

Ministry for National Economy
Deputy State Secretariat for Industry Affairs

ÁDÁM NAGY
DEPUTY STATE SECRETARY FOR INDUSTRY AFFAIRS

INDUSTRY POLICY

ACCELERATE GDT

February 4, 2025



THE INTERNATIONAL ECONOMIC LANDSCAPE AND EUROPE'S COMPETITIVENESS STRUGGLES

THE INTERCONNECTING EFFECTS OF THE PANDEMIC, THE WAR AND THE ENERGY CRISIS CREATED A 'PERFECT STORM' FOR EUROPE



THE COVID-19 PANDEMIC

- Travel restrictions, lockdowns
- Production shutdowns
- Damaged supply chains
- Supply-demand imbalances
- Increasing public debts
- Increasing inequality, social issues



THE RUSSIAN-UKRAINIAN WAR

- International sanctions
- Energy and food market shocks
- Raw material and energy scarcity
- Friend-shoring of supply chains
- Financial aids to Ukraine



THE ENERGY CRISIS

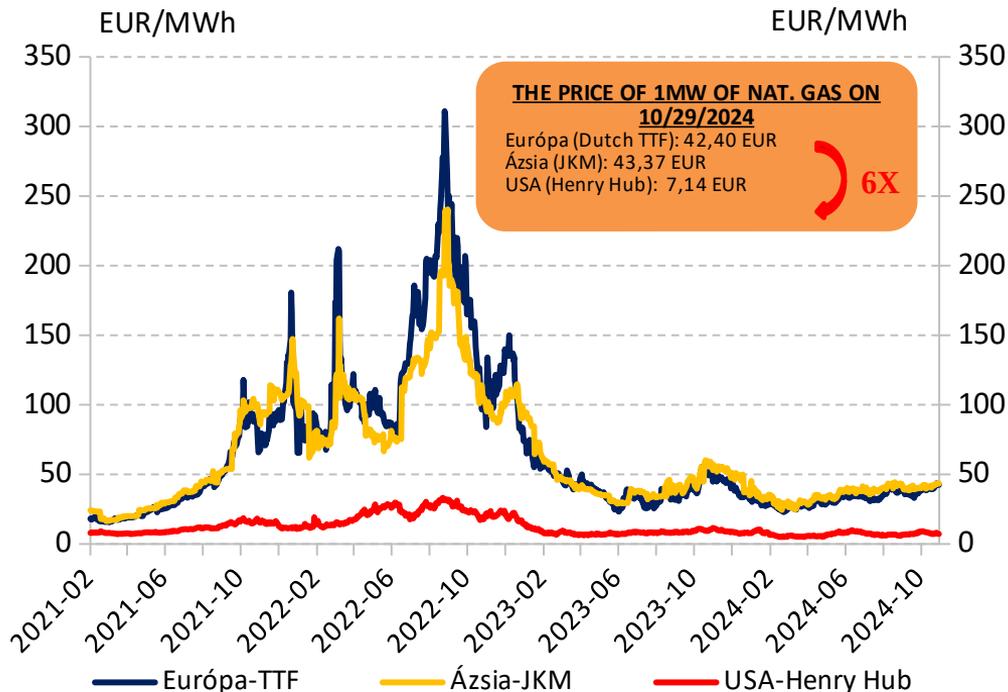
- Unprecedented energy prices
- Energy supply uncertainties
- Diversification, renewables
- De-industrialization
- Europe's competitiveness issues
- Hike of residential costs

High inflation and economic slowdown

THE RUSSIAN-UKRAINIAN WAR HAS DEEPENED THE COMPETITIVENESS STRUGGLES OF THE EUROPEAN ECONOMY

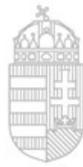


EUROPE HAS TO SUIT ITSELF TO PERMANENTLY HIGH ENERGY PRICES



THE 1M FORWARD STOCK EXCHANGE PRICES OF NATURAL GAS IN EUROPE, ASIA AND NORTH AMERICA (2021M3-2024M5)

- In spite of normalizing energy prices, risks on the energy market are still substantial
- Smaller price volatility compared to the peak of the energy crisis
- Geopolitical tensions (Russia-Ukrainian war, Middle Eastern conflicts) keep energy market risks high
- Due to energy prices Europe has to reconsider its competitiveness strategy
- Price differences between Europe and North America are more than fivefold for over a year now
- Certain energy intensive industrial sectors may disappear from Europe due to excessive energy costs
- Energy sovereignty and green energy considerations can both be facilitated by leaning more on nuclear power

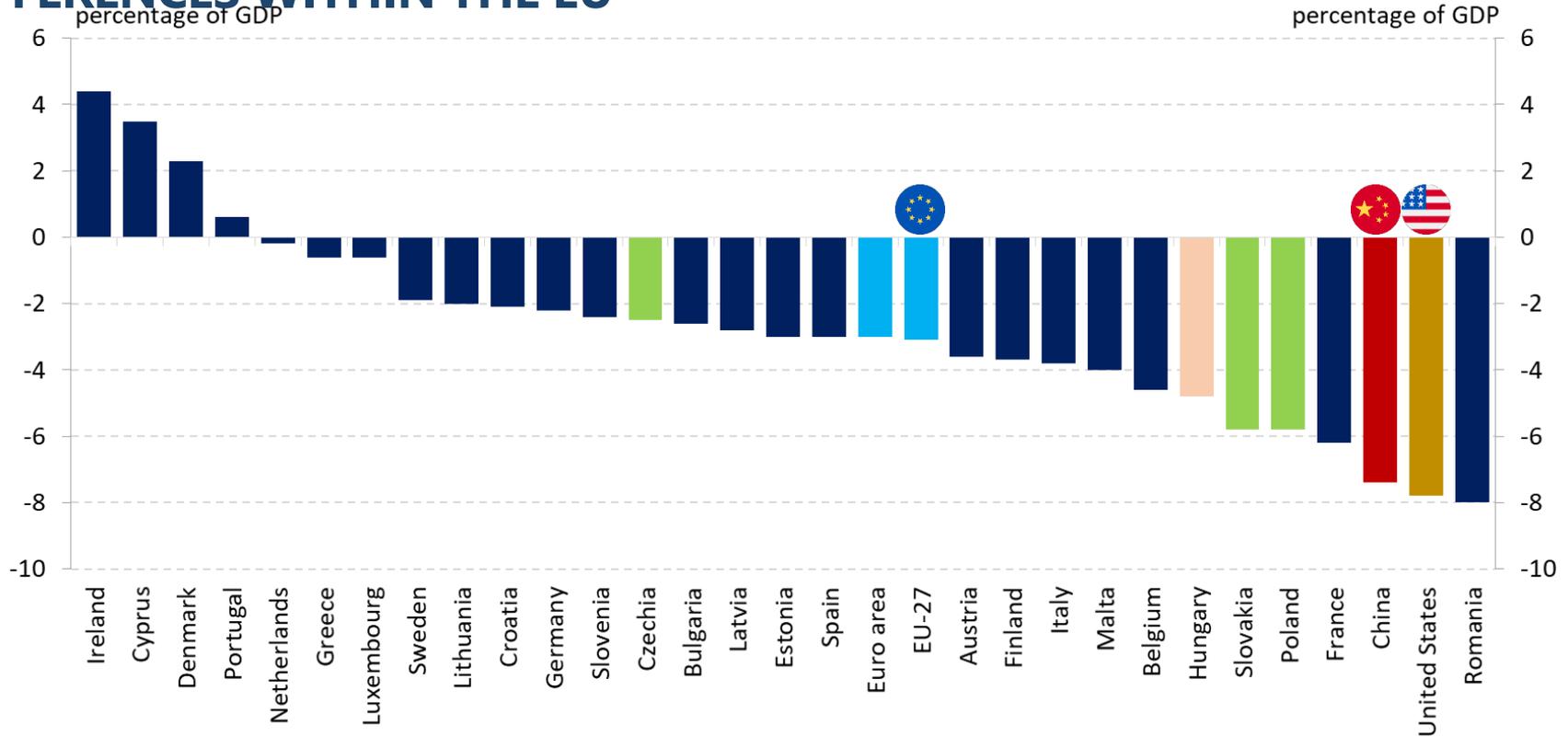


THE EU IS FACING A DOUBLE CHALLENGE:

I. FINANCING THE GREEN AND DIGITAL TRANSITION

II. RETURNING TO CHEAP ENERGY

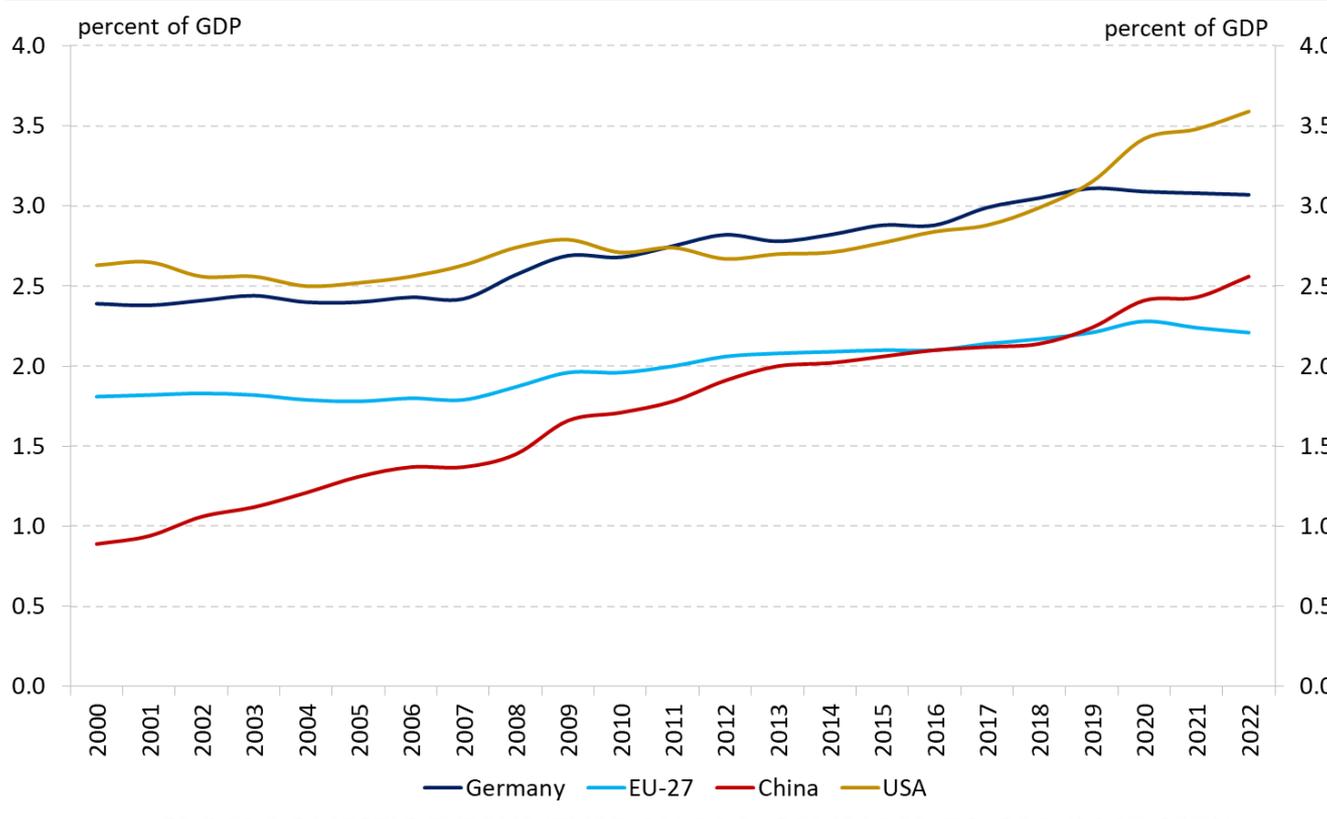
IT IS SIGNIFICANTLY LARGER THAN THE EU, AND THERE ARE SIGNIFICANT DIFFERENCES WITHIN THE EU



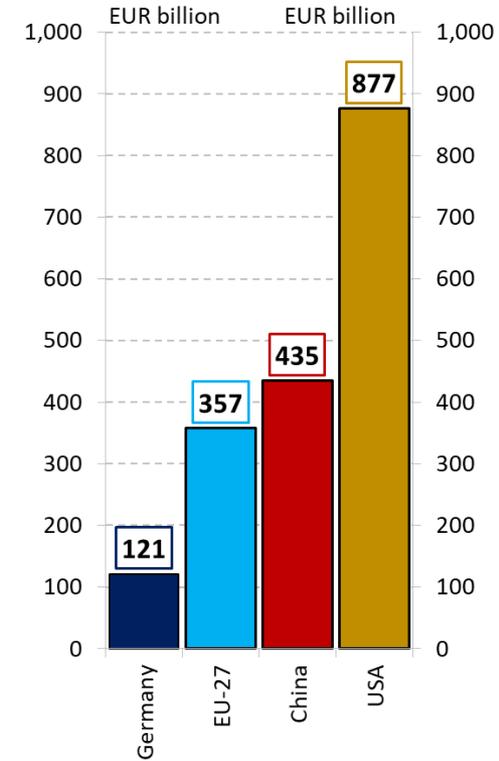
EXPECTED GENERAL GOVERNMENT NET DEFICIT AS PERCENT OF GDP (2024E)

Source: European Commission Autumn forecast, IMF, Ministry for National Economy
 Note: The value for Hungary is the Ministry's estimate.

THE USA HAS MUCH HIGHER R&D INTENSITY THAN THE EU, AND CHINA ALSO OVERTOOK US IN 2019



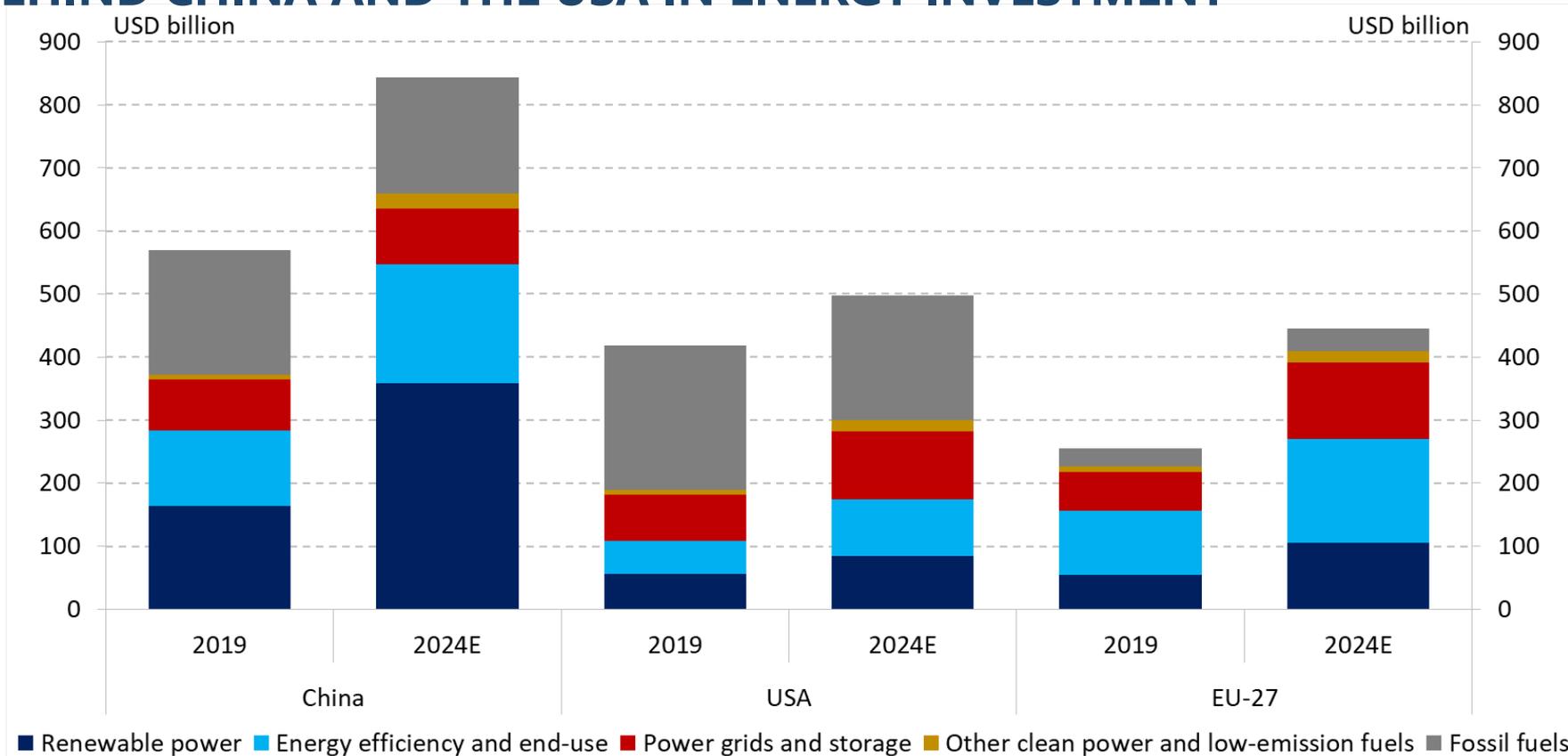
GROSS DOMESTIC EXPENDITURE ON R&D COMPARED TO GDP (2000-2022)



GROSS DOMESTIC EXPENDITURE ON R&D IN EUR BILLION (2022)

Source: Eurostat, OECD

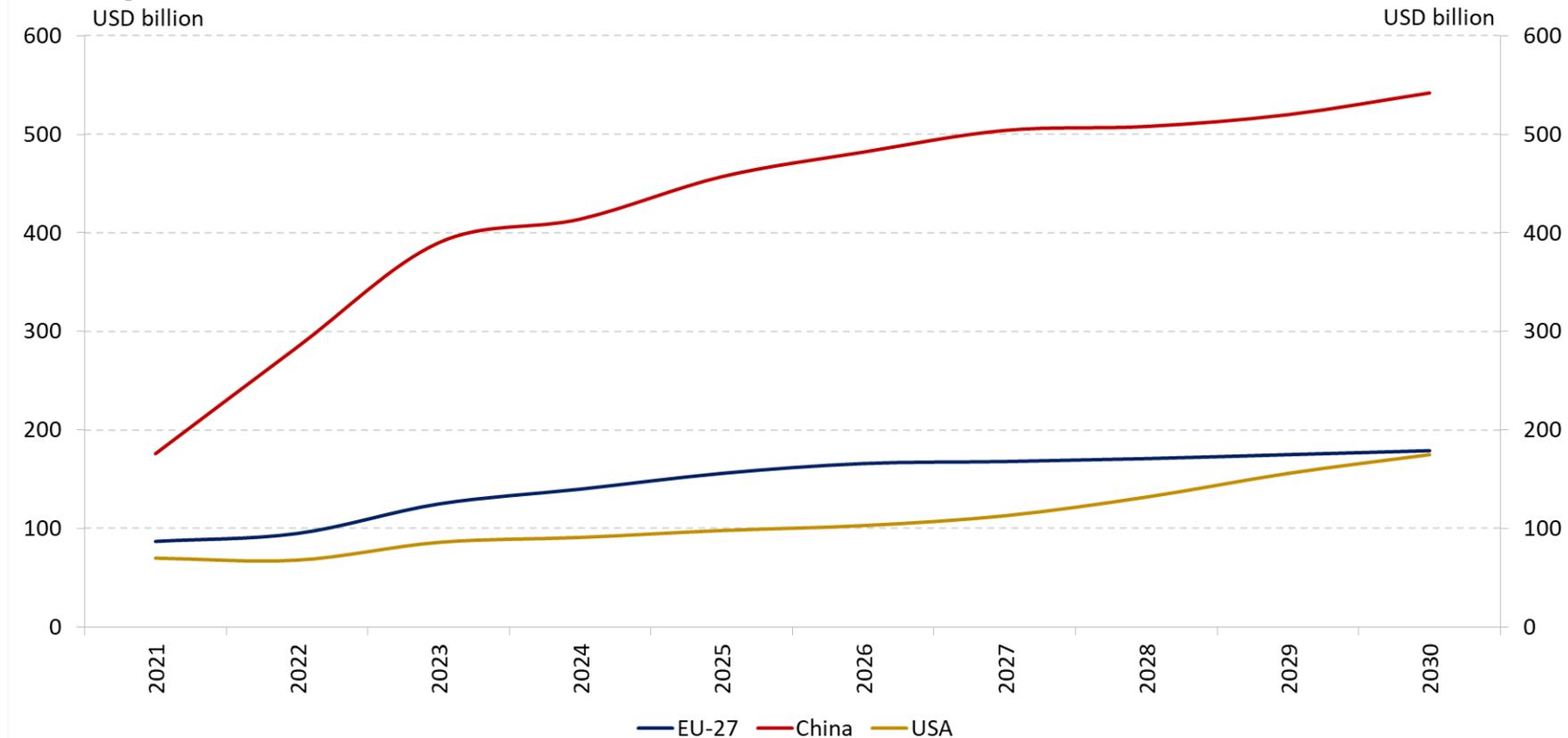
DESPITE THE SIGNIFICANT INCREASE SINCE 2019, THE EU STILL LAGS BEHIND CHINA AND THE USA IN ENERGY INVESTMENT



ANNUAL ENERGY INVESTMENT* IN CHINA, USA, EU (2019-2024E)

Source: IEA Energy Investment 2024
 *Note: data is given in billion real 2023 USD.

CHINA ALREADY INVESTS THREE TIMES AS MUCH IN CLEAN TECH AS THE EU, AND THE USA IS PROJECTED TO CATCH UP BY 2030



CLEAN TECH* INVESTMENTS IN THE EU-27, USA, CHINA (2021-2030E)

Source: Rystad

*Note: Cleantech includes renewables, CCUS, hydrogen, batteries and nuclear energy.

THERE ARE TWO ALTERNATIVE ECONOMIC APPROACHES FOR THE EU:

NO PROTECTIONISM OR TEMPORARY PROTECTIONISM

I. No Protectionism

- 1) Free competition
- 2) Globalisation
- 3) International cooperation



II. Temporary Protectionism

- 1) Tariffs
- 2) State subsidies
- 3) Cheap energy

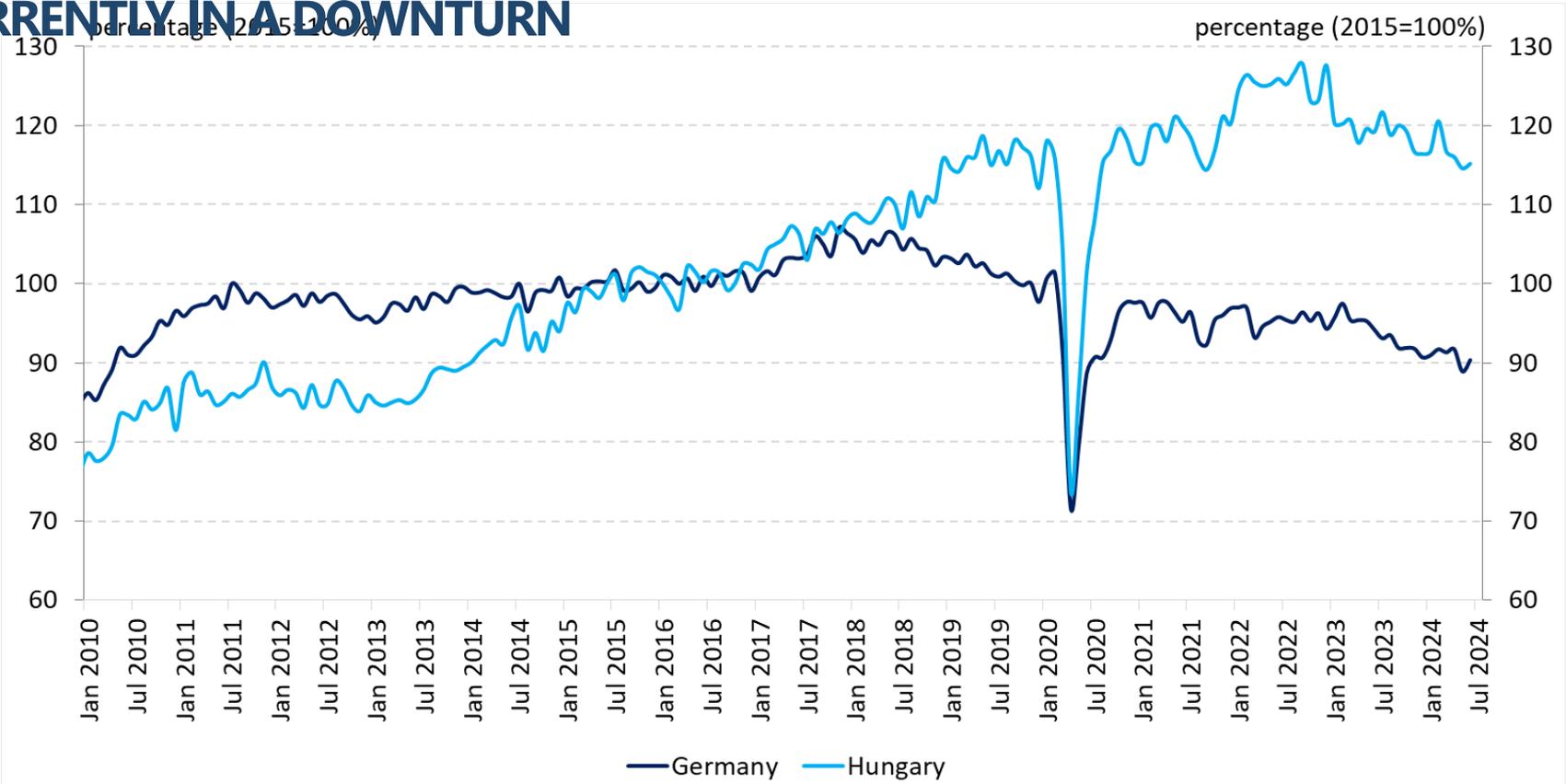
The EU has moved towards temporary protectionism with the introduction of higher tariffs, but the necessary funding for this approach is currently missing.

- On October 30, 2024 the EU introduced additional manufacturer-specific tariffs on top of the current 10 percent on Chinese electric cars. The tariffs range from 7.8 percent to 35.3 percent.



HUNGARY – SOME MACRO INDICATORS

THERE IS A TIGHT CO-MOVEMENT BETWEEN THE GERMAN AND THE HUNGARIAN INDUSTRIAL OUTPUT, BUT THE GERMAN INDUSTRY IS CURRENTLY IN A DOWNTURN



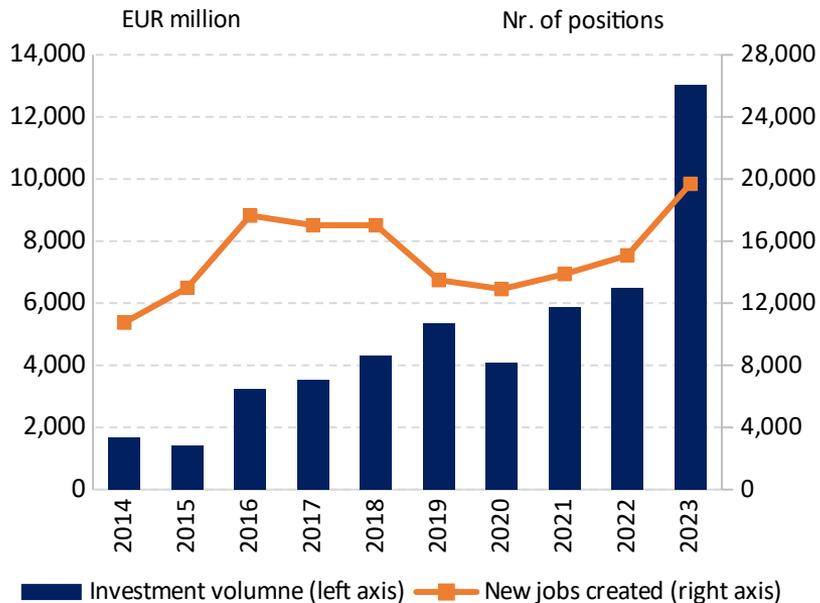
THE DEVELOPMENT OF THE GERMAN AND HUNGARIAN INDUSTRIAL PRODUCTION VOLUME (2010-2024)

Sources: Eurostat

IN 2023 THE TOTAL VOLUME OF FDI AMOUNTED EUR 13 BILLION, AND THESE INVESTMENTS CAN CONTRIBUTE TO THE CREATION OF 19 THOUSAND JOBS



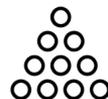
HUNGARY HAS BEEN ATTRACTING A STEADILY GROWING VOLUME OF FDI IN THE LAST 10 YEARS



ANNUAL FDI VOLUME AND NEW JOBS CREATED BY THE INVESTMENTS (2014-2023)

LAST YEAR'S RECORD FDI STRONGLY FACILITATE THE GREEN TRANSITION, PRIMARILY VIA THE AUTOMOTIVE INDUSTRY

2023



INVESTMENT VOLUME
EUR 13 014 million



- **78.3%** electronics and battery sector
- **14.7%** automotive sector
- **5.5%** industrial and food sector



INVESTMENT PROJECTS
209



- **140** energy efficiency and renewable energy related projects;
- **69** large scale FDI projects



JOBS CREATED
19 692



- **10 310** due to Chinese FDI;
- **2 235** due to German FDI;
- **2 137** due to South Korean FDI



HUNGARY – STRATEGY

OUR KEY ECONOMY POLICY GOALS WILL PLAY A CRUCIAL ROLE IN RESTORING ECONOMIC GROWTH



THE HUNGARIAN ECONOMIC GROWTH IS EXPECTED TO EXCEED 3% IN 2025

2025



2026



Affordable housing

Facilitating the construction of 25 thousand apartments per year

Affordable apartment purchase prices and rent prices

Affordable housing loans



Wage convergence based on growth

EUR 1 000 minimal wage by 2028

HUF 1 M (~EUR 2 450) average wage by 2030

The wage rate shall reach that of the EU by 2030



Growing the SME sector

Doubling the average size of domestic SMEs

Doubling the SMEs share in the total export

Doubling lending penetration and digitalization in the SME sector.

HUNGARY'S GOAL IS TO ASSUME A BRIDGE ROLE IN THE FUSION OF WESTERN AND EASTERN AUTOMOTIVE KNOWLEDGE AND TECHNOLOGY



HUNGARY IS AN INVESTMENT AND EXPORT ORIENTED ECONOMY



Our goal is to keep the investment rate close to 30% of the GDP ...

... and to keep FDI-inflow to investment ratio over 20%



Western (mainly European) automotive market players



Eastern (Asian) automotive market players

A century-long accumulation of knowledge and technological advantage in the area of combustion engine vehicles.



World leaders in technologies related to the EV value chain, and control over the necessary raw materials.

The Hungarian economic eco-system, covering wide spectrum of the EV value chain, can elevate Hungary to the most important players of future global automotive industry

IN OUR INDUSTRY STRATEGY, QUALITY-BASED ASPECTS MUST OVERGROW QUANTITY-BASED ASPECTS



HORIZONTÁLIS

EXTENSIVE GROWTH

INTENSIVE GROWTH

Full employment



Higher labor productivity

High investment rate



Smart and green investments

Mechanization and automation



Digitalization and robotization

High export complexity



High domestic added value

Cheap labor and energy



Digital solutions

Much state involvement



Efficient and digital state

The results of extensive (quantity-based) growth must be used to put our economy to a quality-based growth track.

VERTICAL

Original Equipment Manufacturer (OEM)



Audi



Mercedes-Benz



SUZUKI

Tier 1

Tier 1

Tier 1



BOSCH



DELPHI
Automotive Systems



Tier 2

Tier 2

Tier 2

Tier 2

Tier 2



Hungary's embeddedness into international supply chains must be strengthened by the evolution of domestically owned corporation too.

NEW STRATEGIES FOR THE NEW CHALLENGES

Identifying competitiveness-enhancing actions for Hungary's reindustrialization strategy in key sectors - based on extensive corporate consultation and international best practices.

Cross-sectoral, horizontal **examination of Hungarian competitiveness**

Analysis of the Hungarian industry and selected key sectors

Examination of the first three priority sectors, industry consultations. The tasks:

- Mapping **international best practices**
- **Conducting interviews** with industry stakeholders (professional organizations/experts and influential companies)
- **Evaluation** of received **pain points** and **recommendations**
- **Development of prioritized proposals**

126

Corporate interviews

1243

Input from additional market players facilitated through 47 professional organizations

789

PROFESSIONAL RECOMMENDATION

75

KEY RECOMMENDATION

INDUSTRIES ALREADY EXAMINED



AUTOMOTIVE INDUSTRY



FOOD INDUSTRY



HEALTH INDUSTRY



INFORMATION AND COMMUNICATION TECHNOLOGY



RAW MATERIAL PRODUCTION



CREATIVE INDUSTRY

ACTIVITIES PROMOTING THE HUNGARIAN AUTOMOTIVE + BATTERY INDUSTRY

Supporting the Development of Existing Automotive Competencies (such as aluminum chassis, injection molding, cooling technology, etc.)

Establishment of an accredited battery testing, diagnostic, and certification vertical

Creation of a battery competency center.

Establishment of an Automotive Transformation Cluster.

Supporting Hungarian SMEs in obtaining the necessary certifications

Providing financing for Hungarian automotive and battery industry suppliers

Establishing battery and manufacturing waste recycling capacities

Deployment of grid storage systems



Ministry for National Economy

Thank you for your attention!

Cluster Managers Role in Cross-Cluster Green and Digital Transition Collaboration Budapest Partner Meeting



MINISTRY OF CULTURE AND
INNOVATION

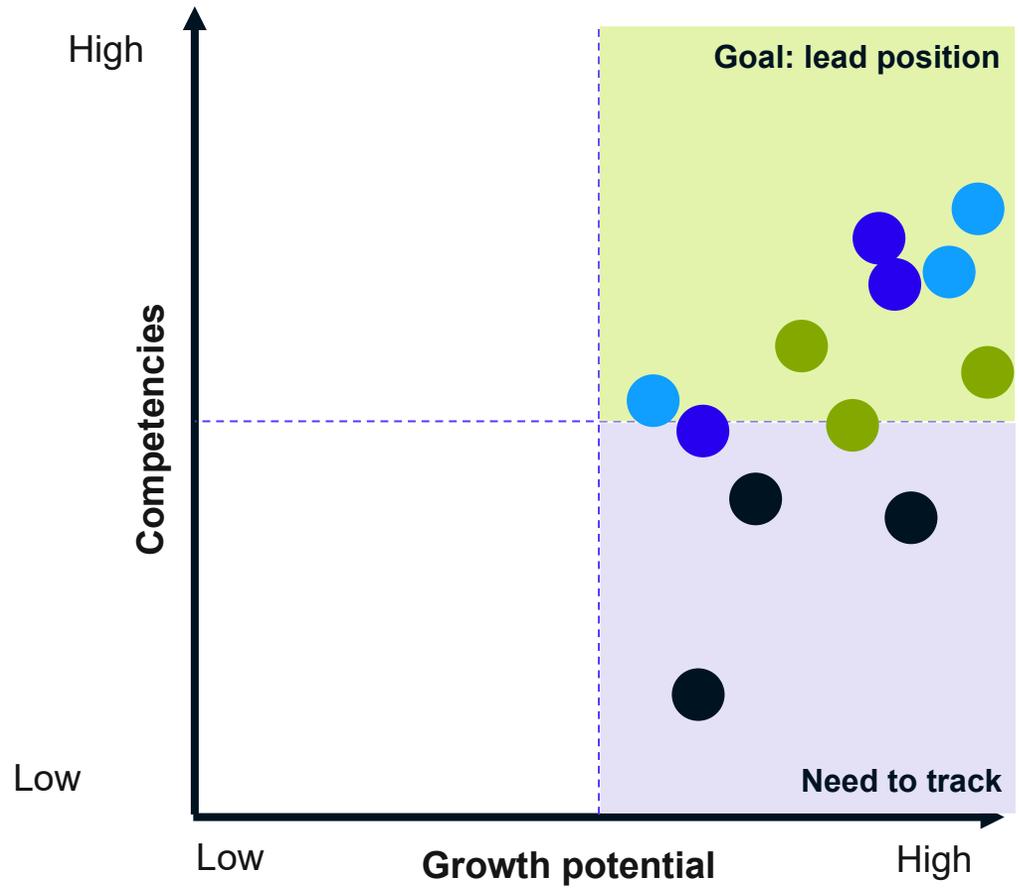
Katalin Szmollár

Head of Department for Innovation and Startups

February 4th, 2025



Deep Tech focus areas in the Hungarian research and innovation strategy



1. Digital transformation

- Artificial intelligence
- Big data and network analysis
- Autonomous vehicles
- Quantum technology

2. Healthy living

- Biotechnology and pharmaceutical research
- Major public diseases (cancer, nerve, cardiovascular, viruses)
- Life and health preservation

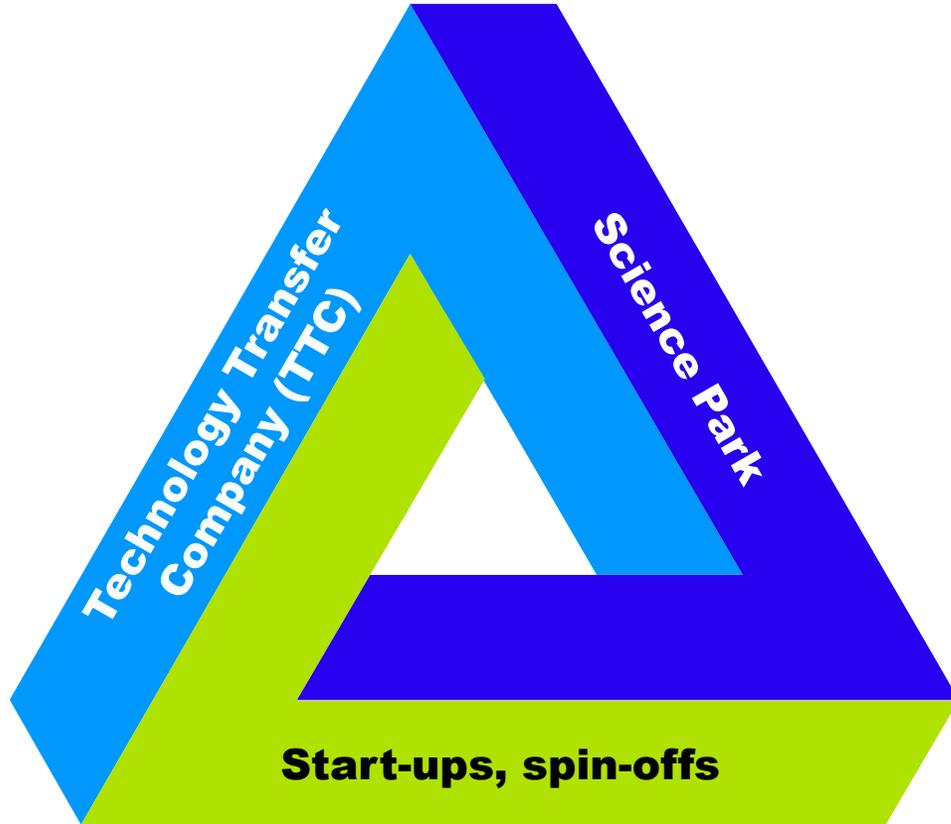
3. Green transition

- Energy production and storage
- Agricultural technologies
- Climate change and water management technologies

+1: Security and safety

- Dual use technologies
- Cyber security
- Space exploration and space industry

Connecting universities and industries



Technology Transfer Company (TTC)

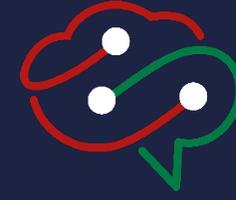
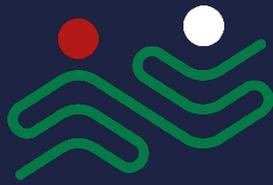
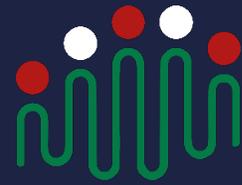
- **Owned by the universities**
- **Main goal:** coordination and management of the University's intellectual properties (IP) and technology transfer activities
- Technology commercialization

Science Park

- **Main goal:** the more efficient economic utilization of scientific results and the acceleration of innovation.
- The **physical space of cooperation** between the university and the corporate sector.

Start-ups, spin-offs

- **Strong technological focus** based on the University's scientific strengths



Thank you for your
attention!

Situation assessment

- ▶ **The labour-intensive phase of the Hungarian economy is over, and we need to move to a knowledge- and technology-intensive phase**
- ▶ **Knowledge-based decision-making** will determine which businesses **win the the 2020s**
- ▶ Business organisations and chambers of commerce also have the task and **responsibility to monitor the structural changes in the economy**

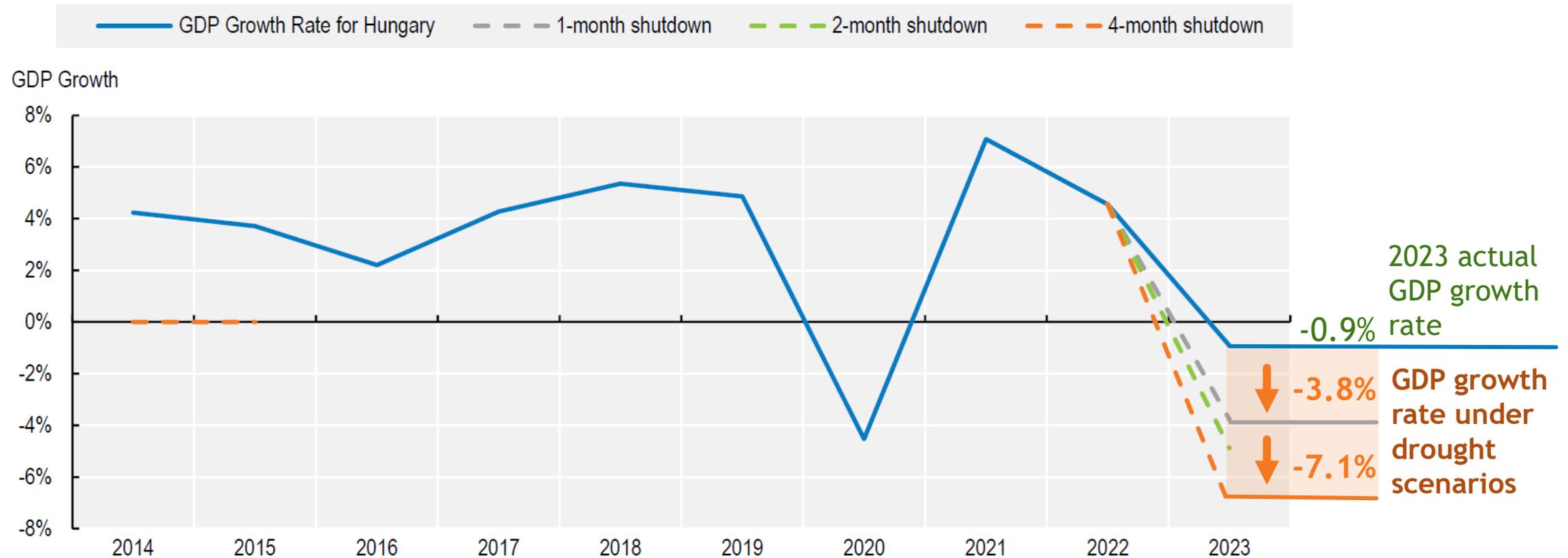
We need to move to a knowledge-based thinking model

The economic imperative of the green and digital transition

- ▶ Today, one of the biggest challenges for cluster leaders is the **Green and Digital Transition**, which stands at the intersection of environmental preservation, European-level competitiveness, and long-term economic sustainability.
- ▶ This directly impacts Hungary's economic resilience and economic stability.
- ▶ For example, in Hungary, **43% of corporate lending** (EUR 24.4B) is **tied to water-dependent sectors**, making businesses vulnerable to resource shortages. (OECD, 2024)
- ▶ Water stress may affect **key industries like agriculture, manufacturing, and real estate**, leading to higher costs, supply chain disruptions, and financial instability.
- ▶ **Droughts** and resource constraints **weaken domestic and regional economic performance**, creating risks for companies, investors, and financial institutions.

An example - Economic risk assessment: The impact of drought scenarios on the Hungarian economy

Percentage reduction in GDP growth under three drought scenarios



Most impacted sectors:

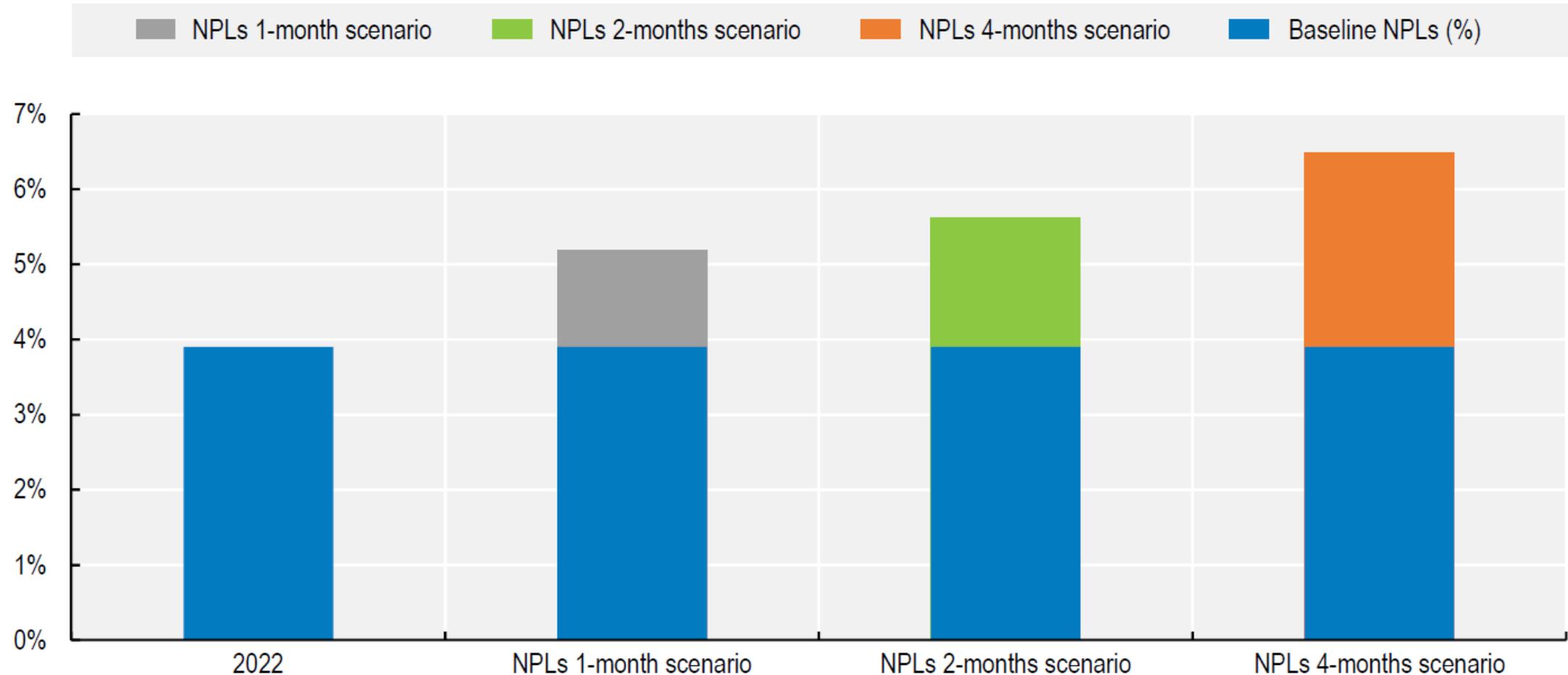
Manufacturing

Agriculture, Forestry, and Fishing

Energy (Nuclear & Biofuels)

The financial implications of the drought scenarios

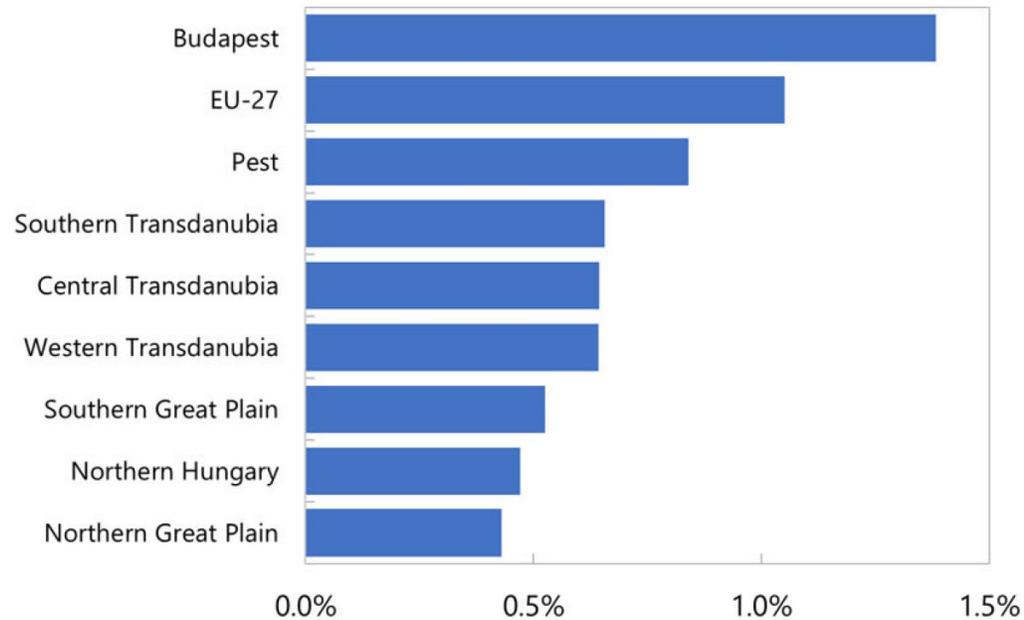
Ratio of non-performing loans in the Hungarian banking system under three drought scenarios



Source: OECD ENV/WKP(2024)13

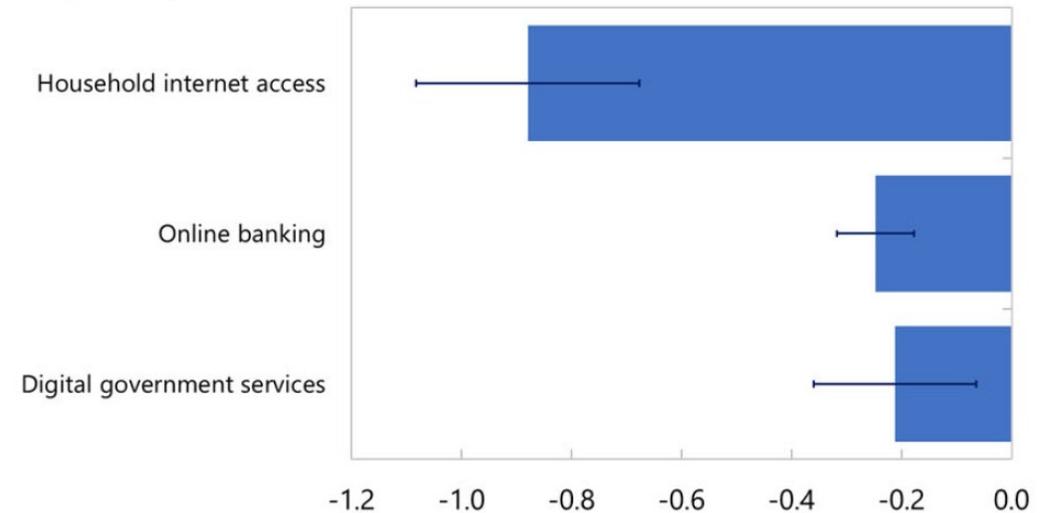
Regional disparities in AI-induced productivity

Model estimates of AI-induced labor productivity (annualized growth rate)



Model results suggest that **AI adoption may widen regional productivity gaps** in Hungary, as higher-skilled regions benefit more, reinforcing existing income disparities.

Impact of digital access on regional disparities (percent)



Increased investment in **digital infrastructure** (e.g., internet access and digitized public services) can **help narrow the income gap**.

Changing models in the catching-up process

- ▶ Over the last thirty to forty years, multinational companies have typically led the adaptation process.
- ▶ In the age of the **knowledge economy**, the role of the **wider and smaller community in economic development**, including **entrepreneurship**, is growing.
- ▶ Community, local culture, traditions in line with the knowledge economy create a market ecosystem, and participation in it is the **basis for entrepreneurial success**. It provides opportunities for growth, development and entry into international markets.
- ▶ And **community development is created by** the value creation of the entrepreneur.

How does the entrepreneur create value?

István Széchenyi - Credit

- ▶ *...we need a moral capitalism, which builds one of its pillars on the freedom of enterprise and the market,*
- ▶ *while the other, the ethical pillar, is based on responsibility, the safeguarding of public morals, the discipline of work, respect for individual fulfilment, and thrift, diligence and credibility...*

Who are the winning businesses of the past decade?

1) Investing in knowledge

- ▶ The value of technology and know-how (intangible assets) on their balance sheet is six times the industry average.

2) Actively seeking export opportunities

- ▶ They not only respond to foreign requests, but also have a strategy to conquer foreign markets (before 2010, only 25% of active exporters had dedicated staff, now the figure is 55%, and 67% employ dedicated staff for R&D, typically with a higher education qualification).

3) Dedicated workforce for growth support processes

- ▶ Product and process development, as well as external market activities, have an established set of responsibilities within the company.

4) Close links with higher education/specialised training

- ▶ They are involved in dual training or work with universities on EU research and development proposals and other research programmes.

5) Pay for knowledge accumulated within the company

- ▶ Median monthly personnel costs per employee in the winning companies were 70 percent higher than the industry average (industry average HUF 372,000, winners HUF 633,000).

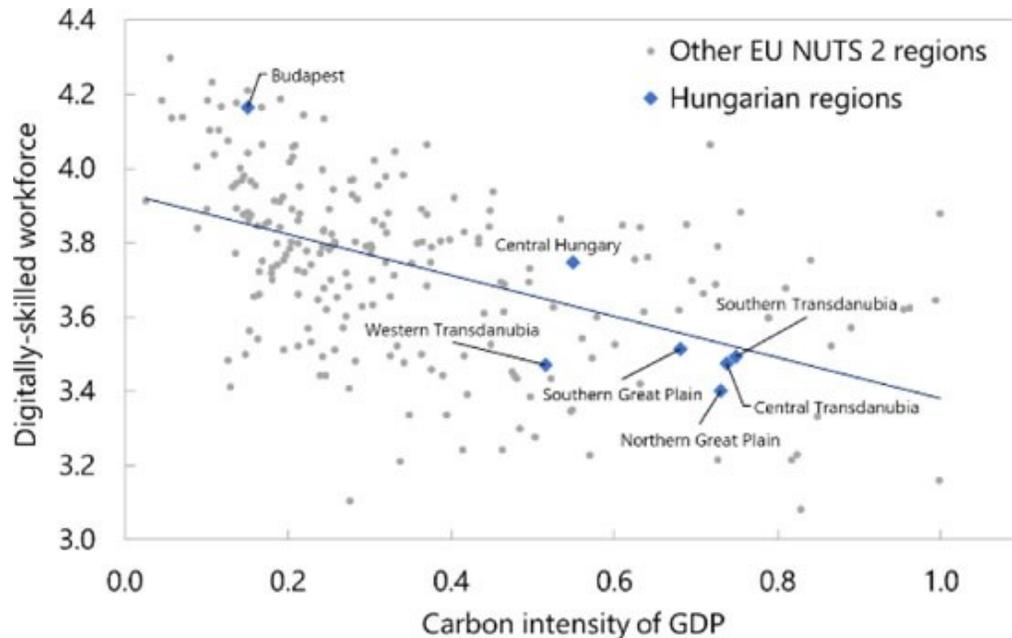
6) Trust in the future and tradition

- ▶ The leader has a positive vision of the future, sees where he or she will be in one, three or five years. their business will be.

Thank you for your attention!

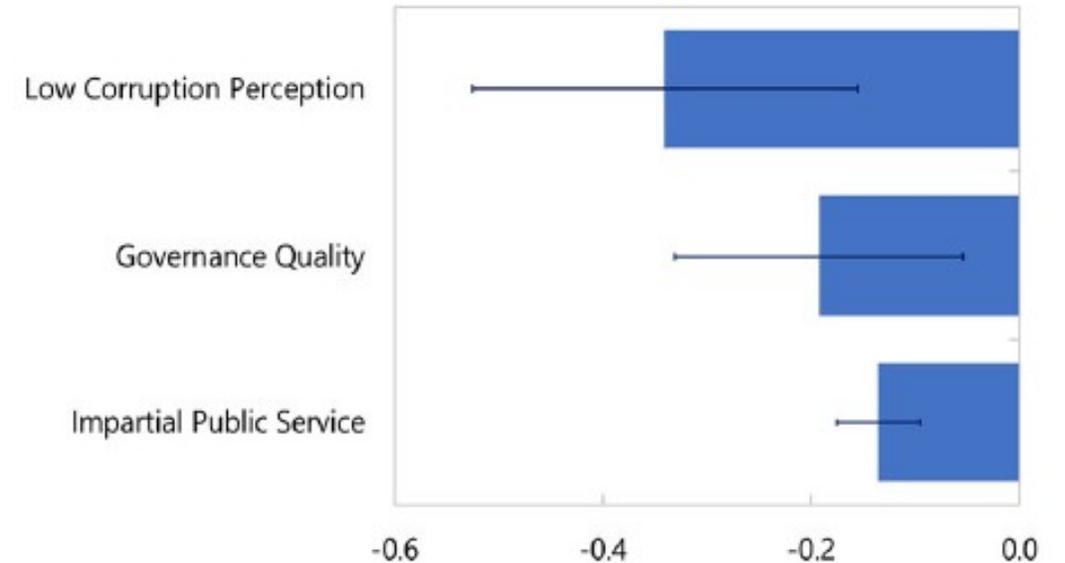
Twin transition and the dual challenge: Regional disparities

Digital and carbon intensities across EU NUTS 2 regions



Limited digitalization in Hungary's poorer regions **reinforces reliance on carbon-intensive industries**, creating a **dual challenge**: low-tech economies lag in productivity while facing greater structural barriers to green transition.

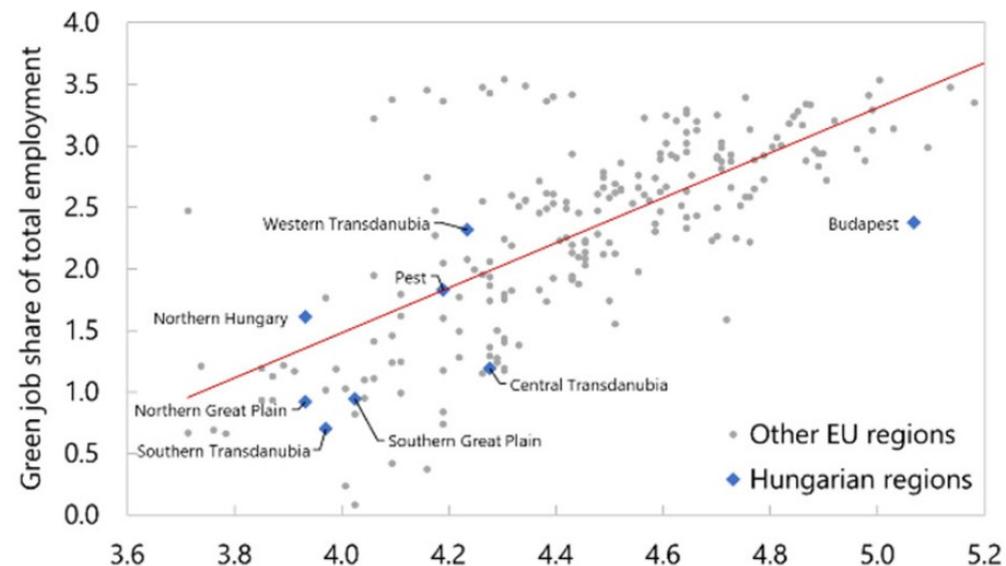
Impact of governance reforms on regional disparities (percent)



Research suggests that **good governance**—low corruption, quality institutions, and impartial public services—can **significantly reduce disparities** and promote regional income convergence.

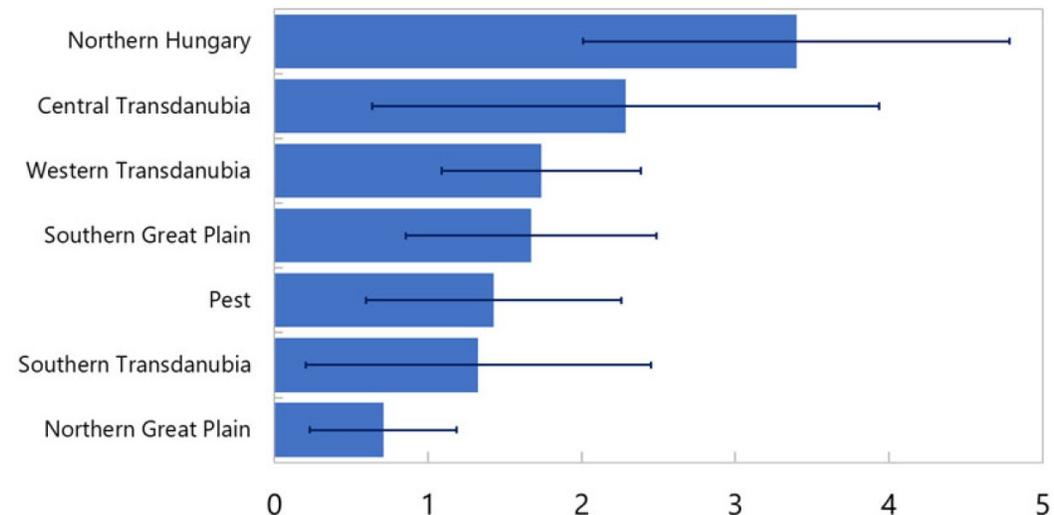
Similar regional differences emerge in green job shares

Correlation between green jobs and regional income (log of each variable)



In Hungary, higher-income regions benefit more from the green transition, as green jobs are concentrated in skilled labor markets, potentially widening regional income disparities.

Impact of training and reskilling on green employment (percent)



Reskilling and private R&D investment can help reduce disparities in green employment, while targeted policies are essential to prevent the digital and green transitions from widening regional inequalities in Hungary.

Hungarians' awareness of climate adaptation needs



87%

believe climate
adaptation
investments create
jobs and boost the
economy



64%

recognize they will
need to adapt their
lifestyle due to
climate change



46%

say climate
adaptation should be
a national priority

Unlocking Transformation: The Hungarian Cluster Ecosystem's Role in Green and Digital Transitions

Peter Keller – Director

National Development Centre – Managing Authority for
Economic Development Programmes

Timeline of the Hungarian cluster history

First cluster established in Hungary

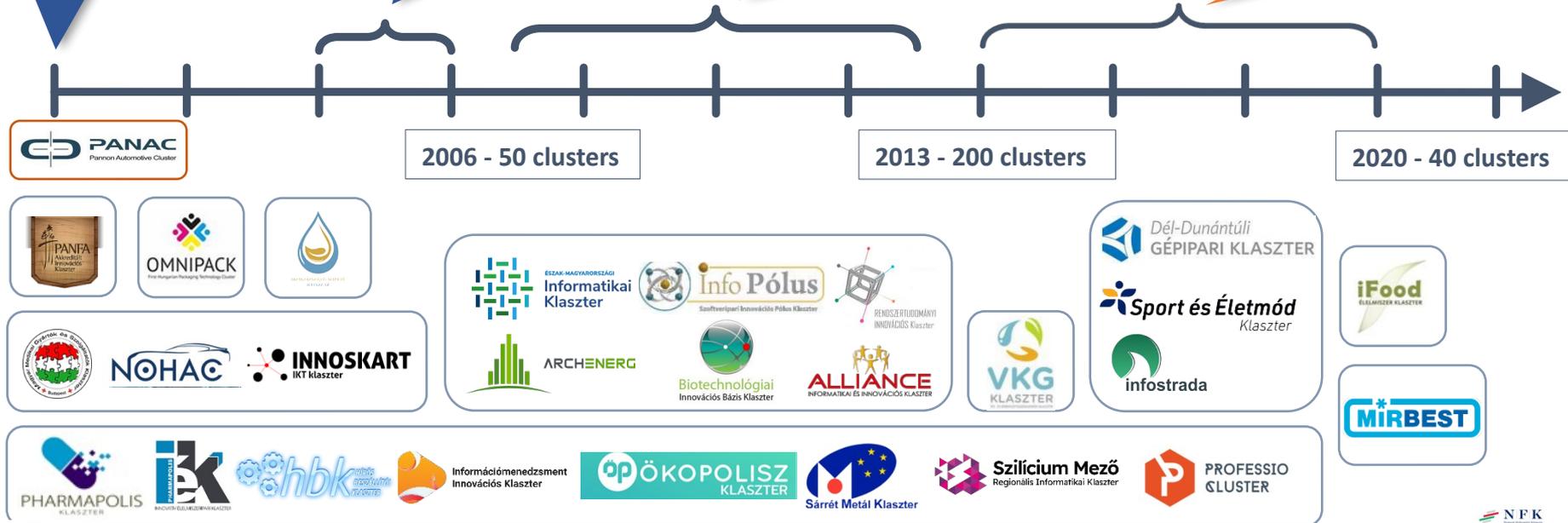
- Pannon Automotive Cluster (PANAC)

The ECOP (2004-06) has already given priority to support the development of business networks.

2007-2013: long-term consistent cluster policy possible

- Cluster accreditation
- 3 stage model
- 200 + clusters set up

2014-2020: consolidation period – EDIOP – internationalisation – services of the cluster management



Timing

Stagnation – Re-building trust

2013 - 200 clusters

- 34 certified clusters
- Members: 1261
- Average number of members: 37
- Total income: 12bn EUR

Stagnating
membership

2022 - 40 klaszter

- 26 certified clusters
- Members: 1028
- Average number of members: 39
- Total income: 9bn EUR

Trust

Composition of accredited clusters – 2023



1300 members



1153 enterprises



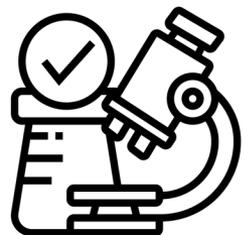
53 universities



10 chambers



9 municipalities



15 research institutes



5 hospitals



2 trustee

Economic power of cluster member companies - 2022.



Number of enterprises:

944; 0,4% of total enterprises (at least 1 employee)



Turnover:

3 407 bn HUF



Export:

2 091 bn HUF



Value added:

934 bn HUF– 2%



Employees

68 831



Paid out wages

501 bn HUF

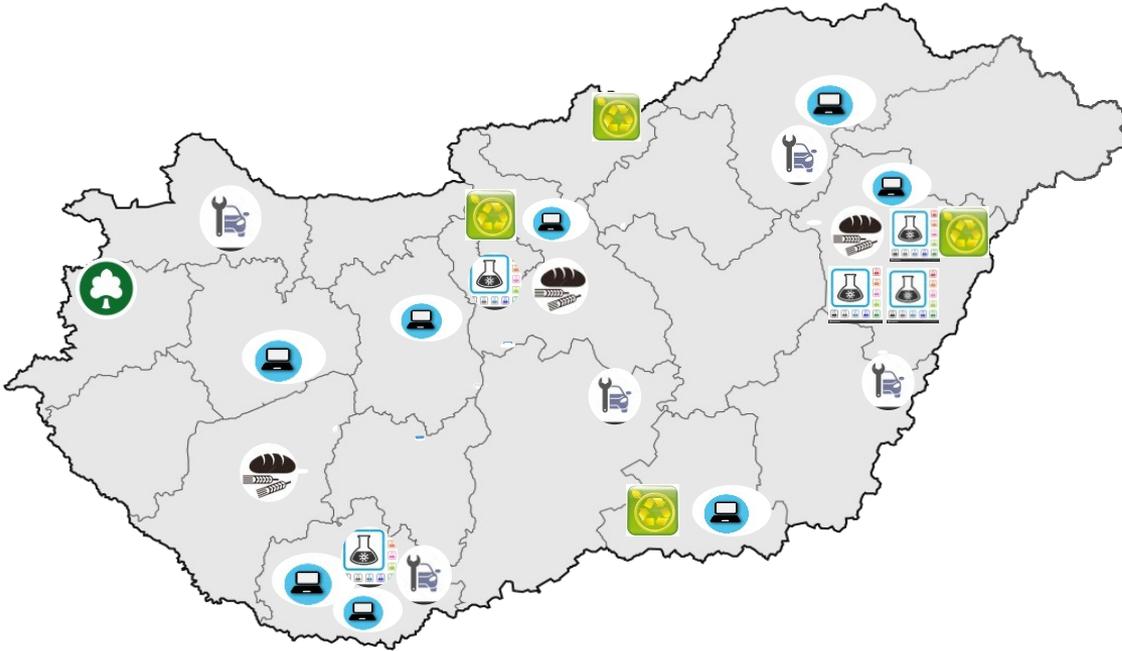


RDI investment

54 bn HUF

Accredited Clusters in Hungary

Cluster Member



 ICT	8	400
 Automotive industry	5	250
 Healthcare, biotech	5	200
 Environment/Packaging	4	150
 Wood/furniture	1	95
 Food	3	175
<hr/>		
	26	~1300

There are about 15 more non-accredited clusters working in NDC's field of vision in Hungary

Development of the Cluster Strategy



What was essential at a strategy?

Clear and well defined goals and concrete tools



Defined goals

1. There should be at least **1 cooperation with outstanding innovation capacity and international visibility** in Hungary's main **key industries**, bringing together the main players in the (sub)industry

2. By 2030, **10% of the total gross domestic value added** will be generated by **cooperating** economic players

Tools for reaching the main goals

A photograph of a business meeting where several people are high-fiving each other, indicating a successful outcome or celebration.

**To strengthen the culture
of motivation and
cooperation**

A close-up photograph of two business people shaking hands, symbolizing agreement, partnership, or cooperation.

**To make business
cooperation attractive**

A graphic illustration of a glowing lightbulb surrounded by various colorful icons representing innovation, technology, and business concepts like 'Creative', 'Idea', and 'Success'.

**To promote innovation
cooperation**

A dark blue horizontal bar with a background of a stack of papers and documents, suggesting policy and regulatory frameworks.

**To create the appropriate policy and
regulatory environment**

Cluster Strategy is not a competitor of other governmental strategies



Digitalisation
Clusters can help the dissemination of the modern digital solutions.

Sustainability
As a result of the cooperation clusters can contribute in reaching climate goals.

Increasing potential
Clusters can provide the value creating potential of the high growth companies.

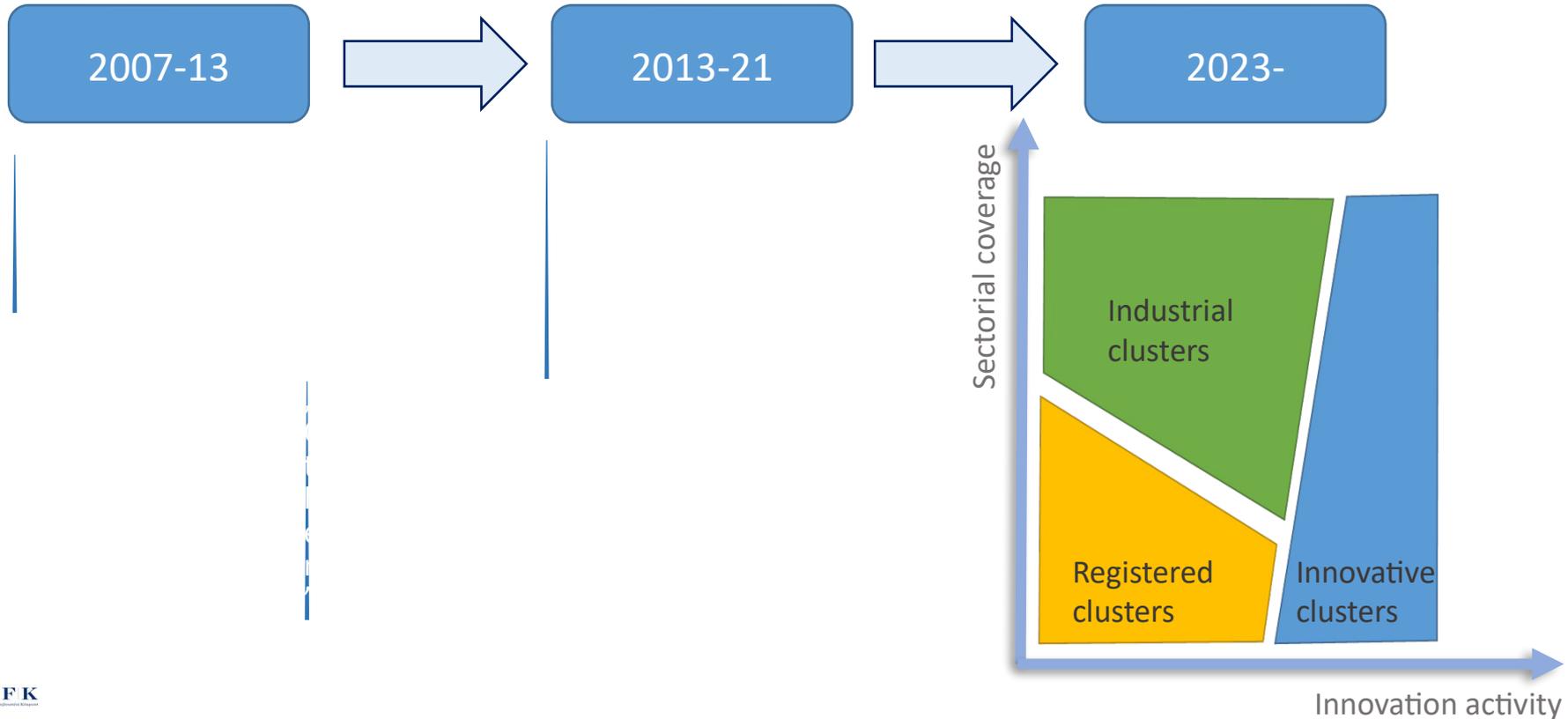
Export potential
Clusters can increase the export potential of the SME sector.

Knowledge transfer
Clusters contribute in increasing knowledge sharing.

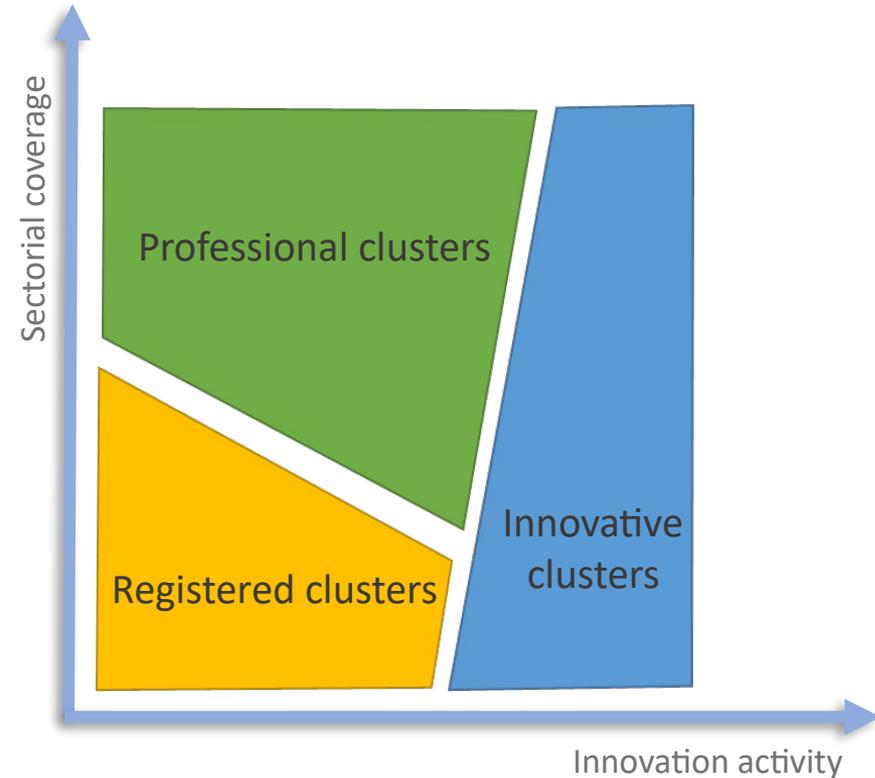
Emerging industries
Clusters must cover the priorities of S3 and Industry Policy.

Re-defining the different type of clusters

Provide tailor-made services



Main features of different types of clusters



Innovative clusters:

- **Mission:** to promote innovation cooperation
- Frontrunner companies in the sectors with the greatest growth potential
- At least national level appearance
- High innovative potential, existing cooperation in R&I
- International visibility

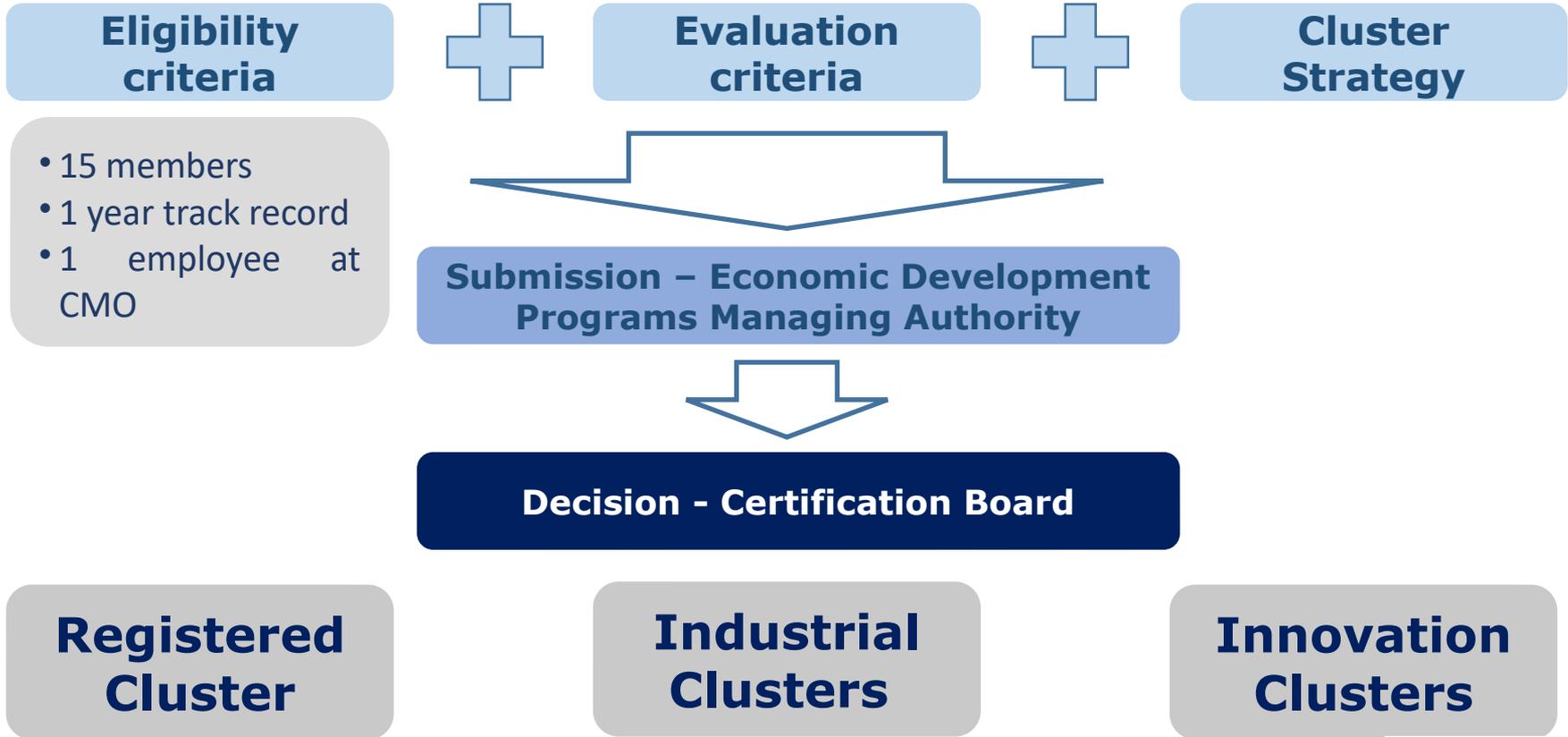
Professional clusters:

- **Mission:** to make business cooperation attractive
- (Local) players of in the sectors with the greatest growth potential
- Strong business driven cooperation
- Regional/ national level appearance (local specifics)
- Export based international activities

Registered clusters:

- **Mission:** to strengthen the culture of motivation and cooperation
- Fulfil of some basic requirements
- Acknowledged as a cluster

3 level Cluster Evaluation System



Evaluation criteria – score board - 1

I.- Stability

- Operational track record of the cluster
- Growth Potential of the membership
- Financial resources of CMO
- Management stability

II.- Cluster Activity

- Cluster Activity
- Press/Media Appearances
- Services provided by the management
- Inter-cluster Cooperation

III.- International Cooperation

- International presence (TCI, ECCP, ESCA) international industry membership
- International Business Activity
- International Cooperation
- International Projects

Evaluation criteria – score board - 2

IV.- Business Potential

- Number of cluster members (membership fee)
- Export Potential
- Business Cooperation among members
- **Members Using Digital Solutions**
- **Percentage of members participating in green/cyclical economy**

V.- Innovation Cooperation

- Marketable cooperative innovation projects
- R&D activity of cluster members
- Number of Intellectual Property
- Cooperation with research sector
- Private Capital involvement

Policy change – Green and Digital

Members Using Digital Solutions

- Percentage of member companies in the cluster using advanced digital solutions

Percentage of members participating in green/cyclical economy

- The number of members that have undertaken or are undertaking mandatory or voluntary reporting under the domestic ESG law
- number of members with verified green financing (loan or bond) above HUF 50 million.

Next steps after cluster certification

Decision – certification – 3 output

**Registered
Cluster**

**Industrial
Clusters**

**Innovation
Clusters**

Mentoring

Dedicated Cluster management call - 2025 Q3

**Members of the certificated cluster awards
extra point at SME, RDI development call**

Main actions of the Strategy

Knowledge transfer among clusters

Cluster Manager Clubs, Cluster Conference, Cluster week, mentoring, international study visits

Continues

Rewarding cluster membership

Cluster membership is an advantage at SME competitiveness, R&D and cooperation projects

Introduced Q2 2021

Renewal of the website

Informative platform, administrative interface and up-to-date database

Planned Q2 2025

Renewal of accreditation system

- Registered
- Professional & Innovative

Planned Q1 2025

Cluster trademark

Indicator of quality of cluster products&services for better market visibility

Planned 2025

Developing the business competence of CMOs

Supporting CMOs

Planned 2025-29

Main challenges of the Hungarian Cluster ecosystem

Still fragmented cluster landscape:

- Parallel cluster initiatives in the same industry (ICT, automotive, energy)
- There are exception: wood, medical devices

Lack of critical mass – 30-40 members in average

- Lack of financial resources to enlarge the management team

Less international visibility – favourable trends have started

Study Visit – Mini Cluster Expo



13:30-14:45 Lunch Break