



**GKI RANK** 46 /132

**GKI SCORE** 50.5

**WORLD AVERAGE** 46.5

**COUNTRY PERFORMANCE SUMMARY**

North Macedonia is a strong performer in terms of its knowledge infrastructure. It ranks 46<sup>th</sup> out of 132 countries in the Global Knowledge Index 2022 and 3<sup>rd</sup> out of the 28 countries with high human development.

**NORTH MACEDONIA**

**AREAS OF STRENGTH**

- + MSME financing gap (% GDP)
- + Years of compulsory education in primary and secondary
- + ISO 14001 environmental certificates (per billion GDP)
- + Tax and contribution rate (% profit)
- + Teachers in tertiary education, gender parity

**AREAS OF IMPROVEMENT**

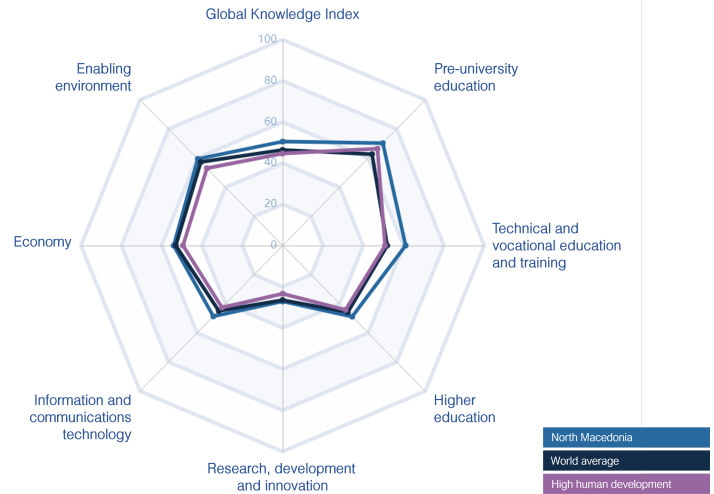
- Labour force participation rate with short-cycle tertiary education
- Ratio of medium-skill TVET occupations earnings to average wage
- Quality of vocational training
- Unemployment rate with vocational education
- Assessment of 15-year-old students in math, science and reading

**KEY INDICATORS**

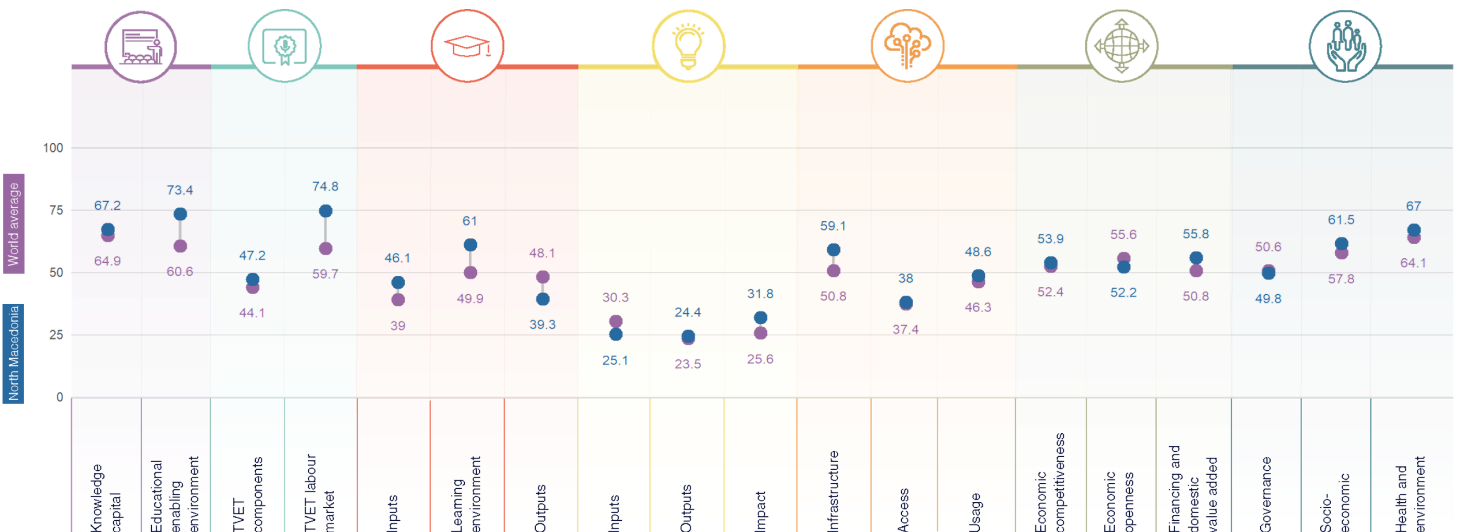
**GDP (US\$ billions): 34**  
**Population: 2,103,330**  
**HDI: 0.77**

**SECTORAL INDICES**

	RANK	VALUE
PRE-UNIVERSITY EDUCATION	58	70.3
TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING	25	61.0
HIGHER EDUCATION	49	48.8
RESEARCH, DEVELOPMENT AND INNOVATION	48	27.1
INFORMATION AND COMMUNICATIONS TECHNOLOGY	57	48.6
ECONOMY	56	54.0
ENABLING ENVIRONMENT	52	59.5



**GKI PILLARS**





# NORTH MACEDONIA

	Rank Value			Rank Value	
<b>PRE-UNIVERSITY EDUCATION</b>	<b>58</b>	<b>70.3</b>	<b>HIGHER EDUCATION</b>	<b>49</b>	<b>48.8</b>
<b>Knowledge capital</b>	<b>77</b>	<b>67.2</b>	<b>Inputs</b>	<b>39</b>	<b>46.1</b>
Enrolment	79	82.53	Expenditure	n/a	n/a
Net enrolment rate in primary education	81	82.53	Government expenditure per tertiary student	n/a	n/a
Net enrolment rate in lower secondary education	n/a	n/a	Teaching staff compensation (% tertiary expenditure)	n/a	n/a
Net enrolment rate in upper secondary education	n/a	n/a	<b>Enrolment</b>	<b>69</b>	<b>19.1</b>
<b>Completion</b>	<b>31</b>	<b>81.23</b>	Enrolment in bachelor's or equivalent level (%)	52	29.08
Years of compulsory education in primary and secondary	1	100	Enrolment in master's, doctoral or equivalent (%)	75	9.13
Completion rate in upper secondary education	44	82.61	<b>Resources</b>	<b>32</b>	<b>73.08</b>
Gross intake ratio to the last grade of lower secondary education	82	61.09	Pupil-teacher ratio in tertiary education	35	83.18
<b>Outcomes</b>	<b>91</b>	<b>37.88</b>	Researchers in higher education (%)	34	62.99
Assessment of 15-year-old students in math, science and reading	64	29.65	<b>Learning environment</b>	<b>36</b>	<b>61</b>
Learning-adjusted years of schooling	85	46.1	<b>Diversity and academic freedom</b>	<b>29</b>	<b>65.19</b>
<b>Educational enabling environment</b>	<b>33</b>	<b>73.4</b>	Teachers in tertiary education, gender parity	6	96.24
Expenditure	n/a	n/a	Inbound mobility rate	47	13.33
Government expenditure on primary education (% GDP)	n/a	n/a	Academic freedom	48	86
Government expenditure on secondary education (% GDP)	n/a	n/a	<b>Equity and inclusiveness</b>	<b>16</b>	<b>56.79</b>
Government funding per primary student (% GDP per capita)	n/a	n/a	Gross attendance ratio for tertiary education, gender parity	27	87.12
Government funding per secondary student (% GDP per capita)	n/a	n/a	Gross attendance ratio for tertiary education, wealth parity	25	18.34
<b>Resources</b>	<b>n/a</b>	<b>n/a</b>	Gross attendance ratio for tertiary education, location parity	10	64.9
Pupil-trained teacher ratio in primary education	n/a	n/a	<b>Outputs</b>	<b>99</b>	<b>39.3</b>
Pupil-trained teacher ratio in secondary education	n/a	n/a	<b>Attainment</b>	<b>54</b>	<b>20.2</b>
Schools with access to computers in primary education (%)	n/a	n/a	Educational attainment rate, bachelor's or equivalent	40	44.88
Schools with access to computers in secondary education (%)	n/a	n/a	Educational attainment rate, master's or equivalent	60	7.17
<b>Early learning</b>	<b>71</b>	<b>61.76</b>	Educational attainment rate, doctoral or equivalent	53	8.54
Gross enrolment ratio in early childhood education	99	19.42	<b>Employment</b>	<b>91</b>	<b>71.44</b>
Proportion of children who are developmentally on track	22	73.26	Labour force participation rate with advanced education	39	79.1
Proportion of children with stimulating home learning environments	9	92.61	Unemployment rate with advanced education	105	63.77
Pupil-trained teacher ratio in pre-primary education	n/a	n/a	<b>Impact</b>	<b>103</b>	<b>26.3</b>
<b>Equity and inclusiveness</b>	<b>45</b>	<b>84.97</b>	University-industry collaboration in R&D	104	33.69
Completion rate in upper secondary education, gender parity	12	98.78	Citable documents per R&D personnel in higher education	56	18.91
Completion rate in upper secondary education, wealth parity	55	56.13	<b>RESEARCH, DEVELOPMENT AND INNOVATION</b>	<b>48</b>	<b>27.1</b>
Completion rate in upper secondary education, location parity	1	100	<b>Inputs</b>	<b>75</b>	<b>25.1</b>
<b>TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING</b>	<b>25</b>	<b>61</b>	Inputs of R&D institutions	97	19.58
<b>TVET components</b>	<b>47</b>	<b>47.2</b>	GERD (% GDP)	67	6.73
<b>Continuous training and skilling</b>	<b>97</b>	<b>37.45</b>	GERD per researcher	81	8.23
Firms offering formal training (%)	40	48.82	Researchers per thousand labour force	57	11.14
Labour force participation rate with short-cycle tertiary education	80	31.91	Tertiary graduates from STEM programmes (%)	66	52.22
Participation rate in formal and non-formal education and training	71	31.61	<b>Inputs of RDI in business enterprises</b>	<b>71</b>	<b>21.85</b>
<b>TVET structure</b>	<b>11</b>	<b>72.89</b>	GERD performed by business enterprises (%)	56	2.54
Government expenditure on vocational education (%)	n/a	n/a	GERD financed by business enterprises (%)	56	37.18
Share of students enrolled in secondary vocational programmes	23	45.78	Researchers in business enterprises (%)	45	29.18
Share of students enrolled in post-secondary vocational programmes	1	100	Firms that spend on R&D (%)	64	18.49
<b>TVET quality and qualifications</b>	<b>125</b>	<b>31.26</b>	<b>Inputs of societal innovation</b>	<b>43</b>	<b>39.27</b>
Extent of staff training	99	44.97	High-skilled employment (%)	48	37.62
Quality of vocational training	113	40.79	Intellectual property payments (% total trade)	16	38.51
Ratio of high-skill TVET occupations earnings to average wage	72	17.78	State of cluster development	97	41.67
Ratio of medium-skill TVET occupations earnings to average wage	99	21.52	<b>Outputs</b>	<b>51</b>	<b>24.4</b>
<b>TVET labour market</b>	<b>14</b>	<b>74.8</b>	<b>Outputs of R&amp;D institutions</b>	<b>39</b>	<b>30.42</b>
<b>Efficiency of the labour market</b>	<b>64</b>	<b>65.45</b>	Average documents per researcher	43	22.29
Firms constrained with inadequately educated workforce (%)	51	63.89	Citations per document	7	58.26
Employment educational mismatch (%)	27	79.55	Resident patent applications (per 100 billion GDP)	47	10.73
Proportion of skilled production workers	45	65.96	<b>Outputs of RDI in business enterprises</b>	<b>57</b>	<b>18.51</b>
Unemployment rate with vocational education	114	52.41	Intellectual property receipts (% total trade)	44	4.99
<b>Post-TVET employment</b>	<b>9</b>	<b>73.28</b>	Industrial design applications (per 100 billion GDP)	56	6.85
Share of TVET occupations	19	71.32	PCT applications (per 100 billion GDP)	53	4.5
Manufacturing employment (%)	9	75.24	Firms producing new products and services (%)	32	57.82
<b>Equity and inclusiveness</b>	<b>28</b>	<b>85.76</b>	<b>Outputs of societal innovation</b>	<b>72</b>	<b>18.32</b>
Enrolment in vocational education, gender parity	n/a	n/a	Trademark applications (per 100 billion GDP)	n/a	n/a
Vulnerable employment rate	47	85.76	Cultural goods exports (% exports)	77	3.24
			Printing and publishing output (% manufactured output)	17	33.4
			<b>Impact</b>	<b>33</b>	<b>31.8</b>
			<b>Quality</b>	<b>11</b>	<b>47.68</b>
			Research institutions prominence	99	0.87
			Growth of innovative companies	107	41.09
			ISO 9001 quality certificates (per billion GDP)	14	52.83
			ISO 14001 environmental certificates (per billion GDP)	3	95.94
			<b>Linkages</b>	<b>98</b>	<b>7.97</b>
			GERD financed from abroad (%)	73	8.16
			Joint ventures per strategic alliance deals (per billion GDP)	106	2.48
			Computer software spending (% GDP)	75	13.28
			<b>Business development</b>	<b>37</b>	<b>39.63</b>
			New business density per thousand population	40	14.15
			Firms with products and services new to the market (%)	25	65.12



# NORTH MACEDONIA

	Rank	Value		Rank	Value
<b>INFORMATION AND COMMUNICATIONS TECHNOLOGY</b>	<b>57</b>	<b>48.6</b>	<b>ENABLING ENVIRONMENT</b>	<b>52</b>	<b>59.5</b>
<b>Infrastructure</b>	<b>45</b>	<b>59.1</b>	<b>Governance</b>	<b>61</b>	<b>49.8</b>
Coverage	82	38.89	Political environment	53	51.09
3G/4G mobile network coverage (% population)	32	99.65	Peace and stability	58	50
Secure Internet servers per 1 million population	64	0.88	Voice and accountability	60	52.17
Investment in telecommunication services (% GDP)	84	16.15	Quality of institutions	71	48.56
<b>Quality</b>	<b>32</b>	<b>48.07</b>	Rule of law	64	52.4
Mobile upload and download speeds	n/a	n/a	Control of corruption	76	43.27
Fixed-broadband upload and download speeds	n/a	n/a	Government effectiveness	74	50
Fixed-broadband subscriptions by speed per hundred people	47	48.07	<b>Socio-economic</b>	<b>56</b>	<b>61.5</b>
<b>Affordability</b>	<b>68</b>	<b>90.41</b>	Gender equity	31	77.96
Fixed broadband basket (% GNI per capita)	80	83.21	Female-to-male ratio in parliament	18	71.43
Mobile broadband basket (% GNI per capita)	83	88.03	Female-to-male labour force participation	95	67.6
Internet and telephony competition	1	100	Female-to-male ratio in Internet usage	76	94.86
<b>Access</b>	<b>66</b>	<b>38</b>	Social inclusion	69	64.53
<b>Subscriptions</b>	<b>82</b>	<b>45.84</b>	Social protection coverage (% population)	68	37.24
Active mobile-broadband subscriptions per hundred inhabitants	96	26.94	Adult literacy rate	36	97
International Internet bandwidth per user	107	30.85	Youth not in employment, education or training (%)	75	59.35
Households with Internet access at home (%)	68	79.71	<b>Standard of living</b>	<b>64</b>	<b>42.1</b>
<b>Skills and employment</b>	<b>53</b>	<b>30.13</b>	Poverty headcount ratio (% population)	56	70.85
Individuals with standard ICT skills (%)	56	24.65	GDP per capita	65	13.35
Tertiary graduates from ICT programmes (%)	36	35.12	<b>Health and environment</b>	<b>52</b>	<b>67</b>
ICT employment (%)	36	30.62	Health	62	79.81
<b>Usage</b>	<b>60</b>	<b>48.6</b>	Universal health coverage	76	68.41
<b>Services</b>	<b>73</b>	<b>47.06</b>	Healthy life expectancy (years)	59	74.72
Government online services	62	70.2	Under-five mortality rate	40	96.3
Fixed broadband Internet traffic per subscription	42	21.89	<b>Environmental performance</b>	<b>66</b>	<b>54.22</b>
Mobile broadband Internet traffic per subscription	67	15.95	Renewable energy consumption (%)	84	16.96
Internet users (%)	57	80.2	Ecological footprint per capita	69	82.69
<b>Outcomes</b>	<b>50</b>	<b>50.13</b>	Natural hazard exposure	52	63
ICT PCT patent applications (per 100 billion GDP)	61	37.07			
E-participation	40	69.32			
Internet activities by individuals (%)	41	53.17			
Trade in digitally deliverable services (% total trade)	60	40.98			
<b>ECONOMY</b>	<b>56</b>	<b>54</b>			
<b>Economic competitiveness</b>	<b>58</b>	<b>53.9</b>			
Infrastructure investment	70	47.67			
Gross fixed capital formation (% GDP)	83	36.04			
Logistics performance	79	42.62			
Transport productive capacity	70	25.33			
Building quality control	20	86.67			
<b>Business agility</b>	<b>54</b>	<b>60.11</b>			
Ease of starting a business	63	88.62			
Insolvency recovery rate	37	52.23			
Entrepreneurial employee activity rate	53	13.88			
Extent of corporate transparency	13	85.71			
<b>Economic openness</b>	<b>74</b>	<b>52.2</b>			
Trade and diversification	42	56.26			
Trade (% GDP)	16	47.83			
High-technology trade (% total trade)	74	20.15			
Product concentration	62	76.1			
Market concentration	100	80.97			
<b>Financial openness</b>	<b>83</b>	<b>48.18</b>			
Chinn-Ito financial openness	71	44.7			
Foreign direct investment, net inflows (% GDP)	44	50.32			
Debt dynamics	90	49.52			
<b>Financing and domestic value added</b>	<b>42</b>	<b>55.8</b>			
Financing and taxes	18	73.86			
Domestic credit to private sector (% GDP)	61	19.97			
MSME financing gap (% GDP)	1	100			
Tax and contribution rate (% profit)	4	94.91			
Bank non-performing loans (%)	54	80.56			
<b>Domestic value added</b>	<b>78</b>	<b>37.7</b>			
Medium- and high-tech activities value added	43	40.92			
Industry and services value added (% GDP)	92	45.34			
Labour underutilization rate	104	46.08			
Output per worker	67	18.43			

\*All values are normalized to a scale from 0 (worst) to 100 (best).