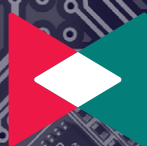


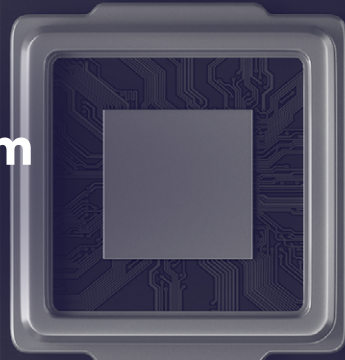
POLICY PROPOSAL - 2023 No.4

HOW DO WE BECOME A DIGITAL NATION?

Policy proposals of the
Equilibrium Institute on speeding up
Hungary's digital development



**Equilibrium
Institute**



How do we become a digital nation?

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2023-04

Publisher and editor responsible:

Equilibrium Institute

April 2023

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Hungary** ▶▶

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EXECUTIVE SUMMARY

01

This decade is about digital transformation: we must succeed in a fundamentally new economic system with a new type of competition. Digitalisation will comprehensively transform the way the economy and society operate – adapting to this is not a luxury to be pursued for its own sake; it is the cornerstone of our future competitiveness, well-being, and security. Digital transformation is one of the most important potential take-off points for escaping the middle-income trap. By the end of the decade, the digital sector could add up to as much as 8,000 bn forints to Hungary’s economic output – but only if we manage to close the development gap we have allowed to emerge in this sector.

02

The EU places a high priority on incentivising and regulating the digitalisation of economic and social life. Hungary must play a far more proactive role than hitherto in shaping this process in order to assert its own economic and social interests at the European level!

.....

03

Our digital development lags far behind both our peer competitors and our potential. Still, how we could make headway in this area is by no means a mystery. We are aware of the most pressing strategic items on the to-do list: developing digital skills, remedying the shortage of ICT professionals, and helping micro-, small-, and medium-sized enterprises catch up digitally.

04

The four most important dimensions of digitalisation are digital knowledge, digital infrastructure, the digitalisation of corporations and the economy, and the digital state. Based on the EU's Digital Economy and Society Index (DESI), Hungary ranks 22nd among the 27 EU member states.

05

We have especially fallen behind in digital literacy: we are ranked 23rd. A mere 49% of Hungarians have at least a basic level of digital skills, the shortage of IT professionals could reach 25,000 in a year or two, and our digital deficit is palpable in all areas of education. The digital inequalities overlap heavily with the general disparities in society: those in difficult financial circumstances, those with lower educational attainment, those living in disadvantaged regions, and the elderly are most likely to have fallen behind.

06

Hungary performs best in terms of digital infrastructure: with our 13th place, we rank in the midrange of EU countries. Neither internet access nor the spread of internet use can impede our digital progress – in other words, in the future, the state would be well-advised to focus its efforts on other areas.

07

Apart from digital literacy, the digitalisation of enterprises is the other area where we have fallen behind most massively (25th place). This is a major competitive disadvantage. Only a third of Hungarian SMEs have at least a basic level of digital intensity, and two-thirds do not even have a website. The use of AI among SMEs is negligible (3%), and the proportion of enterprises that use big data is also very low (7%); even the share of SMEs (24%) that subscribe to cloud-based services is far below the EU average.

08

With respect to digital public services, Hungary ranks 21st in the EU. We fare best in terms of e-government services, but we lag behind in many areas (automated filling of forms, digital public services for residential and corporate users, and open access data). The website and mobile apps offered by government agencies are too heterogenous in terms of appearance, language, and the logic of their operation, which impedes clients in using them as a matter of routine.

09

The Equilibrium Institute proposes that the most important action item is to improve the digital skills of Hungarians as widely as possible. In addition to the comprehensive and digitally centred renewal of the elementary and secondary education system, we especially need to launch state-funded digital competence development aimed at those in need (the disadvantaged, the elderly, the early school leavers, etc.)! In the case of those

who already have at least basic digital skills, we should use tax benefits and financial incentives to encourage their participation in other skill development programmes!

10

We should use digital training vouchers and targeted programmes for those with high-level digital skills to incentivise them to retrain as IT professionals! We should encourage especially youths and women to choose IT education! Let's create a coherent and unified system for short-cycle IT and digital training!

11

Let's create individual training accounts and tax benefits to encourage participation in digital adult education! Let's introduce a system of digital training contributions for employers to incentivise market players to do more for the digital education of employees!



12

Let's follow the British and Estonian model and introduce start-up and innovator visas to make it easier for digital professionals to start their own companies in Hungary! Let's incentivise Hungarian ICT professionals who work abroad to start working in Hungary again! Let's boost the creation of international champions in the Hungarian digital sector!

13

Let's develop a targeted grant scheme to support the digital investments of domestic SMEs! Let's draft digital strategies with detailed roadmaps for all sectors of the economy – and let's consistently implement these! Let's introduce mandatory digital minimums for all business development subsidies!

14

Let's scrap the telecommunications and public utility tax by 2024 to accelerate the building of digital infrastructure! In exchange for this, service providers should make clear and accountable commitments to develop the wired and wireless infrastructure!

15

The consistent implementation of the measures outlined in the National Digitalization Strategy published in December 2022 would in itself be sufficient for the spectacular development of digital public services. In addition, at the same time, digitalization must become a state priority with effective communication and institutional support, overseen by a clearly identifiable government official!

1. WHAT IS THE PROBLEM?

Digitalisation influences all areas of our lives in fundamental ways and to a continuously growing extent.

As a result of the rapid development of computer technology, the expansion in the range of electronic services, and the proliferation of applications based on big data and artificial intelligence (AI), citizens' everyday lives are undergoing profound changes. This extends to a wide variety of areas, including travel and shopping, business transactions, and the processes and technologies used in manufacturing products and services. How the state operates, how citizens manage their public administration issues, and even the conflicts between states are all changing.

This decade will be about the digital transformation: In other words, beyond the digitalisation of data and operations – and as a result of the latter – **we will have to survive and thrive in a new system and a new type of competition.**

What is at issue here is not merely that by using electronic instruments and apps, we can perform certain activities more efficiently, but rather that the ubiquity of digitalisation fundamentally transforms the way the economy and society operate. **The proliferation of artificial intelligence, machine-learning techniques, big data, and cloud services give rise to new modes of value creation.** New business models, corporate management techniques, and types of services are on the rise, and these in turn demand new skills and abilities. Improving user experience, marketing, and even the drafting and evaluation of new policy measures enacted by the state – the underlying transformation will fundamentally affect all walks of life.

Digital transformation also offers a way out of the middle-income trap. The proper digitalisation of the corporate sphere (and the state services assisting the latter) can help small- and medium-sized enterprises (SMEs) boost their productivity, catch up to large corporations, enter international markets, and foster innovation. Improving the public's digital skills will raise the quality of education, promote employment, and strengthen social cohesion. A study suggests **that the digital sector could add 21 bn euros (some 8,000 bn forints) to the output of the Hungarian economy** – but only if Hungary manages to close the development gap that has emerged in this area.¹ **In other words, digitalisation is not some luxury to be pursued for its own sake but the cornerstone of our long-term competitiveness, welfare, and security.**

Digital transformation also offers a way out of the middle-income trap.

Those who lag in their digital development will fall behind in all areas, and that the ground thus lost will be very difficult to make up. That is true for the labour market opportunities of individuals, the competitiveness of corporations and the country overall; it even affects our ability to tackle national security risks. It is no coincidence that in addition to several European states,² the European Union³ also regards accelerating digital transformation as one of the most important potential take-off points in the quest for global competitiveness. This is also reflected in the fact that **in recent years the EU has tried to become increasingly proactive as a regulator in the digital market (and while some argue that it is behind the curve in this**

¹ *Digital Challengers on the next frontier. Central and Eastern Europe thriving in digital commerce.* McKinsey & Company, 2022, and: A digitalizáció 21 milliárd euróval növelheti a magyar GDP-t 2030-ig [By 2030, digitalisation could add 21 billion euros to Hungary's GDP]. *Digital Hungary*, 15 September 2022. <https://www.digitalhungary.hu/gazdasag/A-digitalizacio-21-milliard-euroval-novelheti-a-magyar-GDP-t-2030-ig/17602/>

² *Assessing national digital strategies and their governance.* OECD, 2022, <https://www.oecd.org/digital/assessing-national-digital-strategies-and-their-governance-baffceca-en.htm>.

³ *European Commission Digital Strategy.* European Commission, 2022, https://commission.europa.eu/publications/european-commission-digital-strategy_en.



regard, others, in turn, argue that it is overactive). These efforts include the Digital Services Act, which is meant to regulate the activities of online platform providers and will enter into effect in early 2024;⁴ the comprehensive draft on the European development and application of artificial intelligence, which is slated to be adopted soon;⁵ and new draft legislation published by the European Commission at the end of February 2023 aimed at the speeding up the elimination of the obstacles in the way of expanding high-capacity networks (5G, above all).⁶ **If it wants to assert its own economic and social interests and aspires to be a shaper of this process rather than a passive follower, Hungary must assume a more active role than hitherto in this regulatory work.**

Over the last decade, the Hungarian state, too, commissioned roughly a dozen general and sectoral digital strategies. Currently, the National Info-communications Strategy (NIS)⁷ and the National Digitalisation Strategy (NDS)⁸ have formulated most comprehensively and clearly the idea that **the state plays a vital role in shaping the process of digital transformation**, improving digital competence and developing digital infrastructure and e-administration.

That is the case even if at the same time it is also true that in the majority of countries today, digital transformation is an organic process that will sooner or later transpire even

if it is entirely left up to the market. Over time, necessity will compel private enterprises to recognise that falling behind in this area jeopardises their competitiveness and, ultimately, their very existence. **However, the state is responsible for creating an environment where this organic development is smoothed by removing obstacles and creating proper incentives.** As was true for all previous technological revolutions, time is an essential factor in the digital revolution, too: the pioneers will start out with massive advantages in the emerging order, while those who join late will lag behind for a long time. In this situation, speed is not a luxury but a national strategic interest and hence also the state's responsibility.

“As was true for all previous technological revolutions, time is an essential factor in the digital revolution, too: the pioneers will start out with massive advantages in the emerging order, while those who join late will lag behind for a long time.”

⁴ The Digital Services Act Package. <https://digital-strategy.ec.europa.eu/en/policies/digital-services-act-package>





⁵ Proposal for a regulation of the European Parliament and of the Council laying down harmonised rules on Artificial Intelligence (Artificial Intelligence Act) and amending certain Union legislative acts. *European Commission*, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52021PC0206>.

⁶ *Gigabit Infrastructure Act Proposal and Impact Assessment*. *European Commission*, 23 February 2023. <https://digital-strategy.ec.europa.eu/en/library/gigabit-infrastructure-act-proposal-and-impact-assessment>

⁷ *National Infocommunications Strategy, 2014–2020*. Kormany.hu, <https://2010-2014.kormany.hu/download/b/f/d/21000/Nemzetiszazalek20InfokommunikaszazalekC3szazalekA1ci szazalekC3szazalekB3s szazalek20Strat szazalekC3szazalekA9qia szazalek202014-2020.pdf>.

⁸ *National Digitalisation Strategy, 2021–2030*. Kormany.hu, <https://2015-2019.kormany.hu/download/f/58/d1000/NDS.pdf>.

In the last decades, every term of government saw the drafting of some form of comprehensive strategic document or programme that at least recognised the role of info-communications and then digitalisation. Nevertheless, thus far, the underlying strategic objectives have only been partially realised. There are numerous explanations for this gap between the visions and reality, especially the following:





-  Infocommunications/digitalisation has never emerged as a governmental priority during any of the terms of government since the regime transition.
-  The position of digitalisation within the governmental structure has been constantly in flux, shifting with each change in government and sometimes even several times within a single term of government.
-  On account of their volatile and unsteady integration in the decision-making and institutional processes, the needs of digitalisation were often relegated to the background vis-à-vis competing sectoral interests.
-  Efforts to make headway in the area of digitalisation were at the same time hampered by intra-organisational factors (fear of change at the affected

public administration or commercial player); the negative impact of interactions between various bodies of public administration (failed cooperation stemming from fears concerning loss of competence and resources); and factors involving rent-seeking behaviour by private businesses (the priority given to IT developments of dubious necessity, quality, sustainability, and pricing).

Due to the cumulative impact of the above, Hungary's digital progress has lagged considerably behind its possibilities. In most areas, we are not even at the European average and have fallen far behind the best-performing countries in all the key areas. Still, when it comes to ascertaining what the most pressing strategic objectives are at this time, the situation is very clear: **developing digital competence in the general public as well as in the corporate and public spheres, alleviating the shortage of ICT professionals, and boosting the digital development of micro-, small- and medium-sized enterprises.** Although we have piled up massive disadvantages by failing to address these earlier, given the proper political will and consistent policy work, we could take an enormous leap forward within the span of a few years.

2. WHERE HUNGARY HAS FALLEN BEHIND AND WHERE IT COULD LAUNCH ITS EFFORTS TO CATCH UP

The digital ecosystem is a continuously evolving economic, social, and cultural environment. It is fundamentally **built on four pillars, and hence genuinely sustainable and lasting progress can only be achieved with the parallel and proportional development of these basic areas:**

-  **digital knowledge** (citizens' digital skills, the digital readiness of private enterprises and state institutions, etc.)
-  **internet access, internet use** (very high speed fixed and mobile networks, widespread Wi-Fi access, high internet penetration, etc.)
-  **digital economy** (the digitalisation of enterprises and industries, R&D innovation, start-ups, artificial intelligence, the development of data economy, etc.)
-  **digital state** (digital public services, digitalising government operations, etc.)

Essentially, these are the dimensions measured by the Digital Economy and Society Index (**DESI**), which tracks and compares the digital development of EU member states. Since 2014, this index has compiled the relevant data from member states. Despite numerous methodological criticisms, it has emerged as the most frequently cited evaluation scheme by European decision-making bodies, national governments, and experts alike. Its most important strength is that **it renders comparable the performance of individual European countries while also capturing shifts in their respective positions.**

In the most recent DESI ranking published in 2022, Hungary's position in the **22nd place reflects a severe and long-term deficit in the area of digitalisation.**

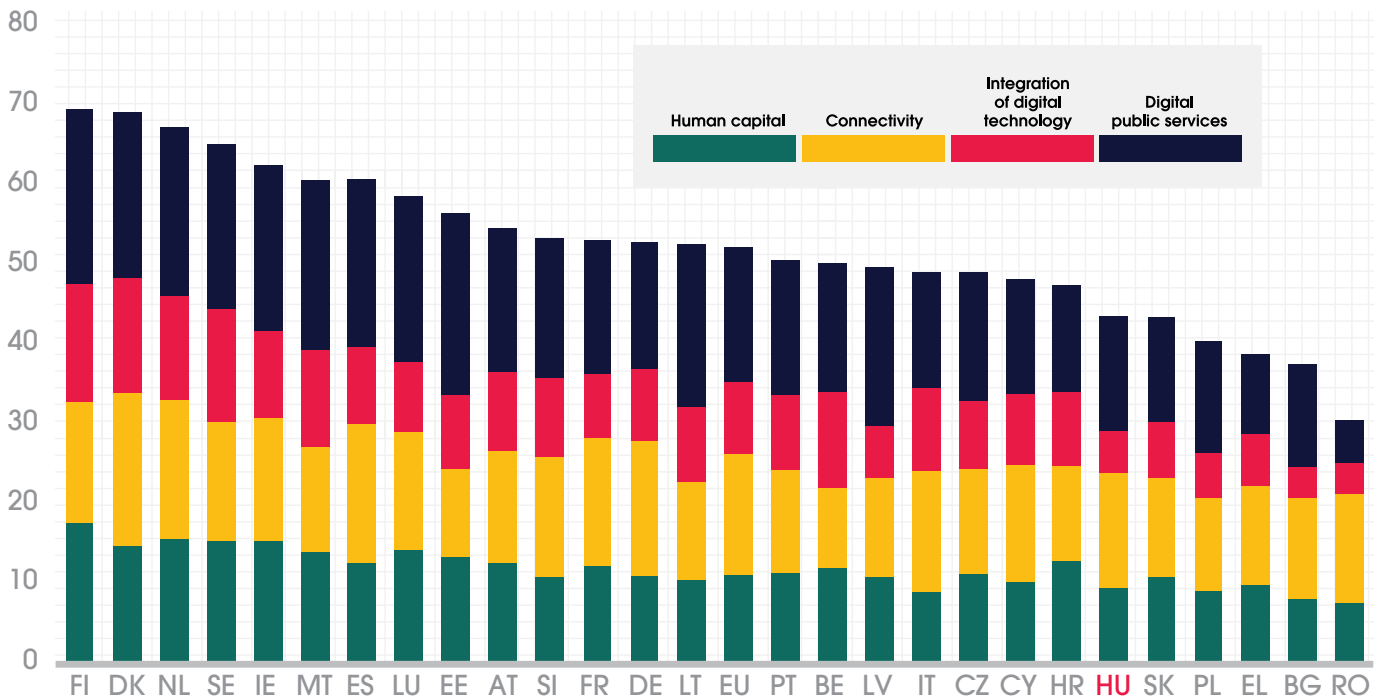


Figure 1: Ranking according to the 2022 DESI indicator measuring the development of the digital economy and society (source: DESI 2022)

In order to present a well-founded survey of the underlying problems and designate relevant pathways to remedy them,

we need to examine separately how Hungary fares in each area measured by the comprehensive index.

2.1. HUMAN CAPITAL – DIGITAL KNOWLEDGE

No matter how developed the digital infrastructure is, its real value comes from the people who can actually use it. **The lack of basic digital skills continuously exerts a detrimental effect on the labour market prospects of Hungarians**, deepening social inequality and impairing economic competitiveness. Furthermore, it also hampers the growth of the digital economy and impedes the realisation of returns on the investments in e-administration digital infrastructure.

Ranking		DESI score (2022)	
2022	2014	S3	64.2
		EU6	50.2
		EU AVERAGE	45.7
23	18	V3	42.2
		HUNGARY	38.4

Figure 2: Hungary’s DESI status: The human capital dimension⁹ (source: DESI 2014, DESI 2022)

⁹ The reference groups cited in our comparisons: S3 – Scandinavian EU member states (Denmark, Finland, and Sweden); EU6 – EU core countries (Belgium, France, Germany, Italy, Luxembourg, and the Netherlands); V3 – Visegrad countries excluding Hungary (Czechia, Poland, and Slovakia).

	Hungary			EU
	DESI 2020	DESI 2021	DESI 2022	DESI 2022
At least basic digital skills % individuals	NA	NA	49%	54%
			2021	2021
Above basic digital skills % individuals	NA	NA	22%	26%
			2021	2021
At least basic software skills % individuals	NA	NA	59%	66%
			2021	2021
ICT specialists individuals in employment aged 15-74	3.4%	3.8%	3.9%	4.5%
	2019	2020	2021	2021
Female ICT specialists % ICT specialists	11%	12%	14%	19%
	2019	2020	2021	2021
Enterprises providing ICT training % enterprises	16%	16%	16%	20%
	2019	2020	2020	2020
ICT graduates % graduates	4.6%	4.9%	3.1%	3.9%
	2018	2019	2020	2020

Figure 3: DESI indicators within the human capital indicator (source: DESI 2020, DESI 2021, DESI 2022)

Hungary lags the furthest behind on the DESI human capital indicator. In this dimension, we rank in the lowest third of European countries, and this is also the area where we have declined the most precipitously over the last decade (falling from 18th to 23rd place). We are not only far behind the traditionally high-performing Scandinavian countries or the EU average but also rank below the average of the Visegrad region (*Figure 2*).

A mere 49% of the adult population in Hungary possess at least a basic level of digital skills, compared to an average of 54% in the EU overall and the EU objective of 80% by the end of the digital decade in 2030. Regarding the share of those with higher than the basic level of digital skills, the

Hungarian figure stands at 22%, compared to an average of 26% in the EU (*Figure 3*).

As for the indicators concerning ICT specialists, we also lag behind the European average. The share of female ICT specialists is especially meagre: they make up a mere 14% of all ICT specialists (the EU average is 19%).

Our weak position when it comes to digital skills can be attributed to **deficiencies in education**. Beyond the general problems that plague the public education system, specific issues at all levels of training and education contribute to the pervasive deficiencies in digital skills.¹⁰

¹⁰ The source of the summary below: Hungary's Digital Education Strategy. <https://digitalisjoletprogram.hu/files/55/8c/558c2bb47626ccb-966050debb69f600e.pdf#page=7&zoom=100,90,140>

PRIMARY AND SECONDARY EDUCATION

- ▶ Developing digital literacy is still not sufficiently integrated into the curriculum: **a significant share of students who complete primary or secondary education are digitally illiterate.**
- ▶ There is no **indicator/assessment framework** to measure the existing level of digital competence of students/educators/vocational education teachers/applied teachers or which would designate pathways to improve these.
- ▶ **ICT instruments and digital teaching & learning methods have been barely integrated in domestic learning practices** (e.g., the possibility of using the internet or the students' own ICT instruments in class, the share of teachers who use digital education apps and the internet, etc.).
- ▶ Although the National Curriculum includes the teaching of digital skills as an objective, **teachers cannot draw on consistent guidelines or teaching materials** in this area, nor do they have access to a coherent and stable digital infrastructure.

A significant share of students who complete primary or secondary education are digitally illiterate.

VOCATIONAL TRAINING

- ▶ Schools often **lack the preconditions for introducing students to the newest digital technology in their trade.**
- ▶ **The subject teachers lack the requisite digital knowledge and pedagogical/methodological skills** to embed the teaching & learning process in a digital framework.

- ▶ Except for a few professions (e.g., the automobile industry), **labour market expectations are not reflected** in the outcome requirements or the curriculum.

HIGHER EDUCATION

- ▶ In some areas, the basic ICT infrastructure in higher education is exceedingly good. However, **replacing outdated IT infrastructure – especially the machines – and acquiring licensed software** remain on the to-do lists of many institutions.
- ▶ Course descriptions, requirements, contents, library materials, and tests are only available online in vastly differing quantities and quality at institutions of higher education, with significant differences between departments.
- ▶ Only a small share of educators has the educational/developmental skills that would allow them to teach their courses in an e-learning framework.

ADULT EDUCATION¹¹

- ▶ In 2020, **a mere 5% of the Hungarian adult population has participated in lifelong learning**, which is half the EU average.
- ▶ **The training participation level is extremely low**, especially in the SME sector, among the residents of small municipalities, and those who are socio-economically disadvantaged.
- ▶ Regulatory impediments and especially financial difficulties stop training providers from using digital learning methods.
- ▶ Regularly updated and openly accessible **digital learning materials** are not available in sufficient quantity.

¹¹ The Digital Education Strategy's assessment is augmented by the observations in the Digital Labour Force Programme: (<https://digitalisiolet-program.hu/files/2e/86/2e865bc650f57539da2dbccf7b169eda.pdf>).

In addition to the low level of digital skills, **the main problem is the general labour shortage that plagues this area.** Today, this has emerged as one of the main obstacles in the way of developing the digital economy in Hungary, and authoritative projections¹² suggest that the problem will worsen in the coming years.¹³ **The labour shortage in the IT sector could surge to 25,000 persons within the next year or two,** which will increase the risk that there simply won't be sufficient IT specialists, engineers, technicians who know how to operate networks, and other specialists.

Furthermore, the attrition in the number of IT specialists may further exacerbate the depth of the prevailing labour shortages.

“The labour shortage in the IT sector could surge to 25,000 persons within the next year or two.”

I 2.2. INTERNET ACCESS, INTERNET USE

Access to a high-capacity and high-quality digital infrastructure¹⁴ and its widespread use is essential for developing the digital economy and citizens' digital welfare. In addition to its impact on competitiveness, this is also vital for equal opportunities and employment.

Of the various DESI dimensions, **Hungary traditionally performs best in the area of connectivity. Our 13th place means that we rank in the mid-range of EU countries, barely below the EU average and ahead of the Visegrad region.** Furthermore, compared to 2014, our situation has not deteriorated in this field; in fact, we have advanced remarkably – we moved up seven places in the rankings, from 20th in 2013 to 13th in 2022 (*Figure 4*).

Ranking		DESI score (2022)	
2022	2014	S3	65.7
		EU6	60.5
13	20	EU AVERAGE	59.9
		V3	49.6
		HUNGARY	57.6

The indicators concerning the availability of digital infrastructure (coverage) and its use (take-up) clearly show that **neither internet access nor the spread of internet use could be factors that impede our digital progress – in other words, in the future, the state should focus its resources and efforts on other areas.**

Figure 4: Hungary's DESI status: The dimension of internet access and internet use (source: DESI 2014, DESI 2022)

¹² The experts of the Association of the Digital Economy (IVSZ - Szövetség a digitális gazdaságért) summarised the key problems based on the results of the priority project designated as GINOP-3.1.1 (*Programme your future!*).

¹³ Összefogás a digitális Magyarorszáგért [Alliance for a Digital Hungary]. IVSZ – 2022: 20.

¹⁴ GHS: 2.

	Hungary			EU
	DESI 2020	DESI 2021	DESI 2022	DESI 2022
Overall fixed broadband take-up % households	82%	81%	83%	78%
	2019	2020	2021	2021
At least 100 Mbps fixed broadband take-up % households	51%	56%	61%	41%
	2019	2020	2021	2021
At least 1 Gbps take-up % households	9.26%	13.21%	21.82%	7.58%
	2019	2020	2021	2021
Fast broadband (NGA) coverage % households	90%	89%	97%	90%
	2019	2020	2021	2021
Fixed Very High Capacity Network (VHCN) coverage % households	43%	49%	79%	70%
	2019	2020	2021	2021
Fibre to the Premises (FTTP) coverage % households	43%	49%	64%	50%
	2019	2020	2021	2021
5G spectrum Assigned spectrum as a % of total harmonised 5G spectrum	60%	60%	60%	56%
	04/2020	09/2021	04/2022	04/2022
5G coverage % populated areas	NA	7%	18%	66%
		2020	2021	2021
Mobile broadband take-up % individuals	71%	71%	84%	87%
	2018	2018	2021	2021
Broadband price index Score (0-100)	64	64	70	73
	2019	2020	2021	2021

Figure 5: The DESI indicators concerning internet access (source: DESI 2020, DESI 2021, DESI 2022)

Today, 97% of Hungarian households have access to high-speed broadband services (the EU average is 90%), and roughly two-thirds of Hungarian homes (64%) can opt for fibre-optic broadband (EU average: 50%). The fact that in this area, the Hungarian figures are better than the EU average results from the investment of 253 million euros we received from European structural and investment funds between 2014 and 2020 to build broadband networks with speeds exceeding 30 Mbps. The situation is favourable not only in terms of the availability of a modern digital infrastructure but also in terms of its

actual take-up. In terms of the indicators measuring the use of fixed broadband, we regularly perform above the EU average (*Figure 5*).

Although 5G services have been launched in Hungary, the national 5G coverage only stands at 18%, far below the EU average (66%). However, Hungary today boasts one of the most extensive and highest quality 4G networks globally. Thanks to the mobile broadband developments that commenced nearly a decade ago, there are now hardly any small municipalities or urban areas left without access to a

wireless infrastructure that can provide broadband speed of up to 30 Mbps. This is a major advantage: the domestic broadband infrastructure can perfectly satisfy the existing needs of consumers.

A greater challenge than the relatively slow spread of 5G services is **that despite the quality of mobile broadband in Hungary, the number of individual mobile internet subscriptions lags behind the EU average** (84%, compared to 87% in the EU). The main reason is that the service in Hungary is still relatively expensive **and that in European comparison, the share of Hungarians who do not use the internet at all is still rather high.**

Based on the above, in the medium term, the **main objective concerning internet access is to hold on to our favourable infrastructural position, continue the investments in the infrastructure, and increase take-up among those target groups that have thus far failed to join the broader segment of the population who already**

use the internet. The most important data in this context is that roughly 10% of the total population between the ages of 16 and 74 – in other words, some 800,000 people – have never used the internet. On the whole, also including those over the age of 74 who rarely ever use the internet, **the digitally illiterate adult population encompasses some 1.5-2 million people.**

The share of people who are offline is especially high in rural areas, among persons with low incomes, and the elderly (those over the age of 55) (Figure 6). The number of those who own some digital instrument (typically smartphones) but have no digital skills apart from using a few social media and other basic apps is higher still. Based on the experience of the countries that perform best in terms of the public’s use of the internet (Ireland, Denmark, Luxembourg, and Sweden), **the share of those who do not use the internet could be reduced to a level where they make up no more than between 1-3% of the total population.**

	Hungary	EU	EU TOP3 average
Rural population	15.5%	11.1%	1.0%
Low income	34.2%	18.1%	2.7%
Unemployed	11.7%	7.53%	1.9%
Over the age of 55	19.1%	10.8%	1.1%
Total	9.93%	7.7%	1.1 %

Figure 6: The share of those who do not use the internet (in the population between 15-74) in the EU and Hungary (source: Our own compilation based on data published in <https://digital-agenda-data.eu/datasets/desi/visualizations>.)

The primary reason people fail to capitalise on the opportunities stemming from the digital transition is the lack of financial resources and knowledge capital: **these threaten those groups in society whose lives are already burdened the most by disadvantages (low educational attainment, financial deprivation, etc.)**. In other words, the digital gap is simultaneously the cause and effect of existing disparities in opportunities. The introduction of distance learning during the Covid pandemic demonstrated this spectacularly – while student communities in which digital skills and the proper tools were widely available

found the transition at least manageable, students (and teachers) who lived in poorer regions were deprived of the opportunities inherent in distance learning.

The digital gap is simultaneously the cause and effect of existing disparities in opportunities.

I 2.3. THE INTEGRATION OF DIGITAL TECHNOLOGIES – DIGITAL ECONOMY

In terms of the integration of digital technologies, our country ranks 25th in the EU – in this case, too, **we perform worse not only compared to the countries of reference but also below our peer competitors (Figure 7)**. This means that Hungarian enterprises do not make sufficient use of the necessary and basic infocommunications instruments and services to the degree that would be needed **to maximise efficiency and competitiveness**.

The broader introduction of IT solutions in corporate processes would significantly reduce costs and maximise competitiveness. Hence, it is a national strategic goal to ensure that domestic enterprises better exploit the opportunities stemming from online commerce, cloud services, or the digitalisation of internal processes.

Ranking		DESI score (2022)	
2022	2014	S3	57.3
25	26	EU6	40.7
		EU AVERAGE	36.1
		V3	27.7
		HUNGARY	21.6

Figure 7: The Hungarian DESI status: The dimension capturing the integration of digital technologies (source: DESI 2014, DESI 2022)

	Hungary			EU
	DESI 2020	DESI 2021	DESI 2022	DESI 2022
SMEs with at least a basic level of digital intensity % SMEs	NA	NA	34%	55%
			2021	2021
Electronic information sharing % enterprises	14%	14%	21%	38%
	2019	2019	2021	2021
Social media % enterprises	12%	12%	13%	29%
	2019	2019	2021	2021
Big data % enterprises	6%	7%	7%	14%
	2018	2020	2020	2020
Cloud % enterprises	NA	NA	21%	34%
			2021	2021
AI % enterprises	NA	NA	3%	8%
			2021	2021
ICT for environmental sustainability % enterprises having medium/high intensity of green action through ICT	NA	65%	65%	66%
		2021	2021	2021
e-Invoices % enterprises	10%	13%	13%	32%
	2018	2020	2020	2020
SMEs selling online % SMEs	12%	13%	18%	18%
	2019	2020	2021	2021
e-Commerce turnover % SME turnover	11%	9%	11%	12%
	2019	2020	2021	2021
Selling online cross-border % SMEs	5%	5%	7%	9%
	2019	2019	2021	2021

Figure 8: The DESI indicators measuring the integration of digital technologies (source: DESI 2020, DESI 2021, DESI 2022)




In Hungary, a mere third of SMEs have at least a “basic level of digital intensity” (the EU average is 55%). The picture would be even worse if micro-enterprises were captured separately in the DESI indicators: a negligible

percentage of Hungarian micro-enterprises support remote work, they hardly use any of the digital applications designed to support individual areas of business operations; in fact, two-thirds of them do not even have an own website.¹⁵

¹⁵ Hungarian ICT Report 2020. Bellresearch.

Among the other indicators concerning the integration of digital technologies, those capturing e-commerce present **the most favourable picture** (Figure 8). In 2022, the revenues from online sales and the share of SMEs selling online were near the EU average. However, in this context is also worth noting that **the most prominent online services in Hungary are typically not Hungarian companies**: KIFLI (Czech), EMAG (Romanian), ALZA (Czech), WOLT (Finnish), and Foodpanda (German).






Based on the above, it is hardly surprising that with respect to the **adoption of technologies that require higher levels of digital preparedness, we perform below the EU average**:

-  The proportion of enterprises using artificial intelligence apps: 3% (EU average: 8%)
-  The proportion of enterprises using apps that rely on the analysis of big data (large datasets): 7% (EU average: 14%)
-  The proportion of enterprises that subscribe to cloud computing services: 24% (EU average: 34%)

Among domestic SMEs, the biggest obstacle in the way of AI and big data investments is that **within the Hungarian SME sector, smaller company size is typically associated with lower levels of efficiency and capitalisation**. Systematic corporate management and organisation-building are wanting in this segment of the economy, and these problems are generally also accompanied by low levels of innovation activity. This situation has persisted even though the adoption of such technologies could incentivise

steps to overcome the aforementioned problems: **thus, for example, in addition to reducing IT costs, cloud computing technologies also tend to reduce the costs of innovation and experimentation in general.**¹⁶

Furthermore, several general challenges can be identified which may substantially slow down the introduction of new digital technologies in the SME sector:¹⁷

-  SMEs typically do not like to enter into market areas in which they lack trust and **do not see the prospect of immediate returns**.
-  Because of their limited financial resources, **SMEs are very careful about new investments** outside their own core business activities.
-  A general problem for SMEs is **the lack of ICT, data analysis, and AI expertise**: when a qualified ICT expert nevertheless joins the given business, the underdevelopment of corporate culture, the problems stemming from lacking infrastructure, access to data, and applications often emerge as obstacles to development.
-  SMEs are less likely to avail themselves of analytic consultancy in the areas of **management and business development**.
-  Digitally disruptive business models, that is, the in-depth digital transformation of the underlying business model in a given area (such as the appearance in the market of Spotify, Airbnb, or Netflix), **tend to evoke fear among the players in the given sector**. Thus, the shock caused by digitally disruptive technologies is often followed by old-style regulatory responses, which hamper further development.

¹⁶ For further details see: *Javaslatok hazánk technológiai fejlődésének felgyorsítása érdekében*. [Proposals for accelerating our nation's technological development.] IVSZ, 2022. <https://ivsz.hu/wp-content/uploads/2022/06/Osszefogas-a-digitalis-Magyarorszagert-teljes-valtozat.pdf#page115>

¹⁷ Shirley Coleman – Rainer Göb – Giuseppe Manco – Antonio Pievatolo, Xavier Tort-Martorell – Marco Seabra Reis: How can SMEs benefit from Big Data? Challenges and a path forward. *Quality and reliability engineering international*, (32)6: 2151–2164.; https://upcommons.upc.edu/bitstream/handle/2117/100656/Paper_Big_Data_4_SMEs_final_revised.pdf

In addition to the above, the main problem is that, for the most part, the majority of stakeholders are not even aware of how far they have fallen behind or the significance of the disadvantage they have accumulated. **The need for digitalisation barely appears in the narratives concerning individual sectors of the national economy.** The knowledge

concerning the adoption of digital solutions and the importance of developing digital skills is rather limited, and **the various sectors of the economy do not have their own digital strategies** nor the digital action plans they would need for interventions.

I 2.4. DIGITAL PUBLIC SERVICES – DIGITAL STATE

E-government services strengthen the competitiveness of enterprises, reduce their administrative burdens, and save citizens time and energy. From the state’s perspective, they are advantageous because they **increase efficiency**, facilitate the collection and processing of data in the public sphere, and make it cheaper, too; last but not least, they also promote the more efficient **realisation of economic and policy objectives**. Furthermore, easier access to public data will also improve the access of economic players to relevant information and the effectiveness of R&D.

With respect to digital public services, Hungary ranks in the bottom third of the EU (21st place in 2022). With this score, we are on par with the other Visegrad countries, although we lag significantly behind the EU average (*Figure 9*).

Among the subindexes, we performed best in terms of the **number of e-government service users**. The primary reason is that during the Covid pandemic, the share of those internet users who avail themselves of e-government services surged from 64% to 81%. As a result, we have far exceeded the EU average of 65% (*Figure 10*).

Ranking		DESI score (2022)	
2022	2014	S3	84.3
21	22	EU6	70.3
		EU AVERAGE	67.3
		V3	57.4
		HUNGARY	57.4

Figure 9: Hungary’s DESI status: the dimension of digital public services (source: DESI 2014, DESI 2022)

	Hungary			EU
	DESI 2020	DESI 2021	DESI 2022	DESI 2022
e-Government users % internet users	64%	70%	81%	65%
	2019	2020	2021	2021
Pre-filled forms Score (0 to 100)	NA	NA	60	64
			2021	2021
Digital public services for citizens Score (0 to 100)	NA	NA	64	75
			2021	2021
Digital public services for businesses Score (0 to 100)	NA	NA	74	82
			2021	2021
Open data % maximum score	NA	NA	58%	81%
			2021	2021

Figure 10: DESI indicators concerning digital public services (source: DESI 2014, DESI 2022)

Since 2016, Hungary has realised several major investments into the central digital system, which have impacted a wide array of users. In parallel with the creation of back-end systems, there were also huge investments in digital public services – a typical example is **Hungary’s official citizens’ portal (magyarorszag.hu) and the affiliated electronic client gateway and identification system, the so-called Ügyfélkapu. About 5.9 million users visit the page each month** – at the end of 2021, some 3,000 different types of public services were presented on the portal, and for 2,600 types of issues, citizens could access online public services/procedures.

However, as far as the **DESI indicators measuring the selection of online services** is concerned, **Hungary attained below-average scores** on all three indicators (pre-filled forms, digital public services offered to citizens, and digital

public services offered to enterprises), **although it must also be pointed out that in the meanwhile, we have continued to narrow the gap between the Hungarian figure and the EU average.** Hungary is also among the low-performing countries with respect to the level of development of open data services.

Owing to the relevant new regulations and laws, Hungarian digital public administration has added numerous new services and has simultaneously become **cheaper and more convenient. At the same time, the existing public administration websites and smartphone apps continue to be too heterogeneous** – in terms of their appearance, language, access, structure, and logic of operation – making it more difficult for users to routinely avail themselves of the services they offer.

2.5. CONCLUSION

The process of digitalisation offers the Hungarian economy and domestic enterprises a historic opportunity. Hence, the fact that the Hungarian digital ecosystem performs far

below the EU average in most areas constitutes a major problem (Figure 11).

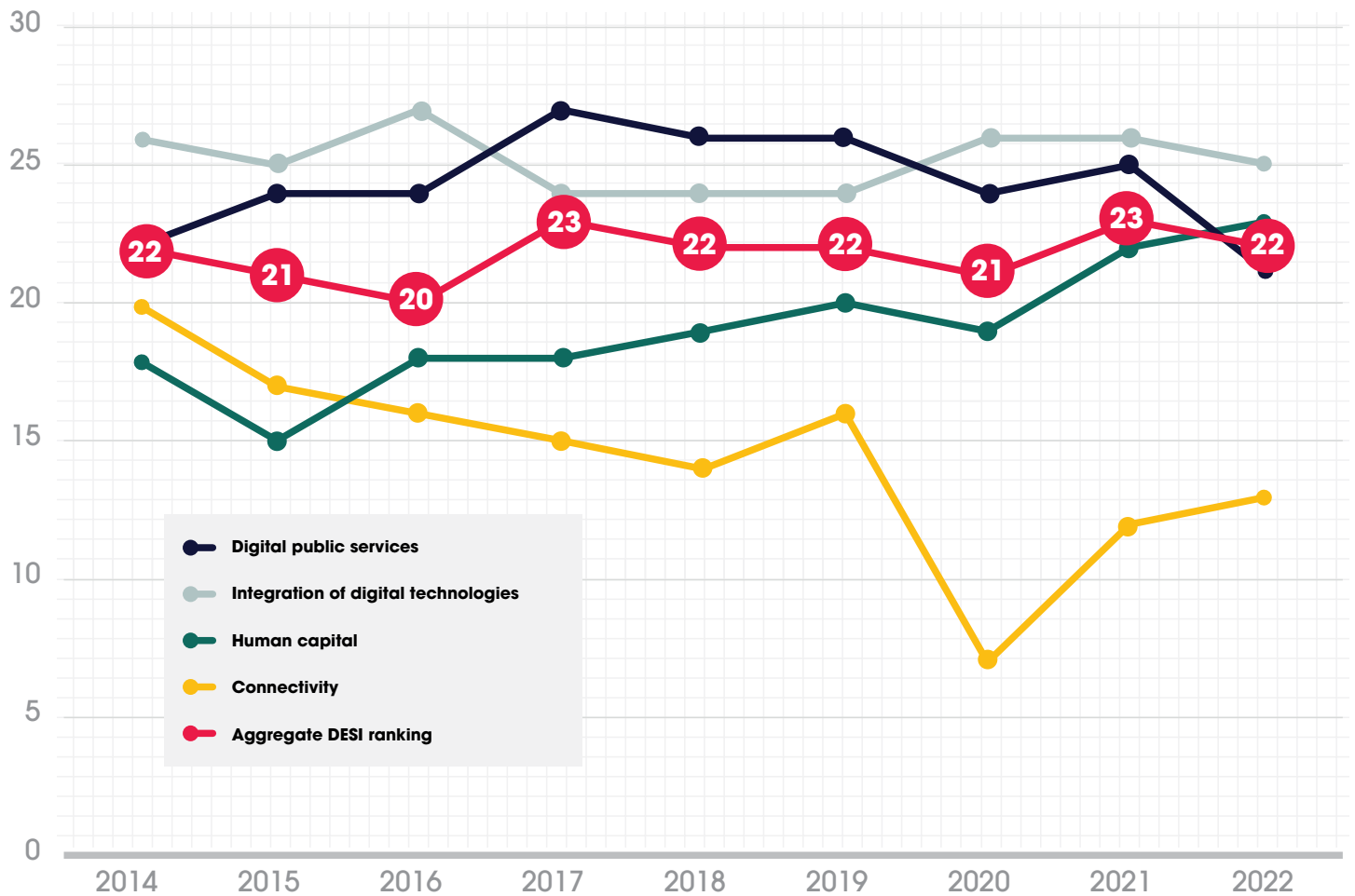


Figure 11: Hungary’s rankings in the individual subdimensions of the DESI between 2014 and 2022 (source: DESI 2014–2022)

For this to change substantially, what we need most urgently is an unequivocal commitment on the part of the government to implement digital investments. In the absence of such a commitment, the stakeholders will lose confidence and momentum. Furthermore, the government also needs to make clear what type of role it can be expected to assume: in other words, it must be clear what strategic visions it follows; its assumptions about the future trajectories of each of the pillars discussed above; and what instruments the government wishes to use to promote the development of the ecosystem.

Our vision of the digital future must align itself with the following simple declaration of principle:

“Hungary regards technological modernisation as a take-off point for growth, and hence, over the coming decade, it will lay the foundations of an efficient development of all elements of the digital ecosystem, and remove all the bureaucratic, regulatory, or financing obstacles in the way of their development.”

3. THE EQUILIBRIUM INSTITUTE'S POLICY PROPOSALS ON SPEEDING UP HUNGARY'S DIGITAL DEVELOPMENT

Ideally, digitalisation is a **market-driven process** motivated by the self-interest of market players and citizens. But what's to be done when the **majority of those who would need to act do not recognise the advantages stemming from these changes or if they do not have the resources to exploit this trend properly?** In such a situation, the state must use its public policy instruments to **help stakeholders recognise the importance of digital investments.**

DIGITAL KNOWLEDGE


For the digital ecosystem to develop, there must be **users** – including employees – **who have the proper level of digital skills**; in other words, there needs to be a broad digital readiness in society. **Digital skills need to be developed in all segments of the public; at the same time, various target groups also need different types of programmes to foster such skills.**

TARGETED AND SUBSIDISED DIGITAL COMPETENCE DEVELOPMENT FOR THOSE WHO ARE MOST IN NEED!

Free public programmes aimed at the broad masses must be launched to develop the digital skills of those who are digitally illiterate or do not possess even the most basic digital skills! Implementing programmes aimed at conveying basic digital skills in the framework of traditional adult education programmes would not be a good idea since ensuring that the participants remain motivated tends to require **mentoring-like, informal educational solutions.** These allow citizens to acquire digital skills at home or

near their homes while they can also receive mentoring. That is why the development of basic digital skills should be implemented either based on independent learning or with the support of mentors, potentially also drawing on the involvement of family members.

Within this broader category, we need to identify the distinct groups of persons most at **risk of falling behind in the digital realm.** In other words, we need to emphasise developing the digital skills of the elderly, the underprivileged, the early school leavers, persons with disabilities, and those who need long-term care. In the aforementioned areas, the state can draw on abundant experience thanks to relevant programmes implemented by NGOs. A good example is the activity of the Skool organisation, which organises programming training and tech activities for youths who live in disadvantaged regions, the residents of children's homes, and the elderly, among other groups.

 We need to emphasise developing the digital skills of the elderly, the underprivileged, the early school leavers, persons with disabilities, and those who need long-term care. 

▶ TAX DEDUCTIONS AND DIGITAL TRAINING VOUCHERS!

For those who already have solid digital foundations, **the state should support programmes that help them improve their existing skills!** In addition to non-refundable grants and favourable loan programmes, employers, too, should be encouraged to fund other programmes – through financial incentives if necessary (thus, for example, in the form of tax or employer contribution deductions). In the case of those whose level of digital readiness is already high, we need to offer the **possibility of retraining to IT or other specialised areas that require high levels of digital expertise** by offering favourable loans or even non-refundable grants for those in need!

The state needs to support **the participation** (of adults) **in formal digital competence trainings, either directly for individuals or through their employers. Generally, this should be done using financial instruments:** educational loans, interest-rate support, guarantees, and state counter-guarantees for those who provide the training. In the case of **participants who are either in financial need or perform exceptionally in the training, non-refundable grants should also be awarded.** Support could take various forms, including vouchers, partial assumption of the loans, or interest-rate support, for example.

▶ DIGITAL TRAINING VOUCHERS! – LET’S HELP THE DIGITAL RETRAINING OF EMPLOYEES!

Let’s launch targeted **retraining programmes for employees with high levels of digital skills** who would like to learn to become IT/digital specialists! The retraining programme should be realised with **co-financing from the stakeholders** (employees, current or potential employers, the state, or external providers of financing). The amount of the co-payment provided by individual stakeholders should be determined based on the level of the individual’s need and the popularity of the given training (non-refundable grants should be used in the case of disadvantaged participants in need). Let’s introduce **digital training vouchers** as types of non-refundable grants, that is, **educational grants that can only be redeemed for designated and qualified products and services!** The voucher could also provide access to bank loans guaranteed by the state.

▶ TARGETED SCHOLARSHIP PROGRAMMES, MORE WOMEN IN THE IT SECTOR! – LET’S REDUCE THE SHORTAGE OF IT SPECIALISTS!

Let’s motivate children from the earliest age to learn to become IT specialists! The state needs to expand the demand for IT education; in other words, **it must increase the number of those who apply to study to be computer scientists and IT specialists.**

Let’s increase the **recognition and popularity of IT professions by using targeted communications campaigns and career orientation programmes in elementary and secondary education!** International experience shows that dormant reserves are especially high among women since, to this day, IT is still perceived as a “male terrain,” and to an extreme extent, too. Thus, there is significant potential in the targeted motivation of female students to study IT.

Let’s create generous IT scholarship programmes in higher education! To reduce dropout rates and better adapt the education provided to the needs of the labour market, **let’s launch a complex programme modelled on the structure of the GINOP-3.1.1 project (“Programme the future!”), which is scheduled to end soon!**

▶ LET’S BRING IT EDUCATION IN LINE WITH THE NEEDS OF THE LABOUR MARKET!

IT education should prepare participants for the actual needs of the labour market! Hence, **we need to improve the cooperation between the institutions that provide such training and the ICT enterprises working near them to increase the labour market relevance of IT education and reduce dropout rates.** Furthermore, we need to **initiate or support** new interdisciplinary and dual trainings and internship programmes.

We also need to support IT and digitalisation training that matches the needs of the labour market in vocational and adult education. Furthermore, **a thorough review of the entire vocational training system must be performed to ensure that it aligns with the needs of digitalisation,** including the scaling-up of IT-related programmes and the necessary investments (infrastructure, equipment,

and educators) to this end. **Short-cycle IT and digital trainings** (programmes provided by commercial and state institutions alike) must be integrated into a coherent and unified system that provides greater transparency. The state should further support **corporate IT and digitalisation training programs**, for example, by allowing employers to deduct the costs from the amount of their vocational training contribution.

Let's use intense state communication to **raise awareness in society of tech labour market needs, the opportunities for further education in IT**, and the benefits of pursuing the educational path to becoming a tech professional!

Let's raise awareness in society of tech labour market needs, the opportunities for further education in IT, and the benefits of pursuing the educational path to becoming a tech professional!

▶ **INDIVIDUAL EDUCATION ACCOUNTS AND TAX BENEFITS – LET'S INCENTIVISE PARTICIPATION IN ADULT EDUCATION!**

The coordinated planning and implementation of public policy, regulatory, and development policy instruments is needed. Together, these should be effective in raising the share of those who participate in adult education – which is low in international comparison – and in making **both formal and informal adult education** attractive.

Let's introduce individual education accounts and extend the student loan system to also cover the participation of adults in digital trainings! Let's offer income tax rebates to employees to incentivise their participation in such trainings! In addition to tax relief, **interest-free loans and subsidies to help fund the procurement of digital instruments could also encourage greater participation.** A distinct and customised incentive and support scheme should be aimed at **workers in disadvantaged regions, including** travel and housing subsidies, for example.

▶ **LET'S INTRODUCE A DIGITAL TRAINING CONTRIBUTION FOR EMPLOYERS!**

Let's incentivise market players to actively engage in activities promoting digital development: by introducing targeted **incentive** packages, we could make enterprises interested in **immediately training their employees!** To this end, **let's introduce a digital training contribution to be paid by employers, with the option to offset the contribution amount by funding their employees' participation in commercial trainings or organising their own internal trainings!** The contribution should be paid into a digital training fund by employers who do not invest at least the amount commensurate with the contribution into the digital development of their employees.

▶ **LET'S RENEW THE EDUCATION SYSTEM!**

We could achieve a lot in this area by reviewing the **Digital Education Strategy** adopted in 2016 (or even drafting a 2.0 version of the original document) and by resolutely implementing those measures in the aforementioned document that continue to be relevant. Above all:

▶ **Let's introduce a digital minimum competence** at every level of the education system. Students should not be allowed to advance to the next level in the education system unless they satisfy the requirements of the digital minimum of the education level they are enrolled in!

▶ **Let's make it a priority to implement targeted programmes** that prepare **teachers to use** digital tools and methodologies for promoting the students' **digital competence** (including free training for teachers, which they should be allowed to count as teaching hours to offset work hours; the integration of competence levels for teachers as a precondition for advancing to the next level on their career ladder; offering time for foreign study trips and research/study breaks, etc.)!

▶ **Let's train masses of digital teaching assistants** who support teachers in their digital teaching!

▶ Let's **develop the digital infrastructure of educational institutions** to ensure that neither the lack of good broadband nor of Wi-Fi capacity in buildings impede the widespread application of digital teaching methods!

▶ **The state needs to incentivise digital community workshops, as well as the experience-based use of cutting-edge technologies** (e.g., 5G, AI, 3D printing, programming robots, drones, etc.)!

▶ **Let's review the National Curriculum to better reflect the needs of digital education** and to ensure that the requirements of digital materials and methods are properly integrated and ready to be applied!

▶ **Let's perform a comprehensive review of the existing digital teaching materials** (e.g., user-friendliness, interactivity, conducive to teamwork, etc.); new learning materials and curricula should be required to integrate international best practices!

▶ Let's open up **the market of digital education solutions (EdTech) and materials to domestic start-up companies!**

▶ **Let's open up digital public and educational collections/libraries to teachers who participate in remote learning and those who develop curricula!**

▶ The state needs to survey the **digital equipment** of elementary and secondary schools and vocational education institutions and **identify where investments are needed!**

▶ **START-UP AND INNOVATOR VISAS! – TARGETED BRAIN-DRAIN AND ENTICING HUNGARIAN EXPERTS TO RETURN HOME!**

The chronic shortage of experts is too pressing a problem for us to wait while the relevant measures implemented in

the general education and adult education systems bear fruit. That is why we must **incentivise the Hungarian digital experts who have moved abroad to work and ethnic Hungarians who were born abroad** to take jobs in Hungary (be it with a physical presence in Hungary or through remote work)! Furthermore, financial incentives, such as tax relief, should be used to incentivise foreign ICT specialists to take jobs in Hungary – at least as long as the labour shortage in Hungary persists at the current high levels! A good method to facilitate this is the so-called White Card introduced in 2022 to attract digital nomads. Let's introduce a **start-up and innovator visa** based on the example of the United Kingdom, which makes it simpler for innovative individuals with viable business plans to enter the country and facilitates their business launch too!

We must incentivise the Hungarian digital experts who have moved abroad to work and ethnic Hungarians who were born abroad to take jobs in Hungary.

THE INTEGRATION OF DIGITAL TECHNOLOGIES – DIGITAL ECONOMY

Just like the economy overall, the domestic digital economy has a dual structure. On the one side are a few hundred medium-sized and large corporations that deploy the most cutting-edge technology; these are typically either foreign-owned corporations or suppliers of global corporations with the ability to produce for export markets. On the other side are several hundred thousand technologically unprepared micro-, small- and medium-sized enterprises that produce goods or services exclusively for the local market. Thus, **in the digital economy, we primarily want to improve the digital development level of micro-, small-, and medium-sized enterprises!**

▶ **DIGITAL BUSINESS DEVELOPMENT! – LET’S ADJUST THE SYSTEM OF STATE SUBSIDIES TO REFLECT THE NEEDS OF DOMESTIC SMES!**

Let’s create a demand-driven, complex, and flexible system of tenders! In a departure from prevailing practices, the state’s business subsidies should prioritise proposals with business development, digitalisation, and innovation components that provide enterprises with the greatest possible flexibility in terms of the eligible costs as well as the range of activities that can be supported!

Let’s create a broadly aimed subsidy programme which provides a low level of outside funding as a percentage of the total investment to help micro- and small enterprises achieve a basic level of digital development! In addition to subsidising office systems, we should also extend the subsidies to the technological modernisation of the core business activity!

Furthermore, the state should create subsidies offering high amounts of funding for complex development needs to digitalise the basic activities of SMEs (for example, production management, predictive maintenance, logistics, etc.). *(The Equilibrium Institute published detailed policy proposals concerning a state subsidy scheme for business development and the importance of supporting digital targets in its policy paper entitled How to help Hungarian strengthen?)*

▶ **LET’S SUPPORT ECONOMIC PLAYERS IN A DIFFERENTIATED MANNER, REFLECTING THEIR INDIVIDUAL NEEDS!**

Let’s create distinct digitalisation strategies and detailed roadmaps for all sectors of the economy! First, the state needs to draw on the help of professional organisations and businesses representing various sectors to identify the most typical impediments to development, developmental needs, and the value chains within the given sector! The

sector-specific funding schemes must be designed on the basis of these reviews. It is vital that these strategies do not get stuck at the level of planning but are also consistently implemented afterwards!

▶ **A MANDATORY DIGITAL MINIMUM IN CORPORATE DEVELOPMENT!**

Let’s increase the digital content of general business subsidies! Let’s provide for the highest possible level of digital content that businesses can include as eligible expenditures in their grant applications – including the development of employees’ digital competence and their IT readiness!

Let’s set a “**digitalisation minimum**” in general enterprise development grants! In other words, let’s specify a minimum share of digital content for every project that receives funding!

▶ **LET’S HELP THE EMERGENCE OF NATIONAL CHAMPIONS IN THE DIGITAL SECTOR!**

Let’s draft a targeted funding scheme to promote the export capabilities of ICT enterprises! This would be based on a flexible grant application scheme – featuring both business development and innovation elements – for SMEs in the ICT sector, with the express goal of supporting their entry into and expansion in international markets. **In addition to providing a business environment that is generally innovation and growth-friendly, it is also important to encourage data use by SMEs:** let’s help smaller enterprises by providing them with expert support, project pre-qualification assessments, and a funding scheme that supports investments aimed at data use! *(As part of its policy proposals put forth in the study entitled How can we become richer?, the Equilibrium Institute has previously focused in detail on the issue of creating a business and growth-friendly environment and on promoting the emergence of national champions.)*

INTERNET ACCESS – DEVELOPING THE INTERNET INFRASTRUCTURE

Although compared to the other areas captured by the DESI indicators, Hungary continues to perform best when it comes to internet access, it is important to keep in mind that in terms of the digital infrastructure, both bandwidths and the quality of services are continuously evolving, and it is easy to fall behind quickly in these dimensions. **Our current good ranking in this area does not render continued improvements redundant.**

▶ LET'S SCRAP THE TELECOMMUNICATIONS AND PUBLIC UTILITY TAXES BY 2024!

In the interest of accelerating the expansion of the digital infrastructure, we should phase out the **telecommunications and public utility taxes** by 2024. This should be done based on consultations with market players **in which the service providers commit to clear undertakings – and the actual performance of these undertakings would be subject to review – involving the expansion of fixed and wireless infrastructure developments** (technically, similar results could also be achieved if instead of scrapping the tax, service providers had the option of writing off precisely documented and verified costs associated with such investments).

Before this, an **action plan and roadmap must be drafted concerning the construction of gigabit networks that span the entire country.** This needs to take into account the undertakings in the abovementioned agreement with the service providers, as well as the preparations concerning those segments of the network that are not expected to be completed based on profitability/market calculations and which therefore need to receive state subsidies in varied amounts depending on the region where they will be built.

Typically, **the market tends to perform the investments necessary** to expand the networks to satisfy the demand for growing data traffic. In so doing, entrepreneurs focus on regions where they can most swiftly recoup their investments (densely populated urban areas, high-traffic transportation junctions, etc.). However, the network coverage of sparsely populated regions with sprawling and fragmented municipal

structures, as well as of institutions that depend on the public sphere for funding (e.g., educational, health, and social institutions), **involves higher levels of financial risks**, and, correspondingly, the market is unlikely to provide for the digital infrastructure of some regions (e.g., so-called dead-end villages, municipalities with very high shares of elderly and/or underprivileged residents, isolated municipalities, etc.). That is why **the state must incentivize the development of digital infrastructure in areas where the relevant investments would not be profitable on a market basis or where it would take commercial investors a long time to recoup their investments.** For example, the elimination of the telecommunications and utility tax may require that a part of the resources freed up in this way must be used for this purpose!

DIGITAL PUBLIC SERVICES – DIGITAL STATE

Digital public services would develop spectacularly if the state consistently implemented the commitments of the National Digital Strategy published in December 2022. This document contains well-thought-out, forward-looking measures regarding, among other things, the integration and further development of existing interfaces, the development of data-based public administration and artificial intelligence-based solutions, or the automation of certain official decisions. We can only hope that as many of these as possible will be realized in the coming years. At the same time, based on the experience of the recent decades, there is certainly a necessary institutional prerequisite for the realization of these plans.

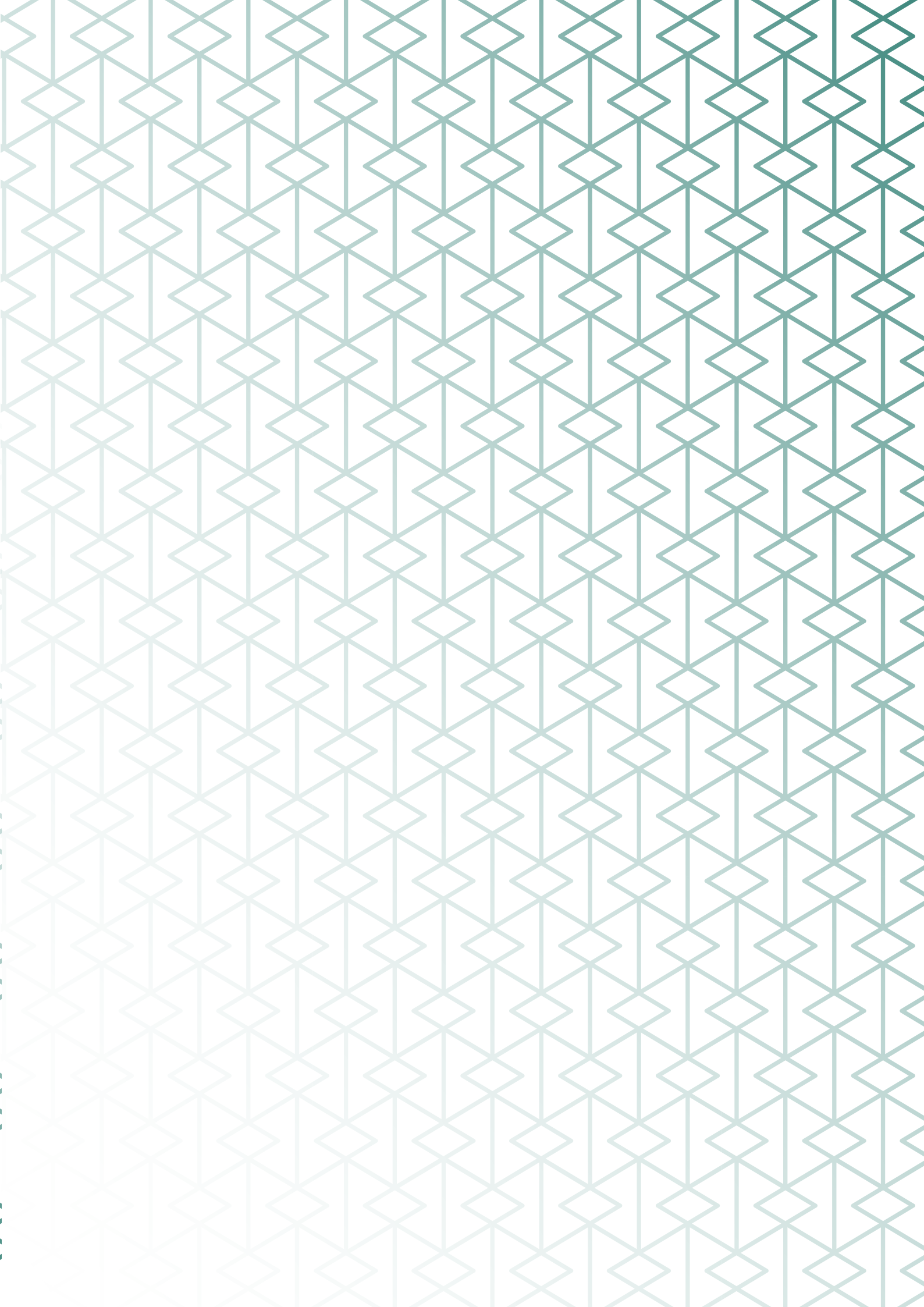
▶ LET'S MAKE DIGITAL DEVELOPMENT A STATE PRIORITY WITH PROPER INSTITUTIONAL SUPPORT AND AN IDENTIFIABLE CASE OWNER!

In the interest of predictability and plannability, the state needs to make clear that it is aware of how important digitalisation actually is. **This simultaneously presupposes the presentation of a firm communication and institutional commitment.**

On the one hand, the government communication should make it clear that encouraging and supporting technological modernization is a national interest, as it is the basis of our well-being and economic competitiveness, and therefore a government priority!

On the other hand, in addition to communication, **there is a need for clear and transparent responsibilities: the digital transition must have a well-identified “owner” within the government of the day who is endowed with the appropriate powers!** Several of the neighboring countries (e.g. Bulgaria, Estonia, Poland, Greece) express the importance of the area by elevating it to the ministerial

level, but it would be progress if a single prominent case owner could be appointed at the state secretary level. In addition, **there is a need for a clear and transparent division of responsibilities:** the relevant laws must make clear which government departments, persons, or background institutions are responsible for various areas of digitalisation and digital development policy! At least as important is the regular and institutionalised consultation with stakeholders: to this end, standing forums for consulting with experts, professionals, and stakeholders must be created.



THE EQUILIBRIUM INSTITUTE'S POLICY PROPOSALS

DIGITAL SKILLS

Let's introduce targeted and publicly subsidised digital competence development projects for those most in need!

Let's introduce digital education vouchers to promote the digital retraining of employees!

Let's reduce the shortage of ICT specialists with a targeted scholarship programme!

Let's incentivise the participation of adults in digital trainings by providing individual adult education accounts and tax benefits!

Digital competence minimums at all levels of the education system!

Let's implement programmes with the broadest possible reach to improve the digital skills of all teachers!

Digital teaching assistants need to help the work of teachers!

Let's provide start-up and innovator visas to make it easier for ICT specialists to take jobs in Hungary!

FOR SPEEDING UP HUNGARY'S DIGITAL DEVELOPMENT

AREA	PROPOSAL
DIGITAL ECONOMY	Let's provide targeted subsidies to incentivise the digital investments of SMEs!
	A mandatory digital minimum in business development subsidies!
	Let's promote the creation of national champions in the digital sector!
DIGITAL INFRASTRUCTURE	Let's scrap the telecommunications and public utility tax by 2024! In exchange for this, service providers should make accountable, firm commitments to implement the necessary infrastructure improvements!
DIGITAL STATE	Let's make digital development a state priority, boosted by an identifiable case owner at the government level!

ABOUT US

The Equilibrium Institute is Hungary's largest independent, future-oriented policy think tank.

In line with the vision of Hungary's future presented in our publication entitled Hungary 2030, the Equilibrium Institute works on creating a smart and environmentally cleaner nation rooted in a strong community. To this end, we write widely appealing and practical policy proposals that serve the development of our country, and we discuss these jointly with the best domestic and international experts.

Our goal is to ensure that the current and future political, economic, and cultural decision-makers learn about our recommendations, come to agree with them and implement them.

The staff members of the Equilibrium Institute and the members of its Advisory Board are renowned experts in Hungary who are considered to be among the best researchers and analysts in their respective fields. The work of the Institute is helped by more than 30 experts, including economists, sociologists, political scientists, lawyers, urbanists, and climate researchers.

OUR EXPERTS



TAMÁS BOROS

Executive director and co-founder of the Equilibrium Institute

He serves as a member of the Scientific Council of a leading European think tank, the Brussels-based Foundation for European Progressive Studies (FEPS). He is the co-founder and co-owner of Policy Solutions, a consultancy and research institute. He is a recurring guest on a variety of political talk shows and often comments about public affairs for leading international media. He previously worked for the European Commission and the Hungarian Ministry of Foreign Affairs as an expert on communication and EU affairs. His research focuses on Hungarian and EU political communication and populism.



GÁBOR FILIPPOV

Director of Research

Previously he worked as an expert advisor in the Hungarian National Assembly and then as a political analyst and senior analyst at the Hungarian Progressive Institute. His analyses and op-eds have been published by numerous domestic and international media outlets, and he is frequently invited to talk about politics on television and radio shows. His research focuses on the European and the Hungarian far-right, on the histories of anti-Semitism and Islamophobia and their present-day manifestations, as well as the workings of contemporary authoritarian regimes.



DÓRA CSERNUS

Senior Climate and Environmental Policy Expert

As an expert in environmental issues, she has worked for the Ministry of Environment and Water, the Office of the Parliamentary Commissioner for Future Generations and the Ministry of Public Administration and Justice, representing the Hungarian position in different EU, UN, and OECD fora. She later worked as Director for International Policy Development at Klimapolitika Research and Consultancy Ltd, and as an independent expert in climate and environmental issues. Her main focus is on climate policy, air-quality control and water policy.



BERTRAM MAREK

Analyst

He holds a BA in Political Science from ELTE, an MA in Communication and Media Studies from BME and an MSc in Political Psychology from the University of Kent. He is currently pursuing his PhD at ELTE PPK. His research focuses on the relationship between nostalgia and system criticism. Previously, he worked as a junior analyst at NielsenIQ. He is a fellow of the Friedrich Ebert Stiftung.



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