's "German Innovation Survey" and ZVEI's own calculations

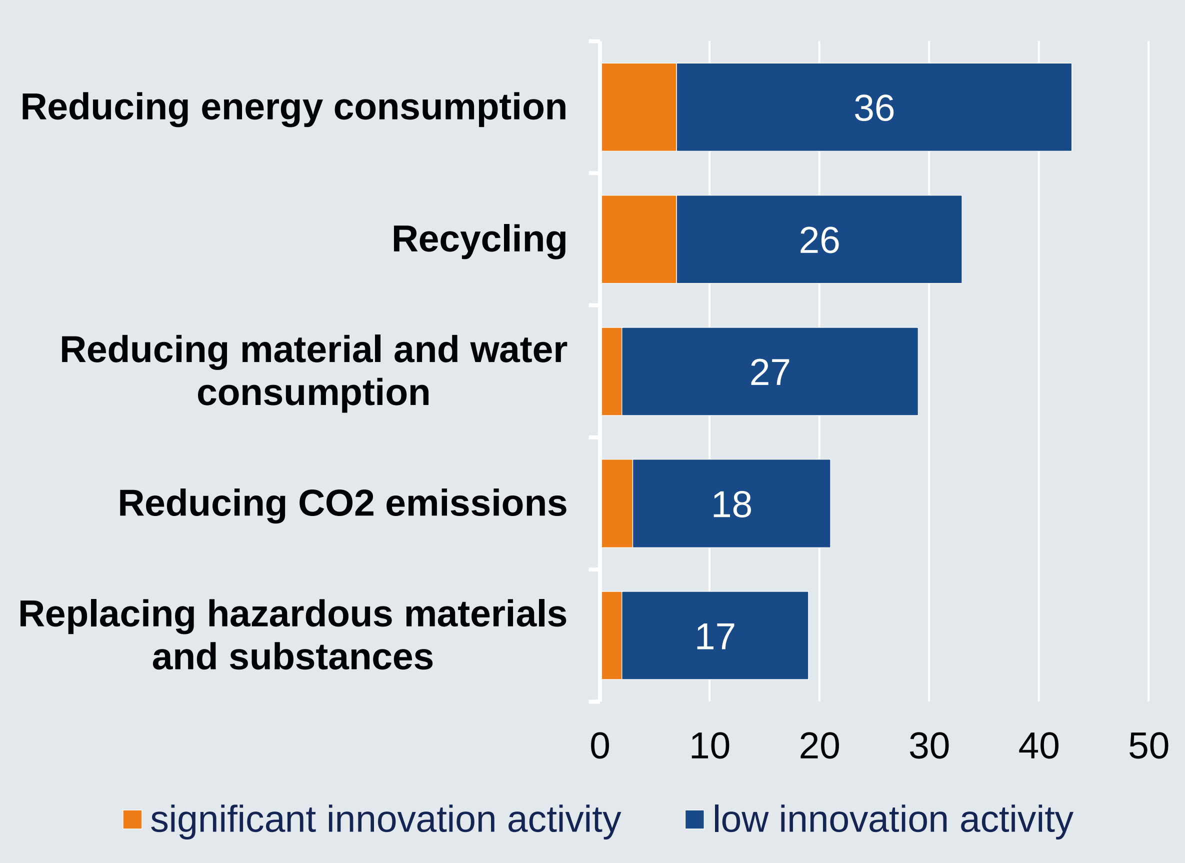
In the German electro and digital industry 19.0 percent of turnover were generated with new products in 2022. **New products** are, thereby, defined as goods that are on the market for less than three years.

A more differentiated view shows that the electro and digital companies generated 5.4 percent of their overall revenues with **market novelties**. At the same time, 13.6 percent of the sales were accounted for so-called **copycat innovations**, whose share has fallen by ten percentage points in the last three years.

In the total manufacturing sector, slightly less than one-fifth of revenues were generated with product innovations in 2022. Here, the share of sales from market novelties was 6.0 percent, while 12.6 percent of turnover came from copycat innovations.

German electro and digital industry
– Environmetal innovations

Share of diff. environmental innovations, 2020-2022, %



Source: ZEW's "German Innovation Survey" and ZVEI's own calculations

Between 2020 and 2022, 56% of all companies introduced **environmental innovations**. Environmental innovations to increase energy efficiency (33%) were mentioned the most, followed by reducing material and water consumption (25%), reducing CO_2 emissions (24%), recycling (21%) and replacing hazardous materials and substances (12%).

In the electrical and digital industry, as many as 71% of companies have made environmental innovations. Environmental innovations to increase **energy efficiency** (43%) were in first place, followed by environmental innovations in **recycling** (33%), reducing material and water consumption (29%), reducing CO_2 emissions (21%) and replacing hazardous materials and substances (19%).

German electro and digital industry
– Innovation figures

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	Unit	2018	2019	2020	2021	2022 [1)]	2023 [2)]	2024 [2)]
Innovation expenditures	**Billion €**	**29.0**	**27.5**	**26.6**	**27.9**	**28.5**	**29.7**	**30.2**
Current expenditures	Billion €	23.6	23.0	22.8	24.2	24.2		
Investments	Billion €	5.4	4.5	3.8	3.7	4.3		
Innovation intensity	**%**	**15.0**	**14.5**	**14.6**	**13.9**	**12.7**		
Share of firms with continuous in-house R&D	**%**	**46.9**	**44.1**	**45.2**	**45.0**	**48.0**		
Share of firms with occasional in-house R&D	**%**	**15.4**	**19.1**	**17.7**	**15.9**	**15.6**		
Share of innovators	**%**	**82.1** [3)]	**73.4** [4)]	**78.7**	**73.1**	**68.2**		
Share of product innovators	%	65.6 [3)]	52.8 [4)]	50.2	47.3	46.8		
Share of process innovators	%	69.8 [3)]	65.9 [4)]	66.6	62.2	57.8		
Share of firms with market novelties	**%**	**28.3**	**26.8**	**25.3**	**24.1**	**20.2**		
Sales with new products	**%**	**32.7**	**27.6**	**23.3**	**21.5**	**19.0**		
Sales with market novelties	%	4.6	3.9	4.6	3.5	5.4		
Sales with copycat innovations	%	28.1	23.7	18.7	18.0	13.6		
Share of firms with cost reduction owing to process innovations	**%**	**27.9**	**27.3**	**22.8**	**27.6**	**18.8**		
Unit cost reduction owing to process innovations	**%**	**3.5**	**3.4**	**3.2**	**3.2**	**3.4**		

Source: ZEW‘s „German Innovation Survey“ and ZVEI‘s own calculations

Notes: 1) provisional, 2) planned, 3) Adjustment to Oslo Manual 4) Adjustment to business register from Destatis

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