
R&D
TOP 50
2025
Fifty Major Corporate R&D Investors in the Netherlands
TNO Vector

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Use of Generative AI

In preparing this analysis, use was made of Large Language Models (ChatGPT, GPT-5.1, 2025, and Anthropic, Claude 4.5 series, 2025). These tools were used to speed up routine tasks, including drafting text suggestions, providing code assistance for data analysis (in R/Python), and structuring methodological explanations. All generated output has been manually checked, verified and, where necessary, adjusted by the researchers.

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In Brief

The 2025 R&D Top 50 confirms the dominant position of ASML, which leads the list for the eleventh consecutive year with more than €3 billion in R&D expenditures—more than the combined total of the companies ranked 2 through 10. The top five shows increasing diversity: newcomer TomTom enters the list, while Shell participates again for the first time since 2017. Notable is the growth of digital service providers, with Booking.com being the fast-est-growing major R&D investor in the Top 50 in terms of percentage growth.

When ASML is excluded, the growth of total R&D expenditures of the R&D Top 50 stagnates from 4.3%[1] in 2022–2023 to 2.8% in 2023–2024. As a result, growth in 2024 even falls below the inflation rate of 3.3%[2].

Geographically, the concentration of R&D remains strongly anchored in Noord-Brabant, particularly around Eindhoven, while Amsterdam is emerging as a second focal point where digital service providers are concentrated. In addi-tion to established players, a new generation of deeptech scale-ups is emerging—often as spin-offs from knowledge institutions. Their high R&D intensity and deep roots in the Dutch economy make them relevant for broadening the private knowledge base.

Despite these success stories, Dutch R&D intensity structurally lags behind that of countries such as Belgium, Germany, Denmark, Korea, Japan, the United States and China—and this gap is widening. The cause is limited private R&D expenditure: the Netherlands has only one dominant R&D-intensive sector (the machinery industry), whereas leading countries have several; and Dutch firms invest a smaller share of their value added in R&D than international competitors across many sectors. The increasing concentration (the top three accounted for nearly a quarter of all private R&D in 2023) also makes the economy more vulnerable.

To catch up in the short term and sustainably strengthen the competitive position, raising R&D intensity within the existing business landscape is a promising option. If Dutch sectors were to match the R&D intensity of international frontrunners, private R&D intensity would be 0.5 to 0.6 percentage points of GDP higher—roughly half of the total gap. In particular, the pharmaceutical industry, electrical engineering industry, ICT, and specialised business services show considerable potential.

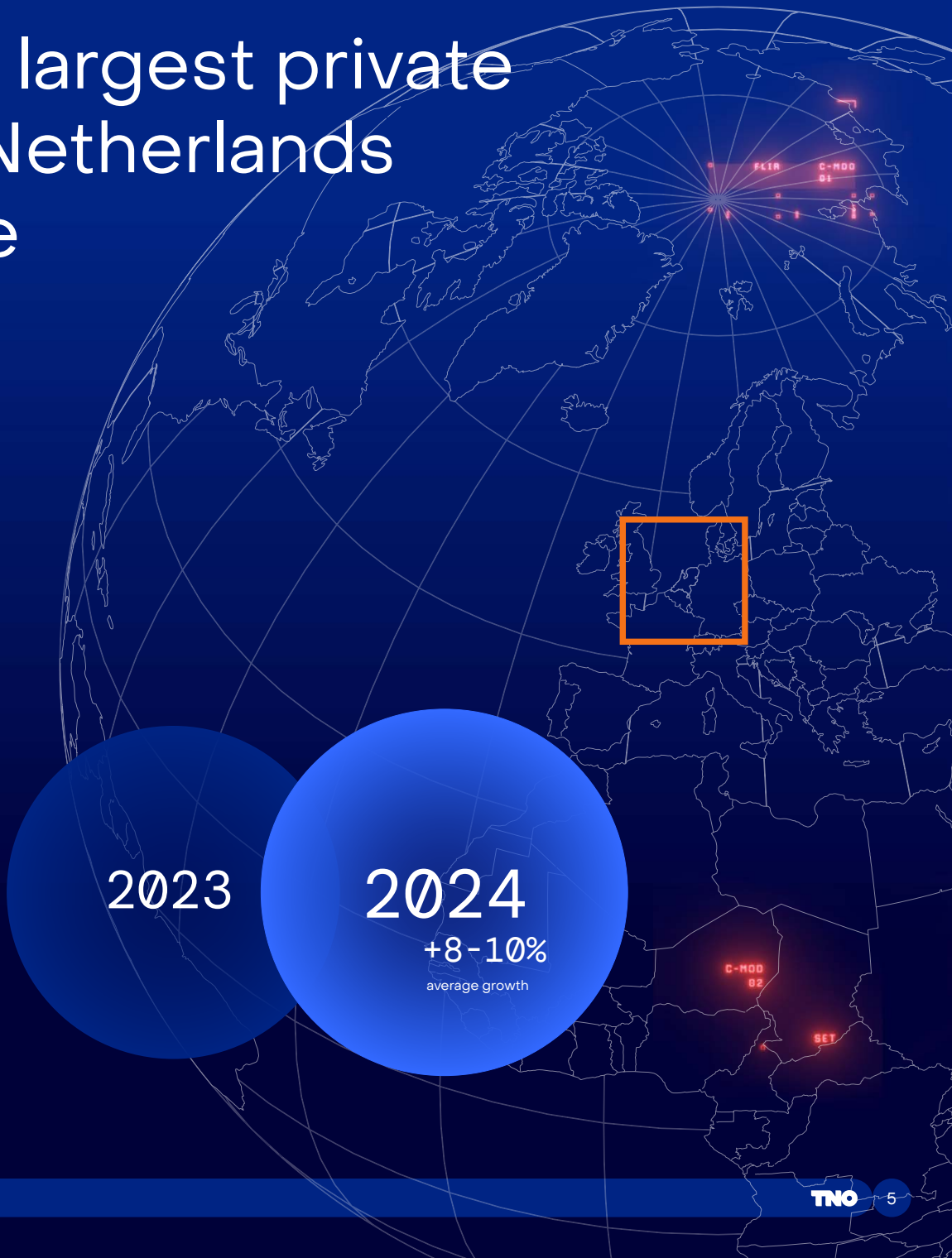
This investment challenge also presents an opportunity: while many European countries find themselves in the so-called **mid-tech trap**, with industries dominated by mid-tech activities, the Netherlands has a strikingly strong high-tech sector profile. And the sectors with the greatest potential for R&D intensification are also sectors with a relatively high share of high-tech firms. This enables the Netherlands not only to address its own investment needs, but also to align with European programmes such as IPCEI projects—broadening innovation capacity and strength-ening competitiveness in a durable way.

1 These growth figures are based on the companies that provided data for 2022, 2023 and 2024; not all companies reported figures for each year.

2 Inflation was 3.8% in 2023 and 3.3% in 2024. Source: CBS (2025), Inflation 3.3 percent in 2024.

The expenditures of the largest private R&D performers in the Netherlands in a broader perspective

Private investments in research and development (R&D) are crucial for the future capacity to create growth in the Netherlands. It is one of our most important assets in the international competitive arena and essential for addressing societal challenges such as population ageing and climate change. This urgency is emphasised in the Dutch translation of the Draghi report[3]: strengthening private R&D is one of the most important engines for increasing productivity growth and sustainably reinforcing the Netherlands' international competitive position.



3 For more details, see TNO Vector (2025), Dutch competitiveness in the light of the Draghi report.

However, insight into where these investments take place and by whom remains incomplete, since companies are not obliged to publicly disclose their R&D expenditures in the Netherlands. The *Technisch Weekblad* Top 50 (R&D Top 50), in which companies voluntarily share their R&D figures, has therefore provided a unique insight into the scale of private R&D in the Netherlands since 2003. This willingness of companies to disclose their figures makes it possible not only to identify who the largest R&D investors in the Netherlands are, but also to track how the innovation landscape is evolving.

After a hiatus of several years, this ranking was revived in 2024 with an updated R&D Top 30. In 2025, this relaunch is continued and expanded: for the first time, *Technisch Weekblad*, VNO-NCW and TNO jointly present an R&D Top 50[4] of major private R&D performers in the Netherlands[5]. The step towards a Top 50 primarily reflects a deliberate choice to increase visibility of the broader innovation landscape and to give more companies the opportunity to make their R&D activities visible. Because the R&D Expenditure drops off sharply lower down the ranking and therefore becomes less representative of total private R&D expenditures in the Netherlands, this analysis focuses primarily on the companies ranked 1 to 30.

For the 2025 edition, R&D figures were collected retrospectively back to 2022 for all companies (including new entrants to the list), ensuring that the series has been consistently updated from 2022 onwards (see Box 1). In this way, the list connects to a time series that was first published in 2003. In this paper, we describe the results of this new R&D Top 50 and interpret the research expenditures of these companies over the period 2016–2024. We then place these expenditures in the broader context of research investment in the Netherlands and compare them with those of neighbouring countries Belgium, Germany and Denmark, as well as major industrialised economies such as Korea, Japan, the United States and China.

Box 1

Methodology of the R&D Top 50

The *Technisch Weekblad* Top 50 ranks Dutch companies annually based on their R&D expenditures, collected through a widely distributed survey conducted by *Technisch Weekblad*. Companies decide themselves whether to participate, and the reported data are not independently verified.

The survey asks companies to report their R&D expenditures in accordance with the OECD definition as set out in the *Frascati Manual*, which is also used by Statistics Netherlands (CBS) (see Box 3). For some companies, it is difficult to determine these figures precisely; in such cases, they base their submission on data reported in the context of the WBSO scheme.

Because companies in the Netherlands generally do not publicly disclose their R&D expenditures, this list provides a unique insight into the research and development activities of the largest players. *Technisch Weekblad* has been doing this since 2003. With the latest edition, this results in a database of R&D expenditure in the Netherlands covering the past 26 years, from 1999 through 2024.

Although the methodology has limitations, such as variation in reporting practices, the ranking provides a valuable overview of trends and leading firms in private R&D expenditure in the Netherlands.

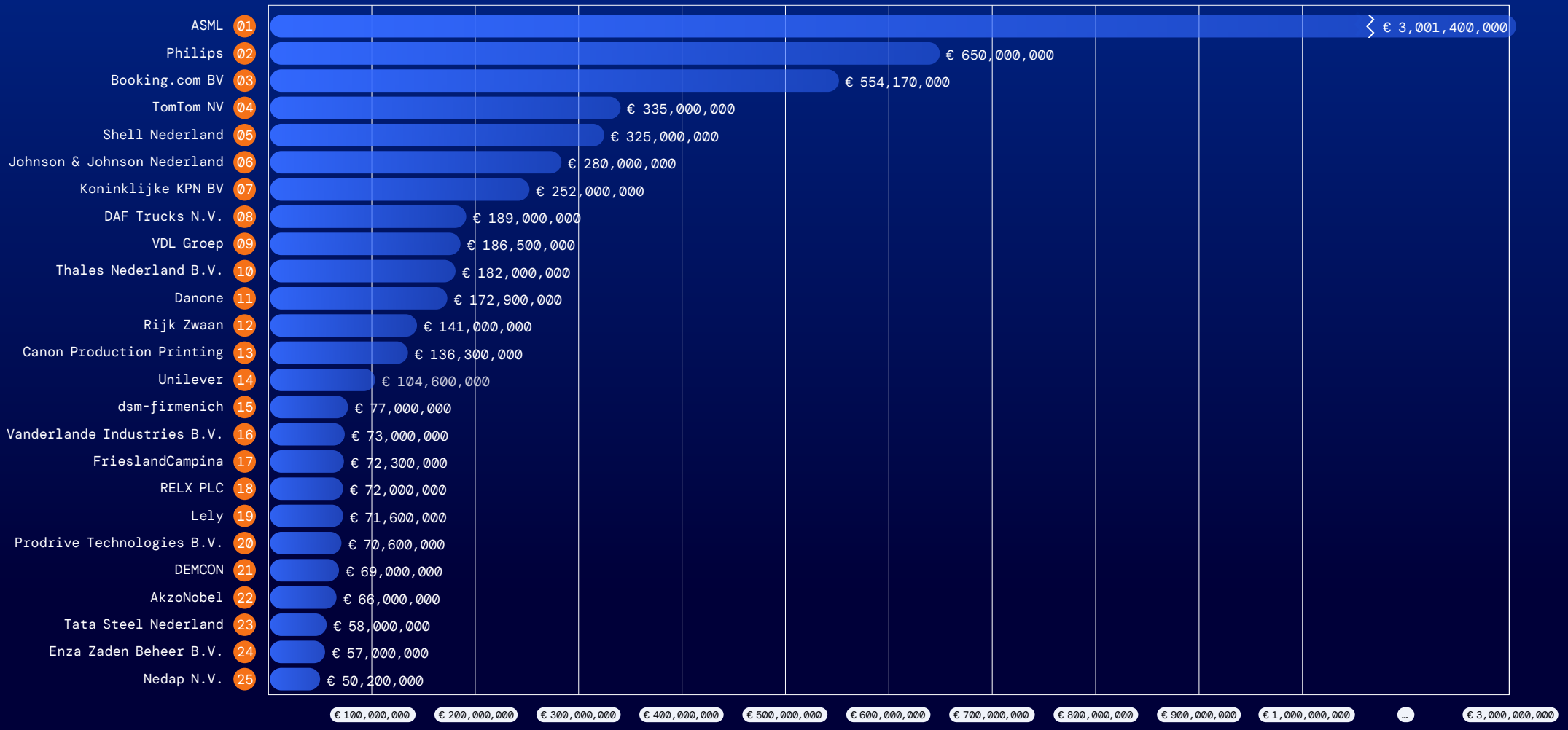
4 This ranking is based on figures that companies voluntarily submitted through an online questionnaire. Only companies that shared their data are included in the list. The ranking therefore does not provide a complete overview of the largest R&D investors in the Netherlands and reflects only the information reported by the participating companies.

5 Note that the ranking includes companies only. In the context of Dutch R&D statistics, organisations such as MARIN, NLR and TNO are commonly considered private R&D performers, but they are not included in the Technisch Weekblad Top 50 2025.

1. Results of the 2025 R&D Top 50

Figure 1.1

1-25

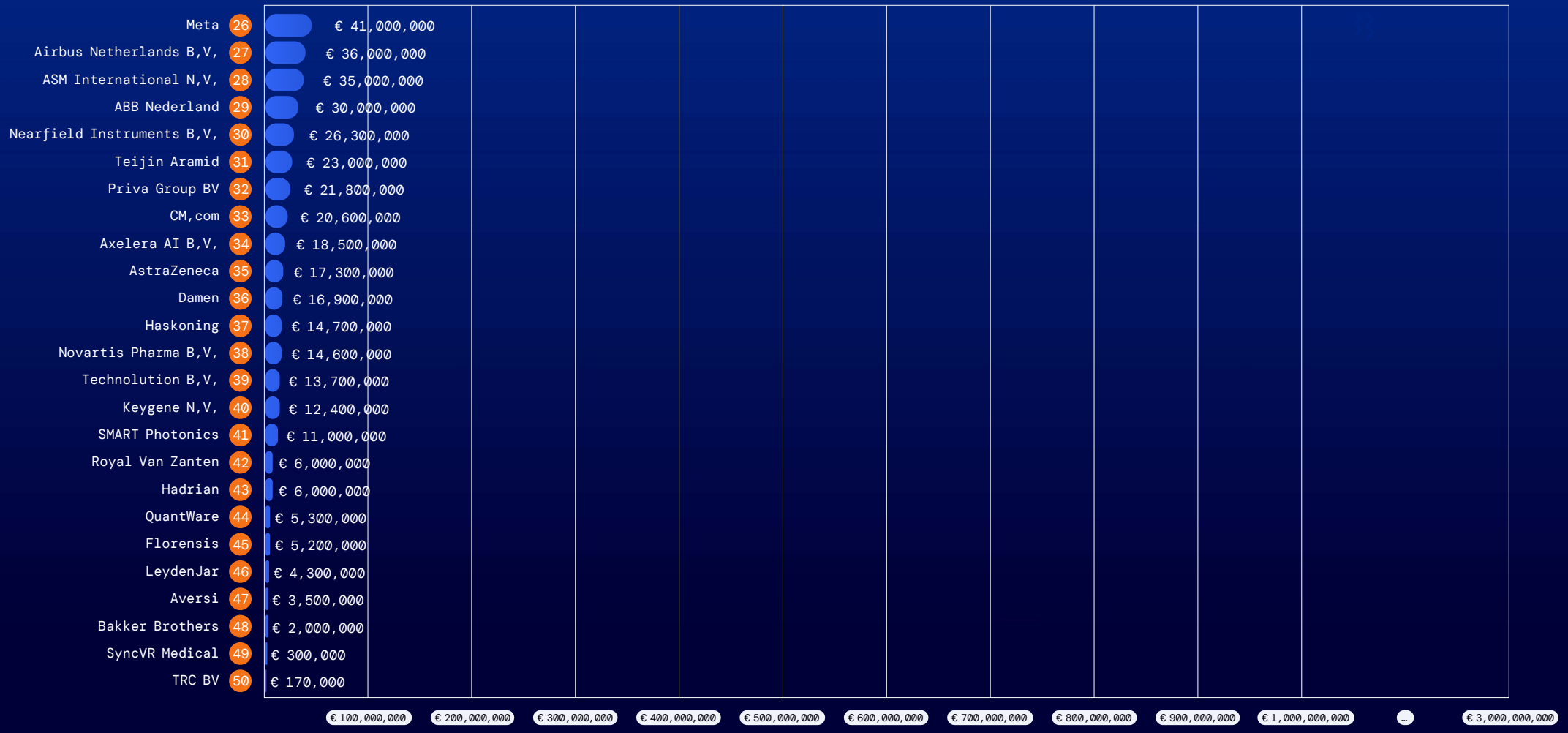


Top 50 participating companies in the Netherlands by reported R&D expenditure

1. Results of the 2025 R&D Top 50

Figure 1.2

26-50



Top 50 participating companies in the Netherlands by reported R&D expenditure

1.1 ASML is the largest R&D performer by a wide margin

Based on the inventory, ASML remains by far the largest R&D investor in the Netherlands, with investment exceeding €3 billion in 2024 (see Figure 1). By way of illustration, ASML alone invests more than the companies ranked 2 through 10 combined. This marks the eleventh consecutive year in which ASML leads the R&D Top 50.

A closer look at the Top 50 suggests that a wide range of sectors is represented in the list. The top five illustrates this diversity: ASML represents the semiconductor and machinery industry, Philips operates in healthcare, Booking.com is active as a digital service provider, TomTom in application software, and Shell Nederland in the energy and raw materials sector. This sectoral diversity continues throughout the remainder of the Top 50.

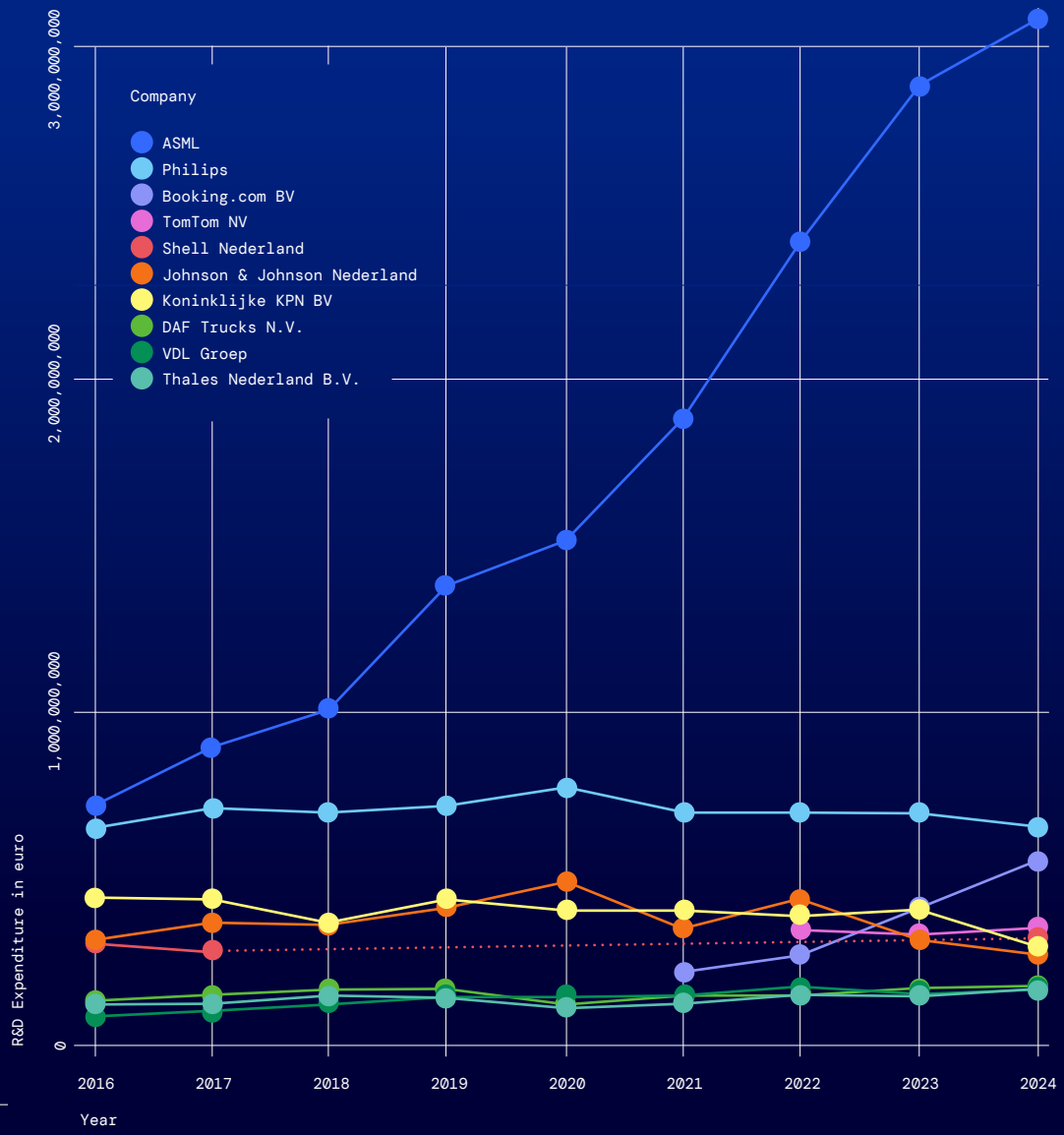
In the 2025 edition, TomTom and Shell also enter the top five for the first time. TomTom has not previously reported its R&D expenditures, while Shell last did so in 2017. As a result, Johnson & Johnson Nederland and KPN, which were among the top five last year, are ranked lower in 2025.

Notably, TomTom—like Booking.com—belongs to the group of fully digital service providers. This shows that digital companies in the Netherlands also make substantial R&D investments, alongside the manufacturing and high-tech firms that have dominated the top of Dutch R&D investors over the past twenty-five years. This aligns with international developments: in 2023, the four largest digital technology companies—Microsoft, Apple, Meta and Alphabet—together accounted for 10% of all global corporate R&D expenditures[6].

6 European Commission & Joint Research Centre (2024). EU Industrial R&D Investment Scoreboard 2024.

Figure 2

R&D expenditure in the Netherlands by company (2016–2023)



R&D expenditure over time for a selection of companies from the Top 50.

Alongside these digital service providers, the broader R&D Top 50 also shows the emergence of new R&D-intensive companies within the manufacturing sector, including spin-offs from public research organisations. Deeptech scale-ups such as SMART Photonics, Nearfield Instruments, QuantWare and LeydenJar are examples of this development.

In absolute terms, these companies are still relatively small compared to the rest of the list, but they exhibit high R&D intensity and carry out their R&D activities almost entirely in the Netherlands. This combination makes such firms particularly relevant for renewing and broadening the private knowledge base in the Netherlands. This is important for closing the Dutch R&D gap: roughly half of this gap can be attributed to the lack of sufficient economic activity in knowledge-intensive sectors. The emergence of new deeptech companies can therefore make an important contribution to diversifying the economic structure.

Figure 2 shows the development of R&D expenditures of the top ten Dutch companies over the period 2016–2024, based on the relevant (historical) R&D Top 50 rankings[7]. The figures are not corrected for inflation, which implies that real growth—especially in the most recent years with higher inflation—is somewhat lower than suggested by the nominal figures.

What stands out in Figure 2 is the exponential growth in R&D expenditure by ASML, with a clear acceleration from 2016 onwards: from approximately €744 million to more than €3 billion in 2024. Excluding ASML, growth in total R&D expenditure has been much less pronounced. In fact, when ASML is excluded, growth in total R&D expenditure of the R&D Top 50 slows to 2.8% in 2023–2024, compared with 4.3% in 2022–2023. As a result, growth in 2024 even falls below inflation, which stood at 3.3%. Nevertheless, there are also companies within the R&D Top 50 that have clearly scaled up their R&D activities in recent years. Booking.com is the most notable example: it is the fastest-growing major R&D investor in the R&D Top 50 in terms of percentage growth[8].

1.2 Further concentration of private R&D in Noord-Brabant

Figure 3 shows, on a map of the Netherlands, the locations of the headquarters of the top ten companies from the R&D Top 30 of 1999, with the size of the orange circle indicating the scale of their R&D expenditures. Figure 4 shows the same for the top ten of 2024. Note that these investment figures are also not corrected for inflation, and that research activities are not always actually carried out within the headquarters themselves—an exception was made for Philips.

What is nevertheless clearly visible is that over the past 26 years, the Dutch R&D landscape has developed a strong and largely stable concentration in the south of the Netherlands, particularly in the Eindhoven region. The high-tech manufacturing industry has formed the centre of gravity here for decades. ASML, Philips and Thales all rank among the top ten in both 1999 and 2024, illustrating the structural continuity of this region. Outside this region, Shell appears in the top ten in both years, showing that long-term presence among the largest R&D investors is not exclusively confined to the high-tech sector.

In addition, the Amsterdam region has seen an increase in R&D activities by companies focused on digital services and software development. Companies such as Booking.com and TomTom—both founded in the past three decades—illustrate this development and show that, alongside the traditional high-tech manufacturing industry in the south of the Netherlands, a group of companies around Amsterdam is also investing substantially in research and development. In the most recent R&D Top 50, this shift becomes more visible: among the new entrants are several digital service providers from the Amsterdam region, including RELX and Meta. This geographical distribution illustrates two distinct R&D clusters: an established cluster centred on the machinery industry in Eindhoven and an emerging cluster of digital service providers in Amsterdam.

7 Missing values in the time series were linearly interpolated.

8 Based on an average annual growth rate (CAGR) of approximately 40% over the period 2022–2024. This is the highest CAGR among all companies in the R&D Top 50 reporting annual R&D expenditures of more than €10 million.

Figure 3

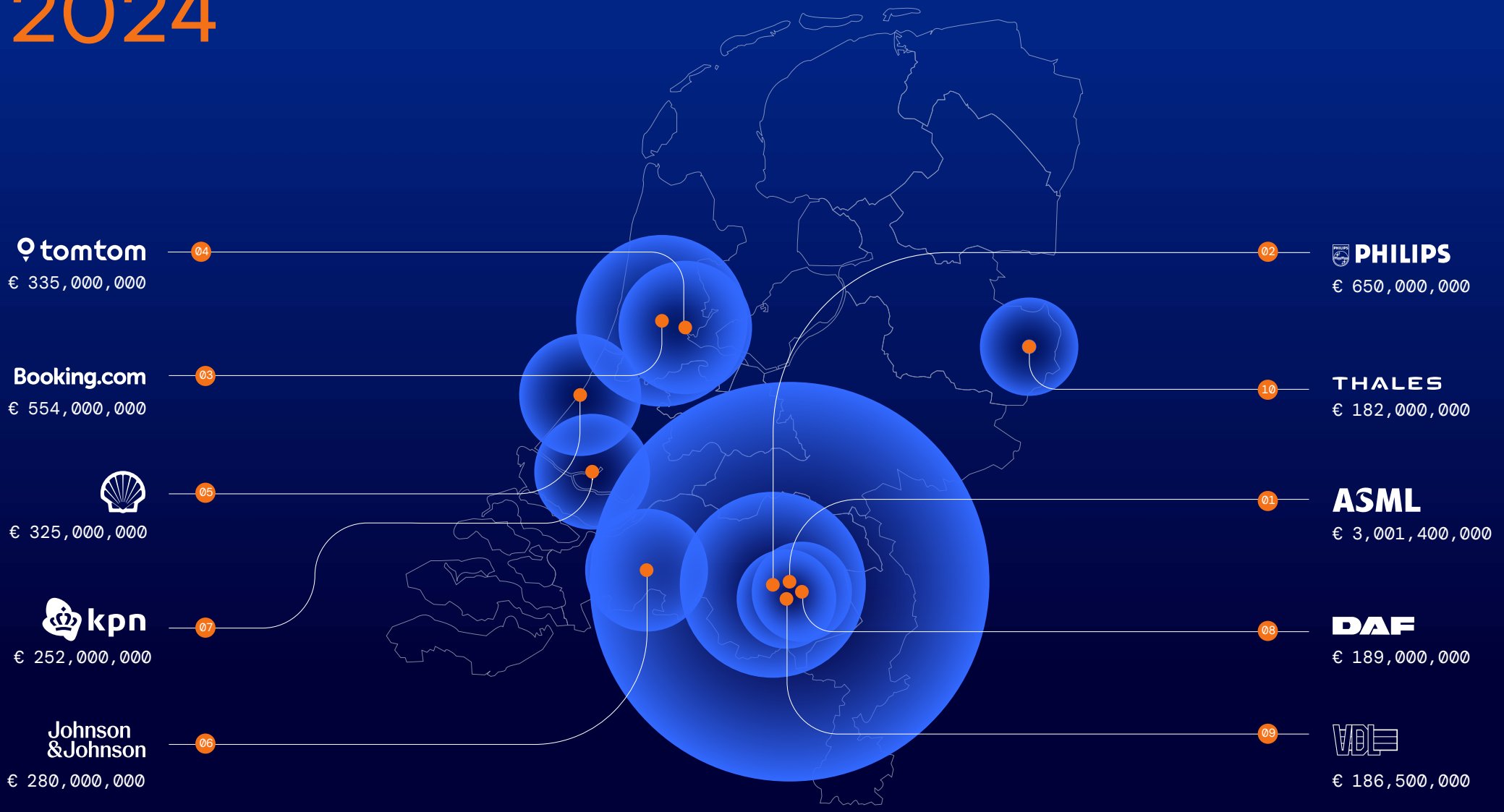
Geographical distribution of R&D expenditures of the top 10 companies in

1999

Figure 4

Geographical distribution of R&D expenditures of the top 10 companies in

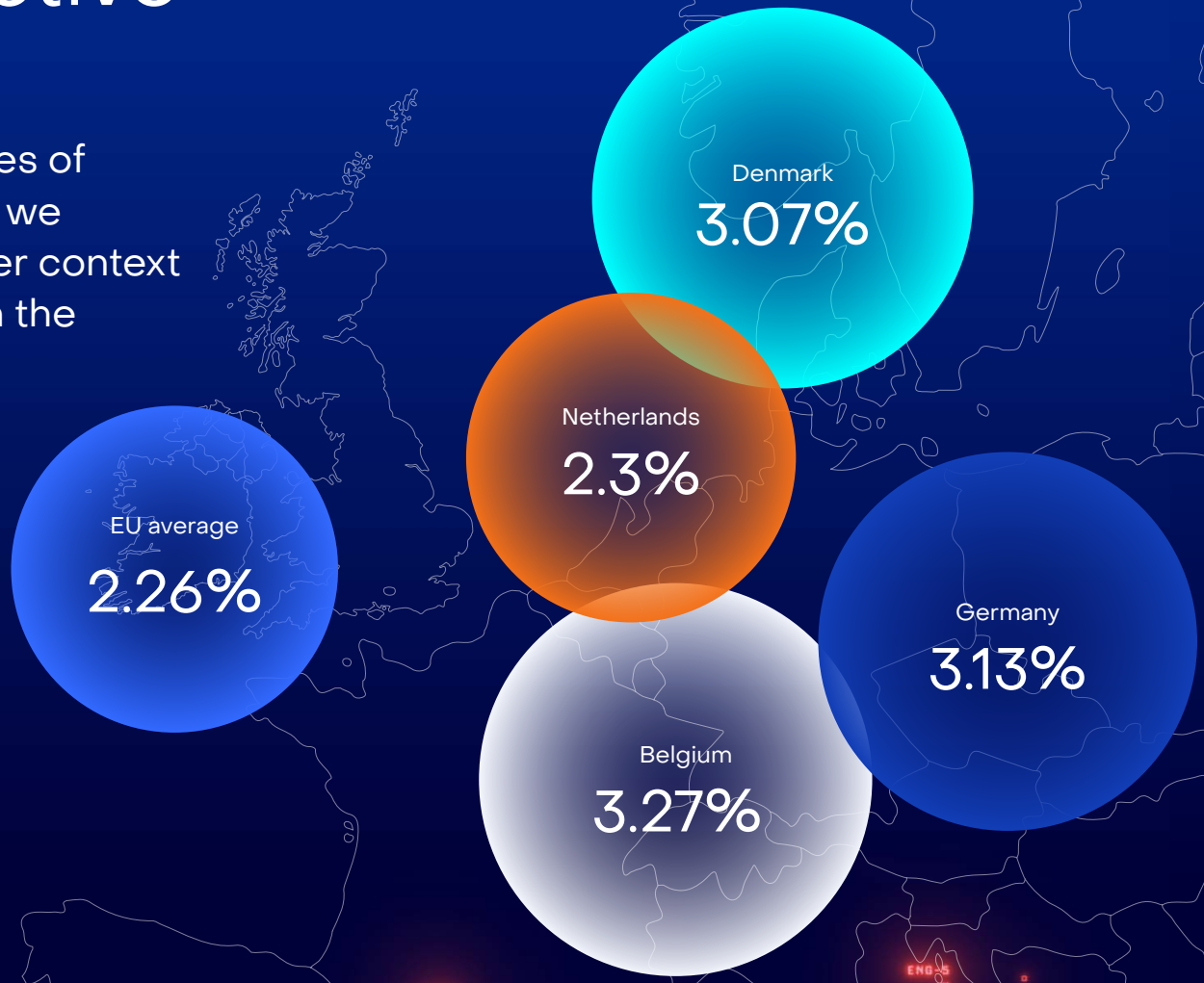
2024



1-10 by sector

2. Dutch R&D expenditures in a broader perspective

To further interpret the research activities of companies included in the R&D Top 50, we interpret these results within the broader context of research expenditures by all actors in the Netherlands (see Box 2).



Box 2

The importance of (expenditure on) R&D for the Dutch economy

'Expenditure on R&D' is 'only' an input indicator of the innovation process. However, we know (based, for example, on econometric estimates) that these expenditures are an important determinant of productivity growth in the Netherlands[9]. In practice, knowledge is our most important asset in the ongoing struggle—the 'race'—to remain competitive as an economy. The relative size of R&D expenditure (expenditure as a percentage of GDP, compared with that of other countries) therefore constitutes a good indicator of the economy's structural long-term growth.

9 For example, see: Erken, H. (2024). *Lage groei productiviteit mede door ongunstige structuur economie*. ESB.

2.1 Lagging behind our ‘peers’

Based on the most recent update of the R&D statistics, it appears that the intensity of both total and private R&D expenditure in the Netherlands (see Figures 5 and 6) is lagging behind that of neighbouring countries Belgium, Germany and Denmark (all of which are among the frontrunners), as well as major industrialised countries such as South Korea, the United States, Japan and even China[10].

Private expenditure is particularly important in this context, as it is companies that ultimately apply knowledge in products, services and production processes.

Figures 5 and 6 also show that Dutch R&D expenditure has remained relatively constant over time, while the other countries in the comparison appear to be extending their lead at an increasing pace. These countries have been able to increase both total and private R&D expenditure more strongly than their GDP (as a proxy for collective income). Belgium is particularly noteworthy in this respect: its R&D intensity has been increasing continuously for more than twenty years.

Box 3

R&D statistics: ‘expenditure on’ and ‘financing of’ research

In R&D statistics, financial flows are divided into two main categories: expenditure on R&D and financing of R&D. This distinction is based on the OECD Frascati Manual, which forms the foundation for the collection of research statistics and is also used by Statistics Netherlands (CBS) and Eurostat[11]. In this context, expenditure refers to the (financial) resources used by organisations to carry out R&D themselves ‘in-house, with their own (and hired) personnel’. A distinction is made between three sectors of performance: i) government, including institutions such as KNAW and NWO institutes—referred to as Government Expenditure on R&D (GOVERD); ii) universities and universities of applied sciences—Higher Education Expenditure on R&D (HERD); and iii) business enterprises, including TO2 organisations such as TNO, NLR and MARIN—Business Expenditure on R&D (BERD).

The sum of (i) and (ii) is referred to as public R&D expenditure; (iii) constitutes private R&D expenditure. Gross Expenditure on R&D (GERD) refers to total R&D expenditure. Financing refers to the source of the financial resources used to carry out R&D.

The distinction between expenditure on and financing of R&D is not trivial. When organisations conduct research—that is, when expenditure takes place—the knowledge created remains within the organisation. This knowledge forms the basis for further innovation: it leads to new ideas for innovation processes and improves organisations’ ability to successfully apply existing (external) knowledge[12]. These effects do not arise from the financing of R&D alone.

In practice, total expenditure on R&D is the most relevant available indicator for capturing a country’s innovation capacity. For this reason, policy (and policy debates) focuses on actual R&D expenditure—the ‘3% target’ is an example of this. The companies participating in the survey that forms the basis for the R&D Top 50 ranking were therefore also asked to report their R&D expenditure, defined in accordance with the OECD Frascati Manual.

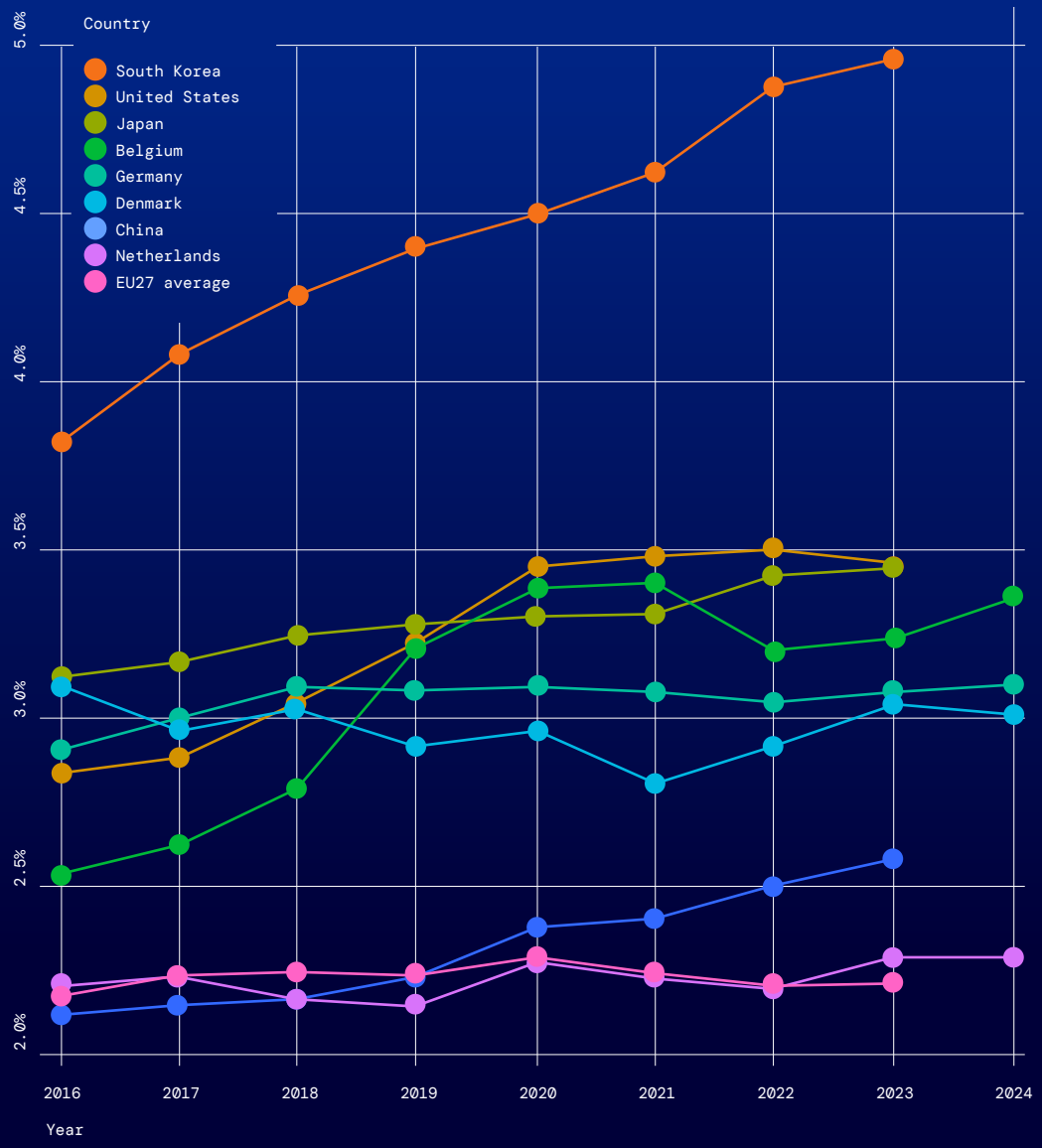
10 Here, the intensity of total and private R&D expenditure is measured as GERD and BERD respectively as a percentage of gross domestic product (GDP). This corrects for the size of the economy and allows for comparison of expenditures across countries.

11 OECD (2015). Frascati Manual 2015: Guidelines for Collecting and Reporting Data on Research and Experimental Development, The Measurement of Scientific, Technological and Innovation Activities. OECD Publishing, Paris.

12 Cohen, W. M., & Levinthal, D. A. (1990). *Absorptive capacity: A new perspective on learning and innovation.* Administrative Science Quarterly, 35(1), 128–152.

Figure 5

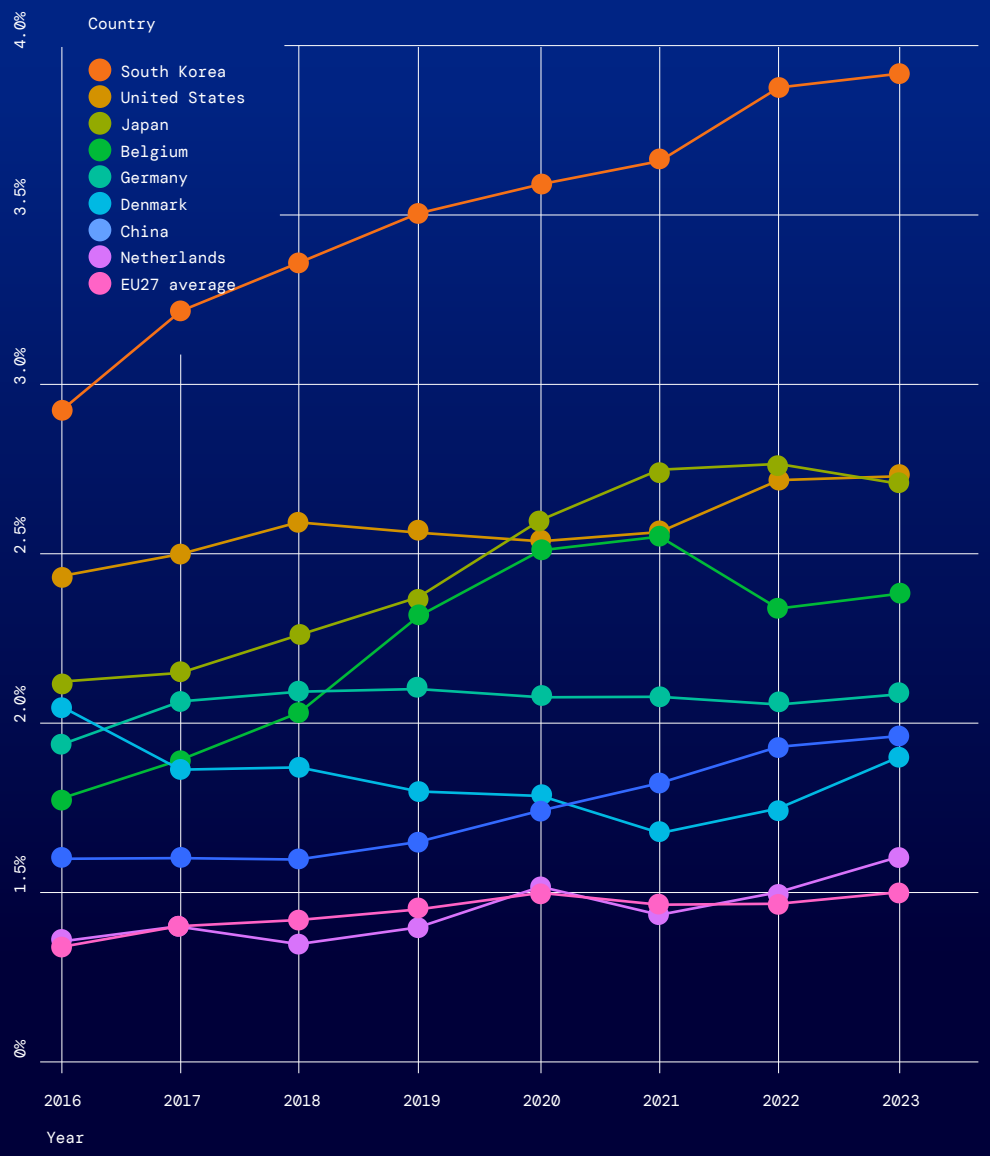
Total R&D expenditure as a percentage of GDP, by country



Intensity of total R&D expenditure, for a selection of countries.
Source: Eurostat (2025).

Figure 6

Private R&D expenditure as a percentage of GDP, by country



Intensity of business R&D expenditure, for a selection of countries.
Source: Eurostat (2025).

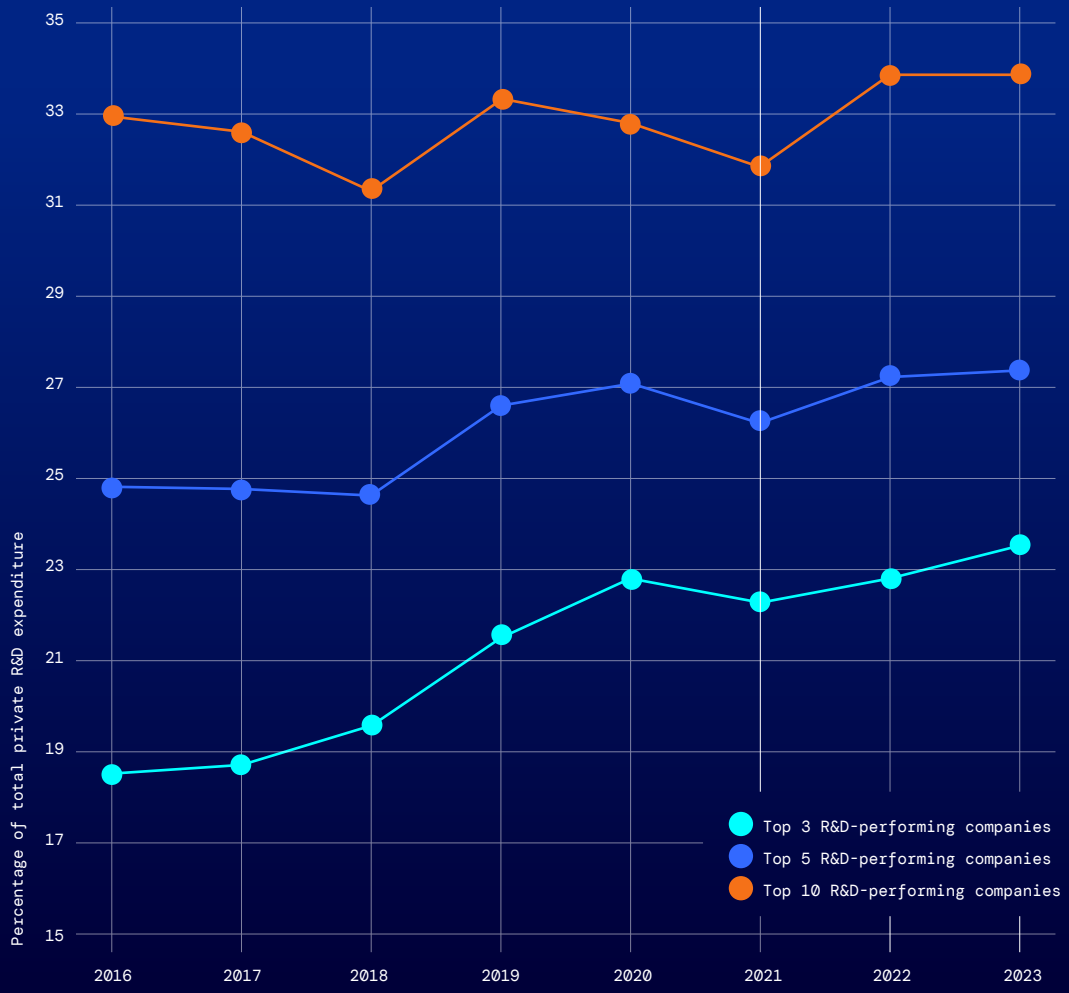
2.2 Further concentration of private R&D at the top of the R&D Top 50

Dutch private R&D expenditure is becoming increasingly concentrated among a small number of large companies. Whereas in 2016 the three companies with the highest R&D expenditures accounted for 19% of total private R&D expenditure, this share had grown to almost a quarter of the total by 2023[13]. The top five also show an increase: their combined share rose from 25% in 2016 to 27% in 2023. By contrast, the top ten display a relatively stable pattern, with a share of around 33% in both 2016 and 2023 (see Figure 7). This increase is, unsurprisingly, largely attributable to ASML.

To keep the Dutch economy future-proof and competitive, it is crucial that it does not remain dependent on a a small set of incumbents. These 'front-runners' are a 'blessing' for the Dutch economy, but the narrow base also entails risks. Other countries have previously experienced how vulnerable an innovation ecosystem can be when a single dominant R&D firm unexpectedly declines, as Finland experienced following the sharp drop in Nokia's R&D expenditure[14]. The Netherlands therefore needs to become more innovative across the full breadth of the economy: existing actors should increase their R&D expenditure, and there should be a pipeline of new R&D-intensive companies.

Figure 7

Share of total private R&D expenditure in the Netherlands



Selection	2016	2017	2018	2019	2020	2021	2022	2023
Top 3	18.5	18.7	19.5	21.4	22.9	22.2	22.9	23.5
Top 5	24.8	24.8	24.7	26.7	27.1	26.2	27.2	27.4
Top 10	33	32.7	31.3	33.3	32.9	31.9	33.8	33.9

Share (in %) of total Dutch private R&D expenditure accounted for by the top 3, top 5 and top 10 companies.

13 For total private R&D expenditure in the Netherlands, data are available from Statistics Netherlands (CBS) up to and including 2023. For 2024, figures for the full population of companies have not yet been published.

14 For more details, see TNO Vector (2024), ASML vs Nokia: What Can the Netherlands Learn from the Nokia Effect?

2.3 Private R&D expenditure dominated by the 'machinery industry' sector

The underlying cause of lagging R&D expenditure in the Netherlands is the relatively low level of private R&D expenditure. This has two main causes. First, the specific sectoral structure of the Dutch economy. What is missing in the Netherlands is sufficient economic activity in those sectors of the global economy that are knowledge-intensive—sectors in which research and innovation are essential for individual firms to compete and, ultimately, to survive. Second, within many sectors Dutch companies reinvest a smaller share of their value added in R&D than comparable firms in other countries. Together, these factors depress total private R&D expenditure[15].

Figure 8 provides an overview of the intensity of private R&D expenditure in R&D-intensive sectors for the same selection of countries discussed earlier, based on the most recent available data[16]. What stands out is that the Netherlands has only one dominant sector in which it leads within this group of countries: the machinery industry—dominated by ASML and the surrounding ecosystem. Other countries in the comparison, which have substantially higher total and private R&D expenditure, have at least two R&D-intensive sectors, with the exception of Denmark. In particular, the Netherlands lacks significant expenditure in sectors such as the pharmaceutical industry and the automotive industry.

At the same time, international comparisons show that the relatively knowledge-intensive sector structure does not provide a complete explanation[17]. Within many sectors, Dutch firms invest a lower percentage of their value added in R&D than their international counterparts. If Dutch sectors were to exhibit the same R&D intensity as an international benchmark group of frontrunners[18], private R&D intensity would be approximately 0.5 to 0.6 percentage points of GDP higher. This is almost equal in size to the part of the gap explained by sector structure alone. In particular, the pharmaceutical industry, electrical engineering industry, the information and communications sector, and specialised business services show considerable potential in international comparisons.

There are three possible pathways to increasing private R&D expenditure: increasing R&D investment by existing firms, stimulating the emergence and scaling-up of new R&D-intensive companies, and strengthening the business climate for foreign R&D-intensive firms[19]. These three pathways can both raise R&D intensity within existing sectors and shift the Dutch sector structure towards more knowledge-intensive activities. In the short term, increasing R&D intensity within existing sectors offers the greatest potential.

15 For more details, see TNO Vector (2025), Shift-share analyse. Internationale ontwikkelingen in private R&D.

16 R&D expenditure is again measured as a percentage of GDP in order to correct for differences in economic size and to enable comparisons across countries. The following sector clustering is applied, based on the NACE classification of economic activities:
- Chemical industry: C20 Chemical industry; C22 Manufacture of rubber and plastic products
- Pharmaceutical industry: C21 Pharmaceutical industry
- Microelectronics industry: C26 Manufacture of computer, electronic and optical products; C27 Manufacture of electrical equipment
- (Other) ICT: J61 Telecommunications; J62 Computer programming and IT services; J63 Information services
- Machinery industry: C28 Manufacture of machinery and equipment
- Automotive industry: C29 Manufacture of motor vehicles and trailers; C30 Manufacture of other transport equipment

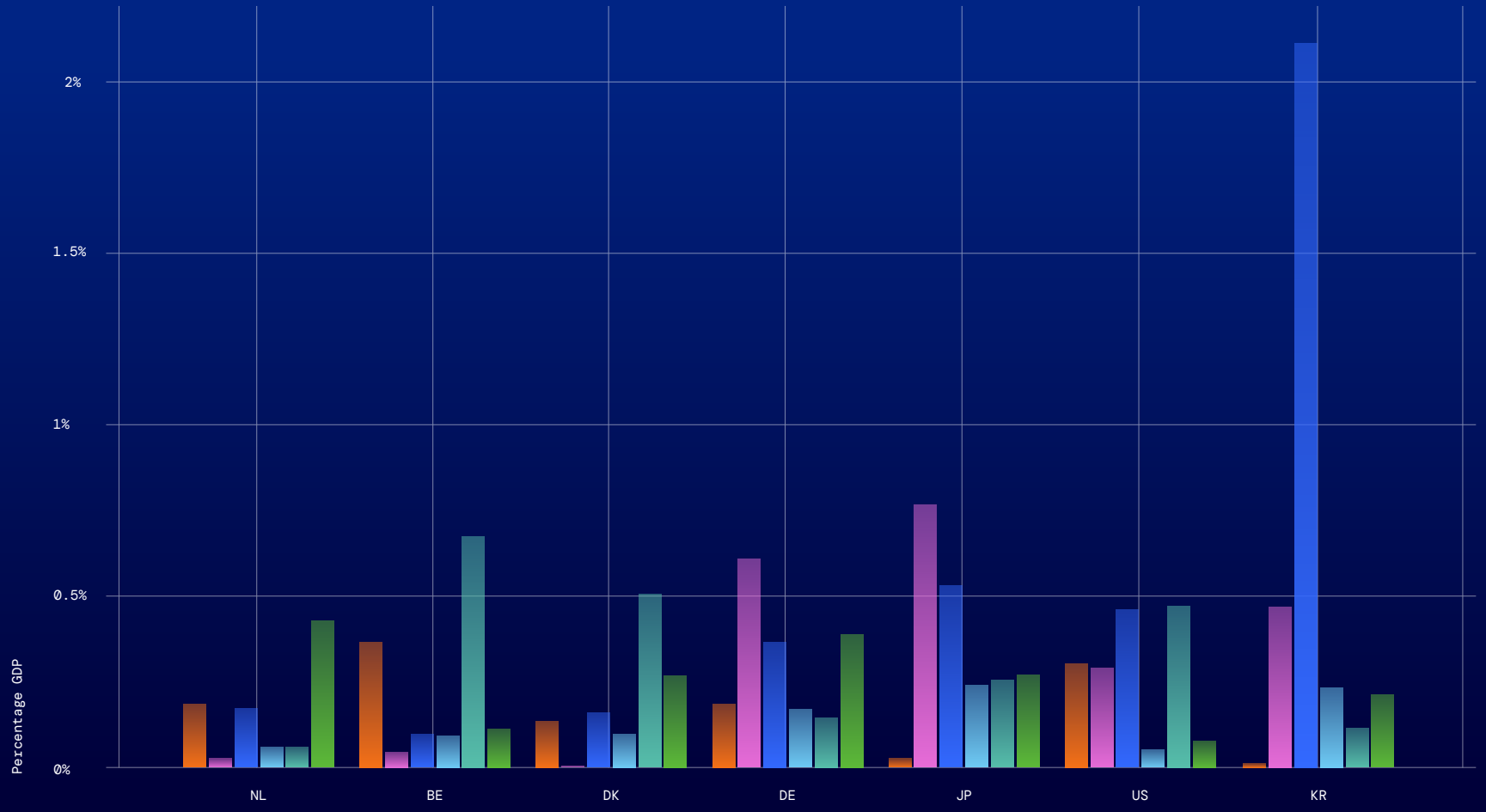
17 This is based on TNO Vector (2025), Shift-share analyse. Internationale ontwikkelingen in private R&D.

18 The international benchmark consists of OECD countries with above-average private R&D intensity and for which sectoral data are available in Eurostat and OECD databases. This benchmark includes: Belgium, Denmark, Germany, Finland, Iceland, Japan, Korea, Austria, the United Kingdom, the United States and Sweden.

19 For further discussion, see TNO (2025), Nederlandse R&D-uitgaven: naar 3% van het bbp in 2030.

Figure 8

Private R&D expenditure by sector and country



Sector	NL (2023)	BE (2023)	DK (2020)	DE (2023)	JP (2022)	US (2022)	KR (2021)
(Other) ICT	0.19	0.37	0.14	0.19	0.03	0.31	0.02
Automotive industry	0.03	0.05	0.01	0.61	0.77	0.29	0.47
Microelectronics industry	0.17	0.1	0.16	0.37	0.53	0.46	2.12
Chemical industry	0.06	0.1	0.1	0.17	0.24	0.06	0.24
Pharmaceutical industry	0.03	0.68	0.5	0.15	0.26	0.47	0.12
Machinery industry	0.43	0.12	0.27	0.39	0.27	0.08	0.22

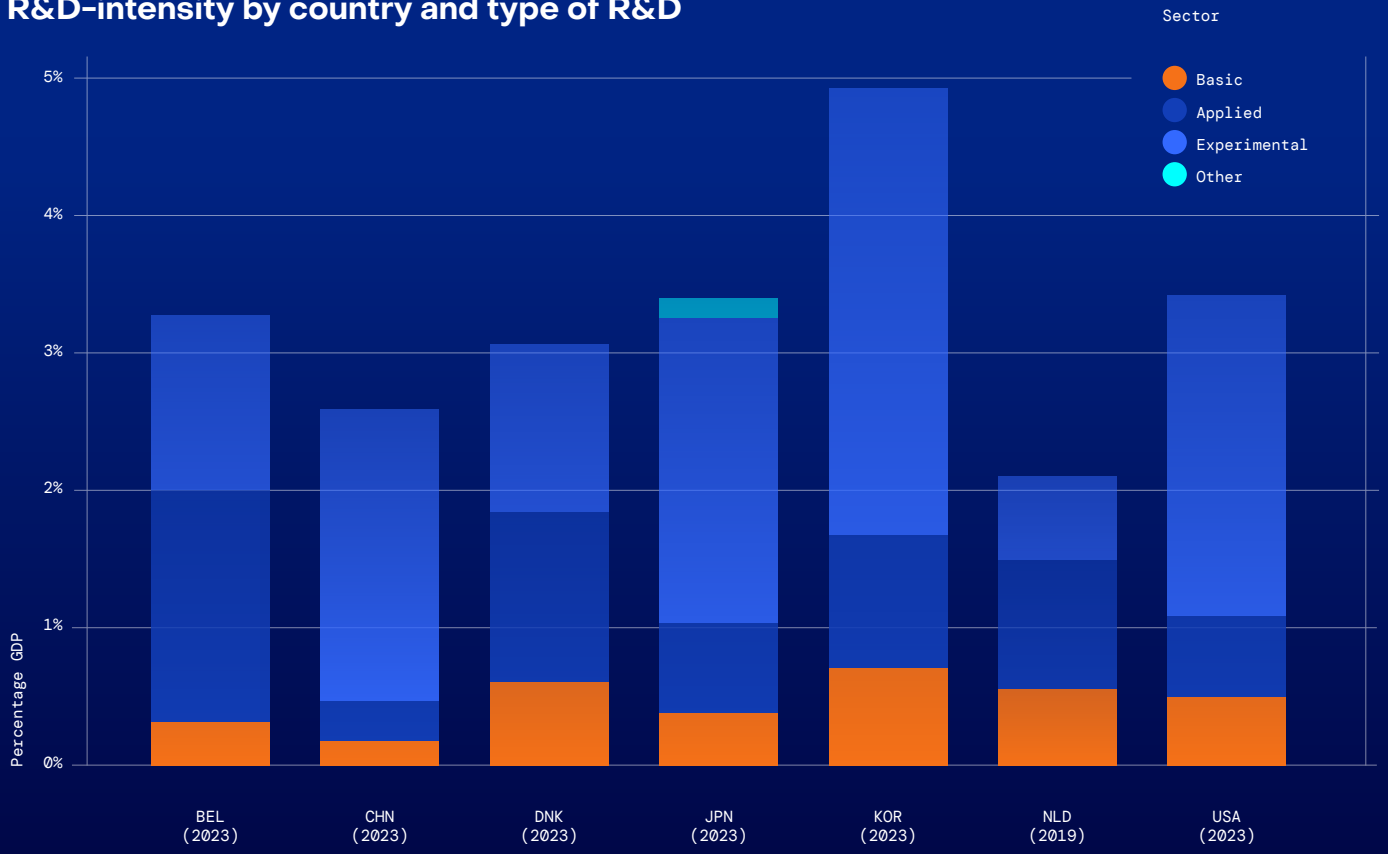
Private R&D intensity for a selection of sectors and a selection of countries, for the most recent year for which data are available. Sources: Eurostat, OECD, CBS, TNO (2025).

2.4 Lagging behind in the area of experimental development

The limited scale of private R&D expenditure also appears to affect the type of research carried out in the Netherlands (see Box 4). The intensity of basic research—fundamental research that in practice is largely performed by the Government and Higher Education sectors (see Box 3)—is relatively high in the overall mix, and notably this applies to almost all European countries that are lagging behind[20]. By contrast, the Netherlands clearly falls short in experimental development: research aimed at advancing knowledge further along the innovation trajectory (research with a relatively higher risk of failure) within the innovation process. Structural long-term economic growth requires greater effort in research focused on applying knowledge in products, services and production processes.

Figure 9

R&D-intensity by country and type of R&D



Country	Year	Basic	Applied	Experimental	Other	Total
BEL	2023	0.32	1.67	1.28	0	3.27
CHN	2023	0.17	0.28	2.12	0	2.57
DNK	2023	0.6	1.24	1.23	0	3.07
JPN	2023	0.41	0.64	2.25	0.15	3.45
KOR	2023	0.74	0.98	3.24	0	4.96
NLD	2019	0.54	0.95	0.65	0	2.14
USA	2023	0.5	0.62	2.32	0.01	3.45

Total R&D intensity of the Netherlands, China, Belgium, Japan, the United States and South Korea, broken down by type of R&D, for the most recent year for which data are available. Source: OECD (2025).

20 Here again, R&D expenditure by type of research is expressed as a percentage of GDP, in order to correct for the size of the economy and thereby enable comparisons across countries.

Box 4

R&D statistics: basic, applied and experimental research

In addition to the further breakdown of R&D expenditure by sector of performance (see Box 3), R&D statistics also distinguish expenditure by type of research.

- *Basic research* is experimental or theoretical work undertaken to acquire new knowledge of the underlying foundations of phenomena and observable facts, without any specific application or use in view.
- *Applied research* is also conducted to acquire new knowledge, but it is primarily directed towards a specific, practical aim or objective.
- *Experimental development* is research that builds on knowledge gained from earlier research or practical experience, with the aim of generating new knowledge directed towards the production of new products or processes, or the improvement of existing products or processes—the "D" in R&D.

2.5 The European 'Mid-Tech Trap' and the strategic opportunities for the Netherlands

Within European policy debates, growing attention is being paid to the so-called mid-tech trap: a situation in which European industry is strong in established, medium-technology sectors, but remains underrepresented into high-tech domains that generate the highest productivity growth and strategic value globally. This is viewed in various European strategic dialogues—among others those focusing on open strategic autonomy and defence innovation—as a risk to the EU's future resilience, productivity and competitiveness[21].

For this reason, the European innovation and industrial agenda is increasingly focused on strengthening high-tech and deeptech value chains. The aim is to reduce dependence on other geopolitical power blocs and to build and anchor key technologies—such as AI, quantum technologies, semiconductors, and advanced energy and aerospace technologies—within Europe.

In this context, it is relevant that, among the thirty largest R&D investors in the R&D Top 50, a relatively large share of the leading investors operates precisely in those sectors that Europe designates as "high-tech"[22]. (see Figure 10). Moreover, R&D investment by these high-tech companies has increased substantially over the past three years (see Figure 11). This provides the Netherlands with a favourable starting position to align with the European ambition to strengthen the high-tech base and to make better use of the European funding instruments that are becoming available for this purpose.

A recent example is the announced AI factory[23] in the Netherlands, which is being realised with European co-financing. The current Dutch R&D landscape therefore presents not only challenges, but also clear opportunities to respond to this necessary European shift towards high-tech-intensive growth. To capitalise on these opportunities, it is essential that the Netherlands continues to invest in renewing its economic structure by stimulating the emergence and scaling-up of new high-tech-intensive companies—for example through IPCEI (Important Projects of Common European Interest) initiatives in these domains.

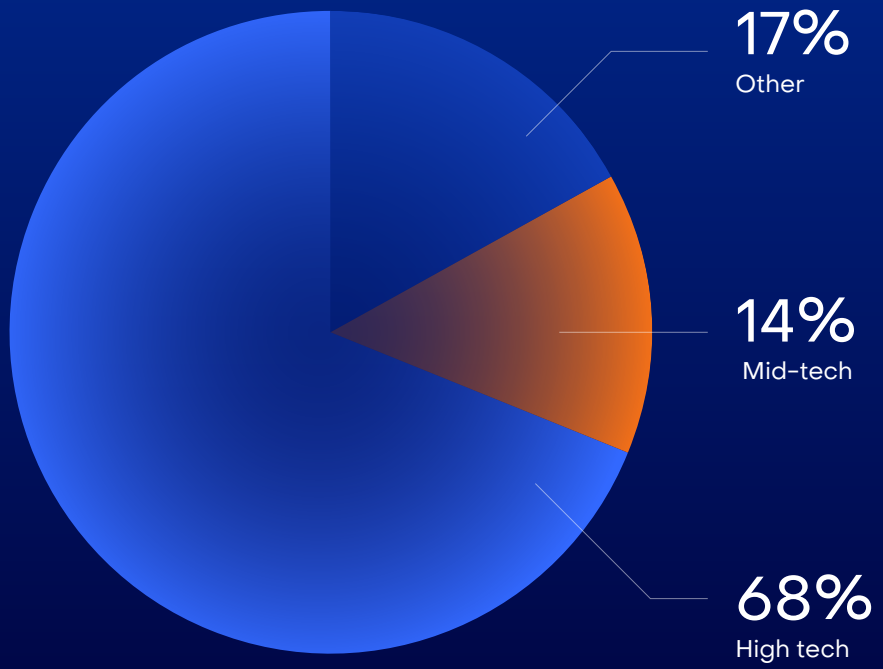
21 For further background, see European Commission (2024), The Future of European Competitiveness: Part A | A competitiveness strategy for Europe, and Dorn, F., et al. (2024), Europe's Middle-Technology Trap.

22 For this analysis, a three-way classification is applied that aligns with the classifications used by Eurostat and the OECD. High-tech includes, among others, aerospace & defence, alternative energy, electronic & electrical equipment, health care equipment & services, pharmaceuticals & biotechnology, software & computer services, and technology hardware & equipment. Mid-tech includes, among others, automobiles & parts, chemicals, financial services, fixed line telecommunications, industrial engineering, industrial metals & mining, industrial transportation, leisure goods, mobile telecommunications and personal goods. The other category consists mainly of services and utilities, including banks, beverages, construction & materials, electricity, food producers and food & drug retailers, forestry & paper, gas/water/multiutilities, general industrials, general retailers, household goods & home construction, insurance, media, mining, oil & gas producers, real estate, support services, tobacco, and travel & leisure.

23 For more details, see AIC4NL, Dutch AI factory.

Figure 10

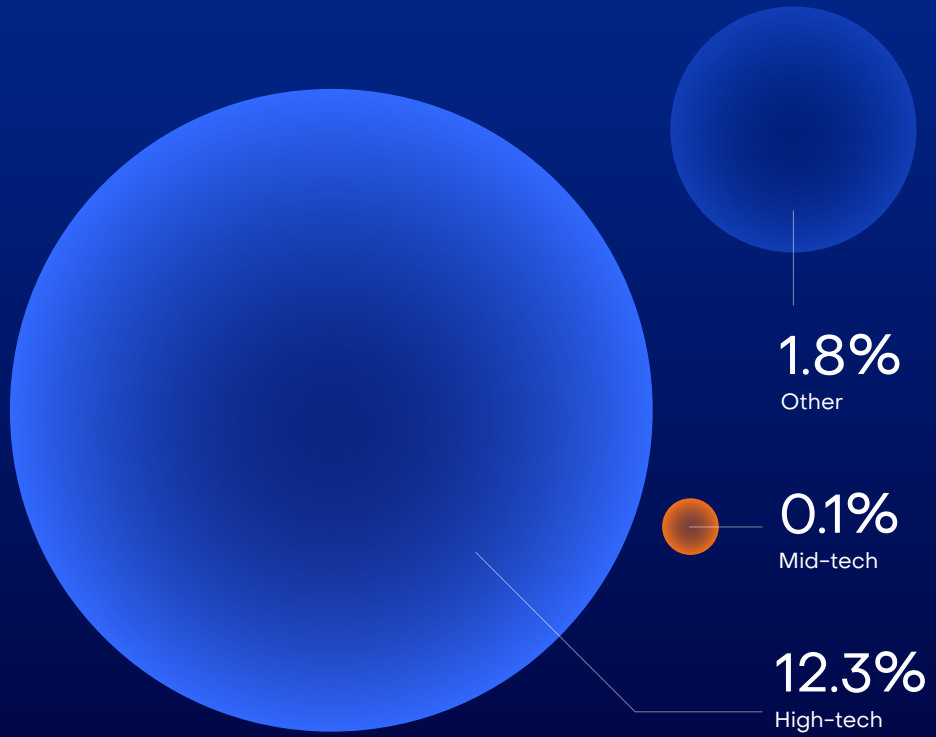
Distribution of R&D expenditure among companies ranked 1–30, by technology classification



Shares of total reported R&D expenditure by technology classification, for companies ranked 1-30.[24]

Figure 11

Average annual growth of R&D expenditure by technology classification



Average growth of total reported R&D expenditure over 2022-2024, by technology classification[25]

24 Companies are primarily classified based on the sector classification used in the 2024 EU Industrial R&D Investment Scoreboard. For companies not included in this Scoreboard dataset, the classification is based on the most detailed sector information available from S&P Global. The distinction between high-tech, mid-tech and other sectors follows the EU definition as applied in the EconPol report "EU Innovation Policy: How to Escape the Middle Technology Trap".

25 For this calculation, only companies that reported R&D expenditure in both 2022 and 2024 and that ranked within positions 1–30 of the R&D ranking in 2024 are included. For each technology classification (high-tech, mid-tech and other), total reported R&D expenditure was aggregated per year. The reported CAGR therefore reflects the average annual growth of total R&D expenditure per class, rather than the average growth of individual companies.

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