



# European Innovation Scoreboard **2024** Country Profile **North Macedonia**

## European Innovation Scoreboard 2024 – Country profile North Macedonia

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## NORTH MACEDONIA

### Emerging Innovator ●

Summary innovation index (relative to EU in 2017): **49.6**

Rank: **34**

Change vs 2023: ▲ 3.9 Change vs 2017: ▲ 11.9

North Macedonia is an Emerging Innovator with performance at 45.1% of the EU average in 2024. Performance is below the average of the Emerging Innovators (48%). Performance is increasing more than the EU (+10%).

Indicator	Performance relative to the EU in 2024	Performance change 2017-2024	Performance change 2023-2024
<b>SUMMARY INNOVATION INDEX</b>	<b>45.1</b>	<b>11.8</b>	<b>3.9</b>
<b>Human resources</b>	<b>36</b>	<b>9.8</b>	<b>4.9</b>
New doctorate graduates	21.4	0	11.6
Population with tertiary education	70.6	32.9	0
Population involved in lifelong learning	13.6	-3.1	0
<b>Attractive research systems</b>	<b>79.7</b>	<b>40.9</b>	<b>3.6</b>
International scientific co-publications	25.9	21.2	0.1
Scientific publications among the top 10% most cited	44.3	36	3.7
Foreign doctorate students as a % of all doctorate students	185.1	70.1	6.6
<b>Digitalisation</b>	<b>37.1</b>	<b>-0.9</b>	<b>0</b>
Broadband penetration	51	-1.7	0
Individuals with above basic overall digital skills	17.7	0	0
<b>Finance and support</b>	<b>14.5</b>	<b>-0.7</b>	<b>0.2</b>
R&D expenditure in the public sector	26.2	-13.1	0
Venture capital expenditures	10.4	7.8	0.5
Direct and indirect government support of business R&D	5.4	6.6	0
<b>Firm investments</b>	<b>42.1</b>	<b>0.6</b>	<b>0</b>
R&D expenditure in the business sector	4.2	1.5	0
Non-R&D innovation expenditures	115.7	0	0
Innovation expenditures per person employed	14.8	0	0
<b>Use of information technologies</b>	<b>30.9</b>	<b>5.7</b>	<b>-3.5</b>
Enterprises providing ICT training	35.6	-5.1	-7
Employed ICT specialists	26.4	16.1	0
<b>Innovators</b>	<b>63.2</b>	<b>0</b>	<b>0</b>
SMEs introducing product innovations	49.6	0	0
SMEs introducing business process innovations	74.1	0	0
<b>Linkages</b>	<b>49.4</b>	<b>40.2</b>	<b>-18.9</b>
Innovative SMEs collaborating with others	44.7	0	0
Public-private co-publications	27.7	25.1	-5.4
Job-to-job mobility of HRST	62.5	82.3	-41.2
<b>Intellectual assets</b>	<b>21.5</b>	<b>3.8</b>	<b>5.4</b>
PCT patent applications	30.1	0.8	8.5
Trademark applications	27.6	13.2	6.4
Design applications	1.1	0.8	0.4
<b>Employment impacts</b>	<b>31.6</b>	<b>6.9</b>	<b>0</b>
Employment in knowledge-intensive activities	15.8	14.5	0
Employment in innovative enterprises	45	0	0
<b>Sales impacts</b>	<b>59.6</b>	<b>14.2</b>	<b>1.3</b>
Exports of medium and high technology products	99.4	10.1	1.1
Knowledge-intensive services exports	42.6	29.3	2.4
Sales of new-to-market and new-to-firm innovations	22.8	0	0
<b>Environmental sustainability</b>	<b>87.4</b>	<b>34.8</b>	<b>48.9</b>
Resource productivity	51.4	29.4	14
Air emissions by fine particulates	N/A	N/A	N/A
Environment-related technologies	144.4	51.6	94.6

### Relative strengths

- Foreign doctorate students as a % of all doctorate students
- Environment-related technologies
- Non-R&D innovation expenditures

### Relative weaknesses

- Design applications
- R&D expenditure in the business sector
- Direct and indirect government support of business R&D

### Strong increases since 2017

- Job-to-job mobility of HRST
- Foreign doctorate students as a % of all doctorate students
- Environment-related technologies

### Strong decreases since 2017

- R&D expenditure in the public sector
- Enterprises providing ICT training
- Population involved in lifelong learning

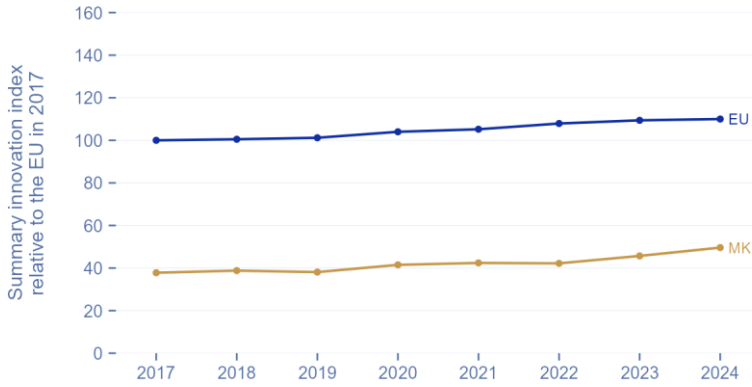
### Strong increases since 2023

- Environment-related technologies
- Resource productivity
- New doctorate graduates

### Strong decreases since 2023

- Job-to-job mobility of HRST
- Enterprises providing ICT training
- Public-private co-publications

**Footnote:** The first data column shows scores relative to the EU in 2024, with colour codes indicating performance levels. The subsequent columns show performance changes over time, with scores relative to the EU in 2017, coloured in purple for positive change and red for negative change. As reference years differ between the first column (2024) and the last two columns (2017), scores cannot be directly compared or subtracted across these columns.



### Summary innovation index

The line chart shows the evolution of the innovation performance of North Macedonia over time, relative to the performance of the EU in 2017.

**Footnote:** All performance scores (SII and dimensions below) are relative to that of the EU in 2017.

### Framework conditions

North Macedonia has shown positive performance in framework conditions, particularly in terms of the attractiveness of the research systems with a 40.9%-point increase on the latter indicator since 2017. However, despite overall progress enhancing its research system, the country stands below 70% of the EU average on international scientific co-publications and prominence of publications in terms of citations. The impressive 70.1%-point increase in foreign doctorate students over the past eight years puts North Macedonia at 185.1% of 2024 EU average – a result of continued state efforts to improve research excellence and national research system integration into the EU (OECD, 2024).

Human resources remain a constraint for North Macedonia which registered a moderate 9.8%-point increase compared to 2017 with performance remaining below 70% of the EU average. A 32.9%-point increase in population with tertiary education registered the best performance among the indicators in this category representing 70.6% of the 2024 EU average. Finally, North Macedonia’s advanced on its broadband infrastructure development, especially the 5G network access, but its broadband penetration remains below the EU average and significant investments into population’s digital skills are required as the country performs at 17.7% of the 2024 EU average on this indicator.

#### Human resources



#### Attractive research systems



#### Digitalisation

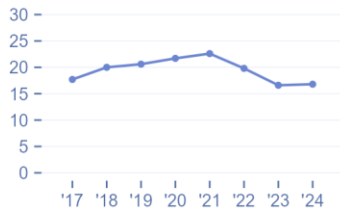


### Investments

North Macedonia registered a 13.1%-point decrease in R&D spending in the public sector compared to 2017 performing at 26.2% of the EU average in 2024 on this indicator. Despite an increase in venture capital expenditure and government support to business R&D (e.g., through the Fund for Innovation and Technology and Development), the finance and support dimension remains modest standing at 14.5% of the 2024 EU average. While firm R&D expenditures are low, the innovativeness of North Macedonian businesses stems from the non-R&D-related investments in innovation, the country performing above the EU average on this indicator.

The Government efforts to enhance digitalisation resulted in moderate increase in the use of information technologies, but its performance remains significantly below the EU average. The steady 16.1%-point increase since 2017 in the number of employed ICT specialists reflects the robust growth of the ICT industry which is one of the country’s fastest-growing sectors (OECD, 2024).

**Finance and support**



**Firm investments**



**Use of information technologies**



**Innovation activities**

North Macedonia performs at 49.6% and 74.1% of the 2024 EU average on SMEs introducing product and business process innovations, respectively. It has shown a significant 40.2%-point increase in linkages since 2017 but further progress is constrained by limited business-academia collaboration as there is a lack of incentives for co-creation and an inadequate support infrastructure (OECD, 2024). Despite a fall of 41.2%-points on job-to-job mobility of HSRT compared to 2023, North Macedonia performs at 62.5% of the 2024 EU average on this indicator.

North Macedonia ranked 54th on the 2023 Global Innovation Index performing above expectations relative to its level of GDP and increasing the translation of its innovation investments into innovation outputs (WIPO, 2023). This result is reflected in the country's 3.8%-point increase since 2017, and 5.4%-point enhancement compared to 2023 in intellectual assets. Notably, North Macedonia's patent and trademark applications increased strongly compared to 2023, but the country still performs well below 70% of the EU average on this dimension.

**Innovators**



**Linkages**



**Intellectual assets**



**Impacts**

Overall, North Macedonia has shown a positive trend across all three dimensions. The main strength lies in environmental sustainability, particularly the development of environmental-related technologies, which increased by 94.6%-points compared to 2023 placing North Macedonia at above 125% of the EU average performance in 2024 on this indicator. This improvement is consistent with the country's efforts on the Green Agenda for Western Balkans and the National Energy and Climate Plan (NECP) implementation. Resource productivity improved but remains at 51.4% of the EU performance in 2024.

On the other hand, sales impacts have also registered an increase of 14.2%-points since 2017, mainly due to the growth in knowledge-intensive service exports, which have risen by 29.3%-points. Additionally, there has been a positive trend in the exports of medium and high technology products, which have increased by 10.1%-points compared to 2017.

**Employment impacts**



**Sales impacts**



**Environmental sustainability**



## Structural differences

### Performance and structure of the economy

The economy of North Macedonia has been resilient over the past few years, with an average annual GDP growth rate that surpasses the EU average. However, its GDP per capita is 42% of the EU average. The turnover share of small and medium-sized enterprises (SMEs) in North Macedonia is higher than the EU average.

### Business and entrepreneurship

The significant growth of North Macedonia's attractiveness as an investment destination is confirmed by the country's higher-than-EU-average FDI net inflows and enterprise birth rates, with scores of 3.8 versus 1.9 and 1.9 versus 0.8, respectively. However, the level of buyer sophistication in the EU remains significantly higher than in North Macedonia. Overall, these findings point to a business environment that is improving and becoming more competitive and attractive for research, knowledge exchange, and investment in innovative products and services.

### Innovation profiles

No data available.

### Governance and policy framework

The North Macedonian governance system provides a relatively high-corruption framework for innovators, with a corruption index at 40.3 (vs 64.0 for the EU), indicating a weak rule of law. Corruption remains prevalent in many areas and is an issue of concern, highlighting the need for strengthened anti-corruption efforts, including robust implementation of the national strategy and allocation of adequate resources to prosecute high-level corruption cases effectively (European Commission, 2023). On a more positive note, the level of government procurement of advanced technology products is slightly higher than the EU average, at 4.0% versus 3.4%, respectively.

### Climate change

No data available.

### Demography

North Macedonia's population stands at more than 1.9 million people with a population density of 80.1. The decline in population is primarily attributed to emigration (State Statistical Office, 2023). Addressing the factors contributing to emigration will be crucial for future population stability and economic development in the country.

## Structural indicators

The table below presents some structural differences between North Macedonia and the EU.

	MK	EU
<b>Performance and structure of the economy</b>		
GDP per capita	42	100
Turnover share SMEs	16.4	12.6
Turnover share large enterprises	34.6	49.6
<b>Business and entrepreneurship</b>		
Enterprise births	1.9	0.8
FDI net inflows	3.8	1.9
Buyer sophistication	2.8	3.6
<b>Governance and policy frameworks</b>		
Corruption Perceptions Index	40.3	64
Government procurement of advanced technology products	4	3.4
Rule of law	-0.1	1
<b>Demography</b>		
Population size (in millions)	1.9	447
Average annual population growth (2021-2023 average)	-5.9	0.3
Population density	80.1	109

## References

The country's relative strengths and weaknesses for each indicator, compared to other EU Member States and neighbouring countries, can be found in [Annex B](#).

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This report provides the Country profile from the 2024 European Innovation Scoreboard for North Macedonia

*Studies and reports*

