

Sustainable **S**mart **S**pecialisation for the **R**e-opening
of **I**ndustrial **S**ites in the **D**anube Region (RIS4Danu)

Results of regional analysis: Hajdú-Bihar County

Workshops in March & May, 2023



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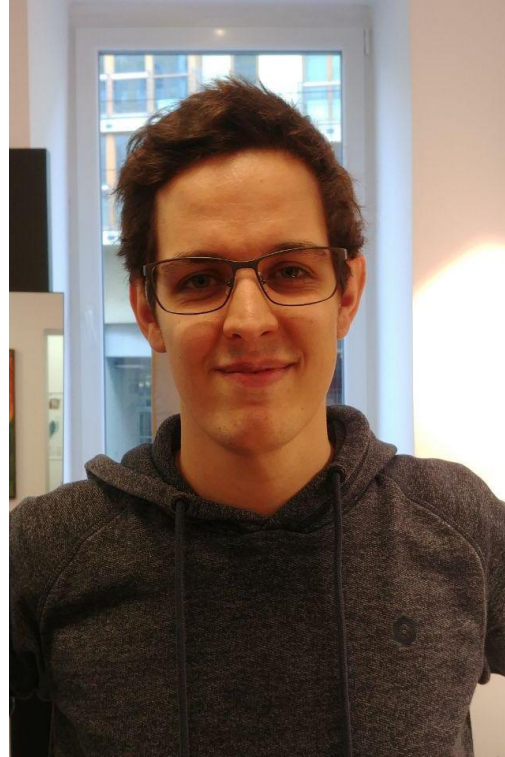


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The Team behind the analysis



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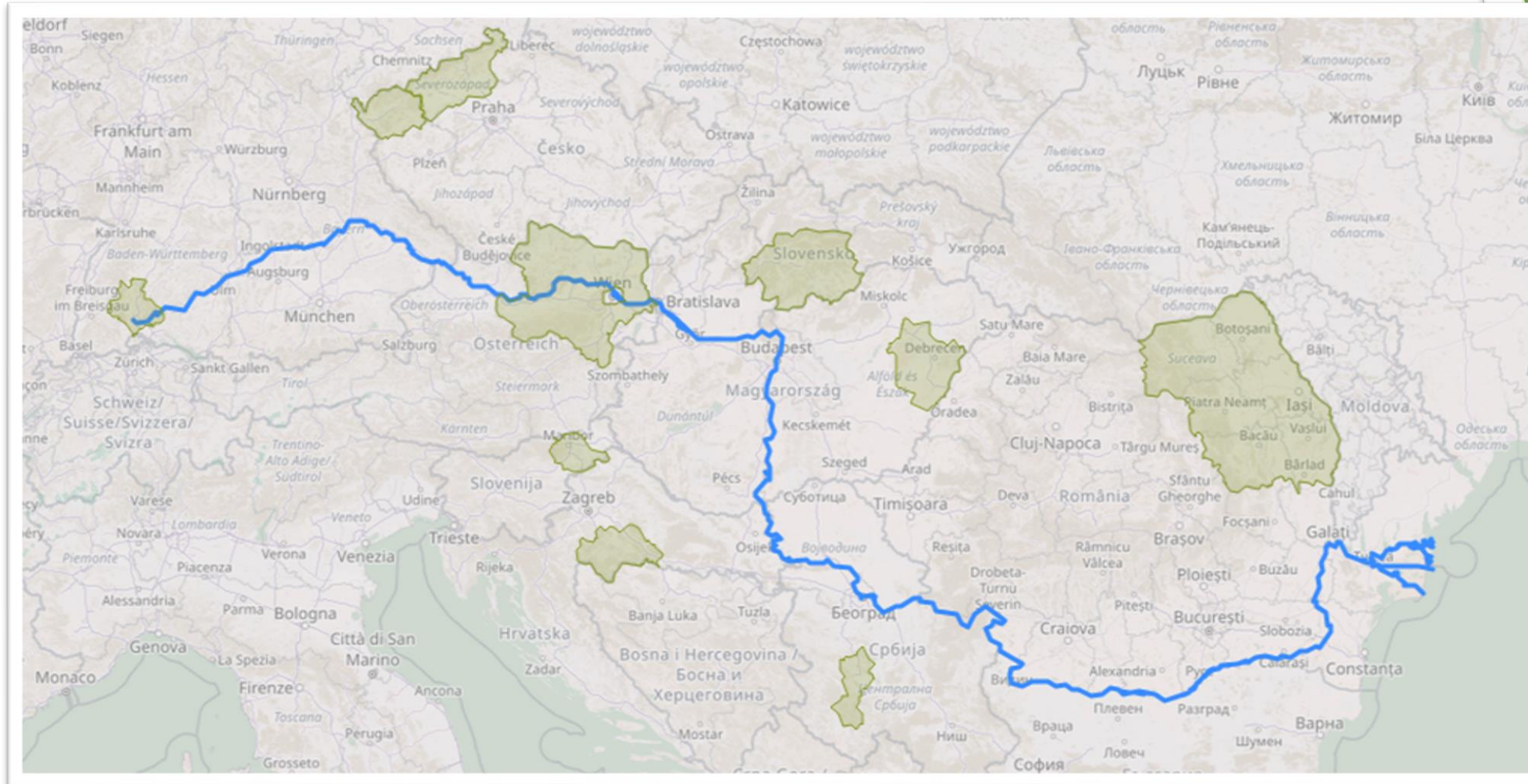
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RIS4Danu: Setting the scene



Source: RIS4Danu Website



Conceptual background



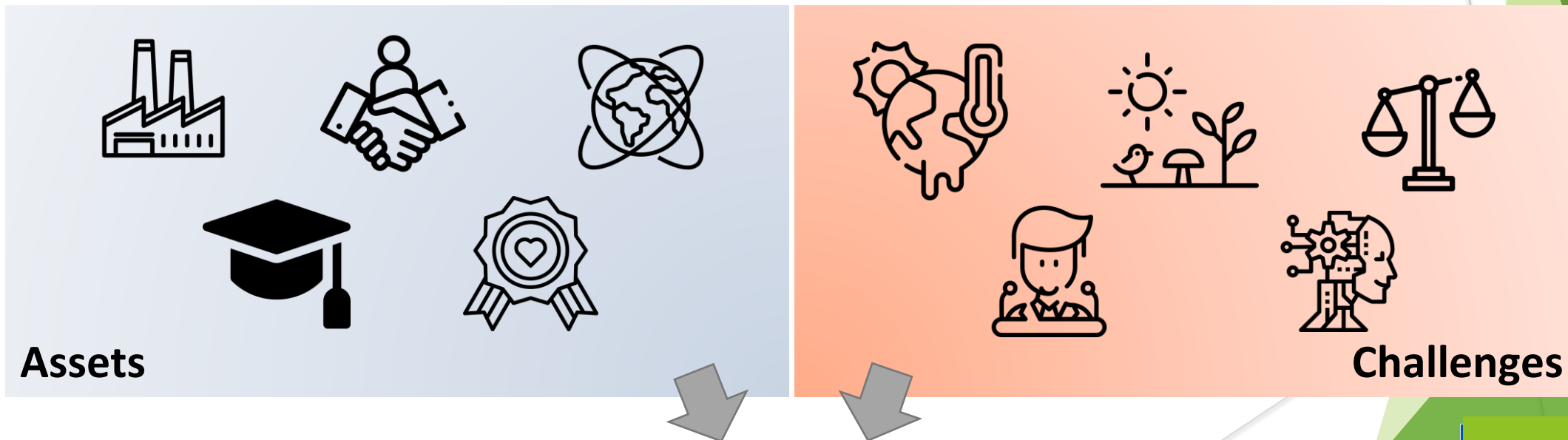
A normative turn in regional innovation policies (RIPs)

- ▶ RIPs have come along way → from “one size fits all” approaches to “building on each region’s strengths, competitive advantage and potential for excellence” (European Commission, 2014) → Smart specialization as one key outcome of this development



A normative turn in regional innovation policies (RIPs)

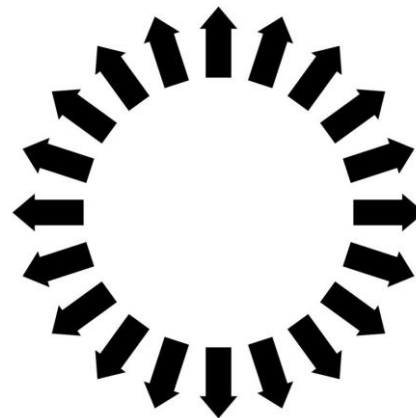
- ▶ RIPs in an era of grand societal challenges --> normativity & contribution to addressing these challenges --> “Third wave of innovation policy” (Schot & Steinmüller, 2018)
- ▶ Not only assets differ, but also challenges and their regional manifestations



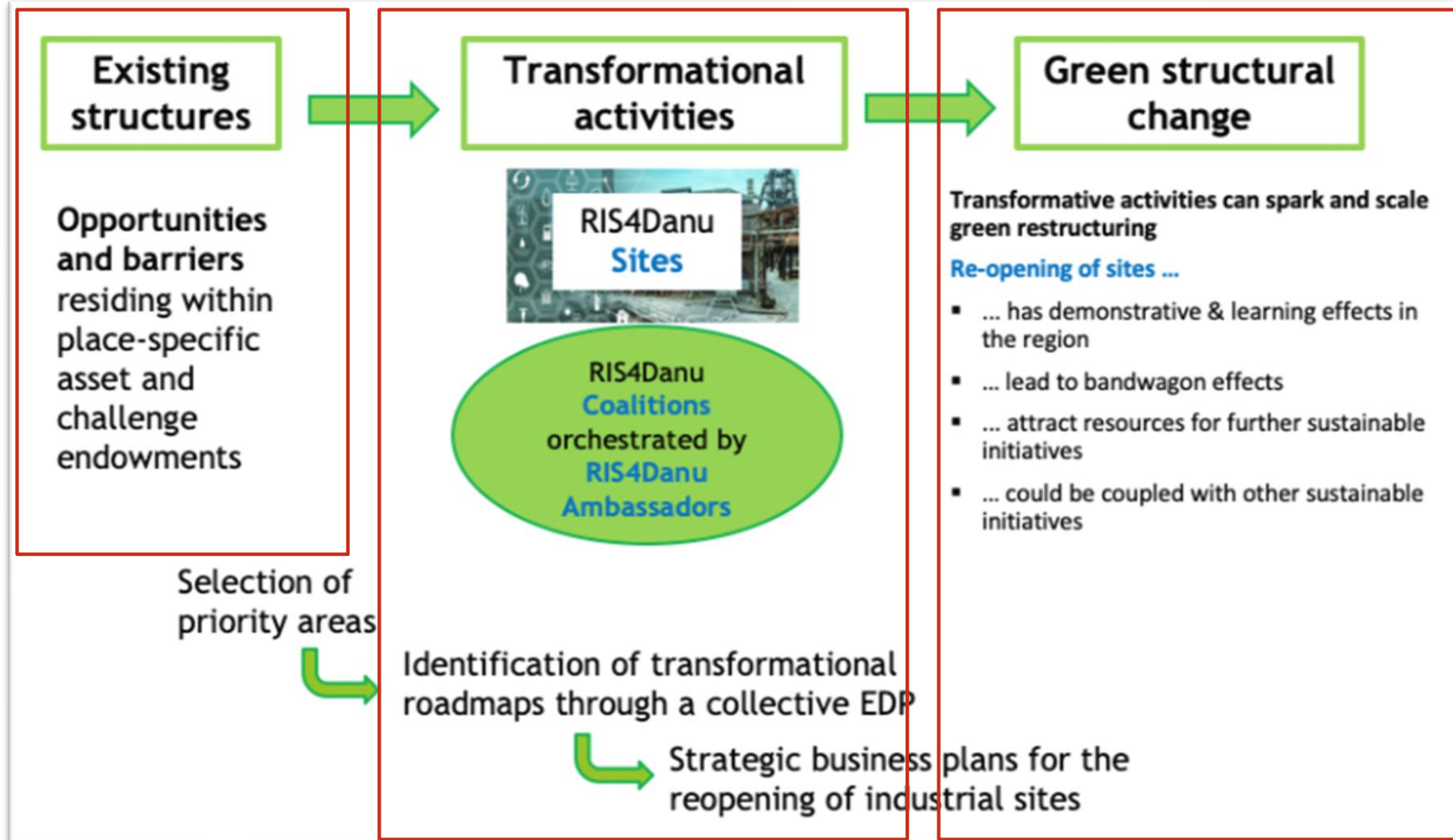
Opportunities for transformative activities emerging for the re-opening of industrial sites

Industrial sites as platforms for regional change

- ▶ Reopening of **closed industrial sites** → “anchors” for transformative change as an opportunity to bring **regional stakeholders together** in order to identify and discuss challenges and potential solutions
- ▶ From “small wins” to larger impact via “propelling mechanisms” (Termeer & Dewulf, 2019)
 - ▶ Mechanism I: “Learning by Doing”
 - ▶ Mechanism II: “Logic of attraction”
 - ▶ Mechanism III: “Bandwagon effects”
 - ▶ Mechanism IV: “Coupling”



Conceptual background: Summary



Source: Tripl et al., 2022



Disclaimers

- ▶ Challenges are big & beyond the reopening of this single site → **pragmatic, positive vision for a sustainable future**
- ▶ We are not going to present roadmaps or solutions, but **potential starting points for an Open Entrepreneurial Discovery Process**
- ▶ RIS4Danu: **2 years, 11 regions**



Regional analysis: Hajdú-Bihar County

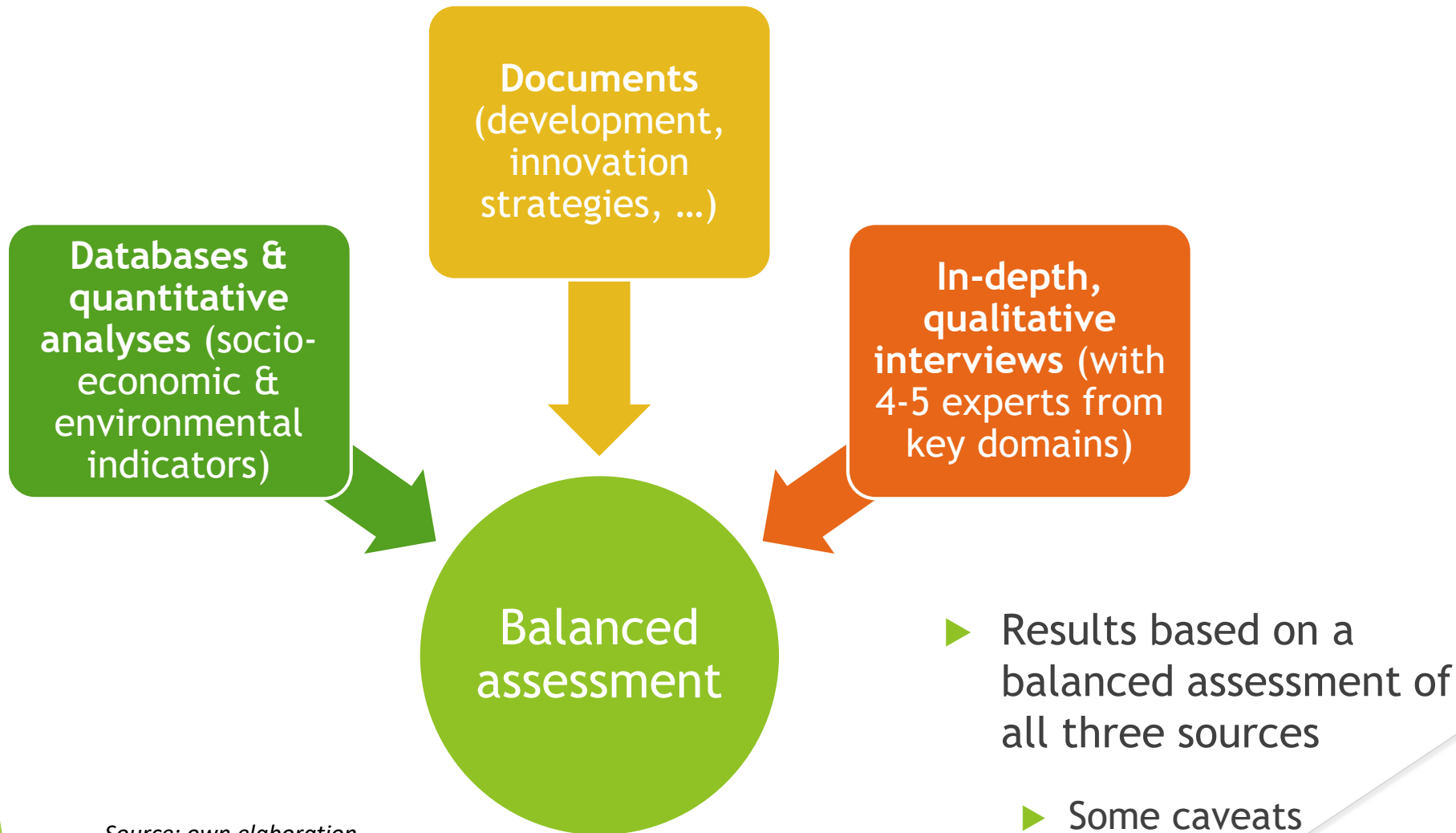


Content of Analysis

- I. Methods
- II. General regional conditions & innovation strategies
- III. Regional Assets
- IV. Regional Challenges
- V. Conclusion



Methods



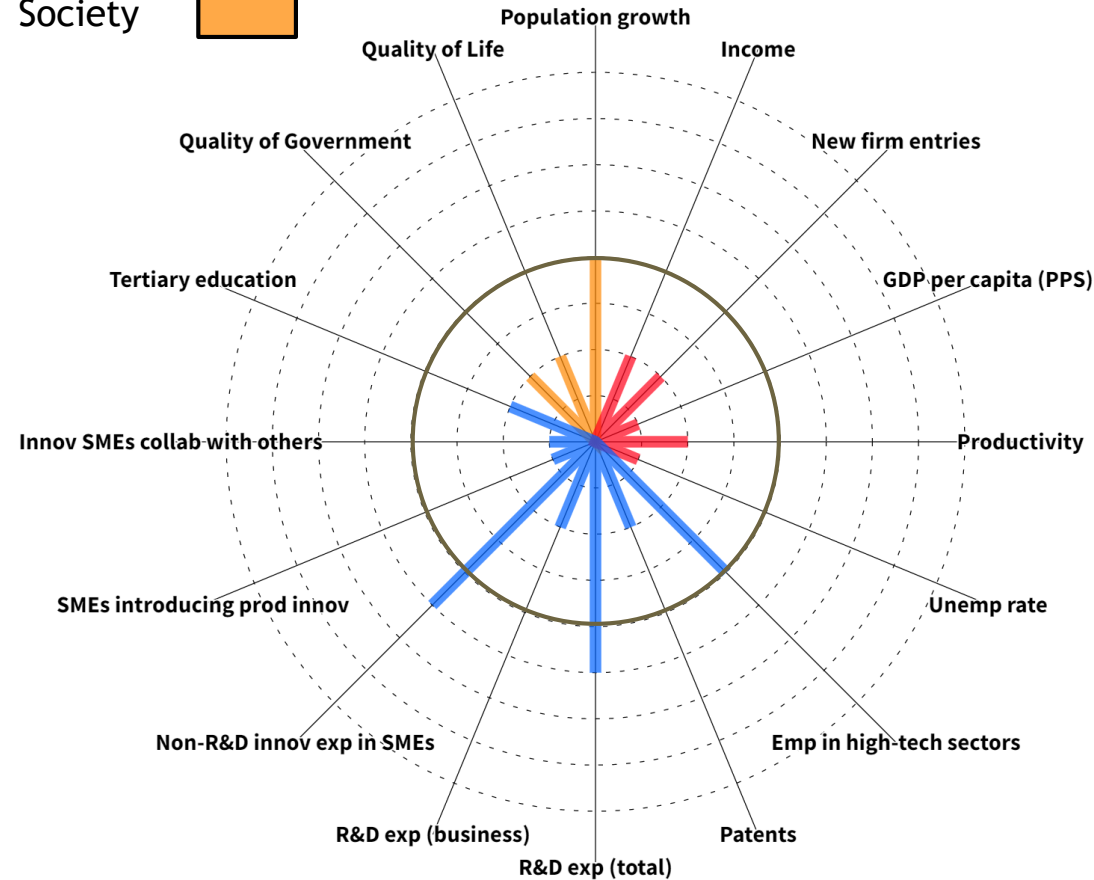
Source: own elaboration



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General conditions Észak-Alföld (HU32)

Legend:
Economy
R&D&I
Society



▪ **Reg Inno Scoreboard (2021): Emerging innovator**

Top 3 industrial activities (% of the total workforce, 2019):

- Specialised construction activities (5.46%)
- Manufacture of food products (5.15%)
- Manufacture of fabricated metal products (3.53%)

Top 3 most dynamic industrial activities* (growth rate of the workforce in the period 2014-2019):

- Specialised construction activities (+49.8%)
- Construction of buildings (+32.1%)
- Manufacture of rubber and plastic products (+29.7%)

*Only those activities have been included in which at least 1.5% of the total number of persons employed have been working



Documents: Development strategy of Hajdú-Bihar County for 2014-2020

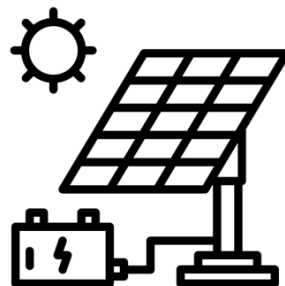
Four key areas

- ▶ **Sustainable environment:** Sustainable water management → climate change; secondary use of thermal water, energy efficiency, renewable energy sources
- ▶ **Competitive economy & healthy food:** business infrastructure, promoting FDI, Debrecen as centre of medical services and innovation
- ▶ **Education & vocational training:** improve education infrastructure
- ▶ **Social, medical & communal development** → reacting aging society
- ▶ **Focus sectors:** agriculture & food industry, health & pharmaceutical industries, machinery, electronics & ICT, logistics, technologies related to the use of renewable energy and exploitation of natural resources

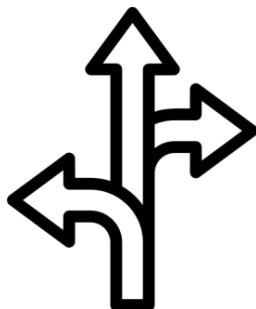


Assets

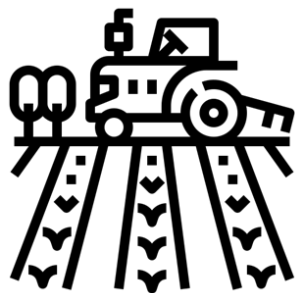
Renewable energy potential



New path development



Growing awareness



Agricultural base
with new opportunities



R&D activity

Renewable energy potential

Indicator	Ranking of Hajdú-Bihar County
Potential for electricity generation by land area of solar photovoltaics (MWh/km ² , 2018)	8 th / 20 Hungarian counties
Primary energy potential per land area of biofuels from agricultural products - projection for the year 2030 (GWh/km ² , 2018)	7 th / 20 Hungarian counties
Primary energy potential per land area of forestry products and forestry residues (excluding material use projected for the year 2030) - projection for the year 2030 (GWh/km ² , 2018)	7 th / 20 Hungarian counties
Primary energy potential per land area of geothermal heating - projection for the year 2030 (ktoe/km ² , 2018)	5 th / 20 Hungarian counties

Source: The dataset of the ESPON "Locate" Project

Hajdú-Bihar County is relatively rich in thermal water which might also serves as source for geothermal energy

“We think [geothermal] is good because we are quite down and out. The geothermal gradient is very high and for us the problem is if you drill a hole, you take water, it comes also minerals and some things that you cannot do something with [...] *I think that pumping back [geothermal] would be sustainable if you have a thermal bath and if you use it for medical purposes and then you have thousands of cubic meters per day used water, then you can use it.*”

Expert Interview



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Growing awareness

“It's very sad to see that the priority of individuals concerning, for example, circular economy or selective waste collection is not a priority. So it depends, of course, on the maturity of a community, you know, but now we see that that economy and money is the first. And then came the other issue. But, of course, *I do hope, and I work to change the attitude in the short term and longer term.*”

Expert Interview

“People in Hungary, and others all over the world really, they take things seriously when it hits them. [...] And what hit us was *the drought, that extreme drought last year and the resulting water scarcity.* [...] people are more open now, they read more, and then the things that they see the prices of food, it's extremely increasing. [...] Something is happening to them, directly hitting their lives, and they start getting information, and *our responsibility is to give them true information.* Our mission is to make people aware that the things happening around them are developing faster and faster, and the result become harsher. [...] What I see now is that *people are more concerned about the future,* especially the young generation. So that's why I'm saying that people are more aware now [of sustainability issues].”

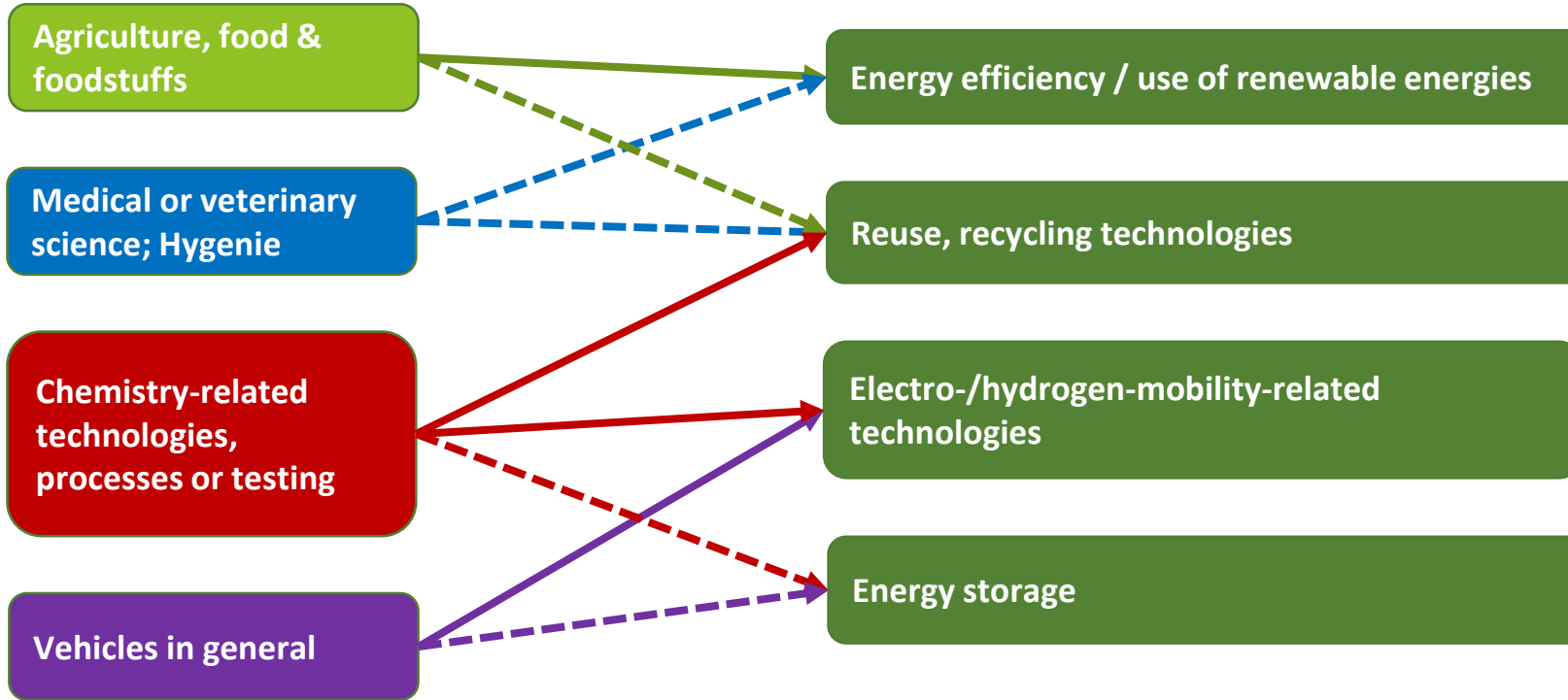
Expert Interview



R&D activity

Fields with relative technology advantage

Potential transformative fields



→ **Already existing connections**
 - - - → **Potential connections**

Source: Own edition based on the data of OECD Regpat Database

Note: Relative technology advantage means that a given technology field is in relative terms more frequently applied in patents of the region than in overall patents of Hungary



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R&D activity

Fields with relative technology advantage

Agriculture, food & foodstuffs

Medical or veterinary science; Hygiene

Chemistry-related technologies, processes or testing

Vehicles in general

Potential transformative fields

Energy efficiency / use of renewable energies

Reuse, recycling technologies

Electro-/hydrogen-mobility-related technologies

Energy storage

→ Already existing connections
- - - Potential connections

<https://www.cooperativepatentclassification.org>
2023

Source: Own edition based on the data of OECD Regpat Database

Note: Relative technology advantage means that a given technology field is in relative terms more frequently applied in patents of the region than in overall patents of Hungary



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Agricultural base with new opportunities

“The most highlighted field in strategies regarding Hajdú-Bihar County was agriculture. Since this sector showed the greatest GDP increase, the area may have significant economic potential. [...] With the development of irrigation and using breeds that are better suited to tolerate extreme weather conditions, it should be a sector which not only increases the economic power of the country but adapts to climate change. [...] However, it raises the question of how sustainable the development of irrigation is if the climatic water balance of the Great Hungarian Plains is already negative.”

Bánóczki, Csorba (2020)

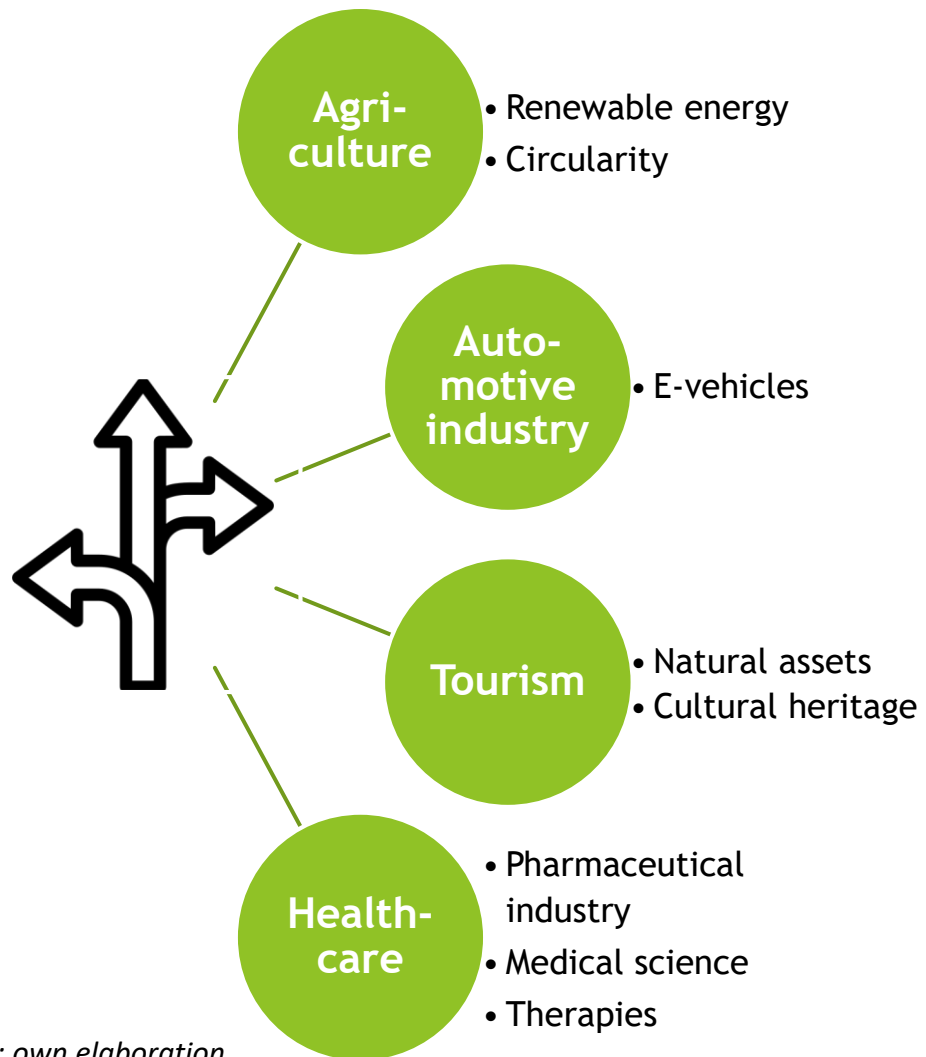
“[...] Organic agriculture, not just because of the EU directive, a green deal, but also because of the low input and the awareness of the population of chemicals and the chemical and antibiotic resistance and so on. And the food industry. But I think the food industry must be the primary in the list because we must develop to process the raw material ourselves and supply it to our population. It is kind of a political or strategic issue also. [...] And the fourth one is to reuse the byproducts. [...] And everything which is getting out of the food processing plant should be reused [...] as raw material for the next circle, the next round. In this way, you can decrease the costs and help the environment.”

Expert interview



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New path development potential



Source: own elaboration

Outlines of an expert interview: Why might investors choose Debrecen?

- ▶ The labour force is still cheap in Hungary
- ▶ Skilled labour force available in Debrecen
- ▶ Support by the local stakeholders like the municipality of Debrecen, the secondary education and the university.
- ▶ Accessibility of Debrecen (motorway, airport)
- ▶ Favourable taxation in Hungary
- ▶ Subsidies from the government.



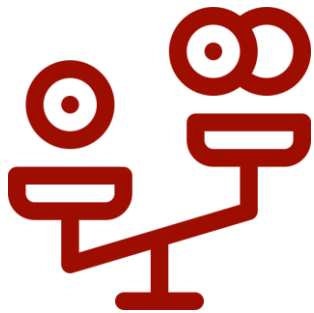
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Challenges

Manifestations of climate change



Regional disparities



Weak entrepreneurial activity



Lack of vision



Legitimacy problems

Manifestations of climate change

Climate change projections and their explanations for Hajdú-Bihar County	
Increase in the number of tropical nights	The expected growth in the number of nights where <i>the minimum temperature does not drop below 20°C</i> is projected to be higher than the European average.
Increase in the number of heat wave days	The expected growth in the number of days with <i>a maximum temperature of more than 35°C</i> is projected to be higher than the European average.
Increasing wildfire hazard	The total area of the region defined as ' <i>burnt areas</i> ' according to the 2012 Corine classification is higher than the European average.
Increasing drought hazard	The <i>precipitation over a nine-month period</i> is below the European average.
Increasing fluvial hazard	The percentage of the total area of the NUTS3 area <i>prone to flooding in the event of a 1 in 100-year fluvial flood</i> is above the European average.
Road infrastructure exposed to fluvial flooding	The percentage of the total length of road infrastructure in the NUTS3 area (major roads and major road intersections) that would be <i>exposed to flooding in the event of a 1 in 100-year fluvial flood</i> is above the European average.

Source: European Climate Risk Typology

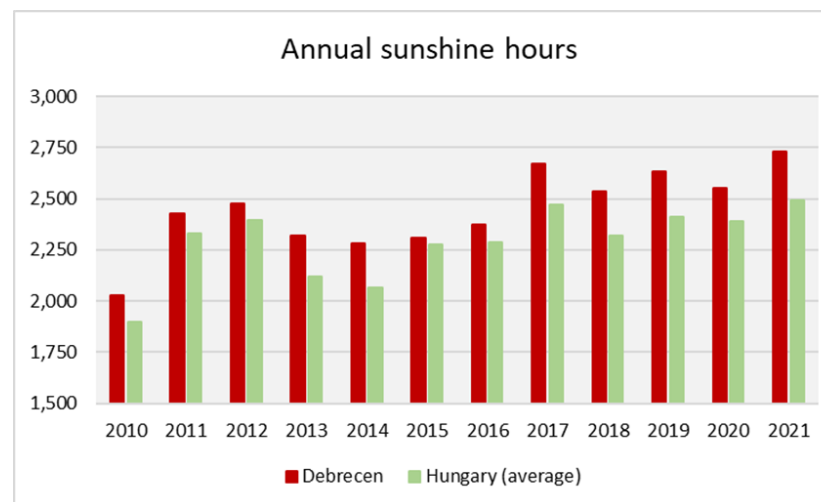
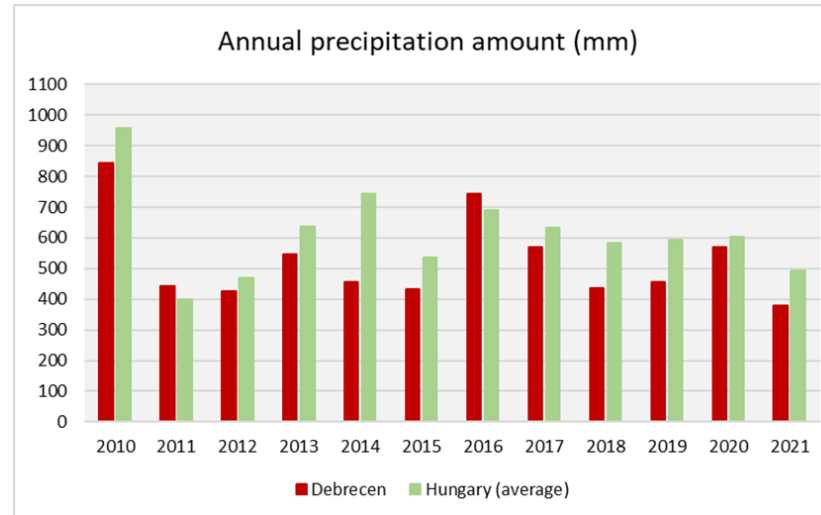


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Manifestations of climate change

“What hit us is the extreme drought last year and the water scarcity due to the drought. And I think that's one thing that we must know how to irrigate our activity, our lands. But now, our mission is to make people aware that the things happening around them are getting faster and faster, and the results are harsher. [...] And [...] because of the climate situation, everybody wants now to focus on irrigation. The problem is that in this arid climate, you are not able to irrigate even if you have an indefinite resource of water. [...] Desertification is one big issue.”

Expert interview

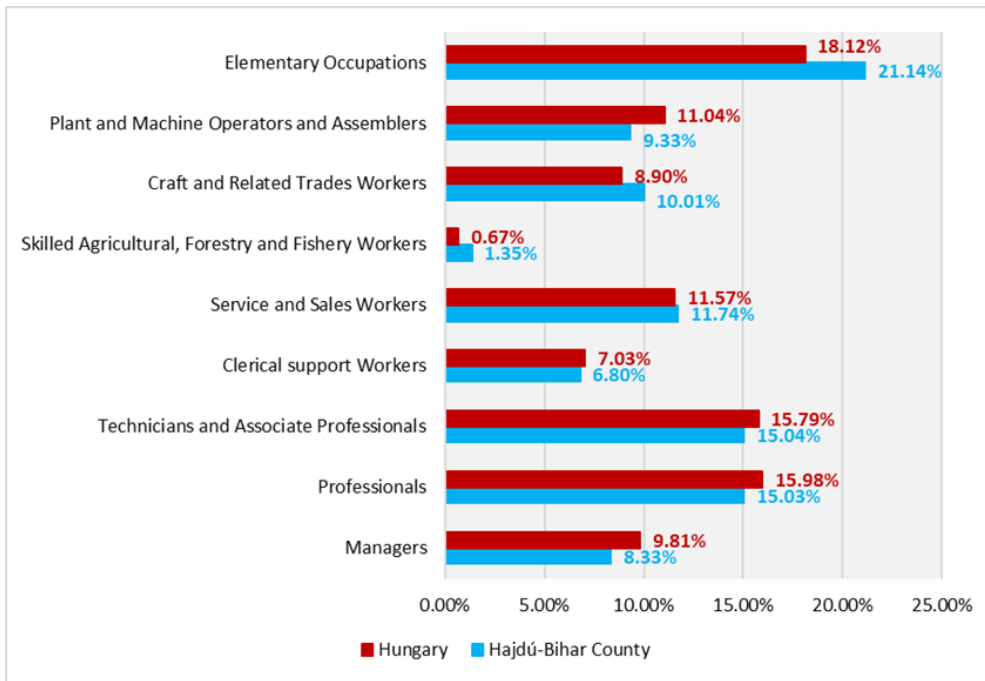


Source:
Hungarian Central
Statistical Office



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Weak entrepreneurial activity, unfavourable labour market structure



Source: National Regional Development and Spatial Planning Information System of Hungary

Area	Operating firms per 1,000 people	New firms per 1,000 people
Hungary	89.61	9.72
Hajdú-Bihar County	78.99	9.84
Balmazújváros District	59.46	7.11
Berettyóújfalu District	57.73	7.01
Debrecen District	107.12	12.82
Derecske District	55.83	7.42
Hajdúböszörmény District	74.91	8.98
Hajdúhadház District	51.19	7.79
Hajdúnánás District	58.02	5.94
Hajdúszoboszló District	77.96	10.66
Nyíradony District	48.72	8.04
Püspökladány District	51.92	7.23

Source: Hungarian Central Statistical Office

“[...] generally, I can say [...] that the culture of innovation is a missing step in our SMEs, SME sector. They do not care about their own potential in innovation, and they do not think about innovation in a way to achieve their own targets both at the economic and individual level.”

Expert interview



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Legitimacy problems

- ▶ Most of the development projects focusing only on economic development as a priority without strong consideration of its environmental and social issues
- ▶ Not only the county development but the national development as well are strongly based upon political decisions

“They used a lot of resources to create the industrial parks, but without SMEs or companies going there. And I think it's a tragedy because *you spent a lot of money on something that will surely not work*. [...] I think that a very important challenge is how to encourage [...] to think in the long term, not only in a short term [...] it's based upon political decisions [...] because, for example, I think as a developer that for 2000 people we do not have to create an industrial park around this settlement. [...] [There] are very good developments and they are strongly supported by these operational programs. But we could find a more efficient way to strongly support the sustainability transition in these regions.”

Expert interview



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Socio-political challenges: Fragmentation, a lack of trust and a missing vision for a sustainable future

- ▶ European Social Survey: Hajdú-Bihar County exhibits a relatively low share of respondents that agree that most people can be trusted
- ▶ Regional experts: agreed that this is indeed one of the fundamental problems in Hajdú-Bihar, especially when it comes to joint projects or cooperation.

”The core issue *that is strongly missing in our region is the culture of cooperation*. [...] There is no culture for collaboration. [...] They do not care about how their knowledge and skills could be exchanged, and I think this is a core issue for local innovation. [...] *The lack of trust*. Of course, this is historic, a generational inheritance in our Central European history. And this is even the case for currently existing SMEs in the county. We contacted a lot of them during our regional cooperation projects, and we met people who do not know a single similar actor in their own environment, and they do not want to deal with anyone. [...] Of course, we also have very good examples, but *most of the good examples exist in Debrecen and around Debrecen*. And we would like to deal with the other, with the rural part too.”

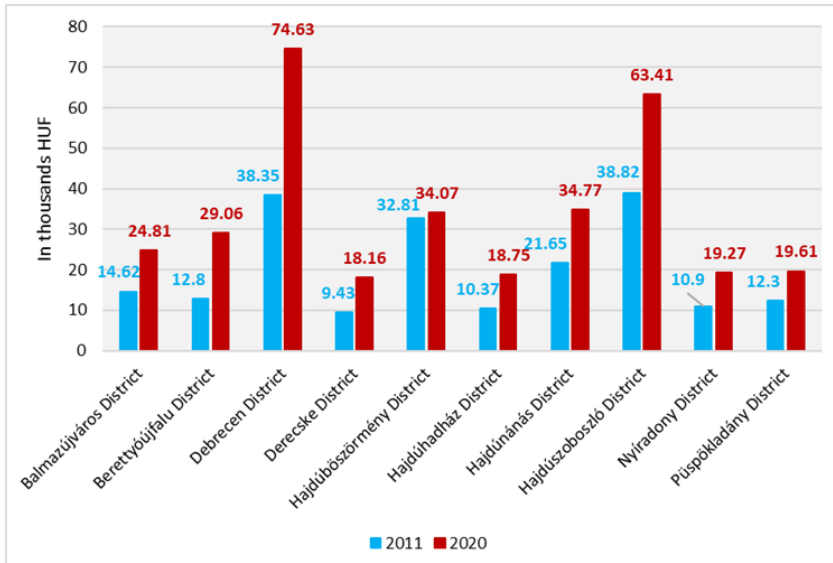
Expert interview



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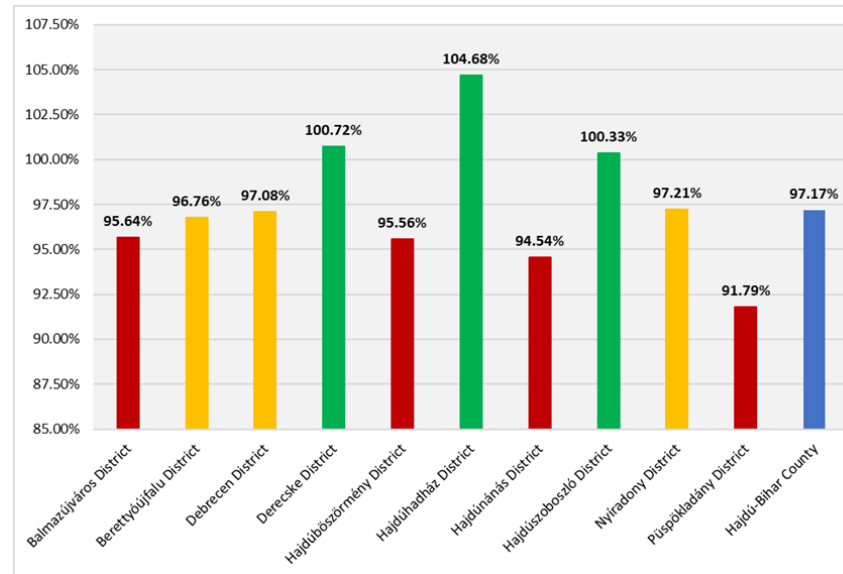
Regional disparities

The business tax revenues of local governments per inhabitant in the districts of Hajdú-Bihar County (2021)



Source: National Regional Development and Spatial Planning Information System of Hungary

Relative population change in the districts of Hajdú-Bihar County over the period 2010-2021 (2010 = 100%)



Source: Hungarian Central Statistical Office

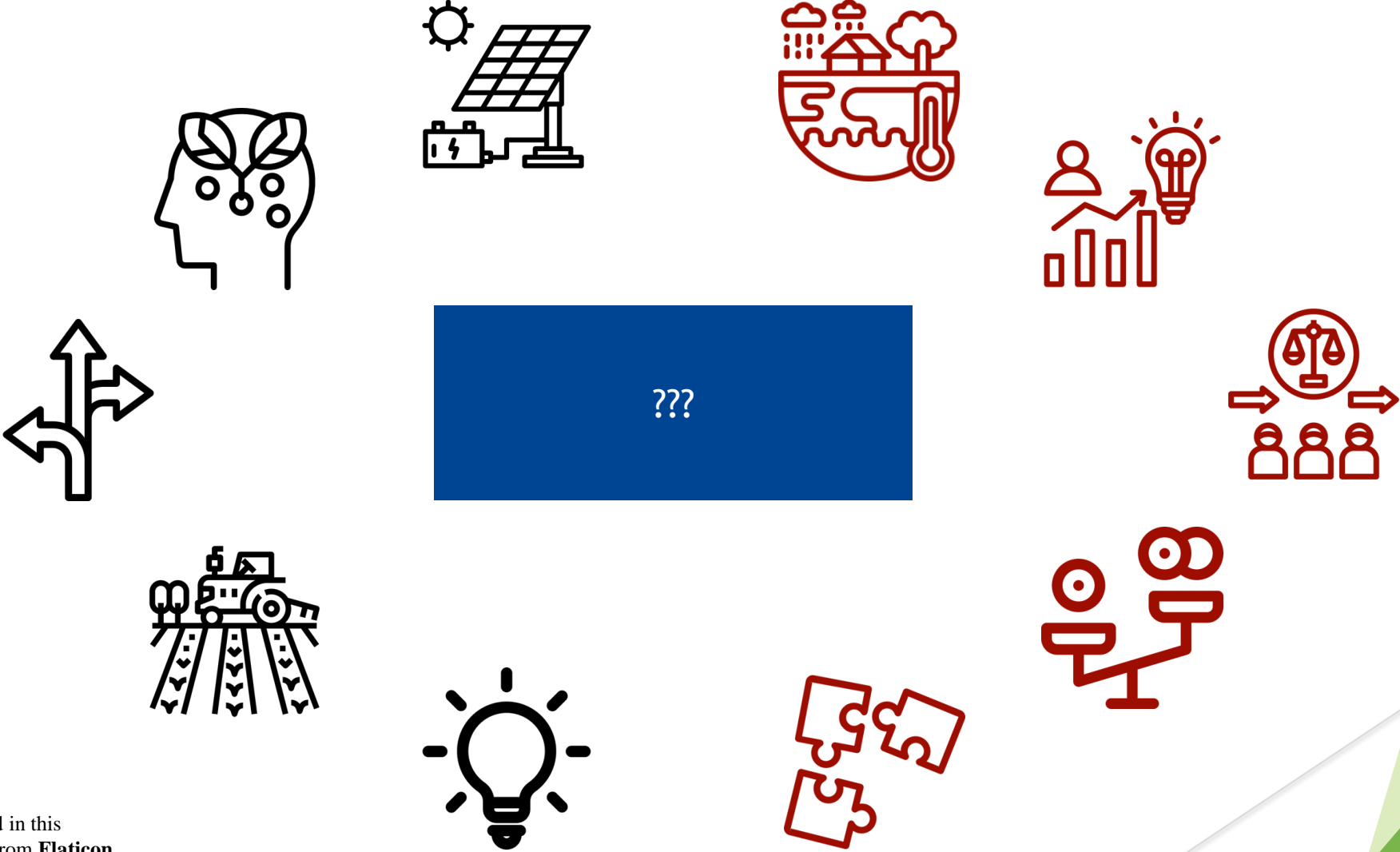
“We have basically four different parts of the county. The southern part, for example, includes the less developed settlements [...] with the low-educated people with no intention to improve. [...] On the other hand, the western part has a very nice agricultural potential, and this is also the same for the eastern part, [...] having some other agricultural opportunities and, in some cases, industrial investment. And there is the capital and the east and the northern part of the county where you can see many more industrial opportunities [than] in the other parts of the county. And investments are significant in this space.”

Expert interview



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Conclusion



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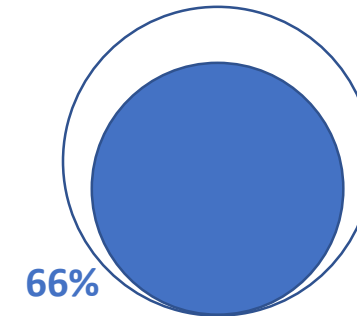
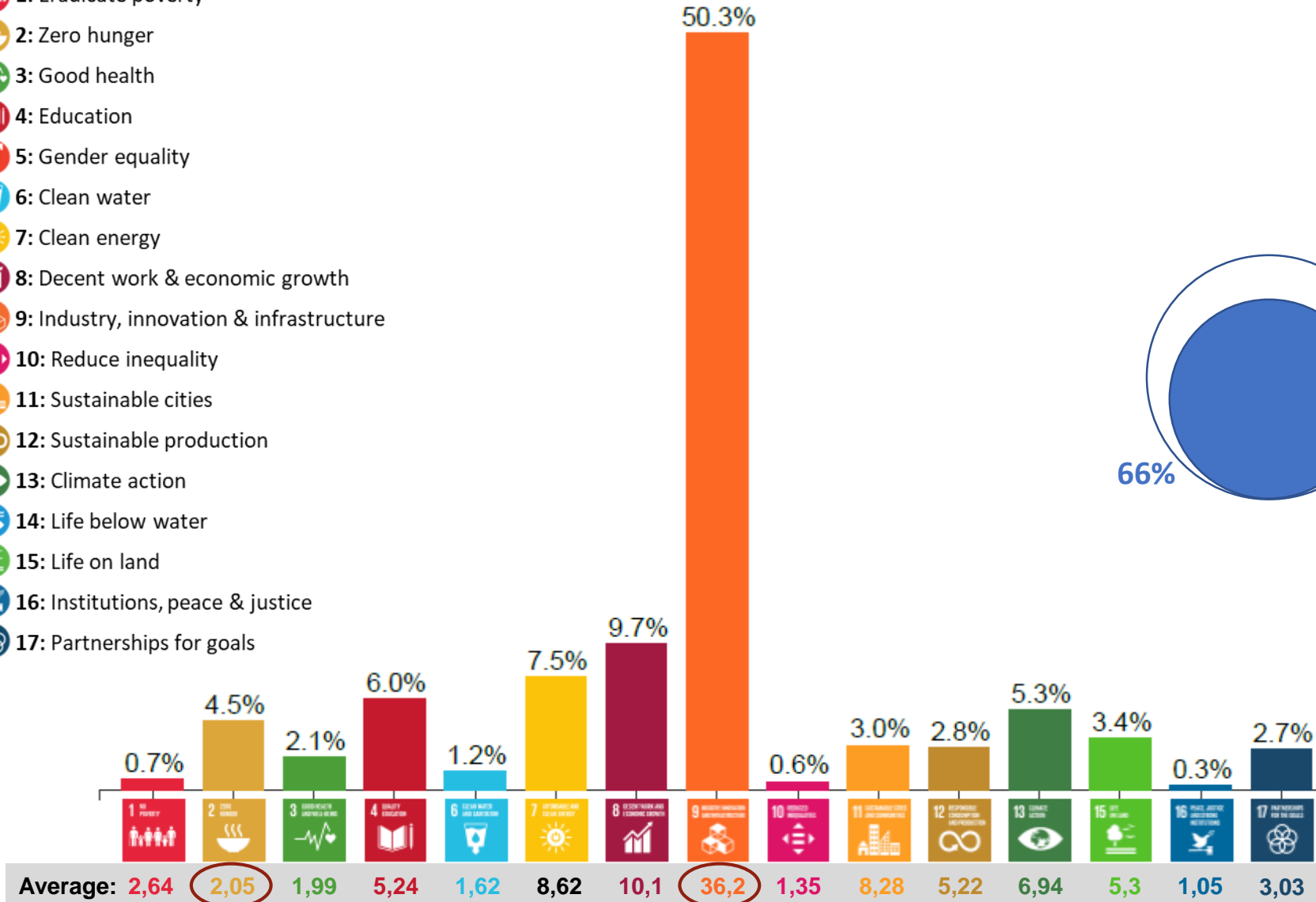
Appendix



SDG Mapping: Hajdú-Bihar County

-  1: Eradicate poverty
-  2: Zero hunger
-  3: Good health
-  4: Education
-  5: Gender equality
-  6: Clean water
-  7: Clean energy
-  8: Decent work & economic growth
-  9: Industry, innovation & infrastructure
-  10: Reduce inequality
-  11: Sustainable cities
-  12: Sustainable production
-  13: Climate action
-  14: Life below water
-  15: Life on land
-  16: Institutions, peace & justice
-  17: Partnerships for goals

Documents: 3*
 Pages: 268
 Hits: 1.082
 Hits/Pages: 4,04



- *• RIS3 Hungary 2021-2027
- Expert Report on S3 in Hungary, Észak Alföld (HU32), Hajdú Bihar county and Debrecen
- Background document for the development of S3 Hajdú-Bihar County

Source: <https://knowsdgs.jrc.ec.europa.eu/sdgmapper>



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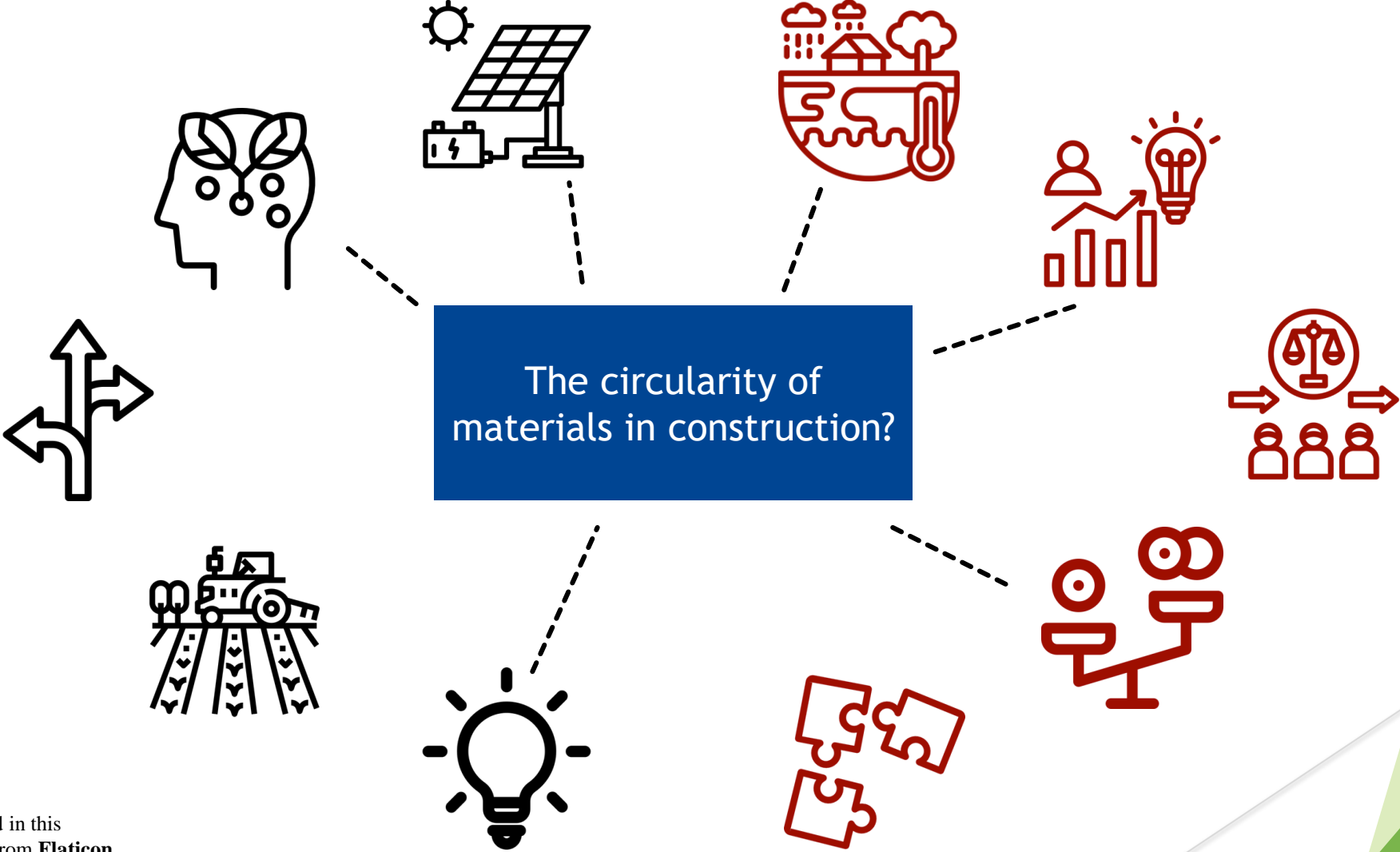
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References

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- ▶ European Commission. 2021. Regional Innovation Scoreboard 2021. Available online: https://research-and-innovation.ec.europa.eu/statistics/performance-indicators/regional-innovation-scoreboard_en (accessed 05.10.2022).
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Data sources for the quantitative analysis

- ▶ CORDIS - EU research projects under Horizon 2020 (2014-2020)
- ▶ ESPON: QoL (Quality of Life Measurements and Methodology) project
- ▶ European Commission (2021) Regional Innovation Scoreboard 2021
- ▶ European Social Survey
- ▶ Eurostat: Regional statistics by NUTS classification
- ▶ Hungarian Central Statistical Office
- ▶ National Regional Development and Spatial Planning Information System of Hungary
- ▶ OECD REGPAT Database (Spring 2022 version)

