Stimulating the transition to a more innovative ICT industry in Romania

Leveraging an existing Romanian stronghold to catalyse productivity growth and prosperity through a more innovative ICT industry.

May 2026

Foreword

Romania's ICT industry has become a national stronghold – large, skilled, and increasingly productive. Yet the model that fuelled growth – outsourcing and shared services – now faces tightening margins, talent constraints, and rising competition. To sustain momentum, Romania must complement outsourcing with productisation, IP-rich development, and innovation-led demand. This report outlines a practical pathway: targeted instruments across the innovation lifecycle, inspired by peer lessons from Czechia, Poland, and Estonia, adapted to Romania's context.

We thank industry representatives, policymakers, and ecosystem actors for their insights, which informed the instrument design choices and roadmap presented here.

Executive summary

Romania's ICT industry is a national asset, accounting for roughly 8% of total value added and outperforming most other industries in Romania on productivity. Yet the cost–quality advantages that powered two decades of outsourcing-led growth are fading. To sustain momentum, the sector must tilt toward productisation, intellectual property development, and stronger innovation performance.

Bottlenecks arise throughout the innovation cycle. Early stages lack affordable access to expertise and prototyping; regulatory uncertainty slows testing; startups struggle to secure first customers; IP protection is slow and unpredictable; and growth capital remains shallow. Collaboration between enterprises is the lowest in CEE, and SME adoption of advanced digital tools lags the EU, limiting pilots, learnings, and diffusion.

Looking ahead, **Romania needs to introduce targeted policy instruments and ecosystem measures** that build on existing strengths while addressing its unique growth barriers and create stronger conditions for innovation. Innovation, however, is not a single step but a lifecycle – from idea generation and early testing, through development and scaling, to commercialisation and internationalisation. Companies create greater value to society the further they progress along this path.

Experience from Czechia, Poland, and Estonia points to a practical path. A balanced portfolio of instruments can remove bottlenecks and accelerate the innovation lifecycle:

- Early pipeline tools (innovation vouchers with DIH/testbed diagnostics, proof-of-concept grants with TRL gating and milestone tranches, and shared testbeds that leverage public digital rails) help teams validate ideas and build prototypes.
- Demand-side measures (corporate open-innovation pilots, innovation-led public procurement, and focused regulatory sandboxes) create first customers, reduce risk, and translate lessons into guidance and procurement practice.
- Capital and protection – fast-track IP aligned to pilot timelines, public VC/co-investment with fund-of-funds as the primary vehicle, and simple, predictable R&D tax/IP box regimes – shorten time-to-market and keep value onshore.

The potential from accelerating the innovation transition is material.

- Growing to the size of Czechia today could add EUR 6 billion to GDP, create roughly 45,000 indirect jobs across supply chains, and generate around EUR 13 billion in fiscal revenues over time.
- A more ambitious scenario of growing to Poland's ICT size today could add EUR 40 billion to GDP, around 295,000 indirect jobs, and roughly EUR 88 billion in fiscal revenues.

Beyond static gains, spillovers from AI, cloud, cybersecurity, and IoT would lift productivity in priority sectors such as energy, health, finance, logistics, manufacturing, and public administration.

Getting there requires solid foundations – predictable regulation and taxation, a "think small first" administrative stance, skills, and interoperable digital public services – followed by phased delivery. In the near term (2026-27), Romania should prioritise prototyping and IP protection while launching shared testbeds and initial sandboxes. The next phase (2027-30) should scale demand and capital through challenge-based procurement, corporate pilots, and co-investment/R&D tax tools. With visible domestic references in place, Romania can then amplify exports and national branding, repositioning itself from a reliable engineering base to a credible hub for innovation and IP.

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01. The Romanian ICT industry at a turning point

This chapter outlines the evolution of Romania’s ICT industry and the factors that have fuelled its growth, from skilled labour and cost competitiveness. It also highlights why these drivers are losing relevance and why the current outsourcing-led model cannot sustain long-term growth and competitiveness. The chapter shows how Romania now faces a crossroad: without a shift toward innovation and higher-value activities, the sector risks plateauing at lower-value activities if innovation is not accelerated.

Romania's ICT industry is a strong base now at a crossroads – what fuelled rapid growth will not be sufficient to sustain future competitiveness

Over the past two decades, Romania's ICT sector has grown into a cornerstone of the economy, expanding rapidly, creating hundreds of thousands of jobs, and accounting for almost 8% of gross value added. This growth reflects clear strengths: a deep and skilled talent pool, a growing number of product-focused companies, and a high ICT share in GDP by European standards.

Historically, competitiveness was driven by Romania's skilled and cost-competitive workforce, which has attracted global outsourcing and shared-services operations. The long-standing income tax exemption for software employees also played a role, improving take-home pay, helping retain talent, and signalling government recognition of ICT as a strategic industry. Yet, the instrument's importance as a growth driver for the ICT industry has gradually faded. Reforms in 2018 reduced its relative benefit, and since November 2023 it only applies to salaries below RON 10,000 - well below the earnings of many ICT professionals. As the Romanian Employer's Association of the Software and Services Industry (ANIS) notes, the exemption is no longer decisive for most ICT firms, and the real gap is that it has not been replaced with **alternative measures to stimulate innovation**.

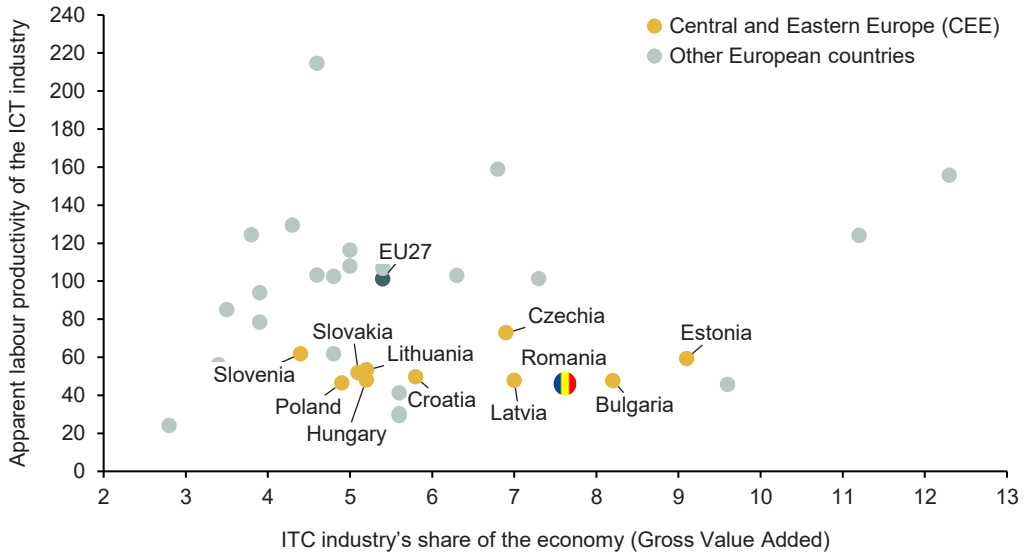
Taken together, Romania's position is strategic and consequential: large and capable, with productivity gaps to close and cost advantages narrowing. Sustained competitiveness requires complementing outsourcing with innovation-led growth. While outsourcing remains an important pillar, continued primary reliance on it may gradually anchor the industry in lower-value activities, tempering long-term competitiveness and innovation potential. As wages rise and the old advantages lose relevance, relying on outsourcing-led growth alone risks locking the industry into lower-value activities and gradually eroding its competitive edge.

Looking ahead, **Romania needs to introduce targeted policy instruments and ecosystem measures** that build on existing strengths while addressing its unique growth barriers and create stronger conditions for innovation. Innovation, however, is not a single step but a lifecycle – from idea generation and early testing, through development and scaling, to commercialisation and internationalisation. Companies create greater value to society the further they progress along this path.

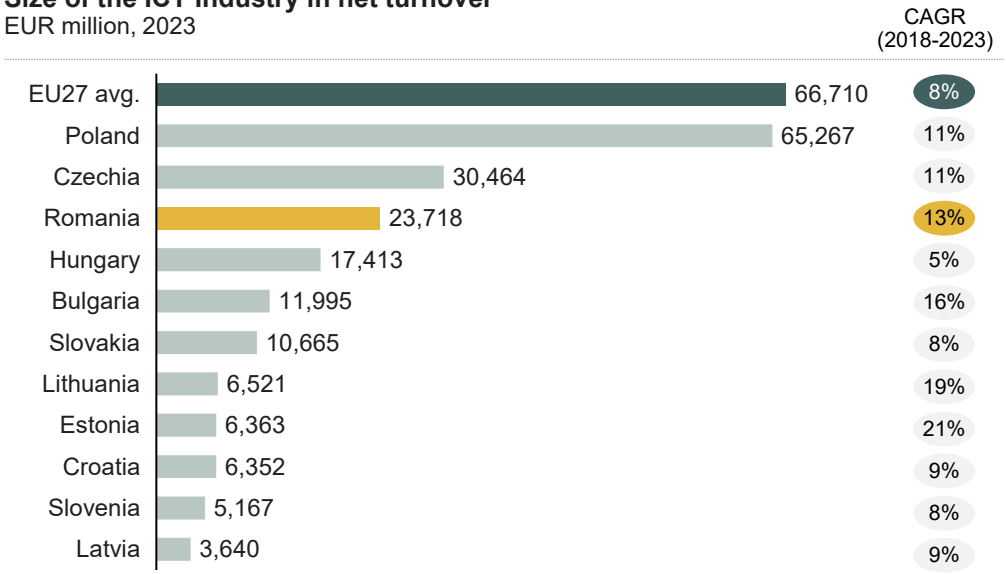
Today, Romanian ICT companies encounter hurdles at each stage – limited access to prototype funding, weak startup-corporate collaboration, administrative burdens, and insufficient support for international expansion. Without targeted measures, many firms risk stalling before reaching higher-value stages, slowing the sector's innovation momentum.

Note: By Central and Eastern Europe (CEE), we refer to 11 EU countries: Bulgaria, Croatia, Czechia, Estonia, Hungary, Lithuania, Latvia, Poland, Romania, Slovenia, and Slovakia.
Source: Implement Economics based on ANIS (2024) and Eurostat (nama_10_a19 & sbs_ovw_act,).

Country performance on productivity and size of the ICT industry
tEUR / percentage, 2023



Size of the ICT Industry in net turnover
EUR million, 2023



Source: Implement Economics based on Eurostat (sbs_ovw_act, sbsna_1a_se_r2 & nama_10_a19).

Romania's ICT industry is a national stronghold, with rising value-added and productivity above the economy-wide average

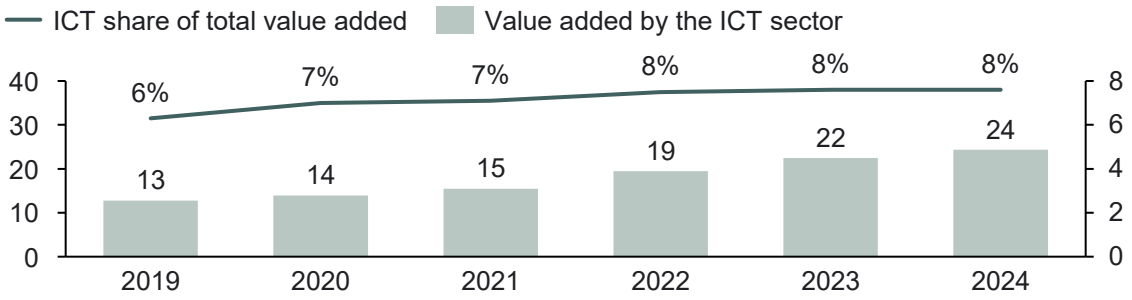
The Romanian ICT industry…

… is a crucial contributor to the economy…

~8% of Romania's total value added is accounted for by the ICT industry, and the contributions have continued to grow the past five years.

The ICT sector contributes approximately 8% of Romania's total value added, underscoring its role as a vital economic industry. In 2024 alone, it generated €24 billion, marking a robust 14% average year-on-year growth.

Gross value-added contributions by the ICT sector
EUR billion (left axis) and % (right axis), 2019-2024



When accounting for indirect and induced effects, ICT drives over 14% of Romania's GDP.

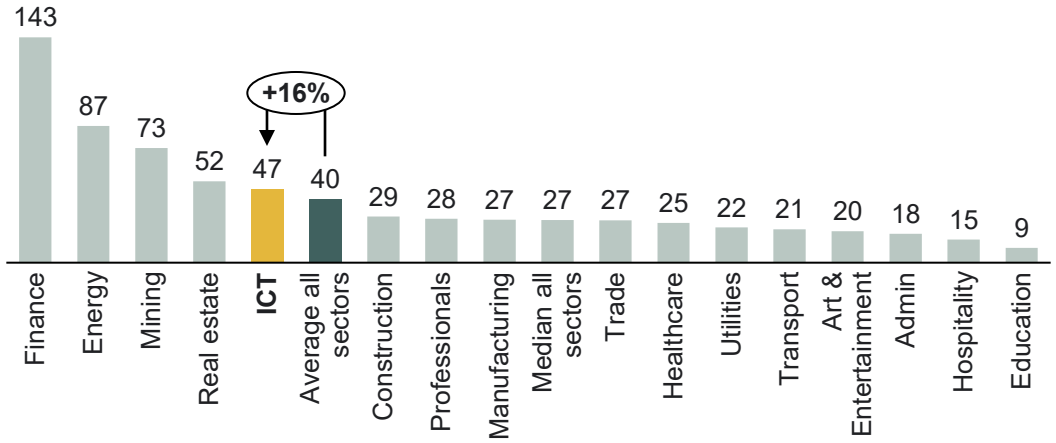
ANIS (2024).

… and is among the most productive sectors in Romania

16% higher productivity in the ICT industry compared to the average apparent labour productivity across all industries.

The ICT industry stands out as one of Romania's most productive industries. In 2023, its labour productivity reached €47,000, surpassing the national average and various other industries. From 2021 to 2023, it achieved an impressive annual productivity growth of 11%.

Apparent labour productivity[1]
EURt, 2023



Note: Apparent labour productivity is defined as value added at factor costs divided by the number of persons employed.
Source: Implement Economics based on Eurostat (nama_10_a19 & sbs_ovw_act,).

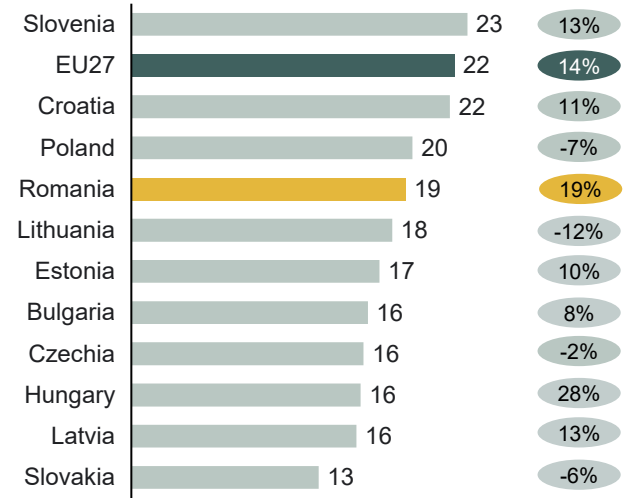
Combining competitive costs with highly skilled talent, the Romanian ICT industry is built on strong comparative advantages

Romania offers a skilled, multilingual ICT workforce with a historically strong cost–quality advantage relative to peers, supported by a robust STEM talent base that has expanded significantly during the past 5 years.

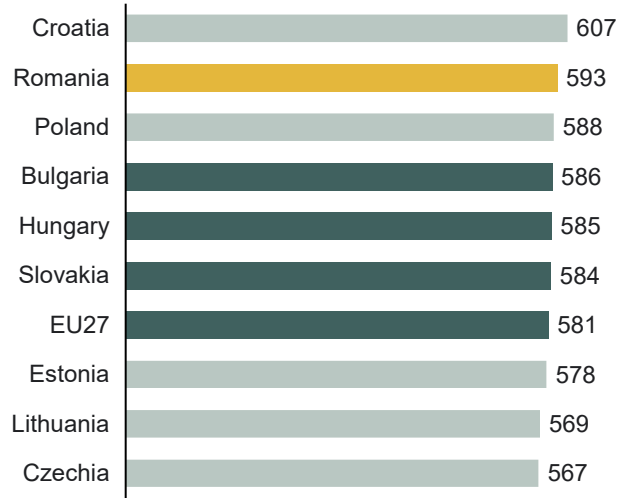
However, this historical advantage is under pressure:

- Other countries are rapidly developing their ICT capabilities, underscoring the need to invest in education, reskilling, and measures to attract talent from abroad.
- Rising labour costs, likely driven by supply constraints, are eroding Romania's traditional cost edge.
- To maintain competitiveness, Romania should enhance productivity, explore alternative financial instruments, and continue nurturing and expanding its domestic ICT and STEM workforce – building on its talent stronghold through skills upgrades, productivity gains, and selective international talent attraction.

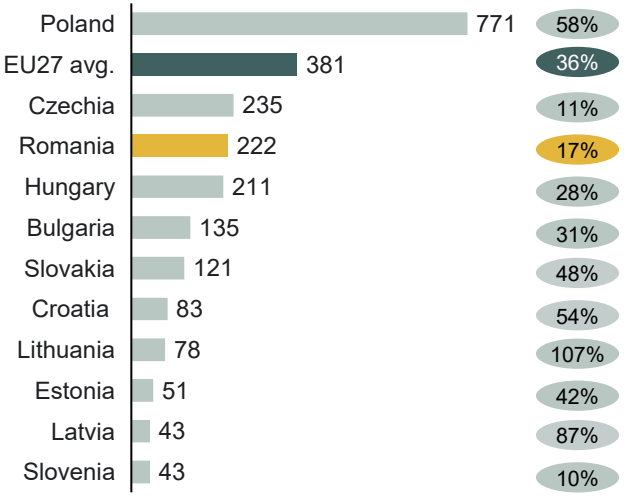
STEM graduates
Per 1,000 inhabitants aged 20–29, 2023



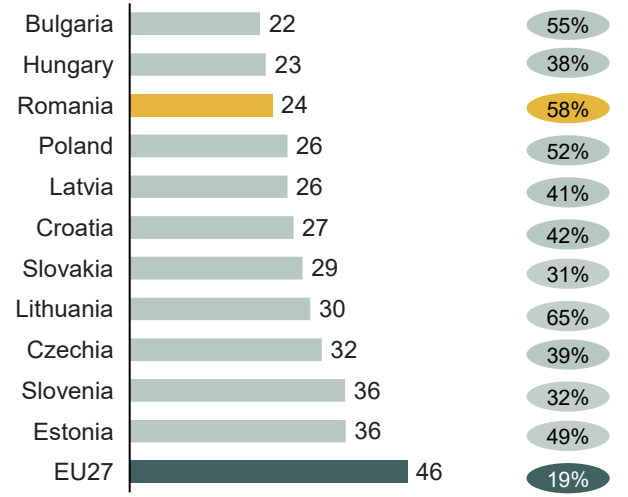
English proficiency skills
EF Index score (0-800), 2023



ICT specialists
Thousand individuals, 2024



Labour costs in ICT
EUR per hour, 2024

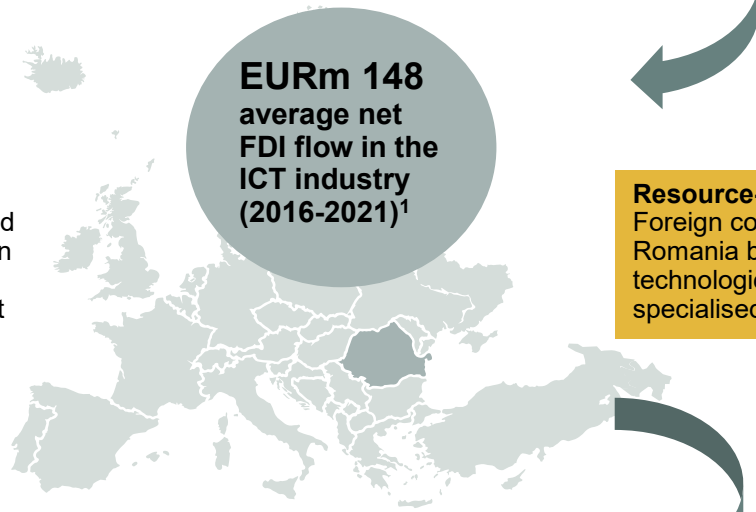


Note: There exists no English proficiency skills score for Latvia. For labour costs in ICT data is not available for 2019.
Source: Implement Economics based on Eurostat (educ_uoe_grad04, lc_lci_lev), the European Commission (2024a) and Education First (2024).

Foreign direct investment has shaped Romania's ICT industry, with growth driven largely by outsourcing-led models

Market-seeking
Multinational enterprises invest in Romania to get access to attractive markets

Strategic
A favourable regulatory regime and a wealthy population attract foreign companies who wish to introduce new products in Romanian market and improve the quality of their existing products



Resource-seeking
Foreign companies are attracted to Romania by its skilled labour force, technological know-how, and specialised clusters of expertise

Efficiency-seeking
High productivity levels lower the real operating costs of establishing a business in Romania and enable foreign companies to improve their overall competitiveness

Motives for engaging in FDI – Romanian context

Foreign direct investment (FDI) decisions are typically guided by four main motives: resource-seeking, efficiency-seeking, market-seeking, and strategic asset-seeking. This framework is commonly used to understand how FDI contributes to national development paths.

The Romanian ICT industry has successfully attracted foreign investments, primarily through outsourcing, creating numerous jobs and forming a vital part of the national economy. Key characteristics of Romania's ICT industry explain the dual motives for FDI:

- **Resource-seeking:** Foreign companies are attracted by Romania's skilled labour force, advanced technological expertise, and specialised knowledge clusters. The country's strong educational system and English-proficient workforce offer a distinct advantage over regional peers.
- **Efficiency-seeking:** High productivity levels and low operational costs make Romania an attractive outsourcing destination. This efficient and cost-effective environment enhances profitability for foreign investors, bolstering Romania's ICT industry's significant contribution to the economy.

Note: (1) National Bank of Romania numbers from InvestRomania (2022). Average net FDI flow in Romania's ICT sector (2016–2021) is 148 million EUR/year, accounting for both inflows and outflows.
Source: Implement Economics based on ESPON FDI (2018) and InvestRomania (2022).

As a result, Romania's ICT industry combines global giants with micro-enterprise base

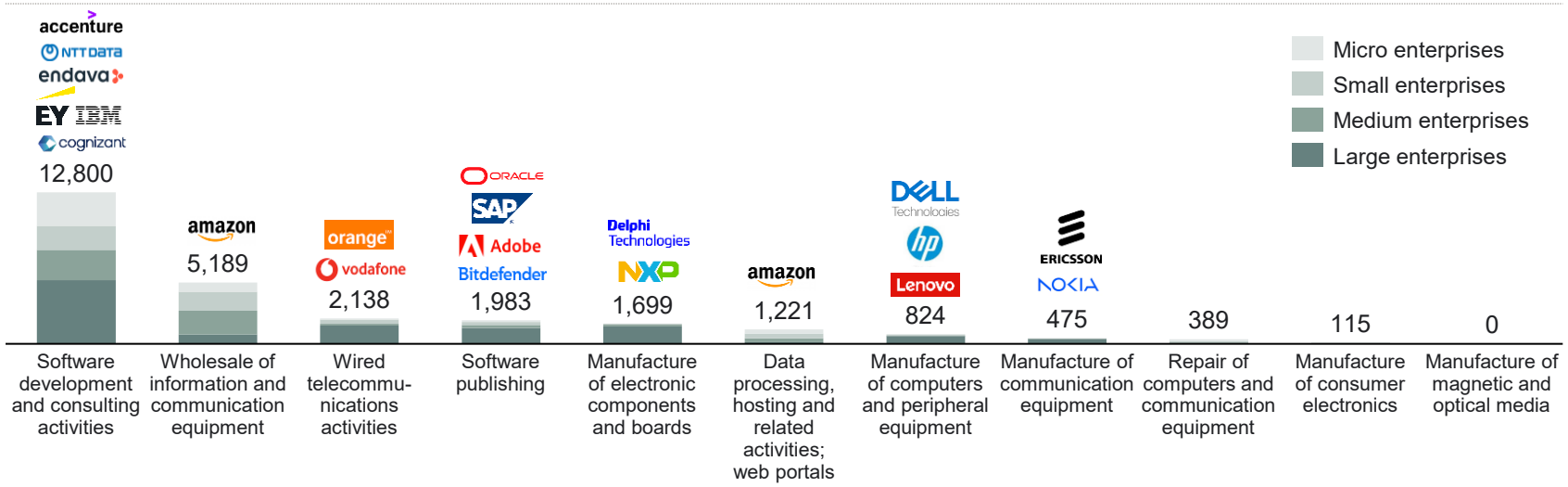
Romania's ICT industry has traditionally been driven by outsourcing in software development and consulting.

In 2023, global leaders like Microsoft, Endava, Accenture, and IBM generated substantial revenue by leveraging Romania's skilled workforce.

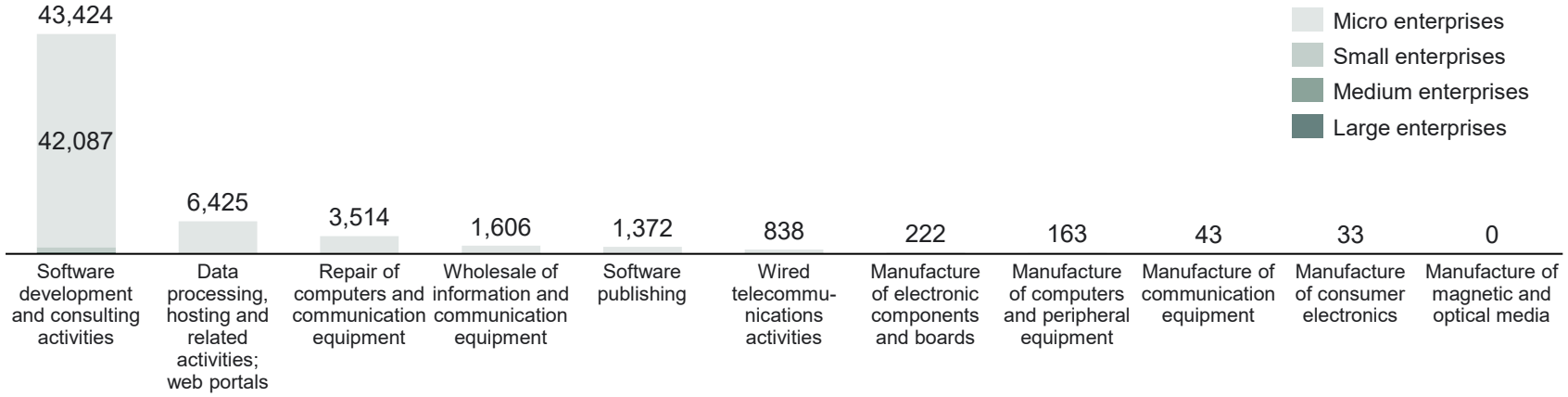
Alongside these giants, numerous micro enterprises bring flexibility and innovation to the industry.

Together, the ICT industry is poised to transform Romania from an outsourcing destination into a leader in technology and innovation in Eastern Europe.

Net turnover by ICT subindustries and company size
EUR million, 2023



Enterprises across ICT subsectors
Number of enterprises, 2023



Source: Implement Economics based on Eurostat (sbs_ovw_act)

Outsourcing has powered growth in the ICT industry, but it won't alone secure Romania's long-term competitiveness

Outsourcing in Romania until today

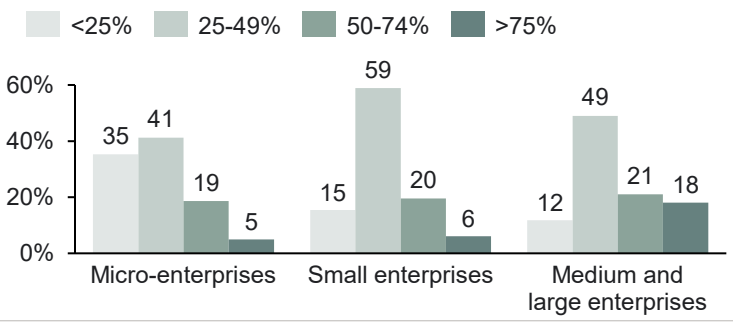
- Historically, ICT outsourcing in Romania has been a major growth driver, driven primarily by cost savings and high technical expertise.
- Organisations have leveraged Romania's skilled workforce and language proficiency for software development and support, generating significant sales.
- In 2023, over 40% of micro-enterprises, 59% of small enterprises, and 49% of medium and large enterprises have relied on outsourcing for at least 25% of sales generation, according to a business survey carried out by ANIS.

Emerging shifts

- Romania's traditional cost edge is narrowing due to wage growth and tighter talent supply. Competitiveness is therefore shifting toward capability depth, quality, and domain expertise.

Percentages of sales generated from outsourcing

% of companies, 2023



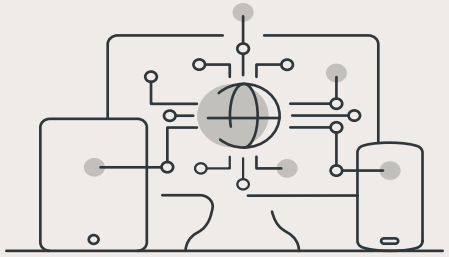
Outsourcing drivers

- **Financial & Cost drivers**
- **Human Resources & Talent drivers**
- **Risk & Compliance drivers**
- **Strategic & Operational drivers**

From cost advantage to capability-led differentiation

The path forward for outsourcing in Romania

- For the past two decades, Romania's outsourcing model has built on cost efficiency and skilled talent and delivered strong growth. As the basis of competitiveness evolves, Romania can convert these strengths into higher-value services.
- Rising wages and talent shortages mean that cost will matter, but differentiation will increasingly come from expertise, IP, and solution ownership.
- At the same time, client needs are evolving. International companies are increasingly looking for partners who can provide not just programming capacity, but also capabilities in digital transformation, AI, productised services, and product development.
- Other countries in Europe are positioning themselves as high-value ICT hubs, increasing competitive pressure.
- To secure long-term growth, Romanian firms can complement cost-driven services with innovation-led models – productised offerings, domain solutions, and partnership-based delivery – while continuing to serve as trusted engineering partners.



Note: The figure on sales generated from outsourcing is based on a smaller definition of the ICT industry but assumed to be representative.
Source: Implement Economics based on ANIS (2024).

Romania has become a strong digital exporter, but exports remain rooted in outsourcing

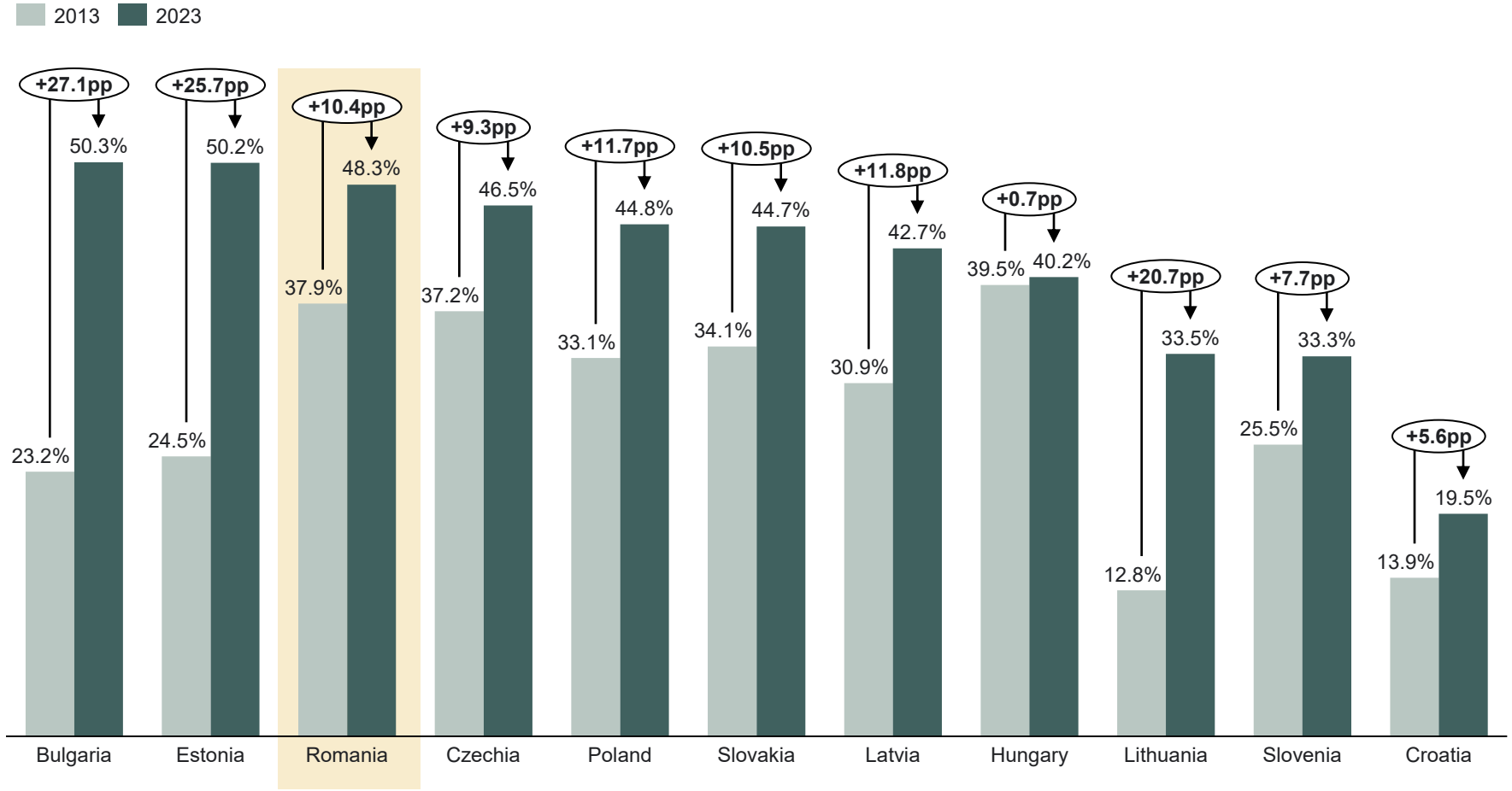
Romania has built a solid position in global digital trade. Nearly half of its service exports are now digitally delivered—comparable to regional peers and reflecting the scale of its ICT sector. The sector's rising contribution to total exports has also become an important driver of Romania's growing trade surplus in services, helping offset part of the country's overall commercial deficit.

The composition, however, still matters. Outsourcing and captive centres have underpinned this rapid expansion and now represent a platform that could be leveraged for productisation and higher-value digital offerings. To date, much of the growth has come from services designed abroad, providing stability but generating limited proprietary software, platforms, or advanced digital solutions.

This distinction is key for competitiveness. Peers such as Estonia combine strong digital export performance with innovation-led integration, supported by product-oriented companies and a dynamic startup ecosystem. Strengthening Romania's own innovation and productisation capacity would reinforce its role in reducing the national trade deficit while moving up the digital value chain.

Digitally-delivered international trade in services

Digitally-delivered share of total exports in services (%) , 2023



Source: Implement Economics based on UNCTAD (2023).

Development companies are starting to grow and catch up in terms of value creation, and will be key in Romania's innovation transition

Romania's ICT industry has long relied on outsourcing as a growth engine, but evidence shows that IT development companies already deliver greater economic impact:

- In 2022, development companies generated €19.5bn GDP impact (6.9%), surpassing outsourcing firms at €17.2bn (6.1%) despite similar turnover levels.
- Development firms are more value-add intensive, retaining IP and capturing spillovers through product launches and innovation.
- Outsourcing remains important but contributes less per unit of turnover and faces limits from talent shortages and rising costs.

Romania's long-term competitiveness will hinge on scaling innovation-driven development firms, while enabling outsourcing players to pivot toward more advanced, partnership-based models.

Impacts generated by ICT outsourcing and development companies

	Impact of outsourcing IT companies in GDP in 2022		Impact of IT development companies in GDP in 2022	
	EUR billion	Percent of GDP	EUR billion	Percent of GDP
Direct contribution (Value created by ICT companies themselves)	€8.7 billion	3.1%	**€9.9 billion**	**3.5%**
Indirect contribution (Supply-chain effects across the economy)	€4.0 billion	1.4%	**€4.5 billion**	**1.6%**
Induced contribution (Consumption effects from higher household income)	€4.5 billion	1.6%	**€5.1 billion**	**1.8%**
Total contribution	€17.2 billion	6.1%	**€19.5 billion**	**6.9%**

Note: ANIS used a narrower definition of the ICT industry. We assume that the same results will show using the broader ICT definition.
Source: Implement Economics based on ANIS (2024) and Eurostat (nama_10_gdp).

Innovation in the ICT industry…

"Innovation is the implementation of a new or significantly improved product (good or service), process, a new marketing method, or a new organisational method."

– OECD, Oslo Manual (2018)

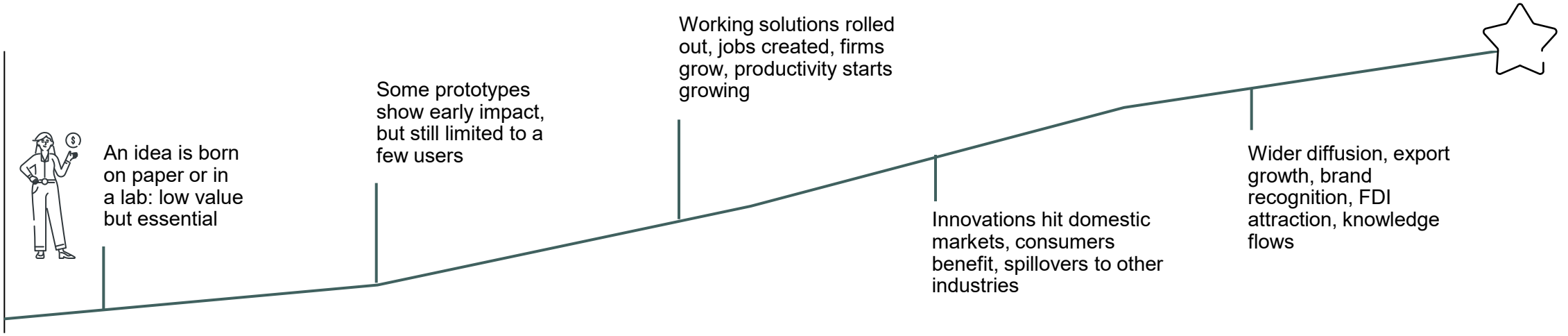
In the ICT sector, innovation goes beyond incremental improvements in service delivery. It refers to the creation and diffusion of new products, platforms, and digital services that generate higher value-added, retain intellectual property, and strengthen competitiveness.

In practice, this takes two main forms:

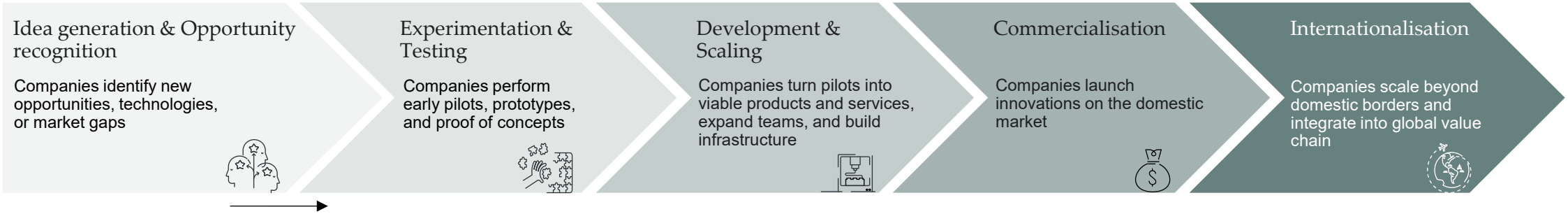
- **Established companies |** Investing in R&D, launching proprietary products, building digital platforms, and embedding advanced technologies such as AI, cloud, and cybersecurity into their offerings.
- **Start-ups and scale-ups |** Agile firms experimenting with disruptive technologies and business models, often driving breakthroughs in niche areas and acting as catalysts for new market segments.

Innovation follows a standard lifecycle, with companies creating more value to society the further along they progress – but barriers accumulate at each stage

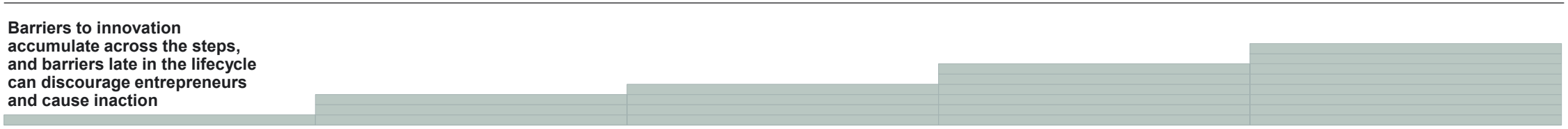
Value to society



The innovation process



Barriers

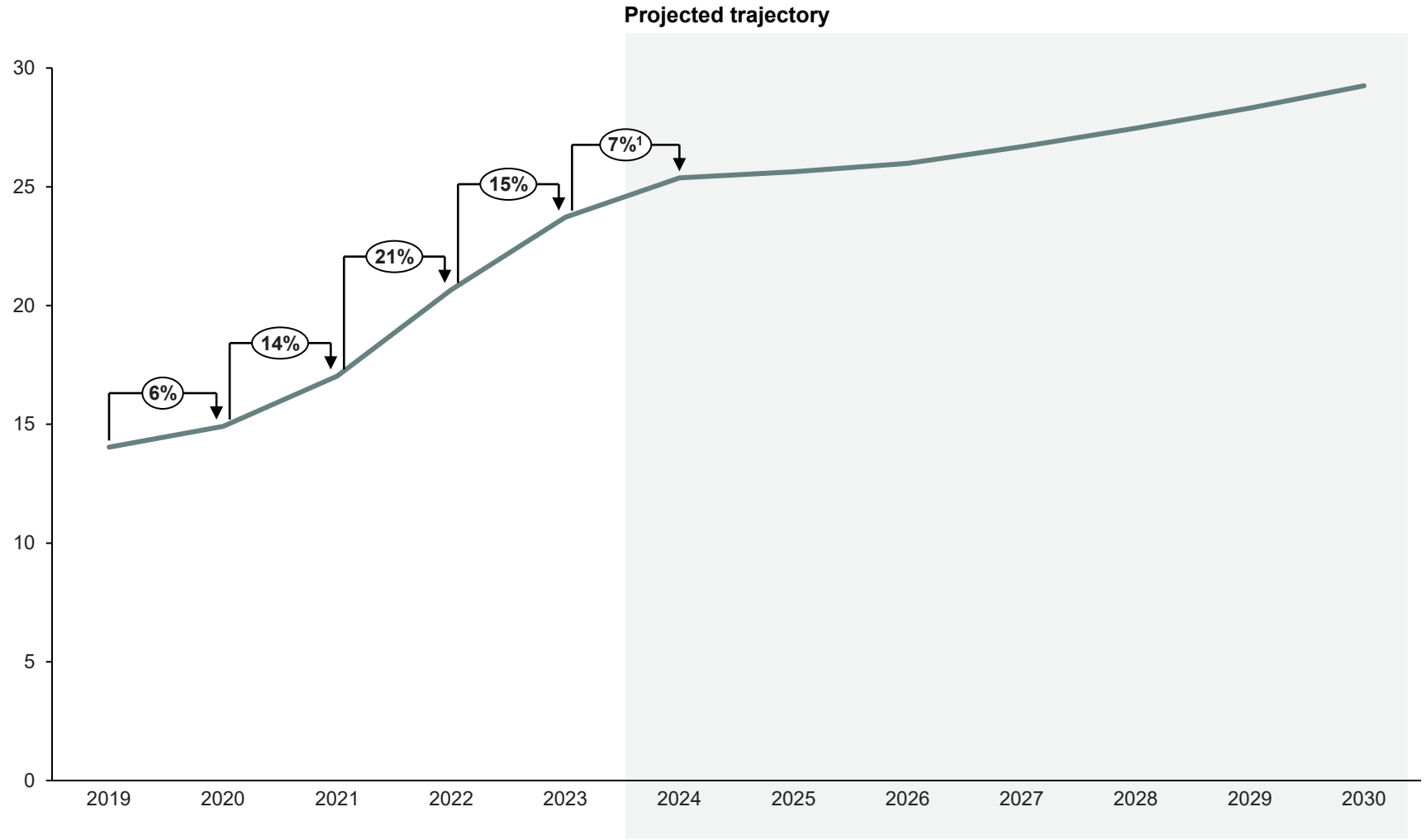


Sources: Implement Economics based on OECD (2015); World Bank (2012); European Commission (2021b).

Status quo will lead to stagnation for the Romania's ICT industry: without targeted innovation measures, Romania's ICT edge erodes as wages rise, talent tightens, and peers move ahead

Net turnover in the ICT industry, 2019-2030

EUR billion



Romania's ICT industry has been a standout performer, with net turnover almost doubling since 2019. Through 2019, the industry rode a steep ascent – roughly +6%, then +14%, and a breakout +21% – but by 2023 growth had eased to about +15%. On average, the industry turnover has grown by 17% annually over this period (2021-2023).

Romania's ICT sector is at risk of slipping from strong to standing still. Recent data from ANIS shows that the ICT industry only grew by 7% from 2023 to 2024. The above analysis indicates that characteristics of the Romanian ICT industry that once attracted sourcing – cost advantage and abundant talent – are eroding, while regional peers are accelerating with targeted innovation policies.

Under a status quo scenario, growth should be expected to flatten. Rising wages will tighten margins, and skilled labour is likely to become a bottleneck that slows down growth – potentially leading to a stagnating ICT industry. If the industry manages to keep up with the rest of the economy, growth should be expected to be only 2% on average annually rather than 17%.[2]

The choice for policymakers is practical and urgent: revert to the historic growth trajectory or accept gradual stagnation. In a status quo scenario, the ICT industry will likely miss the momentum created by digital mega trends: AI, cloud, cybersecurity, and IoT. Romania's strong base remains, yet without deliberate, innovation measures, the industry will hold its position in lower-value services while others move up the value chain. If emerging bottlenecks are removed, and innovation policies are put in place that will enable the industry to keep momentum, reverting to the 17% annual growth rates is likely to be within reach.

Note: 1) Eurostat has not yet published 2024 ICT turnover data. We therefore use ANIS's series, which applies a slightly narrower ICT definition (see slide 47). Historically, the ANIS and Eurostat series move in parallel, so trends are comparable, though levels may differ slightly due to scope. 2) IMF real GDP growth projection for Romania.
Sources: Eurostat (sbs_ovw_act, sbsna_1a_se_r2) and IMF (n.d.)

Digital mega trends are creating a future-fit, high-growth ICT sector, offering strategic opportunities for Romania

Artificial intelligence & machine learning

AI and machine learning are transforming business operations, enabling automation, predictive analytics, and intelligent decision-making.

Cloud computing & edge infrastructure

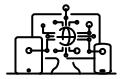
Cloud and edge technologies provide scalable, flexible, and cost-efficient platforms for deploying digital services globally.

Digital transformation & automation

Businesses are rapidly adopting digital tools and automation to optimise operations and deliver new services.

Internet of Things & connected devices

IoT connects devices and systems, generating valuable data streams and enabling smarter cities, manufacturing, and logistics.



Green & sustainable ICT

Sustainable ICT solutions reduce energy consumption and environmental impact, creating opportunities in energy-efficient infrastructure and technology.

Cybersecurity & data privacy

Rising cyber threats and regulatory demands are driving investment in secure, resilient, and compliant digital solutions.

Opportunities

- **High-value ICT services:** AI, cybersecurity, cloud, and data centre services can move Romania up the value chain.
- **Strategic government investment:** Digitalisation of public services and defence tech can catalyse domestic innovation.
- **Green transition & sustainability solutions:** Leveraging EU climate agendas and green ICT initiatives.
- **Talent and regional positioning:** Strong existing ICT workforce and geographical proximity to Western Europe offer cost and collaboration advantages.

Threats

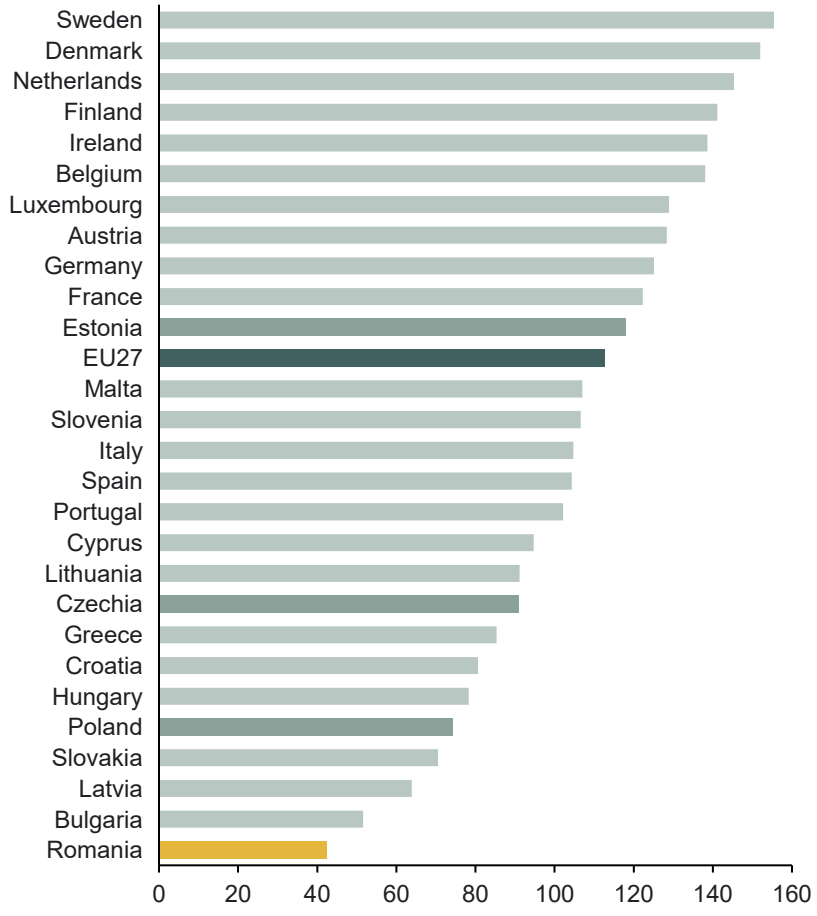
- **Erosion of cost advantage:** AI and automation reduce the reliance on lower-cost labour, challenging Romania's traditional competitiveness.
- **Technology adoption gap:** Limited readiness to implement advanced AI, cloud, and data-intensive solutions could slow innovation.
- **Global competition:** Other emerging ICT hubs are moving faster up the value chain, risking Romania being left behind.
- **Infrastructure bottlenecks:** Insufficient data centres, cloud infrastructure, and high-speed connectivity can limit scalability.

02. Instruments to accelerate innovation

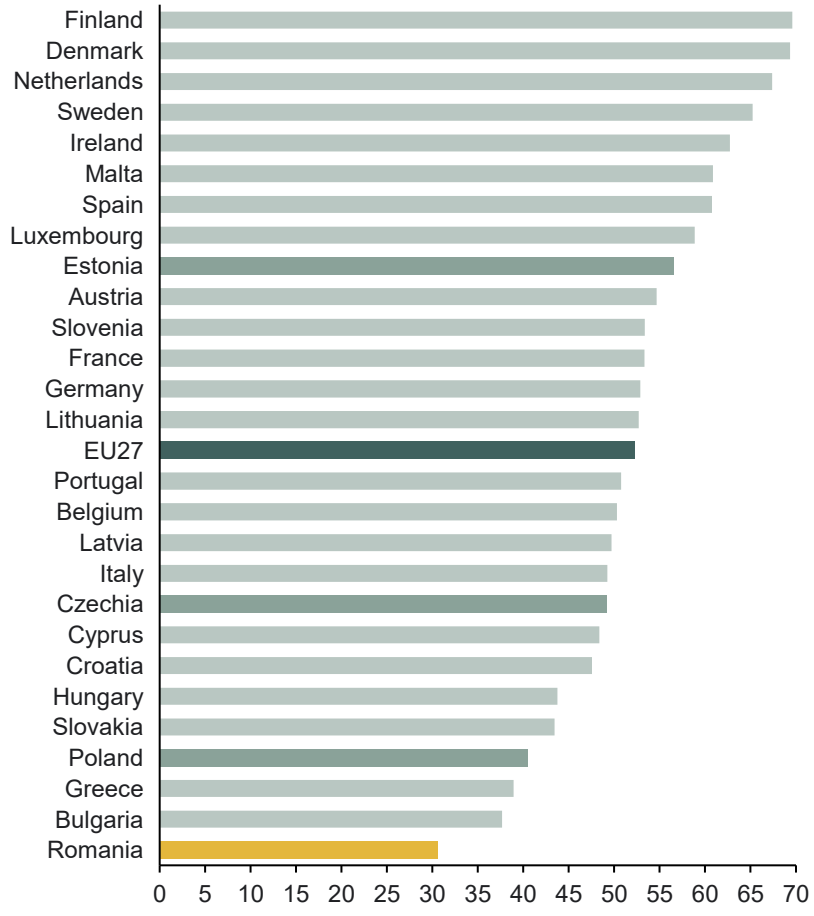
This chapter examines the possible measures that could support Romania in making the transition from outsourcing to innovation. It introduces a framework for selecting relevant instruments, drawing inspiration from peer countries such as Poland, Czechia, and Estonia, which have faced similar challenges but advanced further. The chapter then presents a portfolio of concrete instruments across the innovation lifecycle, together with deep-dives into selected cases that show how they work in practice.

Peer countries like Poland, Czechia, and Estonia have successfully accelerated the shift from outsourcing to innovation – not by chance but through targeted action

European Innovation Scoreboard
Summary innovation index, 2025



Digital Economy and Society Index (DESI)
Total score across four dimensions, 2022



Source: Implement Economics based on Federal Reserve Bank of Dallas (2025).

While Romania's ICT industry is large, Romania generally lags European peers on innovation and digitalisation. International evidence shows that investment in innovation capacity pays off. For example, recent US research finds that **each dollar of public R&D spending ultimately generates between $1.4 and $2.1 in long-run GDP** via higher productivity.

For Romania, which invests far below the EU average in R&D, this underscores the substantial potential gains from scaling up innovation investment and improving the conditions for firms to innovate.

To inform this transition, we look to **Poland**, **Czechia**, and **Estonia**. These countries began from similar positions but have since moved further ahead through targeted measures such as demand-side policies (public procurement and digital government pilots), targeted R&D grants and vouchers, public co-investment funds, ecosystem coordination through centralised startup programmes, regulatory and tax incentives, and stronger skills and university–industry linkages.

In the following pages, we examine some foundational drivers of innovation as well several targeted innovation-inducing instruments through peer country cases, assessing which measures could address Romania's specific barriers and unlock growth.

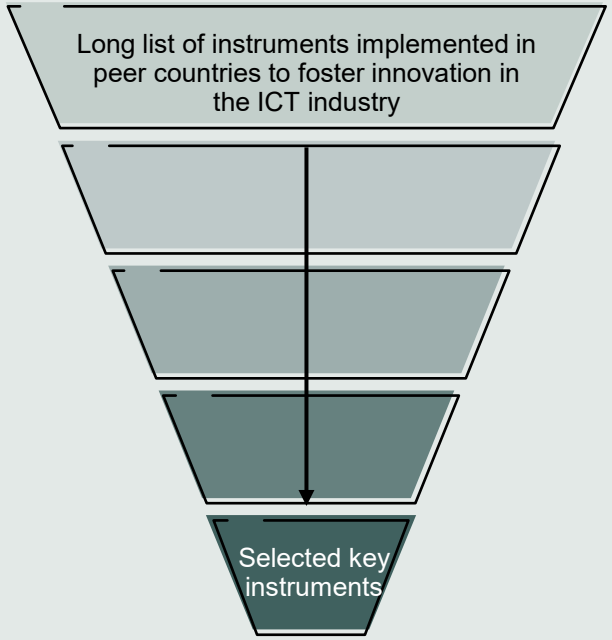
In choosing relevant innovation instruments, we use a framework that filters peer-country strategies to pinpoint actionable solutions for Romania's ICT industry

We focus on instruments that are…

Targeted towards driving innovation in the ICT industry	>	The selection includes only relevant tools and strategies successfully employed by peer countries to cultivate an innovation-driven ICT industry.
Targeted towards challenges in the Romanian ICT industry	>	Instruments must directly address the unique obstacles encountered by the Romanian ICT sector, ensuring their applicability to local industry needs.
Targeting mostly barriers in the first four phases of the innovation lifecycle	>	Our focus is mostly on solutions critical for overcoming barriers in the initial stages of innovation, enabling Romania to establish itself as a pioneer during these early phases.
Are cost-effective or leverage/catalyse private investments	>	We prioritise tools that are either cost-efficient or that effectively stimulate private sector investment, ensuring sustainable public-private collaboration.
Relevant from an SME/start-up or a product innovation perspective	>	Instruments should be tailored to support start-ups and SMEs, given their prominence in Romania. Alternatively, they should drive product innovation, as this represents significant growth opportunities.

Source: Implement Economics

In selecting relevant instruments that can address key barriers across the innovation lifecycle, we start from a long list of instruments tested in peer countries, especially Poland, Czechia, and Estonia, and filter them through Romania's specific context. This ensures that we consider instruments that are not just successful elsewhere, but also relevant and actionable for Romania's ICT industry and overall economic context.



We have mapped out the most relevant instruments across the innovation lifecycle to address Romania's barriers and unlock growth in the ICT industry and beyond

Instruments marked in yellow will be prioritised for now included in the instrument catalogue.

Idea generation & Opportunity recognition

Regulatory instruments:

- **Ecosystem coordinators:** national agencies coordinating startup support, helping build networks and visibility (EE, CZ, PL)
- **Failure-tolerant restart policies:** legal reforms that allow quicker business restart after bankruptcy and promote entrepreneurship (US)

Financial instruments:

- **Proof-of-concept grants:** funding to test if research results can work in practice and be commercialised, moving ideas from labs to early testing (CZ, EE, PL)
- **Innovation vouchers:** small grants helping SMEs connect with universities and labs, stimulating knowledge flows (CZ, PL)
- **Academic incubators:** co-funding and mentoring for ideas coming out of universities (PL, EE)
- **Hackathons & competitions:** events where entrepreneurs compete to solve challenges, stimulating early ideas (CZ, EE, PL)

Experimentation & Testing

Regulatory instruments:

- **Regulatory sandboxes:** controlled environments where startups can safely test new technologies under supervision (CZ, PL, EE)

Financial instruments:

- **Shared testbeds:** physical or digital labs where SMEs can access infrastructure like AI, IoT, or 5G for testing (PL, EE, CZ)
- **Startup accelerators with pilot projects:** programs linking startups to corporates or public bodies to test solutions in real settings (PL, CZ)
- **Micro-grants for prototyping:** very early, equity-free seed funding to build first prototypes and "minimum viable products" (EE, CZ)

Development & Scaling

Regulatory instruments:

- **Talent visas & incentives:** residency or visa programs to attract international entrepreneurs and tech talent and build up scare skills (EE, CZ)

Financial instruments:

- **Corporate open-innovation support:** grants or incentives for large firms to adopt/test startup solutions (PL, CZ)
- **IP fast track:** accelerated, affordable patent and trademark protection to improve accessibility (CZ, PL, EE)
- **Public venture funds and co-investment:** government-backed funds that invest early in startups to attract private investors and fill the early-stage financing gap (EE, PL, CZ)
- **International accelerators:** support for startups to join foreign accelerators, mentors and access new markets (CZ, PL, EE)

Commercialisation

Regulatory instruments:

- **Innovation-led public procurement:** government tenders designed to buy innovative solutions, giving startups a first customer and lead markets (CZ, PL, EE)
- **Digital public services:** interoperable e-government platforms (digital ID, data exchange, cloud) that create lead markets and testbeds for SMEs (EE)

Financial instruments:

- **R&D tax incentives:** tax deductions or reliefs, including the IP box, to encourage companies to invest in product development (CZ, PL, EE)
- **Digital adoption vouchers:** subsidies for SMEs to adopt cloud, AI, and digital tools (ES, PT)
- **National digital skills programmes:** lifelong learning strategies for citizens and SMEs to increase digital adoption (IE, FI)

Internationalisation

Regulatory instruments:

- **Foreign founder attraction:** visas and relocation programs to make it easier for international entrepreneurs to set up locally (CZ, PL, EE)
- **Showcasing government platforms:** using digital government services as exportable "reference cases" for domestic ICT (EE)

Financial instruments:

- **National branding and promotion:** coordinated marketing of the domestic startup/ICT ecosystem abroad (CZ, PL, EE)
- **Trade promotion & export agencies:** support for startups expanding abroad, including matchmaking and landing pads (CZ, PL, EE)

Source: Implement Economics based on input from ANIS.

Overview of suggestive instruments that have been analysed in detail

The assessment of impacts and learnings is based on interviews with program owners or actors otherwise involved in operating the innovation instruments. To the extent possible, impacts and learnings have been verified by conducting multiple interviews and desk research. However, it has not been possible to do detailed, independent analysis of each instrument.

	Instrument type	Target group	Barriers addressed	Impact	Effort	Impact and learnings
Proof-of-concept grants	Financing	Startups, scale-ups	Prototype funding; lab-to-market (TRL 3–6)	Low	Low	Faster commercialisation/IP; shorter time-to-market; company-led consortia and KPIs help conversion.
Innovation vouchers	Financing	All (SME-oriented, but large firms via subsidiaries/units where eligible)	Access to external expertise; early validation	Medium-High	Low	Triggers SME–RTO ties; faster prototypes/IP; strong PoC pipeline; DIH/testbed diagnostics and software outcomes accepted.
Regulatory sandboxes	Regulatory	All	Regulatory uncertainty; testing in regulated sectors	High	Medium-High	De-risk testing; attract investment; evidence for rule changes; case managers and published lessons key.
Shared testbeds	Financing	All	Access to AI/IoT/5G infrastructure; scale testing	High	High	Quicker validation and launches; builds skills; use public digital rails; link pilots to procurement/corporate challenges.
Corporate open-innovation support	Financing	All (startups/ scale-ups as solution providers; established firms as challenge owners)	First customer; integration/credibility	Low	Low	First references and credibility; many pilots; strategic challenge framing, buyer coaching, simple IP, light admin improve conversion.
IP fast-track	Regulatory	All	Slow/uncertain IP timelines that delay deals and launches	Medium	Low	aster protection; boosts confidence; align with voucher/PoC; digital-only filing; accelerate trademarks/designs where patents are not available.
Public venture funds and co- investments	Financing	Startups, scale-ups	Early/growth capital gap	High	High	Crowds in private VC; scales winners; fund-of-funds primary; selective direct windows; link to PoC/incubation.
R&D tax incentives	Regulatory	Scale-ups, established companies	High R&D costs; retain IP domestically	High	High	Lifts business R&D; keeps IP onshore; uptake needs simple templates, rulings; accept AI/software; carry-forward/refund.
Innovation-led public procurement	Regulatory	All (SME-friendly lots benefit S/SU; EE often prime contractors)	Demand pull; first paying customer	High	Medium	Creates lead markets; speeds commercialisation; enable with buyer helpdesk, challenge framing, APIs; track outside registry.
Digital adoption vouchers	Financing	Scaleups, established companies (SMEs as adopters, S/SU as vendors)	Upfront costs; SME digital maturity	Low	Low	Creates lead markets; speeds commercialisation; enable with buyer helpdesk, challenge framing, APIs; track outside registry.
National branding and promotion	Financing	All (export-ready firms prioritised)	Low international visibility/credibility	High	Low	Creates lead markets; speeds commercialisation; enable with buyer helpdesk, challenge framing, APIs; track outside registry.

Source: Implement Economics

Deep-dive | Innovation Vouchers

Idea generation & opportunity recognition | Experimentation & testing | Development & scaling | Commercialisation | Internationalisation

[S] startups • [SU] scale ups • [E] established companies • [A] all

Instrument description

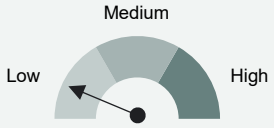
Innovation vouchers are small, fast grants for SMEs to buy external expertise from universities, Research and Technology Organisations (RTOs), accredited labs, design/IP advisors, or Digital Innovation Hubs (DIHs) or testbeds. Typical ticket sizes are EUR 5,000–20,000, with eligible services including feasibility checks, prototype advice, testing, IP search/strategy, and product or user experience (/UX) design. Eligible outcomes include modern software deliverables (cloud/SaaS, UX/product discovery), per peer practice. The goal is quick validation and first-time SME–research linkages to prepare projects for prove of concept (PoC) grants.

Barrier addressed: Vouchers lower the upfront cost of specialised external knowledge many Romanian ICT SMEs cannot afford, facilitating knowledge transfer from research providers to firms.

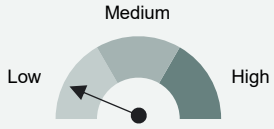
Peer country adoption:

Implementation learnings

Impact: Low direct impact but strong pipeline effects into PoC/accelerators/VC in addition to more SME–RTO collaborations, faster prototype/IP outputs, shorter time to first pilot, and measurable private-spend leverage at low administrative cost.



Effort: Low effort. With standardised calls and pre-approved providers, admin typically covers ~3–7% of disbursed funds.



Application to Romania

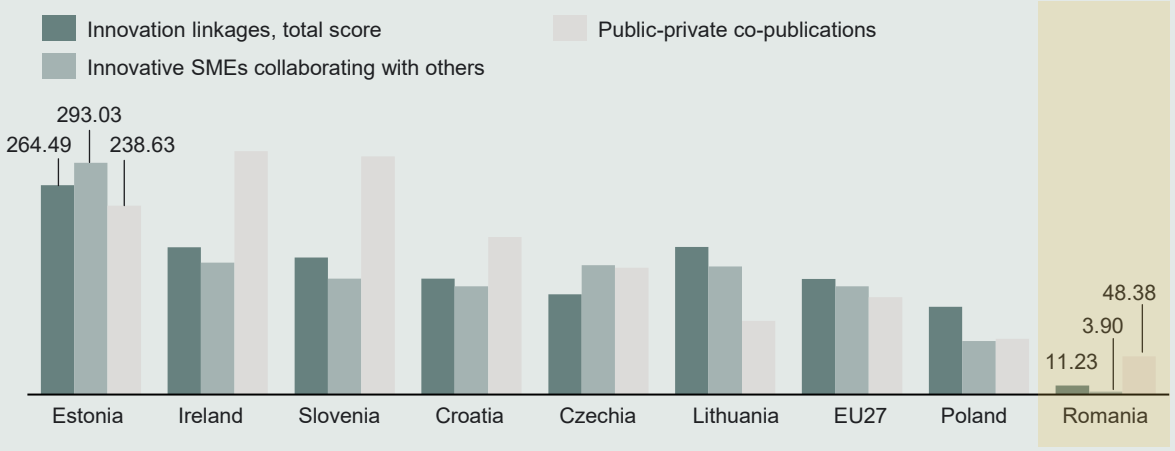
S, SU

Romanian ICT SMEs lack resources and research links to move from services to products, and the SMEs need a low-cost on-ramp from services to products. Innovation vouchers can forge repeatable SME–research partnerships and produce investment-ready prototypes.

- **Design:** pre-approved providers (universities, RTOs, DIHs/testbeds, IP attorneys, labs), 20–50% co-funding, and output-based reporting to keep administration light.
- **Execution:** add quick DIH/testbed diagnostics, accept modern software outcomes, decide in weeks, and fast-track successful vouchers into PoC.
- **Safeguards:** prioritise first-time users or require higher co-funding for repeats to deter consultancy capture, allow retroactive eligibility, and link winners to next steps (e.g. Technology Incubation or PoC).

Domestic innovation linkages score and sub-indicators (EIS)

Index scores (EU27 = 100 in 2017), 2024



Sources: Implement Economics based on European Innovation Scoreboard (2025) and OECD STIP COMPASS (2023)

Deep-dive | Innovation Vouchers

Peer country case: Innovation grant Estonia

The solution

Estonia's innovation voucher scheme, launched in 2009 and refined in 2015, help SMEs buy external R&D/IP services to test materials, run feasibility studies, prepare patent applications, or prototype and validate early products. The programme lowers barriers for SMEs to engage in R&D, fosters first-time cooperation with knowledge providers, and builds capacity for innovation-driven growth. Design upgrades include evaluation in weeks, acceptance of modern software/AI deliverables (including UX/product discovery and cloud/SaaS), light diagnostics via DIHs/testbeds to steer SMEs, and fast-lane referral into PoC calls. The scheme is planned to run until at least 2030.

How it works:

- Managed by Enterprise Estonia (EAS/EIS) and the Ministry of Economic Affairs and Communications.
- Aligned with national focus areas where firms lack resources, skills, or experience; each applicant can apply twice.
- Voucher size: max EUR 7,500; co-financing: 20% SME contribution.
- Providers: pre-approved universities, R&D organisations, labs, design studios, and IP attorneys.
- Fast-track process: evaluation within weeks; disbursement tied to outputs rather than lengthy reporting.

The impact

- Annual uptake is steady, with cumulative beneficiaries numbering in the thousands since launch.
- Pipeline effects are strong: voucher to PoC conversion rates improved where diagnostics and provider lists were used, and time to first prototype/pilot shortened materially. Beneficiaries include SMEs of all sizes, universities, and research providers.

The effort

- Estimated annual budget: EUR 0.5–1 million.
- Administrative cost is low thanks to streamlined applications and a standardised list of eligible services.
- Co-funding rules reduce risks of deadweight and ensure SMEs are financially committed. The fast-lane into PoC calls raises overall programme conversion without increasing admin burden.

Sources: Implement Economics based on OECD STIP COMPASS (2023), OECD Digital Economy Policy Platform (n.d.) and Enterprise Estonia (EIS) (n.d.).

Deep-dive | Proof-of-Concept

Idea generation & opportunity recognition | Experimentation & testing | Development & scaling | Commercialisation | Internationalisation

[S] startups • [SU] scale ups • [E] established companies • [A] all

Instrument description

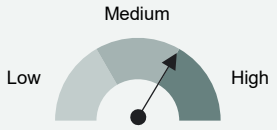
Proof-of-concept (PoC) grants are government funds that help turn research into marketable prototypes by financing prototyping, testing/validation, IP, user trials, and early go-to-market work. They use competitive calls with Technology Readiness Level targets (roughly TRL 3–6/8), require a commercialisation plan, milestones, and staged payments. Typically, a company partner and some co-funding are needed, with links to follow-on support (accelerators, public VC/fund-of-funds). The duration is typically 12-36 months.

Barrier addressed: Romanian ICT teams and research groups struggle to secure funding for prototype development and first customer validation; most available money is either research-only or too late-stage and they operate in a weak collaboration environment with very limited innovation linkages.

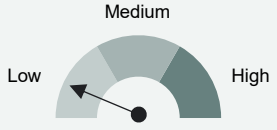
Peer country adoption:

Implementation learnings

Impact: Medium-high impact. Peer programs consistently deliver more spin-outs, higher commercialisation/licensing (20-40% higher), increase in IP events per project, faster time-to-market (reduction by months), and greater follow-on VC for awardees (20-40% more likely).



Effort: Low effort. Requires a capable granting agency, transparent call management, expert evaluators, and integration with downstream finance. Peer examples show feasibility with clear TRL criteria, commercialisation KPIs, and staged payments.



Application to Romania

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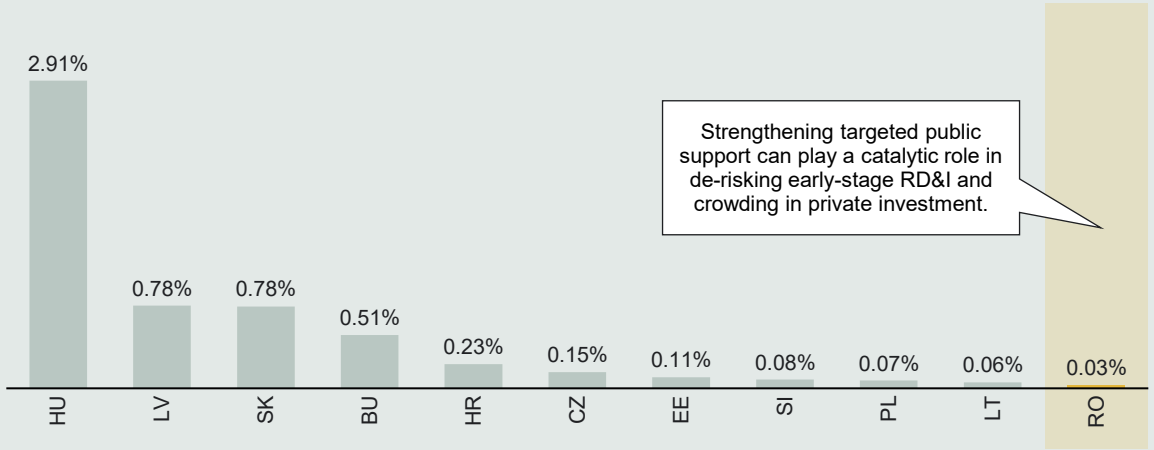
Romania's ICT has strong talent but remains service-heavy and under-commercialised. Building on lessons from peers, Romania should deploy a disciplined, market-oriented PoC scheme:

- **Disciplined:** TRL 3–6, 12–24 months, milestone-gated tranches tied to outputs (prototype/pilot/first customer). Firm co-funding 30–50% (higher public rates for ROs), standard IP/exploitation templates, mixed technical/commercial evaluators, clear kill/redirect gates, and retroactive eligibility from application.
- **Market-oriented:** Require demand evidence (pilot Memorandum of Understanding – MOUs) and a basic commercial plan (segment, pricing, IP/licensing, regulatory path). Accept modern software outcomes (cloud/SaaS, per Czech practice) and costs that unlock customers (testing/certification, integration, freedom to operate - FTO). Prefer company-led consortia with universities/RTOs as partners.
- **Pipeline:** Auto-connect positive PoCs to accelerators, corporate/GovTech pilots, IP fast-track, and public co-investment to speed time-to-market.

State aid in RD&I activities

% of GDP, 2023



Sources: Implement Economics based on European Commission (2024c) and European Commission (2021a).

Deep-dive | Proof-of-Concept

Peer country case: TA ČR GAMA

The solution

TA ČR GAMMA is Czechia's national PoC program (2014–2029) that moves results from TRL 3–6 to licences, spin-offs, and pilots with firms. It consists of three cycles: GAMA 1 (2014–19), GAMA 2 (2020–22), GAMA 3 (2023–29). For each GAMA cycle the program structure is:

- Stage A (Research-organisation PoC): University/TTO-led mini-portfolios that scout research results and fund TRL 3–6 validation (lab/field tests, prototype proof, market checks, IP strategy).
- Stage B (Company collaboration): Follow-on applied development with companies/RTO–firm consortia to prepare pilots, first customers, or licensing.

Key elements:

- **Governance:** Technology Agency of the Czech Republic (TA ČR) runs competitive calls with peer review (technical and economic experts), standardised IP/exploitation templates, and milestone-based contracts.
- **TRL & scope:** Focus on TRL 3–6 (from feasibility to prototype), cross-sector with strong ICT/deep tech representation (AI/ML, cybersecurity, IoT/embedded, software-intensive systems).
- **Funding logic:** Grants sized for PoC work packages; higher public rates for research organisations in Stage A; company co-funding in Stage B under state-aid rules. Tranches tied to outputs (prototype, test reports, pilot/customer, or licence).
- **Ecosystem integration:** Clear pathways into other TA ČR programmes (EPSILON, KAPPA, SIGMA), regional innovation vouchers (e.g. JIC/Brno), and TTO services; growing links to accelerators and private/public VC.

The impact

Findings on impacts from GAMA 1 (2014–19):

Scale: 30 research organisations supported

Commercialisation outcomes:

- 30% of PoC results that are produced in different sub-projects have been commercialised by 2021 (licences, spin-offs, paid pilots).
- A further 40% had secured a commercial partner, with others still in negotiation.
- Awardees are 1.5–2.0× more likely to commercialise versus comparators; 25–35% more patent applications; 30–40% attract private investment within ~2–3 years post-grant.
- System effects include stronger TTO processes, standardised IP/exploitation practices, and more market-oriented teams.

The effort

- GAMA's requires disciplined governance and monitoring: TTO portfolio management, peer-review panels with conflict controls, milestone-gated tranches, standardised IP/exploitation templates, and digital reporting/audits.
- Spending on GAMA 1 was ~EUR 111 million (65% financed by state budget). For GAMA 2, the total expenditure of the program amounts to ~EUR 23 million (97% financed by state budget).

Sources: Implement Economics based on European Commission (2021a).

Deep-dive | Regulatory Sandboxes

Idea generation & opportunity recognition | **Experimentation & testing** | Development & scaling | Commercialisation | Internationalisation

[S] startups • [SU] scale ups • [E] established companies • [A] all

Instrument description

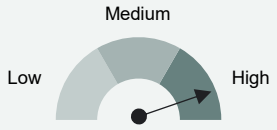
Regulatory sandboxes is a safe testing environment for companies where the government allows the testing of solutions that are either unregulated or not in compliance with current regulations. Testing takes place at a specific location, within a defined timeframe, under the supervision of relevant regulatory institutions and with governmental approval. This allows both businesses and government to collect valuable data, which helps develop real-world-ready products and make data-based policy decisions.

Barrier addressed: Sandboxes help overcome regulatory barriers in the experimenting & testing phase that might hinder innovation, particularly in highly regulated sectors like finance and technology as well as for SMEs. Additionally, sandboxes provide guarantees for investors that the product passes the testing phase, reducing early-stage risks.

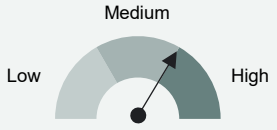
Peer country adoption:

Implementation costs

Impact: High impact. Studies show that companies in sandboxes raise about 15% more investment on average and that participants are 50% more likely to attract investments compared to peers.



Effort: Medium–High effort due to rule adjustments, supervisory capacity, infrastructure, and stakeholder coordination.



Application to Romania

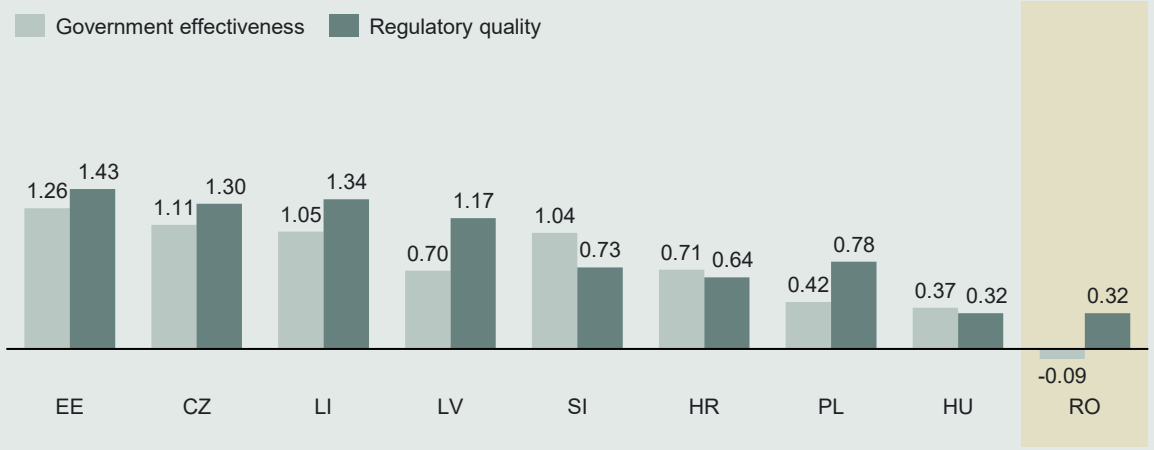
A

Romania scores lowest among peers on WGI government effectiveness (−0.09) and regulatory quality (0.32), far behind leaders like Ireland and Estonia.

- Regulatory sandboxes can address this by enabling time-bound, supervised tests (6–12 months) with clear scope, safeguards, and temporary permits – improving regulatory credibility and shortening paths from pilot to scale.
- Benefits: faster iteration, evidence for rule updates, and investor confidence from real-world "trial runs" under oversight; early data reduces compliance ambiguity and integration risk.
- Make them work: appoint dedicated case managers, publish intake criteria and timelines (~2–3 months to approve), actively source priority cases (e.g. FinTech, AI in public services), and translate lessons into guidance, API/interoperability profiles, and procurement specifications to drive adoption.

Government effectiveness and regulatory quality scores (WGI)

Aggregate indicator, -2.5 (poor governance) – 2.5 (good governance), 2023



Sources: Implement Economics based on World Bank (2023) and Accelerate Estonia (2024).

Deep-dive | Regulatory Sandboxes

Peer country case: Accelerate Estonia

The solution

Accelerate Estonia, launched in 2019, serves as the cornerstone institution for Estonia's regulatory sandbox initiative, part of the government's strategic effort to reinforce its position as a leader in digital innovation.

This framework was developed to support cross-sectoral innovation by providing a structured environment where new business models can be tested under regulatory supervision. It aims to facilitate collaboration between entrepreneurs and government bodies and encourage experimentation with innovative solutions across various industries. It is promoted as Europe's first cross-sectoral and broad-based measure for regulatory sandbox development. Learnings are published and fed into guidance and procurement specifications to mainstream results.

How it works

1) The process begins with consultation between businesses and supervisory authorities, followed by validation of the business model through Accelerate Estonia.
2) Businesses then reference sector-specific legislation to establish rules for their experiments.
3) Proposals are evaluated, and risk mitigation measures are determined, leading to the approval of temporary testing permits by supervisory authorities.
4) Successful projects can transition to permanent regulatory changes, thereby optimising the framework for ongoing innovation.

The impact

- **Investment potential:** Preliminary analyses suggest that companies in Estonian regulatory sandboxes could raise nearly €1.7 billion over 10 years, which is €220 million more than they might otherwise. Participants are 50% more likely to attract investments compared to peers.
- **Economic growth:** Five of Estonia's top 20 startups required regulatory changes enabled by sandboxes, collectively raising over €2.5 billion in investments.
- **Tax revenue:** For every euro raised in the Estonian startup sector, an average of €0.37 in labour tax revenue is generated. Projected over 10 years, this experimentation framework could contribute €307–633 million in tax revenue.
- **Innovation boost:** Companies in sandboxes increase R&D investments by 10–15% on average and are 63% more likely to file patent applications compared to their peers.

The effort

- Implementing regulatory sandboxes is resource intensive and entails significant regulatory adjustments, infrastructure investment, and ongoing stakeholder engagement. Additionally, establishing monitoring systems and building capacity within regulatory bodies require substantial resources.

Sources: Implement Economics based on Accelerate Estonia (2024).

Deep-dive | Shared testbeds

Idea generation & opportunity recognition | **Experimentation & testing** | Development & scaling | Commercialisation | Internationalisation

[S] startups • [SU] scale ups • [E] established companies • [A] all

Instrument description

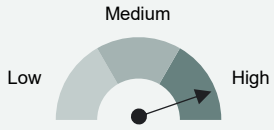
Shared testbeds are controlled physical or digital environments where SMEs, startups, and other innovators can access advanced infrastructure – such as AI platforms, IoT networks, or 5G systems – to experiment, test, and validate new products or services before commercial deployment. The key point is that testbeds are shared resources, lowering the cost and risk for smaller firms, and providing hands-on experience, technical guidance, and collaborative opportunities with academia, industry, and sometimes regulators.

Barrier addressed: Limited access to advanced infrastructure is a large barrier, which prevents SMEs from testing and validating innovative solutions at scale. Many smaller companies lack the financial and technical resources to develop and pilot new technologies independently, making testbeds a critical enabler of experimentation.

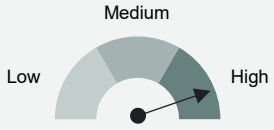
Peer country adoption:

Implementation learnings

Impact: High impact. Shared testbeds safely speed testing and scaling, foster academia–industry–government collaboration, build hands-on skills, and help SMEs reach market faster – boosting ICT competitiveness and growth.



Effort: High effort. Implementing shared testbeds requires significant investment in infrastructure, expertise, and management, including setting up facilities, governance frameworks, and engaging stakeholders. Effort is reduced by adapting proven models from peer countries rather than starting from scratch.



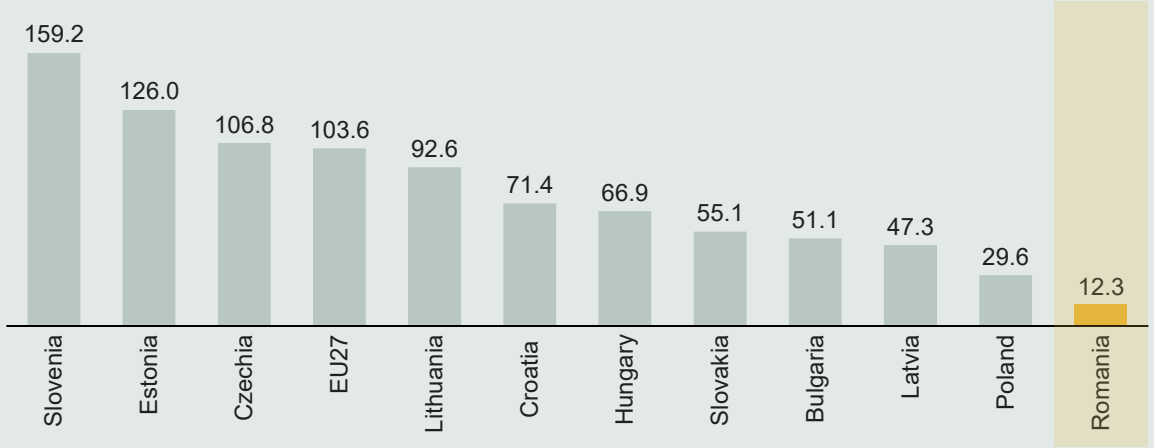
Application to Romania

A

- Testbeds provide SMEs with access to infrastructure and hands-on experience, directly supporting adoption of advanced ICT solutions. Romania records the lowest in terms of product innovation in Europe.
- Product innovation drives competitiveness and new markets. Shared testbeds – through practical experimentation and academia–industry collaboration – raise the share of product innovators, accelerate commercialisation, and strengthen Romania's ICT growth.
- Create "Digital Testbed Romania" prioritising software/integration environments that leverage public digital rails (digital ID, data exchange, government cloud) to keep CAPEX low.
- Pair access with Digital Investment Hubs coaching and link pilots to innovation-led procurement or corporate challenge programmes.

SMEs introducing product innovation

% of SMEs indexed to the performance of the EU in 2018, 2025



Sources: Implement Economics based on European Innovation Scoreboard (2025).

Deep-dive | Shared testbeds

Peer country case: Estonia Digital Testbed Framework (DTF)

The solution

Estonia's flagship testbed, the **Digital Testbed Framework** (DTF), launched in 2021, is a nation-wide digital government platform rather than a physical lab. Managed by the Ministry of Economic Affairs and Communications, it gives startups, scale-ups, and research teams access to Estonia's e-government infrastructure (including X-Road, digital ID, government cloud, and sample datasets) for testing new digital solutions in a live sandbox environment.

Experiments take place in a "living lab" context, allowing innovators to trial AI applications or software services with real systems. Successful solutions can be integrated into public services, giving innovators a reference deployment while the government gains free use. The DTF operates through quick, low-bureaucracy agreements, effectively turning Estonia's entire digital government into an open innovation testbed – a "Government as a Platform" model.

Key features:

- **Nationwide infrastructure access:** Innovators can use Estonia's e-government platforms (X-Road, digital ID, government cloud) to test digital solutions in a live environment.
- **Open collaboration model:** Startups, scale-ups, and research teams worldwide can collaborate under a "Government as a Platform" approach, with successful solutions integrated into public services.
- **Low-bureaucracy engagement:** Minimal administrative overhead and quick collaboration agreements reduce barriers and speed up innovation cycles.
- **Proof of Concept & Real-World Testing:** Solutions can be trialled in real environments, such as the HOIA COVID-19 exposure notification app developed via the DTF.

The impact

- The DTF has enabled rapid development and deployment of innovative solutions with tangible social benefits, e.g. the HOIA COVID-19 app, AI tools for text moderation (TEXTA), and AI systems for detecting domestic violence.
- Scale is notable: pilots can immediately reach millions of citizens, providing both public impact and credible case studies for companies.
- The testbed has attracted global innovators, with numerous proposals in AI, blockchain, and digital identity, fostering international collaboration.
- Beyond outputs, the DTF has shifted the paradigm for government–startup co-creation, demonstrating a new model for open innovation.

The effort

- Effort is mainly organisational and legal rather than capital-intensive. Estonia leveraged existing digital infrastructure and used lightweight agreements covering IP and usage terms.
- A small GovTech team coordinates proposals, onboards participants, and ensures security and privacy with segregated or synthetic data. Costs are low relative to impact, as the government gains solutions effectively for free.
- Success relied on political will, a culture of openness, and prior investment in digital skills and e-governance, making the DTF a low-cost, high-impact, scalable model.

Sources: Implement Economics based on E-Estonia (2021b) and Interoperable Europe (2024)

Deep-dive | Corporate open-innovation support

Idea generation & opportunity recognition | Experimentation & testing | **Development & scaling** | Commercialisation | Internationalisation

[S] startups • [SU] scale ups • [E] established companies • [A] all

Instrument description

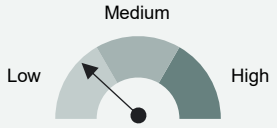
Corporate open-innovation pilots are publicly supported programs that connect startups and SMEs with large enterprises or public institutions to co-develop and test new solutions in real operational settings. Governments typically provide grants or co-funding to cover the costs of pilots, while corporates commit to mentoring, data access, and creating an environment where innovations can be tested at scale. The process is typically challenge-driven: corporates set out specific needs, startups compete to provide solutions, and selected firms receive support to integrate and pilot their technology. Successful pilots often lead to commercial contracts, licensing, or scale-up opportunities.

Barrier addressed: Startups and SMEs often struggle to land their first large customers due to procurement hurdles, risk aversion, and integration costs. By lowering these barriers, open-innovation pilots help startups gain business feedback, reference customers, credibility, and follow-on investment.

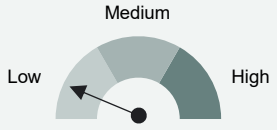
Peer country adoption:

Implementation learnings

Impact: Low impact. Startups gain reference customers and credibility, while corporates accelerate technology adoption and productivity. Ecosystem effects include stronger pipelines for VC funding and wider corporate–startup collaboration.



Effort: Low effort. Successful programs require national coordination, recruitment of committed corporates, and capable accelerators to scout and support startups. Clear frameworks for IP, procurement, and monitoring are also needed to ensure pilots lead to real adoption.



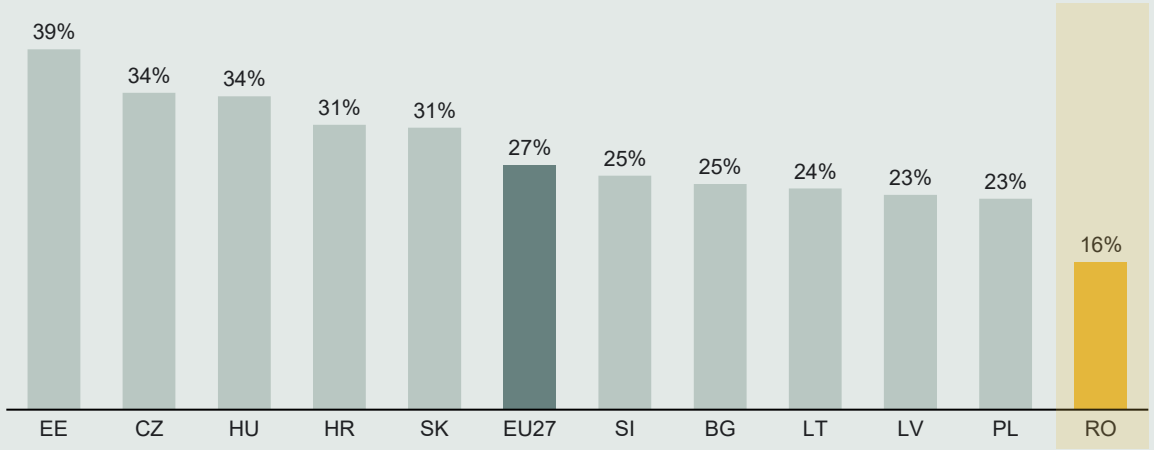
Application to Romania

A

- Romania has the lowest enterprise collaboration on innovation in CEE: 16% vs. 23–39% in peers.
- This limits startup pilots with large firms, weakening early credibility, references, and real-world feedback.
- Corporate open-innovation support can incentivise large firms to test and adopt startup solutions, strengthening demand pull and knowledge transfer so SMEs move beyond outsourcing into higher-value products.
- Make it work: frame challenges in strategic domains (aligned to national priorities/RIS3), provide buyer coaching and simple IP templates to boost pilot-to-contract conversion, and use retroactive eligibility with light admin to reduce friction

Share of enterprises collaborating with other entities innovation activities, 2022

Percentage of all enterprises collaborating on R&D and other innovation activities (CIS 2022 Survey)



Source: Implement Economics based on Eurostat (inn_cis13_co) and PARP (2018)

Deep-dive | Corporate open-innovation support

Peer country case: Scale Up (later evolved into 'Startup Booster Poland')

The solution

Poland launched Scale Up (2017–2019) coordinated by the Polish Agency for Enterprise Development (PARP), connecting startups with corporates through 10 public-private accelerators. Based on strong demand, it evolved into Startup Booster Poland (2021–2027), looking to fund 17 accelerators with stronger sector focus (AI/data, Industry 4.0, energy, fintech, health). Both programmes have been co-financed by EU funds (ERDF, Smart Growth Operational Programme).

How it works (Scale Up):

- **Call for corporates:** Large enterprises applied to join as programme partners. Each corporate defined priority areas or "innovation challenges" where they wanted external solutions (e.g. green technologies).
- **Startup scouting:** Accredited accelerators, working with PARP, scouted and recruited startups across Poland and abroad. Startups were selected based on their ability to address the corporates' challenges.
- **Acceleration and mentoring:** Selected startups entered a structured acceleration programme (usually 6–9 months), where they received equity-free grants, business mentoring, and technical support. At the same time, corporates provided access to infrastructure, data, and internal experts.
- **Pilot implementation:** Each startup worked directly with the corporate to adapt and test its solution in a real-life setting.
- **Follow-up pathways:** At the end of the pilot, corporates could decide to purchase the solution, enter a long-term partnership, or invest further.

The impact

- Between 2017 and 2019, ScaleUP involved nearly 70 large companies and around 300 startups, coordinated through 10 accelerators. According to PARP's evaluation, more than 150 implementations and pilots were launched during or shortly after the programme.
- For startups, participation often meant access to their first strategic clients, improved credibility with investors, and structured mentoring. For corporates, the programme helped shorten internal processes for engaging with startups, exposed them to new technologies, and triggered cultural change towards more open collaboration. Accelerators also strengthened their capabilities, developing sectoral specialisation and building networks with both firms and investors.
- While long-term impacts on revenue growth and investment attraction are not yet systematically tracked, the breadth of participation and early adoption outcomes demonstrate the model's potential to strengthen startup–corporate linkages in emerging ecosystems.

The effort

- Each accelerator received up to PLN 6m (≈PLN 4m to startups via grants/services), ran 2–3 rounds of 3–6 months, recruited at least one corporate "challenge partner," and graduated 20+ startups. This required intensive scouting, mentoring, and alignment with corporate needs. PARP coordinated with ERDF financing. Evaluations note a need for incentives within contracting authorities to ensure post-pilot follow-through.

Source: Implement Economics based on PARP (2018); European Commission (2019); Szczukiewicz and Marek Makowiec (2021)

Deep-dive | Fast track for (ICT) patents

Idea generation & opportunity recognition | Experimentation & testing | **Development & scaling** | Commercialisation | Internationalisation

[S] startups • [SU] scale ups • [E] established companies • [A] all

Instrument description

Fast-track patent and IP procedures accelerate examination and registration for patents, trademarks, or designs by prioritising eligible applications or using cooperation routes such as the Patent Prosecution Highway (PPH). They allow innovators to obtain enforceable IP rights in months rather than years, supporting faster commercialisation and investment. Fast-track services should align with voucher/PoC timelines to avoid protection lag.

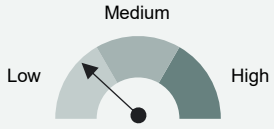
Barrier addressed: Romanian ICT firms face slow IP protection and lengthy patent examination, which delay investment, licensing, and product launches. Many startups rely on service models rather than protected innovations due to uncertainty over timing and cost. Fast-track IP procedures directly address these barriers by reducing time-to-grant, improving predictability for investors, and encouraging firms to patent locally rather than abroad.

Peer country adoption:

Implementation learnings

Impact: Medium impact. Fast-track patents secure protection sooner, accelerating commercialisation, licensing, and VC access. Accelerated examination can cut grant times by 42–75% and reduce pendency by up to two years via work-sharing. Startups with patents/trademarks are ~10× more likely to attract early-stage financing.

Effort: Low effort. Implementation mainly requires procedural updates (work-sharing or domestic acceleration), with staff/IT reallocation; feasible within months.



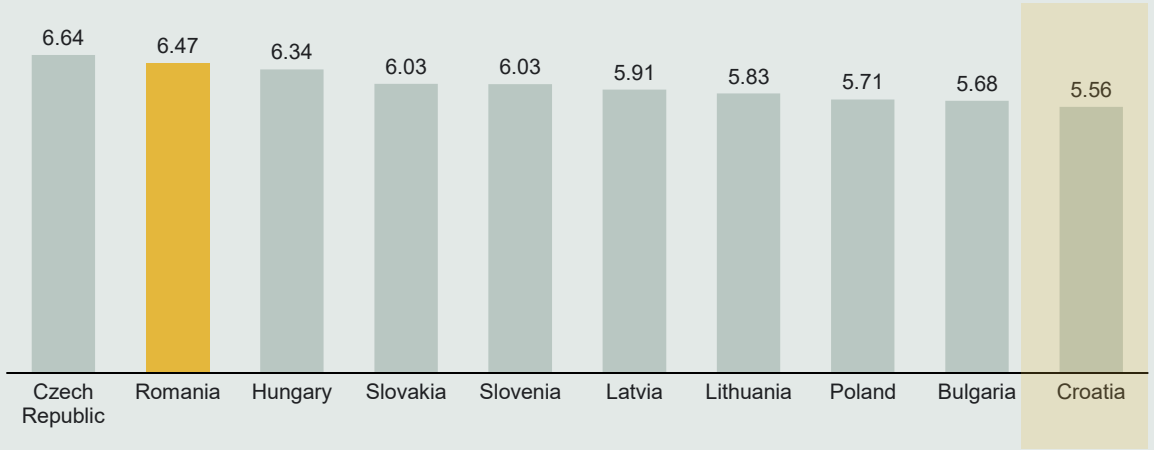
Application to Romania

A

Romania could adopt a **dual approach**:

- Join the Patent Prosecution Highway (PPH) to accelerate patents where partner office search reports exist – an immediate step requiring minimal new infrastructure.
- Introduce a national “Fast-Track IP” option for ICT-related patents, trademarks, and designs, with clear eligibility criteria (digital filing, complete documentation, fee paid). This would give startups predictable protection timelines (e.g. decision in 6–9 months for trademarks). Integrating fast-track IP services with innovation vouchers and PoC grants would strengthen Romania’s innovation pipeline, ensuring that early-stage R&D can be rapidly protected and commercialised.
- Integrate fast-track IP with vouchers and PoC grants so early-stage R&D is rapidly protected and commercialised. Accept modern software outcomes and, where patents aren’t available, offer accelerated trademarks/designs.

Protection of Intellectual Property Rights
Sub indicator IPRI, 2024



Source: Implement Economics based on International Property Right Index (2024); EUIPO (2023a); EUIPO (2023a); Crowell (2024); EPO (n.d.); WIPO (2023)

Deep-dive | Fast track for (ICT) Patents

Peer country case: National Fast-Track Examination Program (UPRP)

The solution

Poland runs a national fast-track patent examination program, launched in 2021, enabling applicants to request accelerated examination of their patent applications directly with the Polish Patent Office. This program is not dependent on the outcomes of examinations by other patent offices. Applicants can submit a request for expedited examination along with the necessary documentation, and the Polish Patent Office will process the request in accordance with national procedures. The program aims to reduce the time to grant patents and facilitate quicker protection for innovations.

Key elements:

- **Electronic submission only** via UPRP's e-services platform.
- **Correctly completed application** (claims, description, drawings, abstract, applicant/inventor data) with all required fields.
- **Electronic fee payment before submission** through the platform.
- **Continuous compliance** with e-filing and completeness requirements throughout examination.
- **Scope includes ICT** but is available for all technical fields; not tied to outcomes from other patent offices.
- **No dependence on foreign prosecution;** processed under Polish national procedures.

The impact

- **Much faster early milestones:** Average time to publication ~0.43 months (~13 days) for fast-track applications.
- **Higher throughput to grant:** In year 1, 404 fast-track filings vs. 14,013 standard; 248 fast-track proceeded to registration.
- **Earlier certainty and market signalling:** Useful for fundraising, partner negotiations, and deterrence against competitors.
- **Improved access for digital applicants:** End-to-end online process reduces administrative friction.

The effort

- **Prepare complete, compliant e-filings:** Ensure all formalities and content are correct at submission to avoid losing fast-track status.
- **Use UPRP e-platform end-to-end:** Submission and payment must be electronic; monitor for office actions and respond on time.
- **Maintain accuracy and timeliness:** Any missing data, incorrect forms, or non-electronic steps can move the case to the standard queue.

Sources: Implement Economics based on World Trademark Review (2022)

Deep-dive | Public venture fund and co-investment

[S] startups • [SU] scale ups • [E] established companies • [A] all

Instrument description

Public venture funds are government-backed vehicles that provide capital to startups, including early-stage ventures, to support scaling, market expansion, and commercialisation of innovations. They can invest directly with public capital or co-invest alongside private investors, sharing risk to attract additional funding and strengthen the venture ecosystem. By combining financial support with strategic guidance, these funds help fill gaps in private venture capital, stimulate private sector participation, and enable more startups to reach growth and scale-up stages.

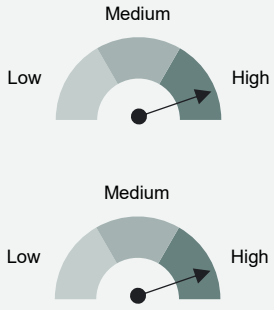
Barrier addressed: Romanian startups face limited access to growth capital and a shallow venture ecosystem, which hinders scaling and commercialisation of innovations. Public venture funds can fill this gap by providing early-stage and growth financing, reducing investment risk, and attracting private and foreign co-investors.

Peer country adoption:

Implementation learnings

Impact: High impact. Public venture funds with co-investment deepen the VC market, attract private capital, and create visible scale-ups that pull in further investors. Spillovers are strong: €1 of VC yields ~€3.33 in output growth; VC-backed firms file ~3× more patents and grow faster than peers.

Effort: High effort. Requires robust governance, compliance, and operations – investment criteria, performance monitoring, legal agreements – plus intensive due diligence and stakeholder coordination; dedicated staffing and resources are essential.



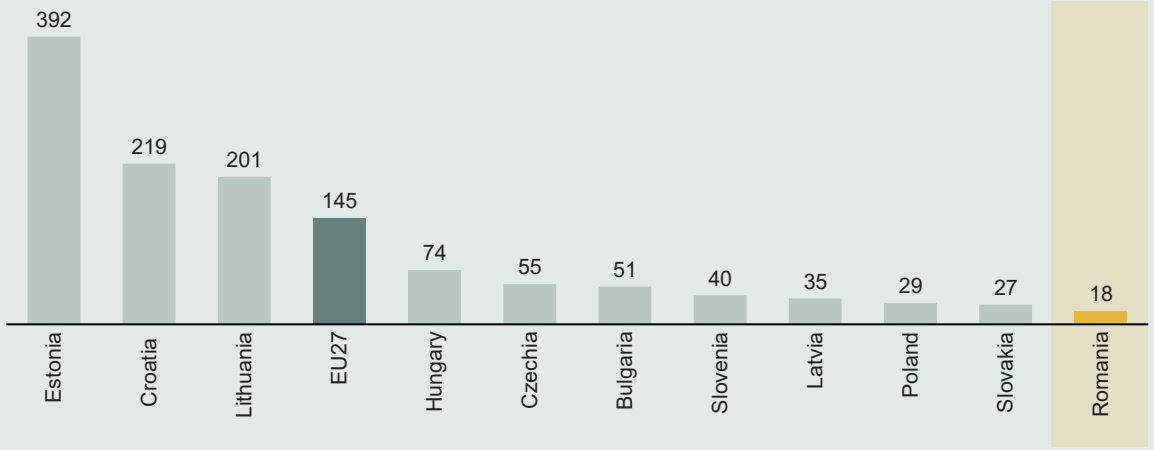
Application to Romania

S, SU

- Romania has already advanced public funding with the **Innovation Romania Holding Fund** (2025), operating a fund-of-funds model that invests in multiple underlying funds rather than directly in startups. While this diversifies risk, its impact depends on the performance of the underlying funds.
- Combine this with selective direct public VC and co-investment to accelerate scaling, create visible success stories, and deepen the VC market. Follow Estonia's playbook: keep fund-of-funds primary; use narrow, time-critical direct mandates to avoid crowding out; and link co-investment to PoC/incubation pipelines to improve conversion.
- Together, these instruments create a full funding chain: from early-stage support to growth-stage co-investment to private follow-on investment. The amount of venture capital serves as a proxy for the dynamism of new business creation.

Venture capital expenditure

Percentage of GDP, indexed to the performance of the EU in 2018, 2024



Sources: Implement Economics based on Winnovart (n.d.) and Copenhagen Economics (2021)

Deep-dive | Public seed and venture funds

Peer country case: PFR Ventures

The solution

PFR Ventures is the largest fund investor in the CEE region and is part of the Polish Development Fund (PFR), fully owned by the Government of Poland. They support the development of the local Venture Capital and Private Equity market, and more broadly, the innovation ecosystem. As a subsidiary of the Polish Development Fund (PFR), it operates a fund-of-funds model, investing in VC and private equity funds alongside private investors, business angels, and corporations.

Their only investor is the Government of Poland, either directly or through the Polish Development Fund or Polish Development Bank (BGK). Money managed by the investment funds is then used to provide funding for the most innovative Polish companies across different growth stages. The funds are addressed for teams just starting to work on their product, as well as companies looking for funding for R&D or expansion.

Key features:

- **Strategic investment programs:** PFR Ventures manages several programs, including the Smart Growth Operational Programme (SGOP) and the European Funds for a Modern Economy (FENG). These support venture capital funds that invest in innovative Polish SMEs, particularly at early stages.
- **Co-investment model**: By partnering with private investors, PFR Ventures enhances the funding capacity available to startups, sharing investment risks and fostering a collaborative investment environment.
- **Focus on early-stage innovation:** PFR Ventures prioritizes investments in early-stage startups across various sectors, including FinTech, HealthTech, and DeepTech, aiming to stimulate innovation and economic growth in Poland.

The impact

- PFR Ventures currently manages a portfolio of more than 80 funds that have made over 900 investments.
- **Market share & ecosystem growth**: In 2024, PFR Ventures portfolio provided around 20% of the capital for innovative enterprises from being involved in 31 out of 147 identified transactions.
- **Leveraging EU funding:** Under the European Funds for a Modern Economy (FENG) program, PFR Ventures committed nearly PLN 240 million to three new VC funds in 2025, aiming to support innovative Polish startups.
- **Supporting innovation across sectors:** In 2024, companies developing or significantly utilising AI tools played a crucial role, with PFR Ventures and Inovo VC identifying 48 transactions of this nature, totalling over EUR 250 million.

The effort

- **Governance & compliance:** Rigorous monitoring of underlying funds, investment criteria, and co-investment agreements.
- **Operational management:** Complex due diligence, legal frameworks, and stakeholder coordination required.
- **Follow-on support**: Continuous backing ensures startups scale effectively, completing the full funding chain: from early-stage to growth-stage co-investment to private follow-on rounds.

Sources: Implement Economics based on PFR Ventures (n.d.) and the Recursive (2024).

Deep-dive | R&D tax incentives

Idea generation & opportunity recognition | Experimentation & testing | Development & scaling | **Commercialisation** | Internationalisation

[S] startups • [SU] scale ups • [E] established companies • [A] all

Instrument description

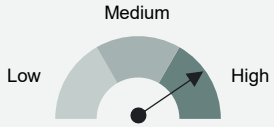
R&D tax incentives are tax measures that lower the private cost of innovation and are widely used across OECD and EU countries. Broadly, there are two types. **Spending side** incentives reduce the cost of carrying out R&D by allowing firms to deduct eligible expenses more than once or claim a tax credit, making researchers, prototypes, and lab work cheaper after tax. **Earnings side incentives, or IP boxes,** reward successful results by taxing income from qualifying intellectual property – such as patents or copyrighted software – at a much lower rate, encouraging firms to keep and commercialise their IP domestically. In some systems, these are complemented by reinvestment incentives, which defer corporate tax until profits are distributed, freeing up cash to reinvest in innovation.

Barrier addressed: R&D tax incentives lower the high upfront cost of R&D, help firms capture more of the return from their innovations at home, and improve cash flow for young or scaling companies.

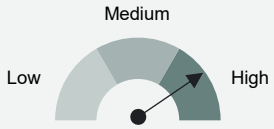
Peer country adoption:

Implementation learnings

Impact: High impact. International studies suggest high impact, as R&D tax incentives significantly raise business R&D expenditure, hiring of researchers, and domestic patenting/software releases. IP boxes encourage firms to retain IP locally, boosting licensing and export potential.



Effort: High effort, with incentives requiring clear guidance and stable legislation, as well as audit capacity to check eligibility. Uptake depends heavily on simplicity (plain-language examples, templates) and certainty (binding rulings, consistent rules).



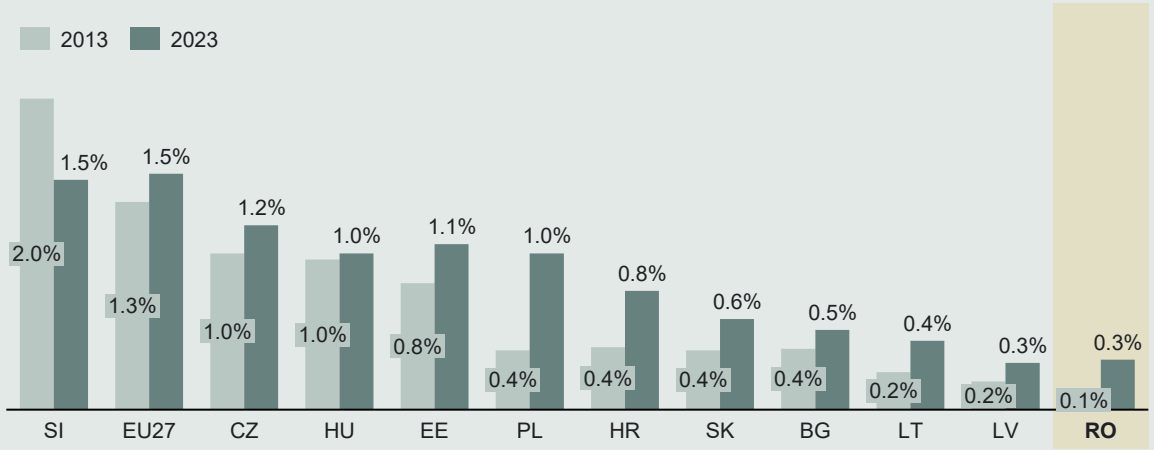
Application to Romania

SU, E

- Romania records the lowest business R&D intensity in the EU (0.3% of GDP in 2023 – with ICT R&D accounting for 0.07%). Introducing or expanding R&D tax incentives could lower the high upfront cost of R&D for SMEs and corporates, helping firms start more projects and hire more researchers.
- A well-designed IP Box regime could further encourage companies to register and commercialise IP in Romania, reducing the outflow of high-value intangible assets abroad.
- Maximise impact with simplicity and certainty: clear rules, plain-language templates, optional advance rulings, and startup-friendly carry-forward/refund features. Accept AI/software in eligibility (e.g. software releases, cloud/SaaS, AI model development and data/compute costs where applicable), allow retroactive eligibility windows, and provide binding rulings to reduce audit risk and accelerate uptake (Czech execution lessons).

Gross domestic expenditure on R&D

% of GDP, 2023



Sources: Implement Economics based on EUROSTAT (rd_e_berdindr2)

Deep-dive | R&D tax incentives

Peer country case: R&D super deduction ('Ulga B+R') and 5% IP box

The solution

Poland operates a combined tax package that helps companies both reduce the cost of R&D activities, the R&D super deduction ('Ulga B+R'), and increase the reward when those activities generate valuable intellectual property, the 5% IP box. The two instruments are designed to complement each other, covering the need to lower upfront costs while also maximising the payoff from successful innovations for both startups and established companies alike.

How it works:

- **R&D super-deduction (Ulga B+R):** Companies can deduct eligible R&D costs twice in their tax return, lowering the after-tax cost of hiring researchers, developing prototypes, or running tests. Since 2022, wages can be deducted at 200%, making R&D staff significantly cheaper to employ. Unused deductions can be carried forward for up to 6 years, ensuring that loss-making or early-stage firms also benefit once profitable. Firms declare the extra deduction in their annual tax return, supported by project documentation.
- **IP Box:** Profits earned from qualifying IP (including patents and copyrighted software) are taxed at a 5% rate instead of the normal 19%. Companies do not need prior approval – they apply the lower rate directly in their tax return, provided they can show documentation (nexus calculation, project records) if audited. This rewards firms that succeed in commercialising their R&D and encourages them to keep IP registered in Poland.
- **Stacking rule:** Firms can use both incentives on the same project – first lowering the cost of doing R&D, then paying a reduced rate on profits if the work generates income. This creates a "cheaper to try, more rewarding to succeed" model.

The impact

- In 2023, around 3,500 firms and entrepreneurs claimed the R&D super deduction, with more than PLN 9 billion in eligible costs declared. At a 19% tax rate, this equates to about PLN 1.7 billion in tax support.
- Additionally, over 7,000 firms and entrepreneurs made use of the 5% IP Box in 2023, especially in ICT/software but also in manufacturing and med-tech sectors.
- Studies note that combining both measures compounds the tax benefit – making R&D cheaper to start and more rewarding if successful.
- However, while uptake is high, broader innovation indicators such as patent filings have not yet shown a clear improvement, which may reflect time lags before firm-level incentives translate into economy-wide results.

The effort

- Poland's R&D tax incentives are claimed through self-assessment in the annual tax return, supported by cost records and short project notes. Guidelines and templates from the Ministry of Finance help firms manage compliance. Safeguards ensure integrity: grant-funded costs cannot be claimed twice, and only IP developed through the firm's own R&D qualifies for the 5% rate. While the system requires specialist tax inspectors to distinguish genuine R&D from routine work. Overall, it is a medium administrative effort. Its stability since 2016 has built trust among firms and made it one of Poland's most visible innovation tools.

Source: Implement Economics based on Republic of Poland (2025); Polish Investment & Trade Agency (2025); Zbroińska & Konieczna (2025).

Deep-dive | Innovation-led public procurement

[S] startups • [SU] scale ups • [E] established companies • [A] all

Instrument description

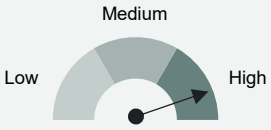
Innovation-led public procurement (ILPP) positions government as a first customer for innovative firms. Rather than subsidising experiments or pilots, the state commits to buying solutions that meet real public needs, giving startups and SMEs their first commercial contract. This validation is often decisive: a reference contract with a ministry or city opens doors to corporate buyers and export markets, with a focus on problems to solve rather than product specifications, putting startups/SMEs in a more even position relative to large incumbents. This not only generates public sector improvements but also helps companies cross the critical gap from prototype to marketable product.

Barrier addressed: ILPP tackles the commercialisation gap faced by startups that struggle to secure a first paying customer. By lowering entry barriers to public tenders, it gives SMEs a real market opportunity while shifting procurement away from favouring large incumbents. At the same time, it strengthens demand pull for innovation, helping ensure that new technologies are developed, purchased and applied in practice.

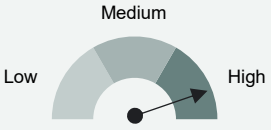
Peer country adoption:

Implementation learnings

Impact: High impact, as government validation accelerates commercialisation, anchors firms domestically, and creates lead markets. Public services modernise while firms gain exportable references.



Effort: Medium effort. The setup requires adapting procurement rules, training public buyers, and building trust that innovative solutions can be delivered at scale.



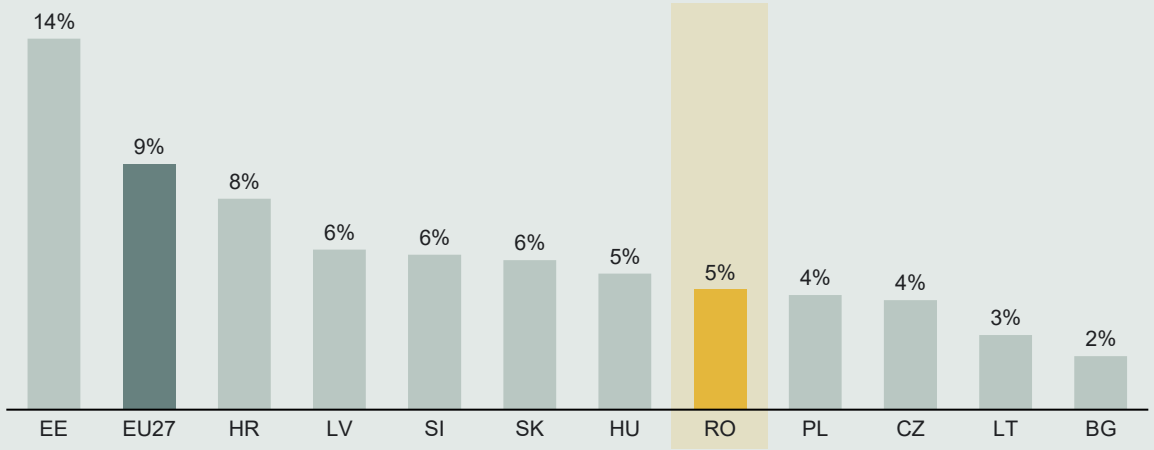
Application to Romania

A

- Romania allocates only 5% of its procurement budget to innovation, well below the EU27 average (9%) and leaders like Estonia (14%). This means that despite Romania's large procurement volume (over 30% of GDP), very little currently acts as a demand-pull for startups and SMEs.
- Introducing an innovation-led procurement platform could help close this gap by channelling even a small additional share of contracts into challenge-based tenders in areas such as digital public services, health, and green transition.
- A central, innovation-driven GovTech-style initiative could give the program visibility and help shift procurement from cost-minimisation towards value creation and innovation.
- Enablement: establish a buyer helpdesk and coaching, run challenge framing in priority domains, publish APIs/interoperability profiles to cut integration costs, and track innovation procurements even when outside the main registry.

Innovation share of public procurement

Share total public procurement allocated to innovation, 2024



Sources: Implement Economics based on European Innovation Scoreboard (2024)

Deep-dive | Innovation-led public procurement

Peer country case: GovTech Polska

The solution

Poland launched GovTech Polska in 2018 under the Prime Minister's Office to reframe public procurement as a driver of innovation. The program was designed to lower barriers for SMEs and startups, making it possible for them to win public contracts without the heavy compliance and track-record requirements of traditional tenders. By using a challenge-based model, GovTech Polska turns public sector needs into opportunities for young firms to commercialise solutions.

How it works:

- **Challenge definition:** Ministries, municipalities, and public agencies submit problem statements (e.g. VAT fraud detection, smart traffic management, digital education tools) to the GovTech platform. These are published as open challenges.
- **Open call for solutions:** Startups, SMEs, and even informal teams can apply. Unlike standard tenders, there are no turnover or track-record requirements, lowering the entry barrier. Applications are short (a few pages or a prototype demo).
- **Competitive selection:** Challenges often attract 50–100 applications. From here, solutions are judged anonymously and the best 5–10 are shortlisted for the second phase, where teams refine prototypes with limited financial support. Finalists then pitch, and a winner is chosen.
- **Fast-track contracts:** Instead of a multi-year procurement cycle, winners sign contracts within months. Typical procurements are up to €140,000, though a few have also reached larger, national scale.
- **Visibility and scaling:** Winning solutions are showcased by GovTech Polska, giving firms visibility and credibility with corporate and export markets.

The impact

- GovTech Polska has generated clear success stories, from AI-driven border checks to municipal waste optimisation. The program has opened procurement to hundreds of SMEs that never supplied the government before.
- Polish tenders previously drew only 1–3 bids. GovTech contests changed this dynamic, with each challenge now drawing around 50 proposals, sometimes nearly 100 – increasing competition and innovation overall.
- Most winners are small firms with no prior government experience. Instead of years of paperwork, they receive a contract immediately after winning, giving them their first paying customer and a reference to build on.
- Despite these wins, Poland's innovation share of public procurement is only 4%, below the EU average. Evaluations point to structural issues: contracting authorities still prioritise lowest price over value creation, and GovTech budgets represent only a small fraction of Poland's procurement spend. Moreover, further incentives are required for public bodies to actually implement the procurements (currently not provided).

The effort

- Setting up such a programme required adapting procurement rules, creating a challenge platform, and training civil servants to frame problems rather than specifications. High-level backing from the Prime Minister's Office gave the program visibility and legitimacy, while simplified paperwork made it accessible to SMEs. Overall, the administrative effort has been moderate.

Source: Implement Economics based on EUROSTAT (gov_10a_exp); European Commission (2024b); European Institute of Public Administration (2025); GovInsider (2019);

Deep-dive | Digital adoption vouchers

Idea generation & opportunity recognition | Experimentation & testing | Development & scaling | **Commercialisation** | Internationalisation

[S] startups • [SU] scale ups • [E] established companies • [A] all

Instrument description

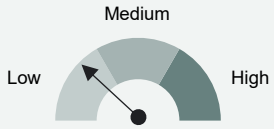
Digital adoption vouchers are subsidies for SMEs to acquire and integrate digital tools such as cloud services, automation systems, AI solutions, or cybersecurity upgrades. The vouchers reduce upfront costs by co-financing a share of investment and often combine funding with expert advice and training. This makes advanced digital solutions affordable and usable for firms that otherwise lack resources or know-how. Unlike generic innovation grants, vouchers are targeted at commercialisation and productivity gains: they help SMEs modernise internal operations and create market demand for digital providers, giving local tech firms more business-to-business customers.

Barrier addressed: SMEs face high upfront costs, limited knowledge about digital options, and a lack of internal skills to implement new systems. Many also struggle with risk aversion or uncertainty about returns. Vouchers lower these financial and knowledge barriers while also stimulating a domestic market for digital solutions.

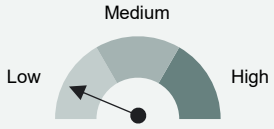
Peer country adoption:

Implementation learnings

Impact: Low impact. Digital adoption vouchers can raise SME digital maturity, leading to more efficient operations, higher productivity, and better capacity to innovate. They also stimulate demand for local tech providers, creating a stronger business-to-business market.



Effort: : Low effort. These programs require clear eligibility rules, application vetting, and compliance checks (e.g. state aid, sustainability). SMEs often need advisory support to prepare projects, which can be provided via digital innovation hubs or consultants.



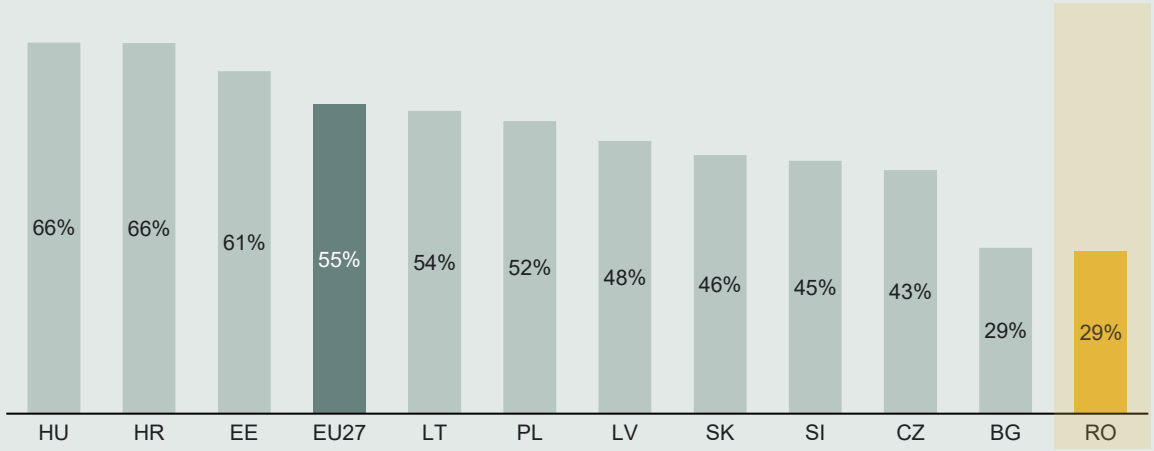
Application to Romania

SU, E

- Romanian enterprises show very low uptake of advanced digital tools such as AI, cloud, and data analytics, with only 29% adoption compared to 55% in the EU27 overall – signalling missed modernisation and competitiveness.
- Digital adoption vouchers can lower SME costs/risks and stimulate demand for local ICT providers.
- Pair vouchers with DIH/testbed diagnostics and coaching; use approved vendor lists to raise quality and reduce risk; target sectors (e.g. health, utilities, logistics) to improve uptake and impact.

Adoption of AI, cloud, or data analytics

% of enterprises, 2023



Source: Implement Economics based on European Commission (2024a)

Deep-dive | Digital adoption vouchers

Peer country case: Digitální podnik – Technologie 4.0

The solution

Launched in 2023 under the Ministry of Industry and Trade, Digitální podnik – Technologie 4.0 is Czechia's flagship SME digitalisation program, funded through EU structural funds (OP TAK). It aims to tackle the slow uptake of advanced digital tools among SMEs. High upfront costs, limited internal know-how, and fear of failed investments kept adoption rates low. The voucher programme was designed to break this barrier by giving SMEs a low-risk entry point into digitalisation.

How it works:

- **Voucher value:** SMEs can apply for subsidies (up to ~CZK 200,000 / EUR 8,000–10,000) to cover 50–70% of eligible costs for adopting digital tools, training staff, or working with certified digital providers.
- **Scope:** Eligible projects include cloud migration, ERP and CRM systems, AI-enabled solutions, automation, and cybersecurity upgrades.
- **Delivery model:** SMEs must choose providers from an approved list of ICT vendors, developed by the Ministry of Industry and Trade together with regional innovation centres and digital innovation hubs. This ensures vendors meet quality criteria, reduces risk for SMEs, and channels demand toward local ICT firms, strengthening the domestic digital ecosystem.
- **Support cycle:** Applications are reviewed by regional innovation centres, and successful SMEs receive both financial support and light-touch advisory, including project scoping support, provider matching and compliance guidance, to help to ensure the new system is effectively deployed.

The impact

- The programme helped hundreds of firms in manufacturing, logistics, and retail adopt cloud, automation, or AI tools that would otherwise have been delayed.
- By requiring approved vendors, the scheme created a steady pipeline of clients for local tech firms, strengthening trust and long-term service ties.
- Oversubscription has proved the scheme meets a real need (297 applications in 2023–24 worth CZK 3.49 billion, more than double the initial budget). Yet many strong projects went unfunded, which may risk discouraging SMEs from applying if budgets remain limited.
- Evaluations suggested that even modest voucher amounts triggered large-scale upgrades and showed the appetite for sustained digital support.

The effort

- The scheme requires detailed applications (business plans, technical documentation, 'do no significant harm' environmental compliance). This favours medium-sized firms or those with consultants. The managing agency had to convene multiple evaluation panels, but this rigorous process ensured only impactful, integrated projects were funded.

Source: Implement Economics based on Ministry of Industry and Trade, Czechia (2025); The Business and Innovation Agency, Czechia (2025); Ayming (2024)

Deep-dive | National branding and promotion

Idea generation & opportunity recognition | Experimentation & testing | Development & scaling | Commercialisation | **Internationalisation**

[S] startups • [SU] scale ups • [E] established companies • [A] all

Instrument description

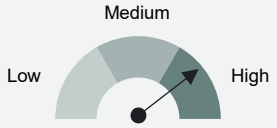
National branding and promotion campaigns position a country as an attractive hub for startups, investment, and innovation talent, by marketing the country as innovative, digitally advanced, and open to entrepreneurs. Governments and agencies coordinate branding efforts through global campaigns, pavilions at major tech fairs, storytelling platforms, and coordinated messaging across ministries. By investing in brand visibility, countries can differentiate themselves in crowded markets, attract venture capital and corporate partners, and entice foreign entrepreneurs or skilled workers. National branding is especially powerful when it integrates tech identity with cultural and social narratives.

Barriers addressed: Many emerging ecosystems struggle with global visibility. Startups may lack international recognition, making it harder to attract foreign investors or customers. Branding fills this gap by creating a strong "country brand" that startups can leverage as a credibility signal abroad, improving access to capital, markets, and partnerships.

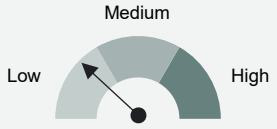
Peer country adoption:

Implementation learnings

Impact: High impact when the ecosystem is ready. With solid digital services, startup pipelines, and funding in place, national branding works as a force multiplier – amplifying visibility, attracting investment, and signalling credibility abroad.



Effort: Low effort. When fundamentals are in place, it requires sustained coordination across ministries trade offices, and embassies, plus investment in marketing, events, and storytelling.



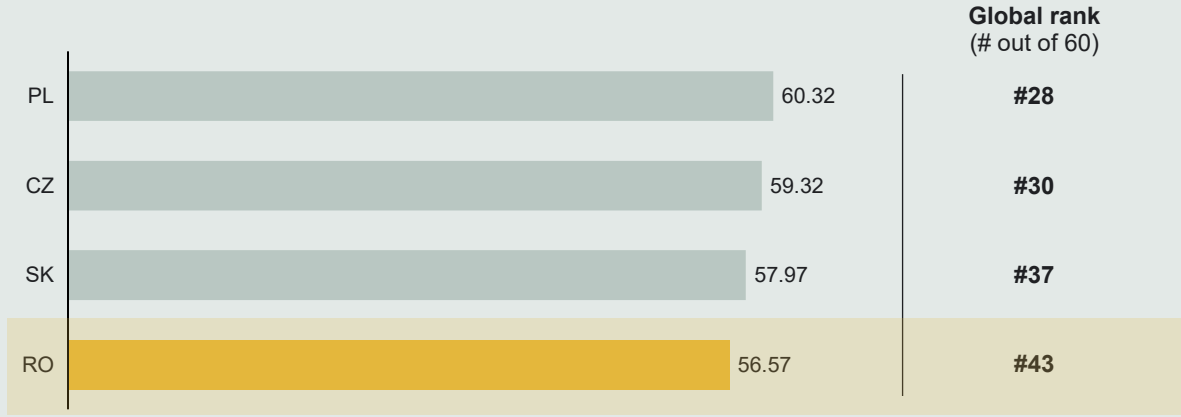
Application to Romania

A

- Romania ranks 43rd out of 60 countries in the Anholt-Ipsos Nation Brand Index (2023), behind CEE peers like Poland (#28), Czechia (#30), reflecting limited recognition beyond outsourcing.
- This weak profile constrains attractiveness for innovation-driven investment and talent.
- A coordinated branding strategy can reposition Romania as an innovation destination, boosting visibility for ICT and attracting FDI, skilled workers, and global customers – especially when built on ecosystem strengths and progress in earlier lifecycle stages.
- Make branding contingent on visible domestic references (GovTech/testbeds/PoC spin-outs) and coordinate a unified "tech front" (industry, founders, VCs, enterprise agency) with government to sustain a single, credible narrative.

Anholt-Apsos Nation Brand Index, 2023

Composite index score and global rank (out of 60)



Note: Data not available for other CEE peers: Slovenia, Lithuania, Croatia, Estonia, Bulgaria and Latvia..
Source: Implement Economics based on Anholt-Ipsos (2023).

Deep-dive | National branding and promotion

Peer country case: 'e-Estonia' as a global brand

The solution

Estonia has built one of the most successful national innovation brands in Europe, centred on its identity as a digital nation. Since the early 2000s, Estonia has actively branded itself under the "e-Estonia" umbrella – a coordinated platform promoting the country's digital society, startup ecosystem, and innovation policies abroad.

The effort is coordinated by Enterprise Estonia (EAS), the Ministry of Economic Affairs and Communications, and the e-Estonia Briefing Centre. Unlike generic trade promotion, this branding focuses on Estonia's unique narrative: a small, agile country where government and startups co-create digital solutions.

How it works:

- In the early 2000s, Estonia made a deliberate choice to brand itself as a "digital nation" rather than compete on low costs. The government created the e-Estonia brand platform.
- Rather than scattershot promotion, Estonia committed to a single story, tying together public services, startups, and policy reforms under one identity.
- The e-Estonia Briefing Centre was set up as a physical and virtual showroom where 10,000+ international delegations, investors, and journalists are hosted each year, with live demos of digital services and introductions to local startups.
- Estonian embassies and trade offices actively use the e-Estonia narrative in economic diplomacy, pitches to investors, and promotion at global tech fairs.
- Policies like e-Residency not only serve entrepreneurs but also double as marketing campaigns, creating a global community of advocates who directly associate their business identity with Estonia.

The impact

- Estonia consistently punches above its weight in global rankings: top 5 in EU for digital public services, and among the top in CEE for VC funding per capita. In 2021, Estonia was the world's fastest-growing nation brand according to the Nation Brand 2021 survey.
- The e-Estonia brand has given startups "borrowed credibility": founders report that foreign investors and corporates associate Estonian firms with reliability and digital sophistication.
- Reference campaigns like e-Residency (100,000+ global users) have served as both policy and marketing, anchoring Estonia's identity as a global hub for entrepreneurs.
- While brand saturation can be a risk, in that Estonia's "digital nation" story must keep evolving, the country remains one of the most visible innovation ecosystems in Europe relative to size.

The effort

- Branding requires constant coordination and credibility. Estonia invests in professional marketing teams, cross-ministry coordination, and a dedicated showcase centre. The model is resource-intensive but efficient: Estonia's small size makes alignment easier.

Source: Implement Economics based on e-Estonia (2021a); e-Estonia (2022a); Brand Estonia (2025); Hoffmann and Solarte-Vasquez (2022); Papp-Vary (2018)

03. Untapped potential from a more innovative ICT industry

This chapter explores what Romania stands to gain by shifting to a more innovation-driven ICT industry. Using existing evidence and tailored modelling, it estimates the potential impact on GDP, job creation, and fiscal revenues, while also highlighting spillover effects on long-run growth through multiple transmission channels. The analysis provides a forward-looking view of how stronger innovation capacity could benefit not only the ICT industry itself but also the wider Romanian economy.

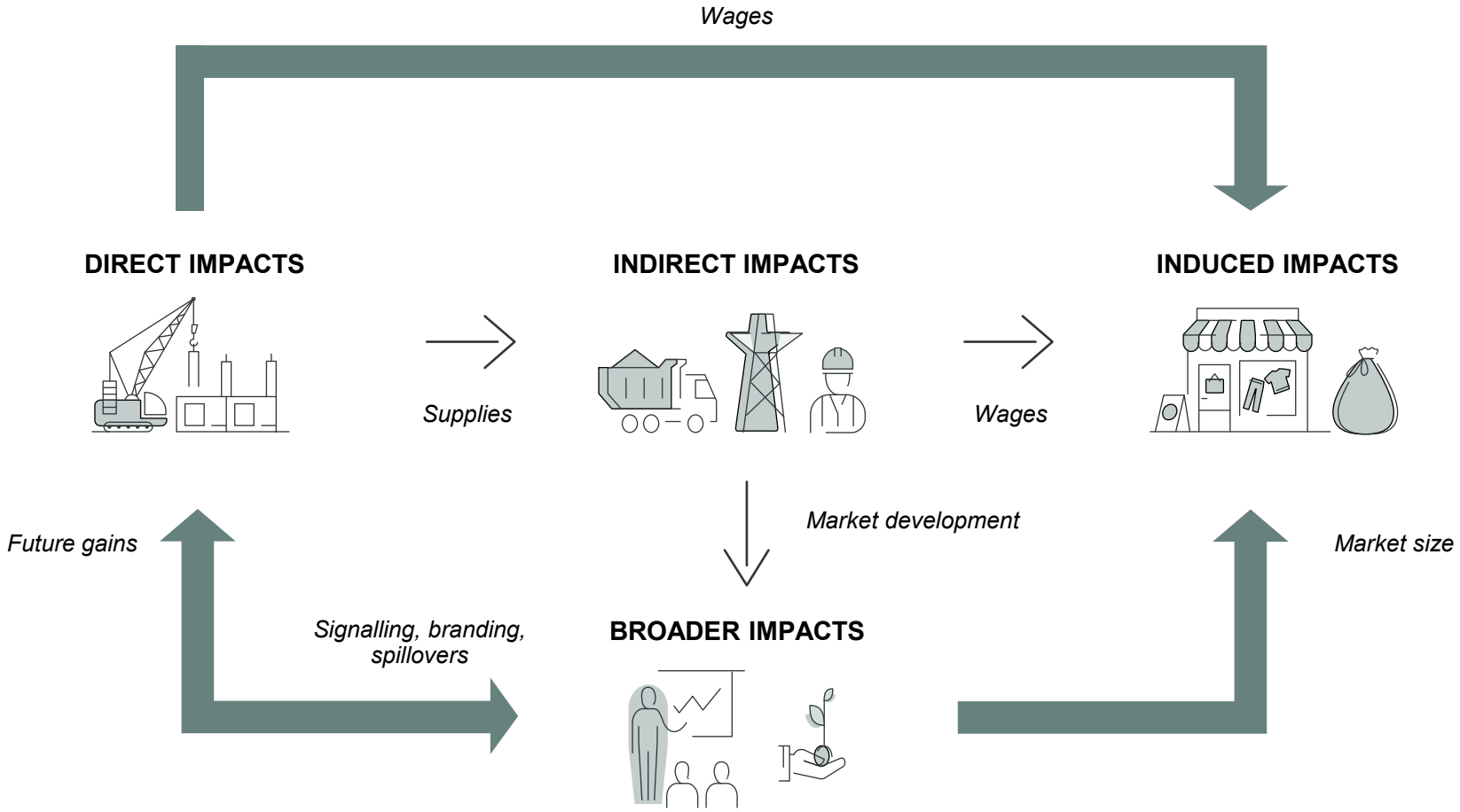
Romania's untapped transition potential may be achieved through multiple transmission channels

Romania's ICT industry is a strong base for the Romanian economy but holds untapped potential for growing, becoming more competitive, and enhancing productivity.

This transition triggers economy-wide channels of impact and future gains:

- **Direct (within ICT):** Growth in the innovative subsectors of the ICT industry increases output, exports, R&D, and high-productivity jobs.
- **Indirect (supply chains):** Higher ICT activity lifts local purchases of business services, cloud/data centres, equipment, and a range of other materials needed for the operation of ICT services.
- **Induced (households):** Higher wages and employment boost consumer spending in multiple sectors, such as retail, hospitality, housing, and transport.
- **Broader impacts (branding/signalling):** A more innovative ICT industry helps Romania attract talents, capital, and companies.
- **Broader spillovers (downstream sectors):** Core digital building blocks (such as AI applications, cloud solutions, IoT, cybersecurity, automation) diffuse into the rest of the economy, raising productivity, quality, innovation, and resilience.

Economic impact transmissions channels



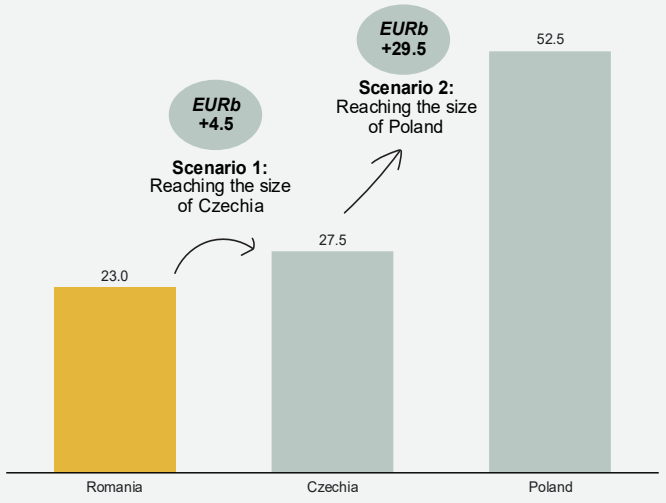
Source: Implement Economics based on Mosiashvili, N. and J. Pareliussen (2020) and Filippucci, F., P. Gal and M. Schief (2024).

Understanding the untapped ICT transition potential follows three steps: (1) define innovation-led growth scenarios, (2) quantify economic impacts, and (3) map economy-wide spillovers

Step 1 Define innovation-led growth scenarios

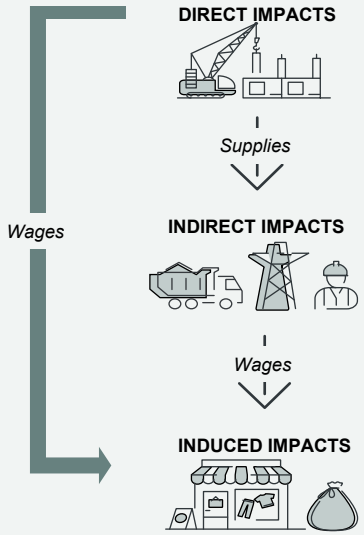
We benchmark Romania to more product-oriented and innovative peers – Czechia and Poland – to size the catch-up potential. In economic terms, innovation-led growth corresponds to a productivity shock.

Value of output in the ICT industry
EUR million



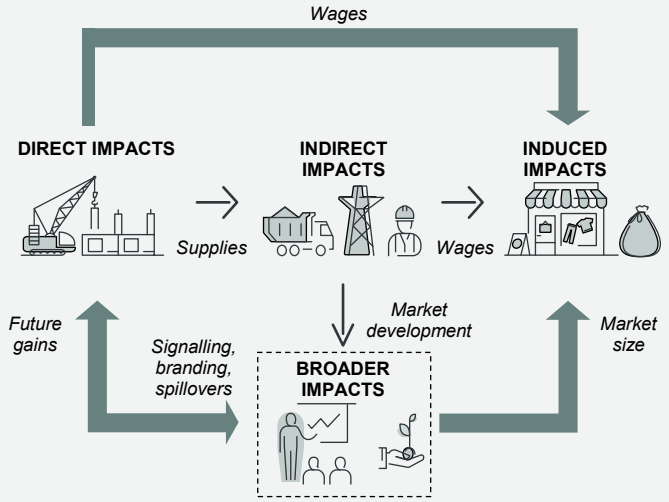
Step 2 Quantify economic impacts

We compute direct, indirect, and induced impacts of the expansion of the ICT industry to assess how a more productive ICT industry enhances economic activity throughout the Romanian economy.



Step 3 Map economic-wide spillovers from a larger innovative ICT industry

We map how spillover effects from core digital building blocks diffuse throughout the economy, raising productivity, quality, innovation, and resilience broadly in the Romanian economy.



Note: Size is proxied by value of output (pragmatic choice given IO constraints). Scenarios illustrate an innovation-led growing path; they do not imply moving away from outsourcing.
Source: Implement Economics

The Romanian ICT industry is large by CEE standards – only exceeded by Czechia and Poland

Romania's ICT industry is one of the largest in CEE and offers a strong base for converging towards more product-oriented peers with even larger ICT industries. Measured by output value, the Czech ICT industry is 19% larger and the Polish 128% larger.

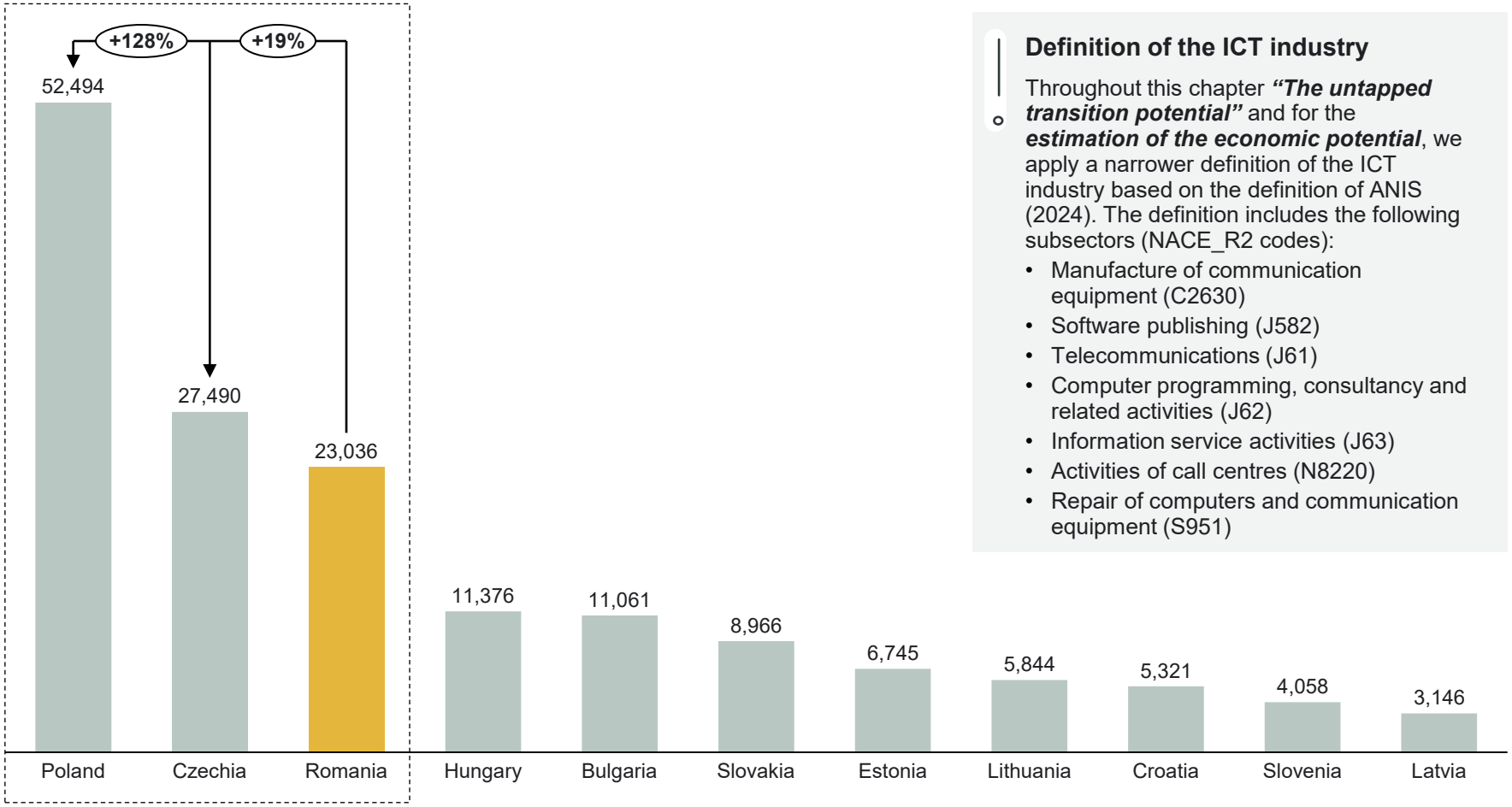
The untapped transition potential can be framed as c*atching up with Czechia or Poland* – complementing today's outsourcing strengths by scaling product development, productised services, and IP-rich activities. This shifts Romania's industry mix toward higher-value creation, following the trajectory of those peers.

Achieving this requires rolling out the targeted policy instruments and increasing R&D investment (public and private) as a share of GDP.

Czechia is the near-term benchmark and Poland representing the longer-term catch-up scenario.

Value of output in the ICT industry[1]

EUR million, 2023



Definition of the ICT industry

Throughout this chapter ***"The untapped transition potential"*** and for the ***estimation of the economic potential***, we apply a narrower definition of the ICT industry based on the definition of ANIS (2024). The definition includes the following subsectors (NACE_R2 codes):

- Manufacture of communication equipment (C2630)
- Software publishing (J582)
- Telecommunications (J61)
- Computer programming, consultancy and related activities (J62)
- Information service activities (J63)
- Activities of call centres (N8220)
- Repair of computers and communication equipment (S951)

Note: 1) We define the size of the ICT industry as its current-price "value of output" because it is the updated, consistently available measure across countries, allowing us to set a comparable shock magnitude despite missing IO output data for Poland
Source: Implement Economics based Eurostat (sbs_ovw_act).

The composition of Romania's ICT industry is broadly similar to leading peer countries

Romania's ICT industry composition mirrors peers but is more telecom-heavy and less product-oriented (software publishing) than Czechia and Poland.

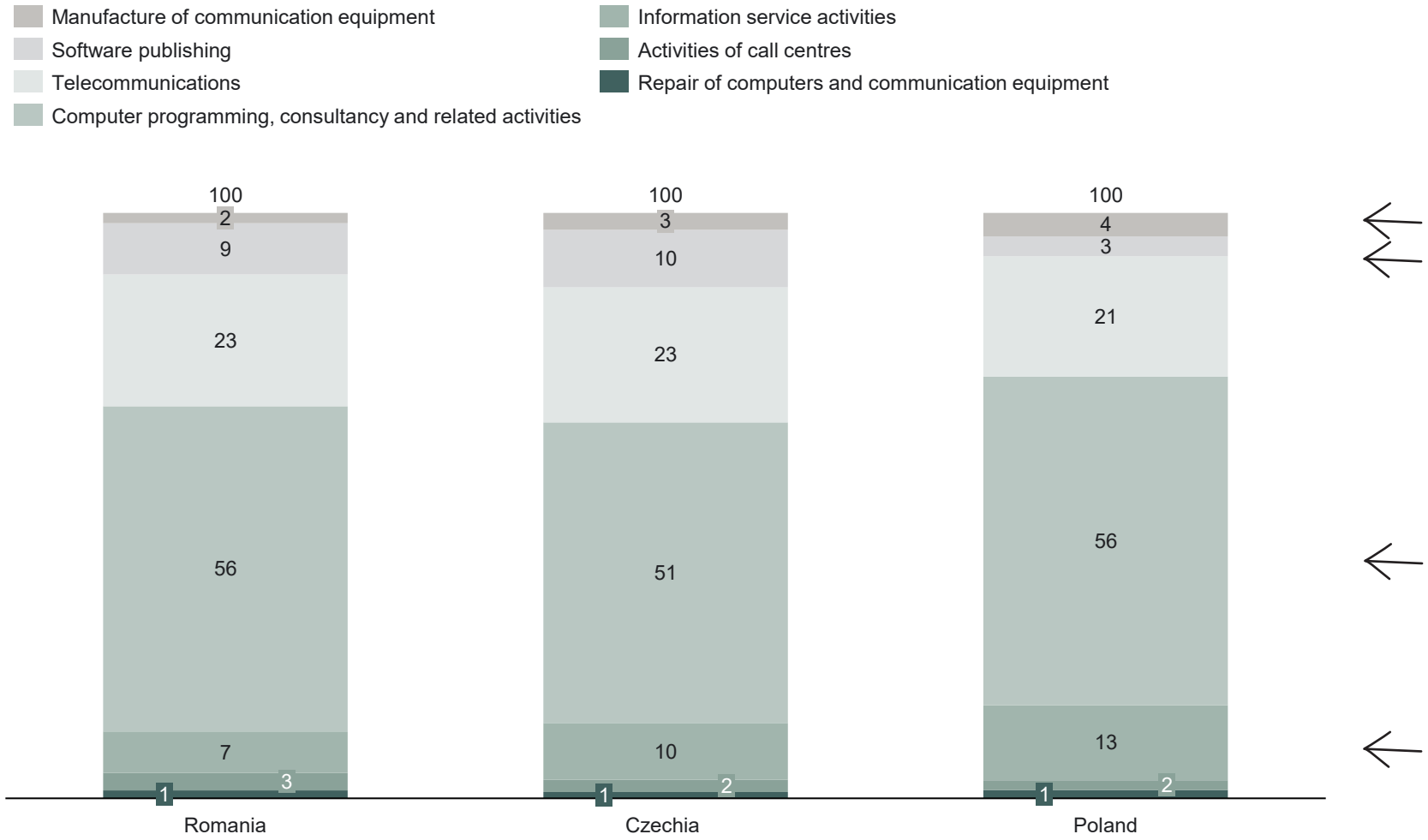
Implementing a targeted policy portfolio (as outlined in Chapter 2) is expected to boost the innovative ICT subindustries. These are:

- Manufacture of communication equipment
- Software publishing
- Computer programming, consultancy and related activities
- Information service activities

Remaining subindustries are assumed to be stable in size.

Composition of the ICT industry across subsectors

% of output value, 2023



Note: To align with the 2020 IO multipliers (ANIS, 2024), we preserve Romania's existing ICT structure by distributing the shock proportionally using the IO-consistent 2020 sector composition.
Source: Implement Economics based Economics based on Eurostat (sbs_ovw_act).

Innovation-led ICT growth could add significantly to Romania's GDP, jobs, and fiscal revenues

If Romania succeeds with getting key innovation drivers in place and implementing key policy instruments to support and foster innovation, it will be possible to move towards the size of the Czechia and Polish ICT industry.

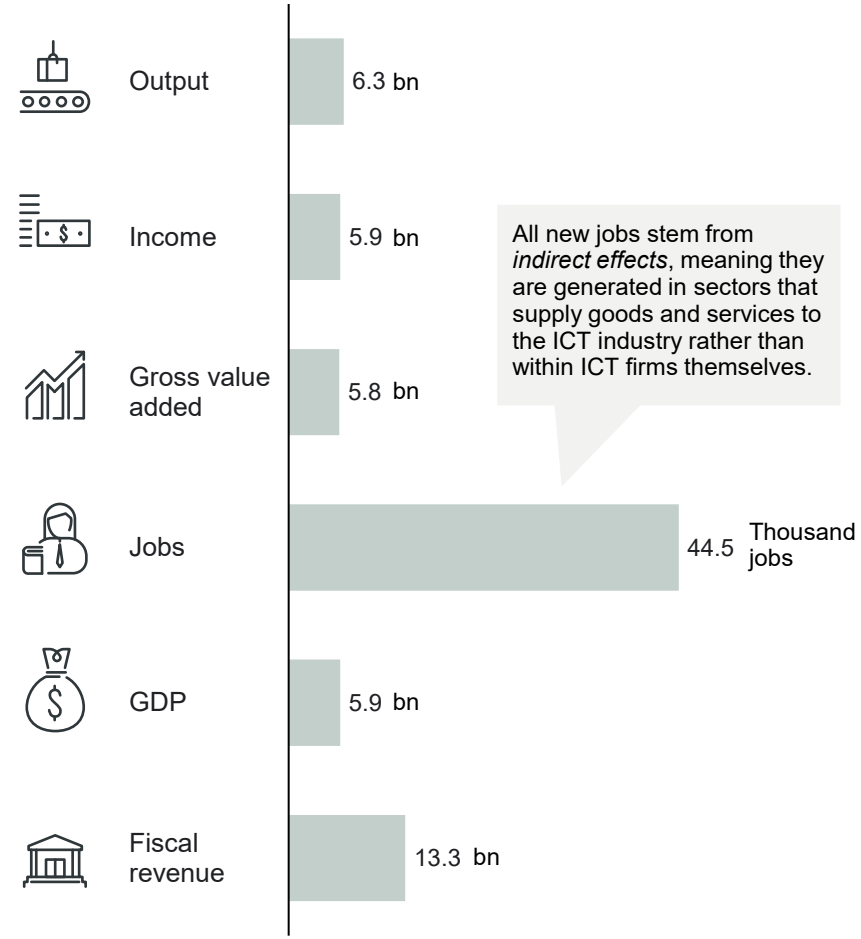
Depending on the ambitions and the success rate, innovation-led ICT growth could add:

- EUR 6-40 billion increase in GDP
- 45,000-295,000 jobs
- EUR 13-88 billion Increase in fiscal revenue

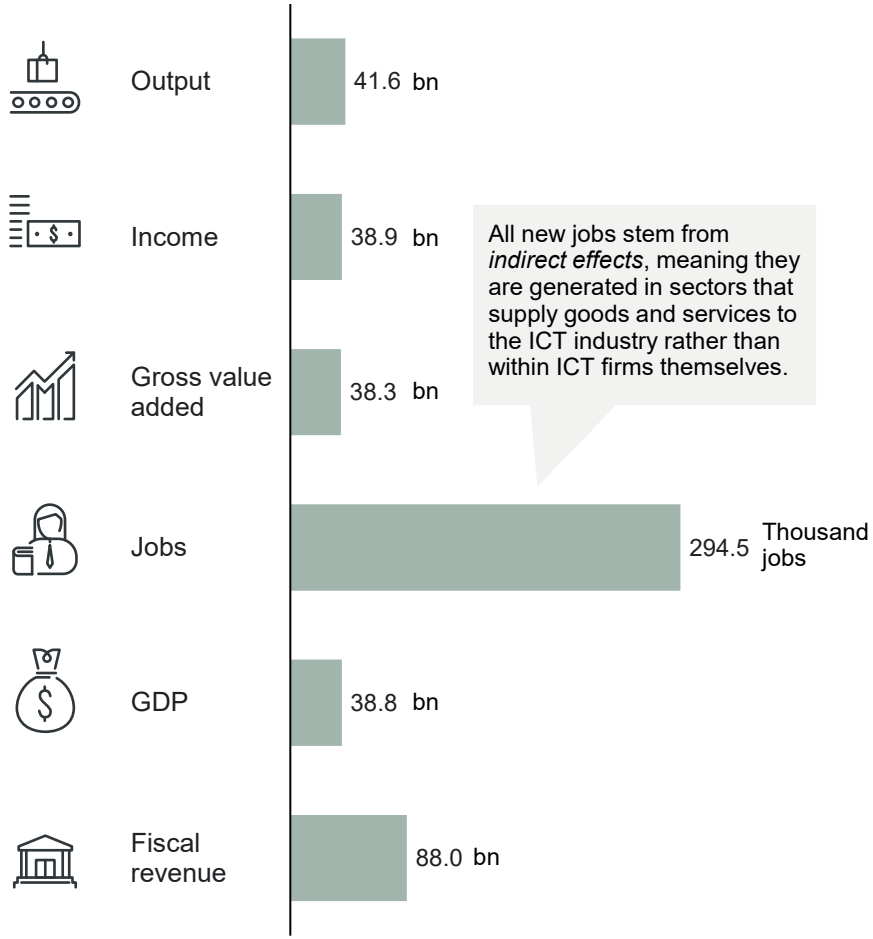
These estimates are conservative, capturing only **the *direct and indirect effects*** of a productivity uplift (excluding induced impacts).

In the near term, more value is produced with the same resources as firms move up the quality ladder into higher-value subsectors and productised, IP-rich offerings. As capabilities and market demand deepen, this transition will also expand demand for resources in Romania's ICT industry.

Scenario 1: Catching up with Czechia
EUR billion/ thousand jobs



Scenario 2: Catching up with Poland
EUR billion/ thousand jobs



Note: We use value of output as a proxy for output, due to IO output tables missing for Poland. The effect on the final results is however minimum.
Source: Implement Economics based on Eurostat (sbs_ovw_act).

Stay on today's growth path, remove new barriers – and Romania can reach Poland's ICT size by 2030–2035

Romania's ICT industry already grows faster than the rest of the economy (17% on average since 2021).

If this pace continues – supported by a modest acceleration and no new bottlenecks – Romania could reach Czechia's 2023 level within 1–2 years and Poland's 2023 level in roughly six years, making growing to the size of Poland a realistic prospect by 2030–2035.

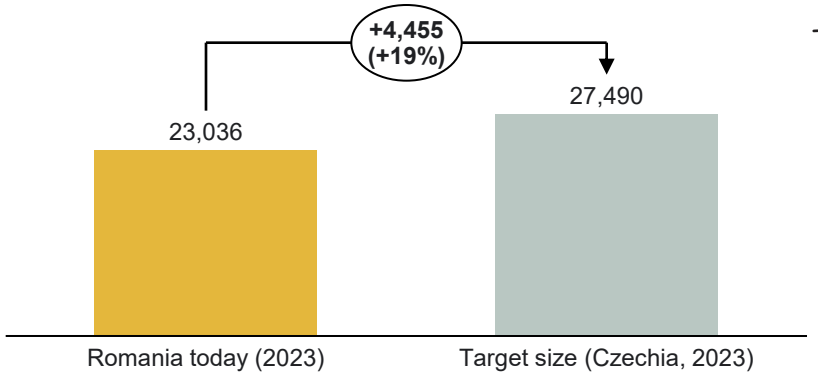
This requires three conditions to hold:

- Skilled labour remains available at competitive wages
- Growth capital does not tighten
- Market demand keeps expanding

Our proposed instruments are designed to keep these conditions in place by allowing projects to move from idea to market, reducing approval and integration delays, converting pilots into paying customers, and ensuring protection and financing arrive on time. In such a situation, rising wages and public digitalisation translate into growth in the innovative, product-driven segment of the ICT industry.

Scenario 1: Catching up with Czechia

Value of output, EUR million



Direct GDP effect
€2.6 bn

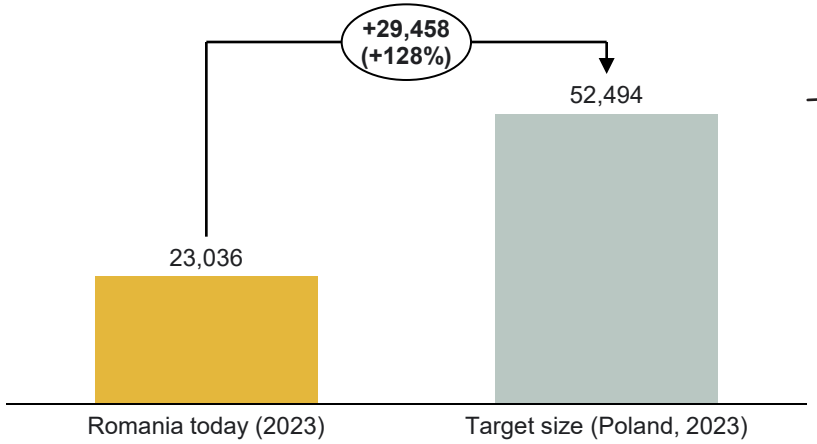
Indirect GDP effect
€3.3 bn

Historical average growth, 2021-2023
+17%

Catch-up timeline
~1-2 years

Scenario 2: Catching up with Poland

Value of output, EUR million



Direct GDP effect
€16.9 bn

Indirect GDP effect
€22.0 bn

Historical average growth[1], 2021-2023
+17%

Catch-up timeline
~6 years

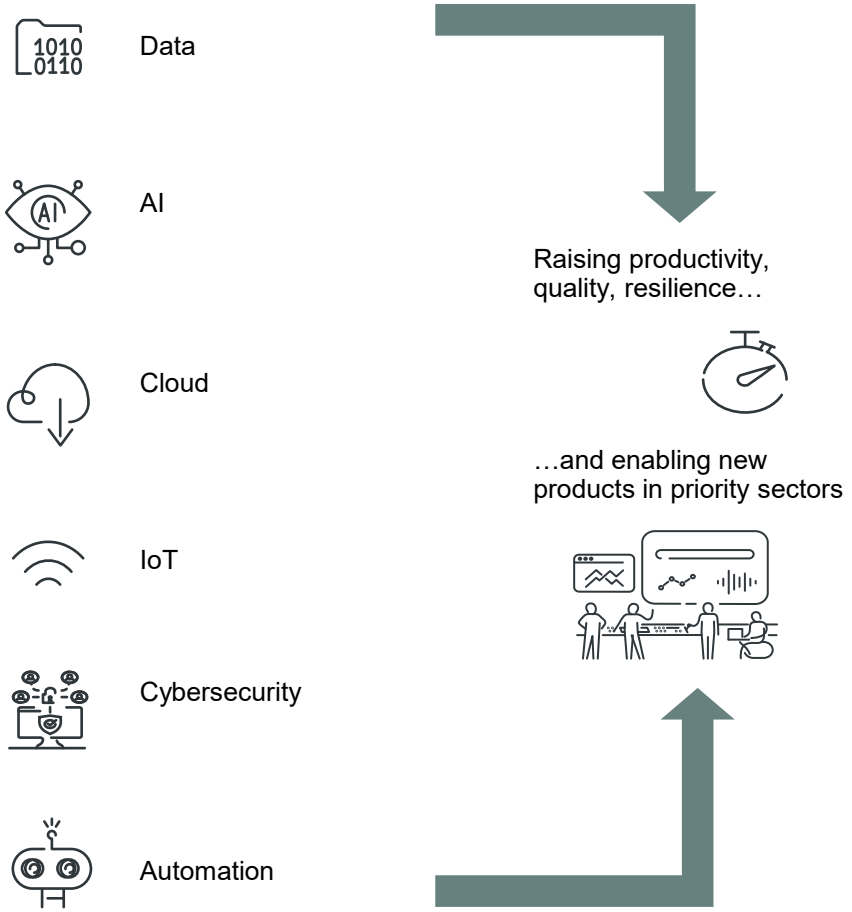
Note: Size measured as value of output, ANIS ICT scope. 1) Growth rates are in terms of value of output for the entire ICT sector by Eurostat definition and not ANIS ICT scope.
Source: Implement Economics based on Eurostat (sbs_ovw_act).

The gains extend beyond static effects, with positive spillovers to the broader economy

Investing in ICT innovation delivers more than static gains within the Romanian economy.

A more innovative ICT industry accelerates technology adoption across multiple other sectors, such as energy, health, banking, retail/logistics, and automotive, by diffusing core digital building blocks (data, AI, cloud, IoT, cybersecurity, automation). This drives broader impacts through faster adoption and improved competitiveness, making ICT a cross-economy driver.

Targeted ICT innovation diffuses across the economy through common digital building blocks



Targeted ICT innovation enables priority sectors to adopt technology and innovate

Examples of key channels in priority sectors:

- **Energy & utilities |** IoT smart grids (smart meters/sensors for real-time visibility), demand-forecast analytics (balance supply/demand), OT/IT cybersecurity (safe digitisation of critical systems).
- **Health |** Telemedicine (remote consults), EHR/HIE (shared patient records), AI diagnostics (faster, more accurate), remote monitoring IoT (alerts from wearables/devices).
- **Banking & financial services |** RPA/automation (faster back office), fintech platforms (digital onboarding/ payments), credit/risk analytics (better decisions), cybersecurity (fraud prevention).
- **Retail & logistics |** E-commerce platforms (omnichannel reach), route optimisation (efficient delivery), warehouse robotics (faster picking), digital payments (smooth checkout).
- **Automotive & advanced manufacturing |** Software-defined vehicles (features via software), advanced control systems (quality/throughput), Industry 4.0 automation (sensors/robots), digital supply chains (end-to-end visibility).
- **Public administration |** E-services (online permits/taxes), e-invoicing/e-transport (compliance, lower admin cost), data platforms (interoperability), digital identity (secure access).

Source: Implement Economics

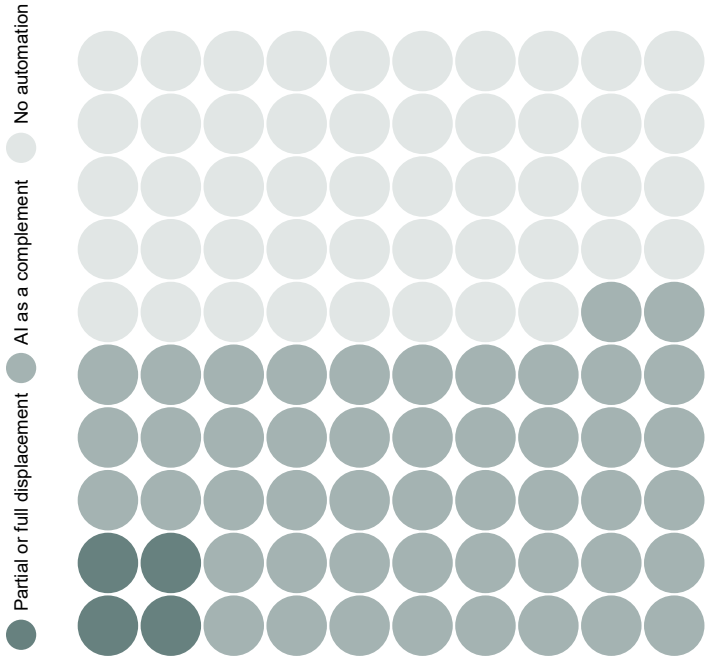
As one ICT-driven channel of spillovers, widespread AI adoption alone, by lifting productivity and freeing staff time, could add EUR 14-16bn to GDP every year

The boost to Romania's GDP from generative AI around ten years from now, if widespread adoption is achieved.

14-16 BILLION EURO ANNUAL IMPACT **+5%** GDP

Gains come from:

- Productivity boost from people working with generative AI
- Freed up time when generative AI helps to automate work
- Re-prioritised and re-employed time to other value-creating activities



42%
of jobs in Romania are likely to remain unaffected by generative AI

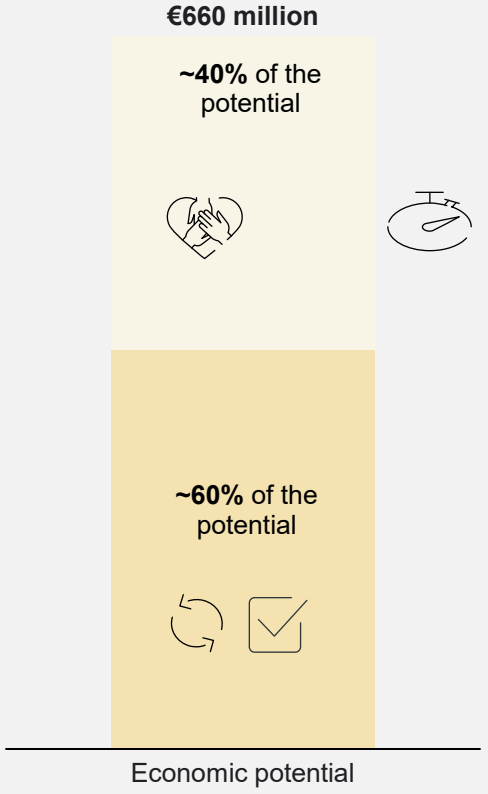
54%
of jobs are expected to work together with AI and see a boost in productivity

4%
of jobs are estimated to be highly exposed to generative AI, leading to some job closures

The isolated potential in the public sector

EXAMPLE

Potential impact of generative AI on public administration in Romania
€ million increase from baseline Gross Value Added (GVA) after a ten-year adoption period



Increased quality and speed of public services, allowing for new types of services and increasing personalisation, transparency and accessibility.

Example: AI improves document search, enabling staff to provide citizens with faster and more accurate advice.

More available time and resources that can either enable public employees to focus on new, high-value tasks or be directed to reduce budget deficits.

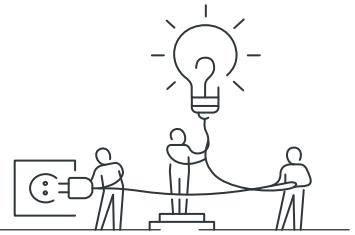
Example: AI processes routine paperwork, allowing employees to spend more time on complex cases.

Source: Implement Economics (2024a) and Implement Economics (2024b).

04. Policy roadmap towards a more innovative ICT industry

This chapter sets out a sequenced roadmap for action, based on the barriers and instruments assessed. The roadmap is designed to guide policymakers and industry leaders in building an innovation ecosystem that enables startups to scale, established firms to develop new products, and the ICT industry as a whole to become a stronger driver of long-term growth.

Romania must first get the fundamentals right – innovation only scales on solid foundations of predictability, skills, digital infrastructure, and “think small first” administration



Foundational conditions for innovation

1

Trust and institutional integrity

Strong rule of law, low corruption perception, and confidence in data security and public institutions.

2

Regulatory and fiscal predictability

Stable, transparent rules and long-term policy signals that reduce uncertainty and support risk-taking.

3

Strategic vision and coordination

A long-term digital and innovation strategy, with strong governance to ensure coherence across ministries and programmes.

4

Efficient administration

Low bureaucratic burden, streamlined business processes, and interoperable public digital services.

5

Digital and human capital

Broad digital skills in the population, advanced ICT/product skills for firms, and robust talent pipelines for future growth.

6

‘Think small first’ principle

Policies and practices that lower entry barriers, ease compliance, and create fair conditions for smaller firms to grow.

Source: Implement Economics based on ANIS (2025a).

Innovation does not scale without solid foundations. For innovative startups and SMEs to grow and established firms to invest in product innovation, the enabling basics must be in place.

Some steps are moving in the right direction, such as the Romanian Government’s commitments to expand digital public services. Yet recent developments also underline fragility and lack of patience. The restriction of the long-standing income tax exemption for software employees has reduced policy predictability. The new minimum turnover tax adds to this uncertainty by taxing revenues rather than profits, which places a heavy burden on capital-intensive, low-margin, or pre-profit firms – the very profile of many product builders and scale-ups. It also complicates investment decisions for multinationals and can weaken demand for SME-driven innovation.

Beyond the immediate costs, frequent fiscal changes and carve-outs send a signal of unpredictability that discourages long-term bets. Administrative and regulatory burdens continue to weigh heavily on small firms, and the absence of a clear, coordinated national digital strategy leaves companies hesitant to take risks or shift from outsourcing to product innovation.

These foundations are not a substitute for targeted innovation instruments – they are the precondition for those instruments to work.

Romania should consciously diagnose its innovation bottlenecks by tracking where firms stall along the lifecycle, understanding why, and acting quickly to unblock them

The innovation process

WHY

To move from ad-hoc initiatives to a deliberate innovation strategy, Romania should install a simple ***"diagnose–act–learn"*** **loop** across the innovation lifecycle.

DIAGNOSE

Regularly measure progression through the lifecycle and watch for sudden slowdowns or drop-offs. Treat these as system alarms, not firm-level failures.

UNDERSTAND

Interrogate the few biggest bottlenecks to reveal the common causes behind them. Expect the binding constraint to shift over time as the ecosystem matures.

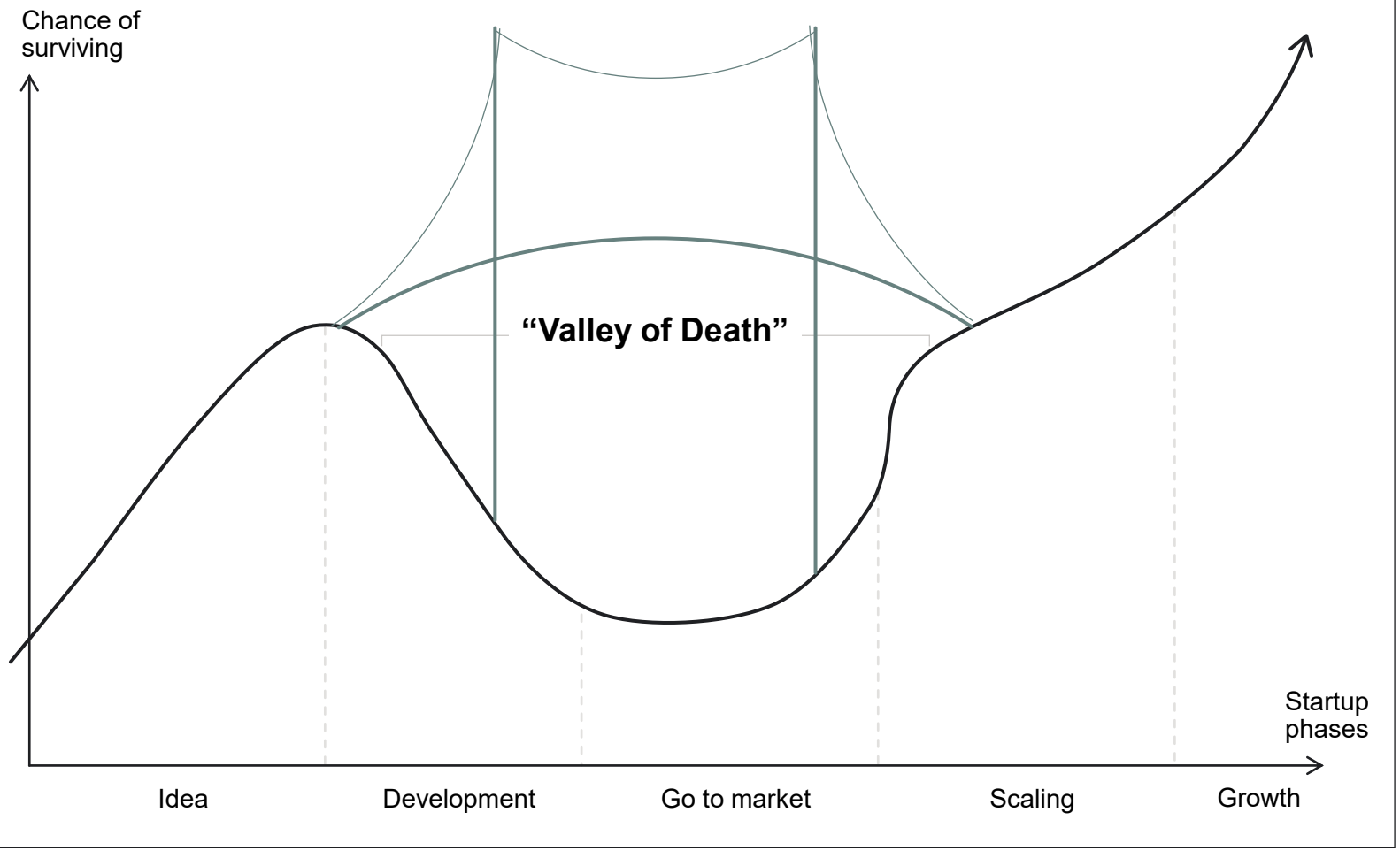
ACT

Respond quickly with targeted adjustments and rebalance effort toward the most binding constraints. Review outcomes, learn, and repeat – with patience and long-term strategic goals in mind.

Source: Implement Economics

Romania needs stage-appropriate finance across the entire innovation cycle, so the "Valley of Death" is bridged, from ideas and prototyping through pilots, scaling, and commercialisation

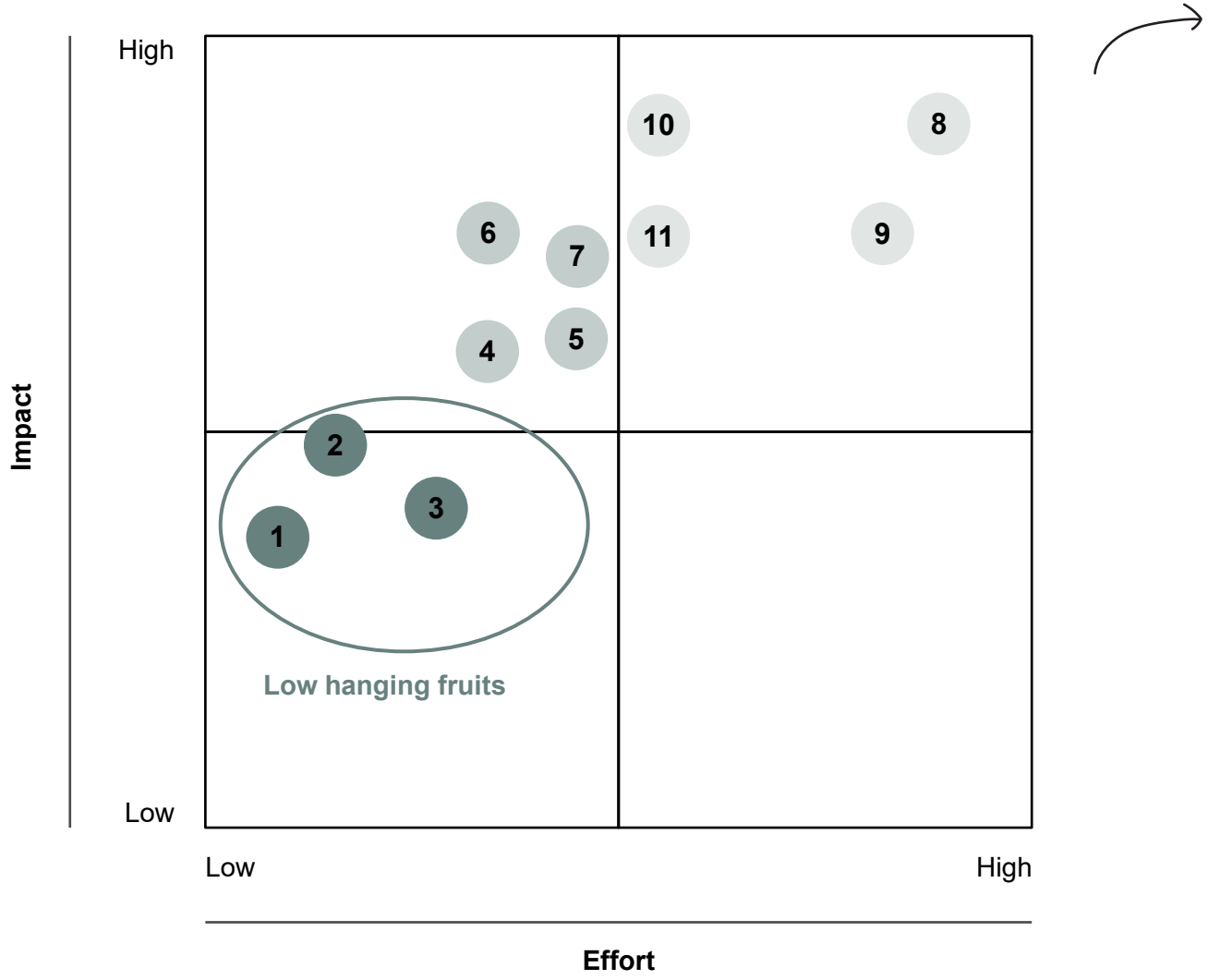
The "Valley of Death"



- The 'Valley of Death' is the dip between a promising prototype and a repeatable business, when costs spike for pilots, integration, certification, and first sales while revenues are uncertain. Survival chances typically fall just before the first customer and scale.
- Due to this dip, talent can build prototypes, but stage-appropriate capital and demand pull are thin. Teams struggle to finance real-world pilots, protect IP on time, or bridge the first sales cycle – creating the risk that value leaks before products reach the market.
- Bridging the dip requires predictable, sequenced support across stages: early build (innovation vouchers, PoC), first demand (corporate and GovTech pilots, shared testbeds, fast-track IP), and scale (co-investment/public VC and R&D tax/IP box). This is why the roadmap prioritises quick pipeline builders first, then demand and capital (see next slide).
- Success means fewer drop-offs, faster time to first revenue, higher prototype-to-product conversion, and more IP-rich, productised Romanian ICT – unlocking the potential quantified in Chapter 3.

Source: Implement Economics

Romania should prioritise instruments using an impact–effort lens and make clear strategic choices on where to play, combining quick wins with long-term reforms



1. **Innovation vouchers** | Small grants to buy expert help for first R&D steps.
2. **Digital adoption vouchers |** Co-funded cloud/AI/cyber upgrades for SME productivity.
3. **Corporate open-innovation pilots** | Co-funded startup pilots with committed corporates.
4. **Fast-track IP** | Accelerated patents/trademarks to speed deals and launch.
5. **National branding and promotion** | A single, credible story to attract capital and talent.
6. **Proof-of-Concept grants** | Fund prototypes from lab to pilot, TRL 3–6.
7. **R&D tax incentives/ IP box** | Cheaper R&D; lower tax on qualifying IP income.
8. **Public venture funds/ co-investmen**t | Crowd in private capital for seed and Series A (scaling).
9. **Shared testbeds** | Low-cost 5G/AI/IoT environments to test at scale.
10. **Innovation-led public procurement** | Government as first customer via challenge-based tenders.
11. **Regulatory sandboxes** | Supervised trials that de-risk new tech and models.

Source: Implement Economics

Sequence the push: move ideas to validation and customers with low-hanging fruits, then sustain demand and speed approvals while protecting IP, and finally deepen capital, scale testing, and lock in long-run competitiveness

Low-hanging fruits (2025-2026)

- **Innovation vouchers:** Small grants for expert help
  - **Why:** quickest way to kick-start early R&D, light administration, immediate SME–research links, quality improved by DIH/testbed diagnostics, fast-lane to PoC.
  - **How to:** use standard templates and a pre-approved provider list, add a simple DIH/testbed diagnostic, decide in weeks and pay on outputs, route successful cases to PoC.
  - **Who:** All companies (SME-oriented, but large firms via subsidiaries/units where eligible).
- **Digital adoption vouchers:** Co-fund cloud/AI/cyber
  - **Why:** rapid SME productivity gains and local demand for ICT, easy to template, higher uptake with DIH coaching.
  - **How to:** use an approved vendor list, require a brief DIH digital roadmap, fund cloud/AI/cyber implementation bundles, track before-and-after KPI baselines.
  - **Who:** Scaleups, established companies (SMEs as adopters, S/SU as vendors).
- **Corporate open-innovation pilots:** Startup–corporate challenges
  - **Why:** fast route to first customers and credibility, challenge waves launched within months, higher conversion with buyer coaching.
  - **How to:** publish challenge calls and pre-brief buyers, shortlist on problem–solution fit, run 8–12-week pilots with simple IP terms, make a follow-on decision within 30 days.
  - **Who:** All companies (startups/ scale-ups as solution providers; established firms as challenge owners).
- **R&D tax incentives/IP box:** Cheaper R&D, lower tax on IP income
  - **Why:** system-level change that compounds with ecosystem maturity, requires stable rules and startup-friendly features to keep IP onshore. Medium effort with strategic leverage; quick rollout to signal pro-innovation stance, reduce testing risk, and speed up approvals.
  - **How to:** issue plain-language guidance and templates, offer optional advance rulings, accept AI and software outcomes, enable carry-forward and refunds for startups.
  - **Who:** Scale-ups, established companies.

Medium reforms (2027-2030)

- **Fast-track IP:** Accelerated patents/trademarks
  - **Why:** medium-effort, high signal, protection aligned with pilots, faster deals and fundraising.
  - **How to:** join PPH, enable digital-only filing, offer accelerated trademarks/designs, align timelines with pilot starts.
  - **Who:** All companies.
- **Proof-of-Concept grants:** Fund TRL 3–6 prototypes.
  - **Why:** strongest early impact among medium reforms, prototypes converted to pilots, faster starts with milestone tranches and retroactive eligibility.
  - **How to:** define TRL 3–6, require company-led consortia, set milestone tranches, add post-project KPIs/clawbacks.
  - **Who:** Startups, scale-ups.
- **Innovation-led public procurement at scale**: Government as first buyer
  - **Why:** sustained demand pull, lower friction through buyer helpdesk and APIs/interoperability. Medium effort with strategic leverage; unlocks early demand and lowers friction while signalling commitment to innovation.
  - **How to:** create a challenge platform and a buyer helpdesk, publish APIs/interoperability, use small lots and track innovation tenders outside the registry.
  - **Who:** All (SME-friendly lots benefit S/SU; EE often prime contractors)
- **Regulatory sandboxes:** Supervised trials
  - **Why:** reduced regulatory risk in testing, impact depends on case managers and active sourcing, lessons feed guidance and procurement. Medium effort with strategic leverage; quick rollout signals pro-innovation stance, reduces testing risk, and speeds approvals.
  - **How to:** appoint case managers, publish intake criteria/timelines, agree temporary permits/safeguards, collect evidence and translate into guidance/procurement.
  - **Who:** All companies.
- **National branding and promotion**: Promote success stories
  - **Why:** attract talent, customers, investors.
  - **How to:** build a single narrative with domestic references, align embassies and trade offices, run curated missions and measure leads, pilots, and export wins.
  - **Who:** All companies (export-ready firms prioritised).

Long-term bets (2030+)

- **Shared testbeds:** 5G/AI/IoT test environments
  - **Why:** high impact for safe, at-scale testing, capex and governance heavy, start with a digital-rails lighthouse before phasing 5G/IoT.
  - **How to:** start with a digital-rails lighthouse using e-ID, data exchange, and cloud, use lightweight access agreements and pair with DIH coaching, phase 5G and IoT as demand grows.
  - **Who:** All companies.
- **Public venture funds/co-investment:** Crowd in private capital
  - **Why:** deeper VC market and crowded-in private capital, fund-of-funds primary with selective direct windows, connected to PoC/incubation pipelines.
  - **How to:** keep fund-of-funds primary with narrow direct windows, set clear co-investment rules and link dealflow to PoC and incubation, publish portfolio KPIs.
  - **Who:** Startups, scale-ups.

Source: Implement Economics

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List of acronyms

AI – Artificial Intelligence

ANIS – Romanian Employer's Association of the Software and Services Industry

API – Application Programming Interface

APIA – The Business and Innovation Agency (Czechia) [API Agentura]

BG – Bulgaria (country code)

BGK – Bank Gospodarstwa Krajowego (Polish Development Bank)

B2B – Business-to-Business

CAPEX – Capital Expenditures

CEE – Central and Eastern Europe

CIS – Community Innovation Survey

CRM – Customer Relationship Management

CZ – Czechia (country code)

CZK – Czech Koruna

DESI – Digital Economy and Society Index

DIH – Digital Innovation Hub

DTF – Digital Testbed Framework (Estonia)

EAS/EIS – Enterprise Estonia / Estonian Business and Innovation Agency

EHR/HIE – Electronic Health Records / Health Information Exchange

EE – Estonia

EFTA – European Free Trade Association (mentioned via EU contexts; not a primary focus)

EIPA – European Institute of Public Administration

EIS – European Innovation Scoreboard

EPO – European Patent Office

ERDF – European Regional Development Fund

ERP – Enterprise Resource Planning

EU – European Union

EU27 – European Union, 27 Member States

EUIPO – European Union Intellectual Property Office

FDI – Foreign Direct Investment

FENG – European Funds for a Modern Economy (Poland)

FTO – Freedom to Operate

GDP – Gross Domestic Product

GovTech – Government Technology (innovation-led public procurement/programmes)

GVA – Gross Value Added

HR – Croatia (country code)

ICT – Information and Communication Technology

IKT – Information and Communication Technology (Estonian branding context)

ILPP – Innovation-Led Public Procurement

IMF – International Monetary Fund

IoT – Internet of Things

IP – Intellectual Property

IP Box – Preferential tax regime for qualifying IP income

IPRI – International Property Rights Index

IT – Information Technology

JIC – Jihomoravské inovační centrum (Brno Innovation Centre; referenced via vouchers context)

KPI – Key Performance Indicator

LT – Lithuania (country code)

LV – Latvia (country code)

ML – Machine Learning

MoU – Memorandum of Understanding

NACE – Nomenclature statistique des activités économiques dans la Communauté européenne (Statistical classification of economic activities)

NIFO – National Interoperability Framework Observatory (Interoperable Europe)

OECD – Organisation for Economic Co-operation and Development

OP TAK – Operational Programme Technology and Application for Competitiveness (Czechia)

OT/IT – Operational Technology / Information Technology

PAIH – Polish Investment and Trade Agency

PARP – Polish Agency for Enterprise Development

PFR – Polish Development Fund (Polski Fundusz Rozwoju)

PLN – Polish Zloty

PL – Poland (country code)

PoC – Proof of Concept

PPH – Patent Prosecution Highway

R&D – Research and Development

RIS3 – Research and Innovation Strategies for Smart Specialisation

RO – Romania (country code)

RTO – Research and Technology Organisation

SaaS – Software as a Service

SGOP – Smart Growth Operational Programme (Poland)

SI – Slovenia (country code)

SK – Slovakia (country code)

SME – Small and Medium-sized Enterprise

TTO – Technology Transfer Office

TRL – Technology Readiness Level

UPRP – Urząd Patentowy Rzeczypospolitej Polskiej (Polish Patent Office)

UX – User Experience

VC – Venture Capital

WGI – Worldwide Governance Indicators

WIPO – World Intellectual Property Organization

About Implement Economics

Implement Economics is the economics expert unit of Implement Consulting Group. Our experts are advisers to corporate and government decision-makers within regulation, trade, digitalisation, decarbonisation, and globalisation.

The team applies economic modelling, data analytics and econometrics to help solve worthwhile problems for the European Commission, industry associations, and governments in Europe, Asia, and the Americas.

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