

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

# Results regional analysis: Nord-Est region

Thermal Distribution plant  
Thermal Power plant  
Water Treatment plant

Slănic-Moldova, October 23, 2023



universität  
wien



Institut für Geographie und Regionalforschung

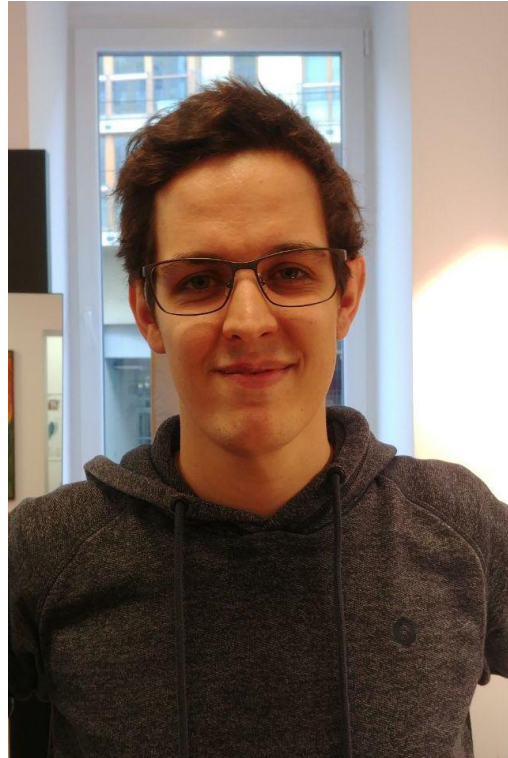


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# The Team behind the analysis



**Univ.-Prof.  
Michaela Tripl**



**Simon Baumgartinger-Seiringer  
Postdoctoral researcher**



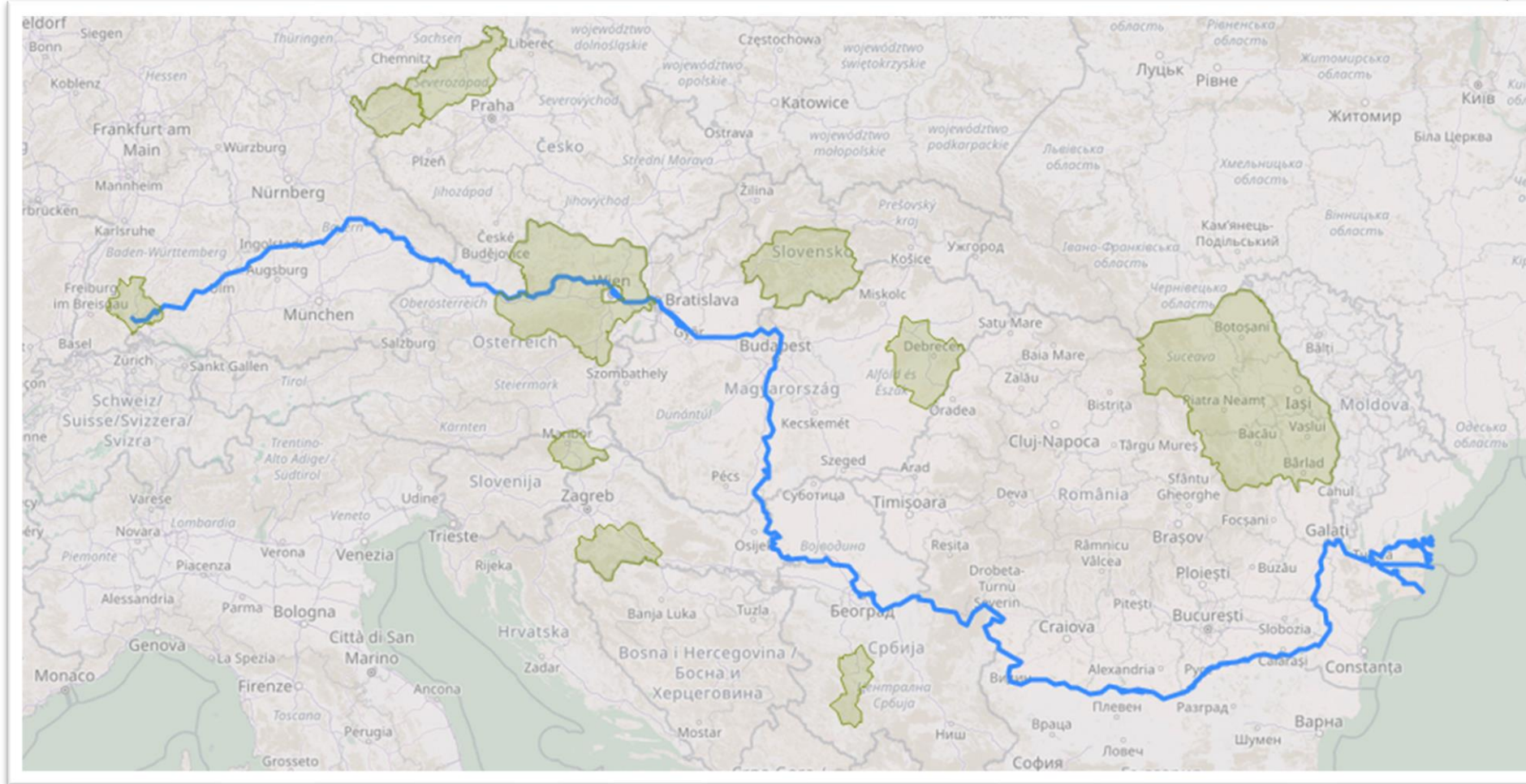
**Veronika Desch  
Student Assistant**



**Balázs Páger  
Postdoctoral researcher**



# RIS4Danu: Setting the scene



Source: *RIS4Danu Website*



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# Regional analysis: Nord-Est region / Bacău County

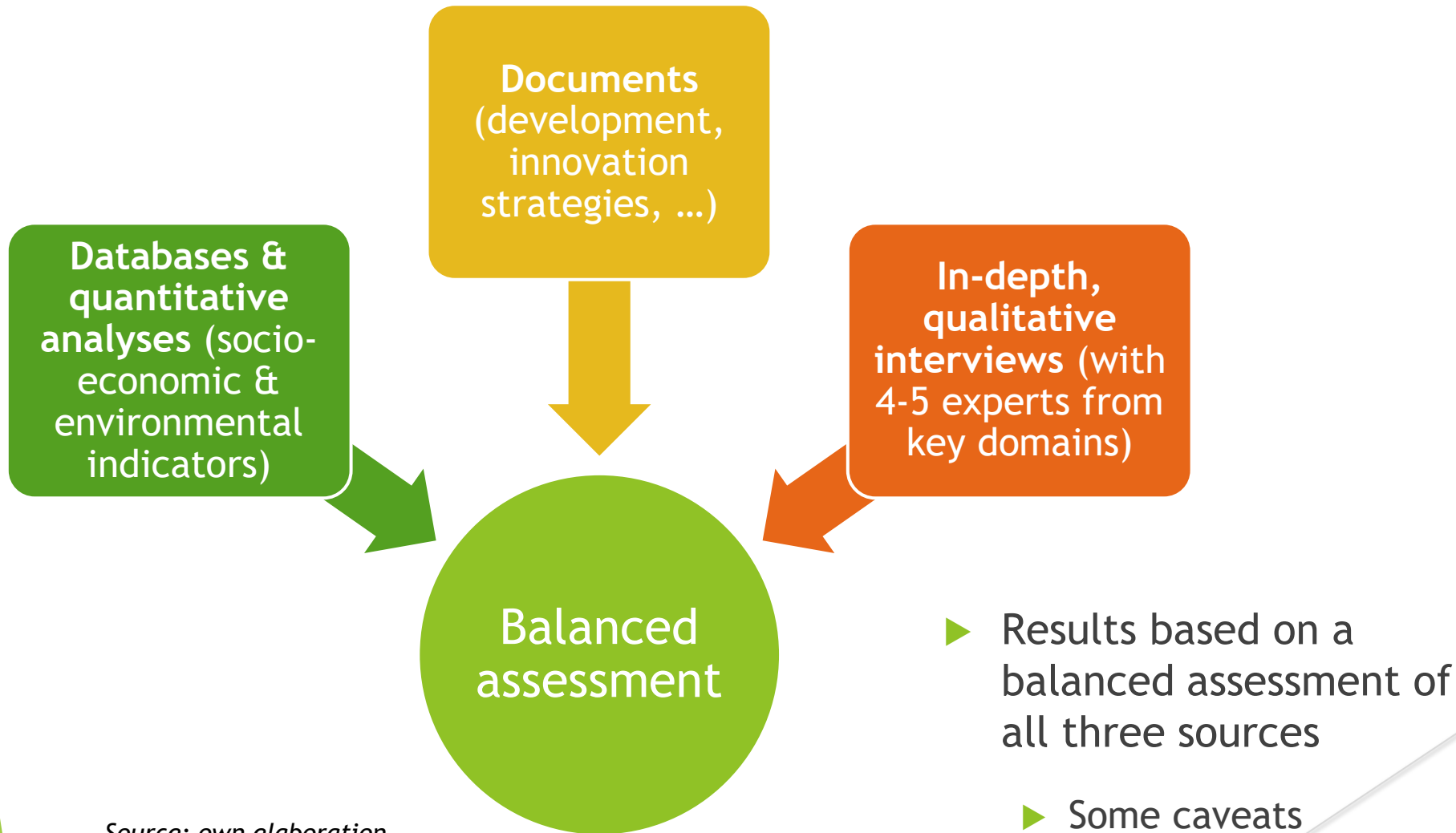


# Content of Analysis

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



# Methods



Source: own elaboration



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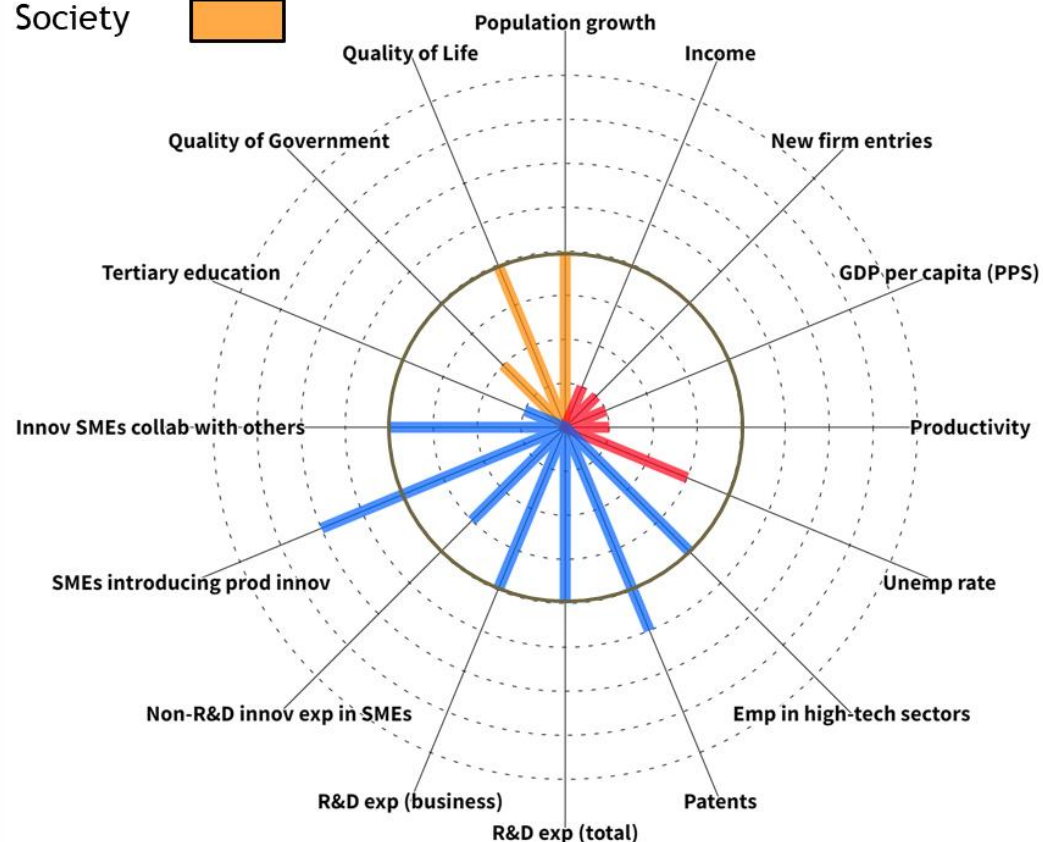
# Disclaimers

- ▶ 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



# Nord-Est development region (R021)

Legend:  
Economy  
R&D&I  
Society



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

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

- Construction of buildings (6.75%)
- Manufacture of food products (5.70%)
- Manufacture of wearing apparel (5.12%)

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

- Construction of buildings (+28.3%)
- Specialised construction activities (+13.5%)
- Manufacture of food products (+11.4%)








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





# Documents: Key development fields - regional-level framework

## RIS3 Nord-Est region (NERIS3)

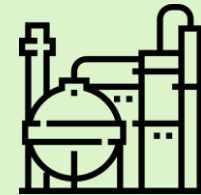
<p><b>Agri-Food and Wood Processing</b> Smart Farming, agricultural products, environmental impact of agriculture, biosecurity and food safety, forestry</p>		<p><b>ICT</b> Industrial modernisation, cybersecurity, Big Data, Smart city and village, new ICT products and test solutions</p>	
<p><b>Textile</b> High-tech processes and applications in textiles, technical and functional textiles, digital fashion</p>		<p><b>Health</b> Medical and pharmaceutical biotechnologies, precision medicine, prevention medicine, e-health, biosecurity</p>	
<p><b>Energy</b> Alternative energy sources, energy efficiency</p>		<p><b>Tourism</b> ICT solutions for tourism, creative marketing and promotion, healthy lifestyle-, eco-, business-, cultural tourism</p>	
<p><b>Environment</b> water (innovative solutions), air (innovative solutions), circular economy</p>			



# Documents: Key development fields - county-level framework

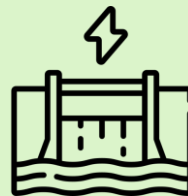
## Development Strategy Bacău County 2009-2021

Increasing the competitiveness of the **agri-food and forestry** sectors (positioning as a distribution and processing center)



Development of the local business environment and **acceleration of the industrial reconversion process**

Capitalizing on **renewable energy** resources (hydropower potential)



Promoting **economic convergence** and increasing **social inclusion**

# Documents: Key development fields - local priorities

## Strategie Smart City 2021-2027 Slănic-Moldova

### Society-related improvements

Active cultural life and events  
Urbanisation  
Transport infrastructure

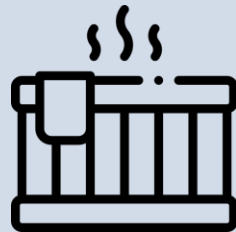


### Digitalisation

Digital public service access, telemedicine and digital tools for life quality management

### Balneo-climatic tourism

Bioclimate and spa potential: 11 of 24 hydromineral sources are exploited currently

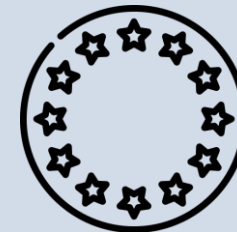


### Investment in SMEs

Support for businesses, young entrepreneurs, start-ups, social entrepreneurship

### European programmes and projects

Economic development, trainings, assistance for administration, exchange with other cities



# Challenges

## Manifestations of climate change



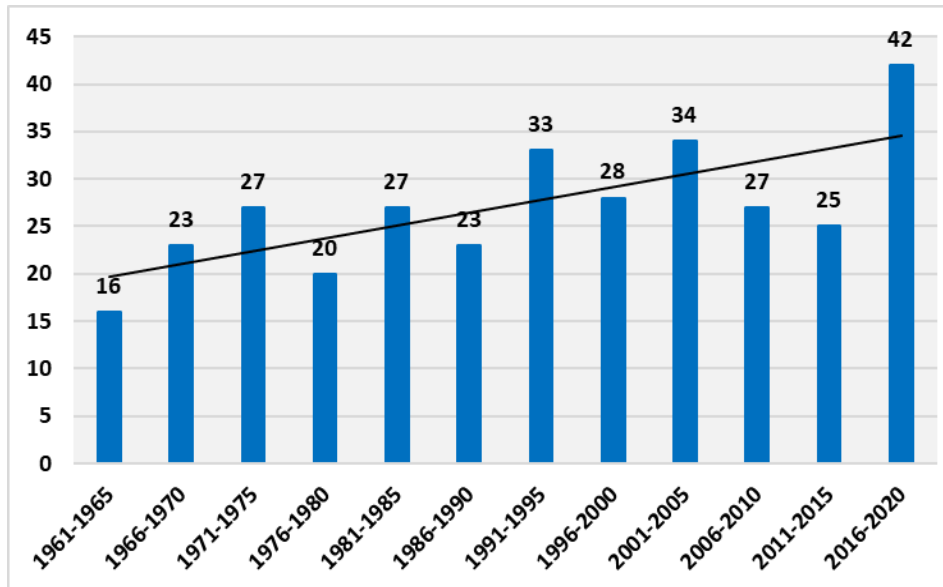
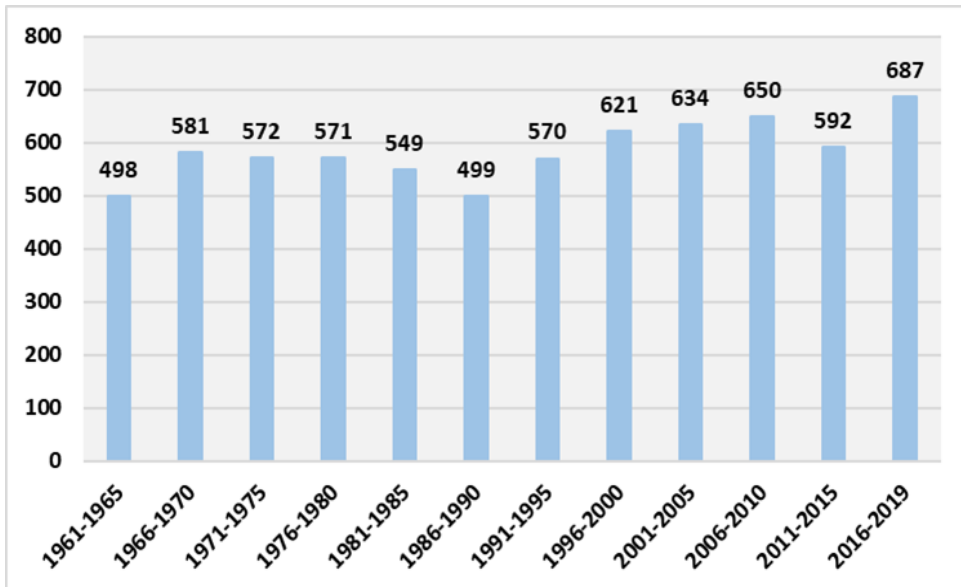
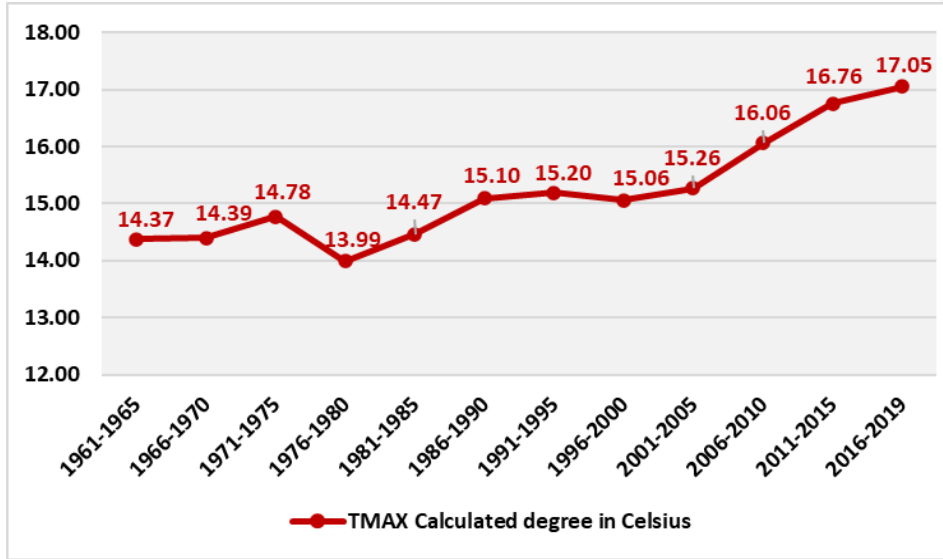
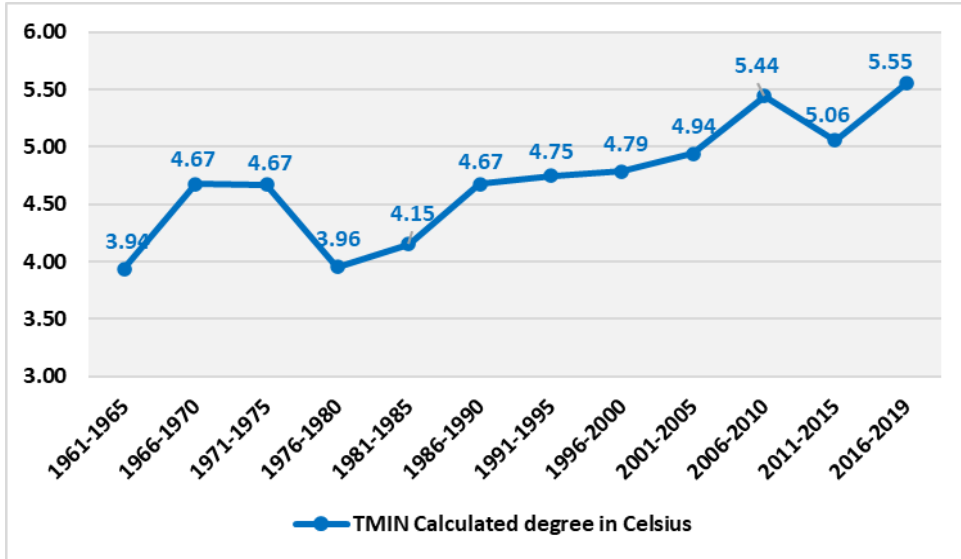
Social issues

## Fragmentation of the Regional Innovation System



Environmental impacts

# Manifestations of climate change



Data source:  
<https://www.ncei.noaa.gov/access/past-weather/Bacău>

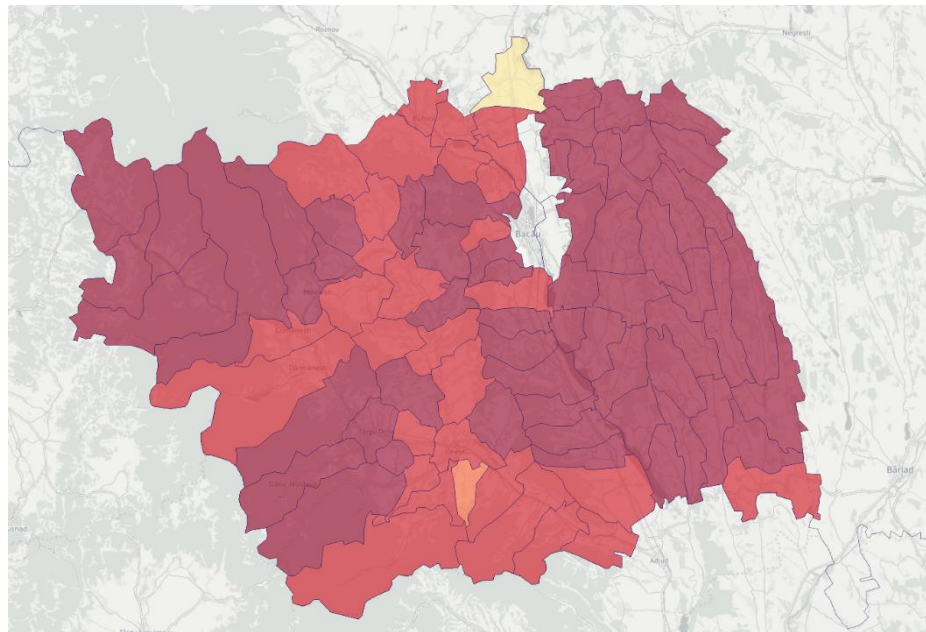


# Manifestations of climate change

Event	Short Description
October 2016	Floodings as a consequence of heavy rain from October 11 <sup>th</sup> on, 100s of people evacuated, schools and several roads closed as a precaution
June 2018	400 homes flooded, around 15 roads & bridges damaged or closed; over 12,000 policemen, 3.200 firefighters and 6.600 technical staff mobilized
May 2019	Heavy rains and storms in Moldova region, Bacău County among the most affected ones, roads closed and bridges damaged to increased river flow
June 2021	Romania heavily affected by strong rainfall and winds, one driver of a car dead in Bacău County, strong damages to infrastructure

Source:  
*floodlist.com;*  
*romania-*  
*insider.com*

Source: JRC Disaster  
Risk Management  
Knowledge Centre



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# Fragmentation in the Regional Innovation System

“The underdeveloped innovation system, the insufficient interactions between the academic environment and the productive sector, the lack of human capital, the absence of the required skills and the modest performance of the governance systems erode the existing potential. Rigidities on the labour market, the insufficiently developed business environment, the reduction of the population, young people and graduates of higher education limit the prospects for growth and development.”

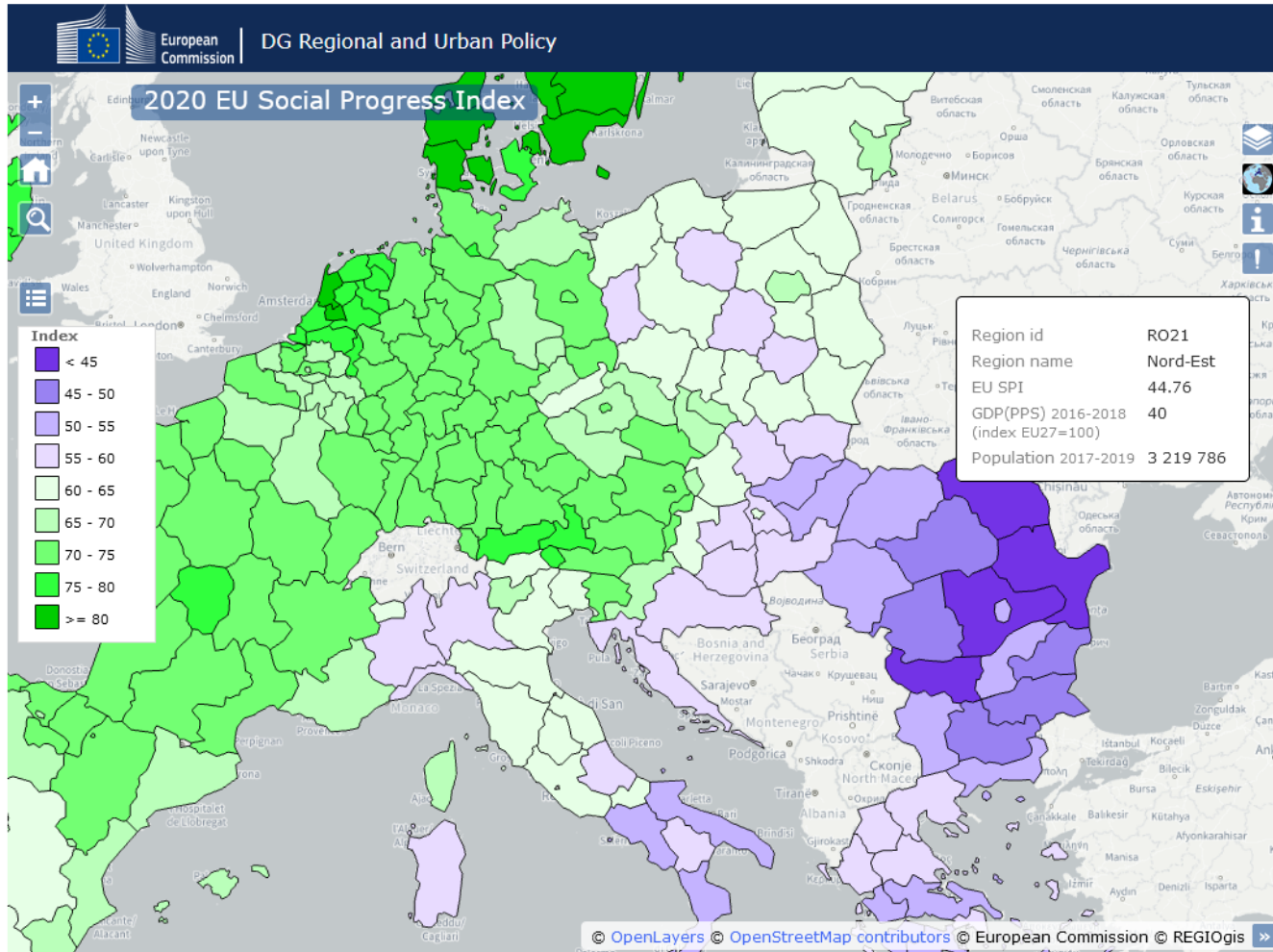
“Because the research and development doesn't have the vocation to address the needs of the industry with the same language and to make steps forward more openness and more dialogue and more understandable approach to the industry. On the other hand, the industry itself doesn't have too much from the patient on understanding the language of research and that knowledge can be useful for them. That is why (...), there is also the gap between of the intermediaries that should be dedicated 100% to this and being capable to try to work with both sides. And that is where we try to fit in with being approach to the cluster organisation, which are good place to do this. We encourage research polarisation in university, coordinating programs to develop entrepreneurial skills of research teams. We have worked with the entrepreneurs to help them to become not so much (...) hesitant when they find out about certain other common transition.”

*All quotes are derived from the interviews with regional experts*



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# Social issues



The Nord-Est region is ranked 237 out of 240 European NUTS 2 regions.

Low performance in the areas of

- water and sanitation,
- tolerance and inclusion,
- access to basic knowledge, information and communication, and higher education

Source: European Commission



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# Social issues

“The demographics is the main problem now because we lost a lot of people in the last 30 years. (...) If you take all the counties from Romania and you look to the percentage of people that left, you will find on the first six positions our counties. But because there were not many opportunities in the area, the opportunities in the area have been blocked for so many years in the last 30 years. So now we are seeing opportunities arising, but we already lost a lot of population [especially] (...) people from 24 to 45. So people who are active, people that have already established in Western Europe that have kids with them enrolled in schools (...) , they are talking with their kids in Italian, in Spanish, in English. No more in Romania.”

“The region still has a big, let's say, brain drain, and qualified workforce drain to other more attractive cities in Romania, but also other regions in Spain or Italy. You know, Bacău, I think is more present in Milan than in Bacău, and this is not easy to discover and, of course, shows the fact that we still need to work more around creating the conditions for an attractive education environment or to keep the people with the competencies integrating.”

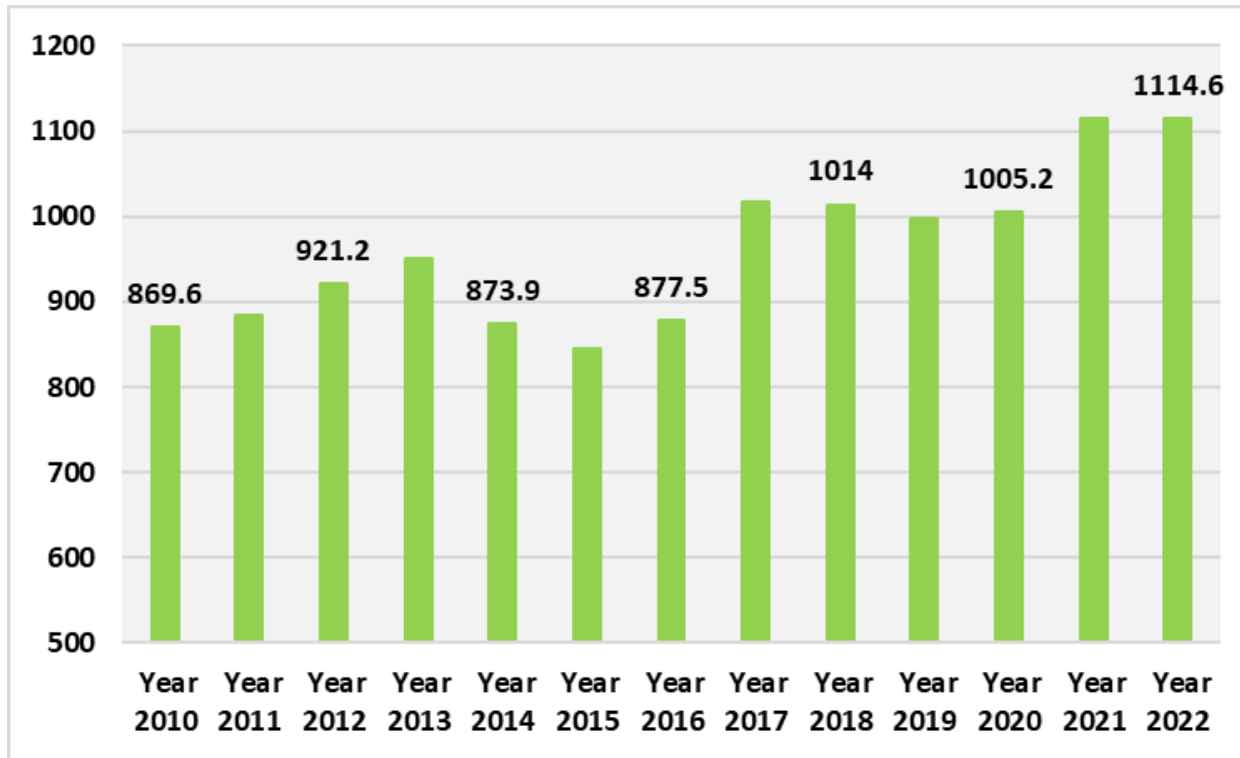
*All quotes are derived from the interviews with regional experts*



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# Environmental impacts of past and present economic activity

The volume of cut wood in Bacău County  
(in ths. cubic meters, 2010-2022)



Data source: National Institute of Statistics, Romania

The total volume of wood harvested in the county shows a clear upward trend over the past decade.

However, the proportion of afforested areas relative to the total of forested areas has not exhibited such growth trend.



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# Environmental impacts of past and present economic activity

GHG emissions (in Mt equivalent CO<sub>2</sub>) by NUTS-2 regions in 2018

	TOTAL	From Agriculture	From Buildings	From Industry	From Power stations	From Transport	From Waste
RO11	11.006	2.650	1.418	1.776	0.493	2.783	1.832
RO12	12.606	2.596	1.339	2.538	1.772	2.271	2.046
RO21	<b>13.517</b> <i>(rank: 4<sup>th</sup>)</i>	<b>3.192</b> <i>(rank: 1<sup>st</sup>)</i>	<b>1.761</b> <i>(rank: 2<sup>nd</sup>)</i>	<b>5.023</b> <i>(rank: 3<sup>rd</sup>)</i>	<b>0.554</b> <i>(rank: 7<sup>th</sup>)</i>	<b>2.239</b> <i>(rank: 6<sup>th</sup>)</i>	<b>0.702</b> <i>(rank: 4<sup>th</sup>)</i>
RO22	17.533	2.572	1.474	7.560	2.303	2.432	1.151
RO31	19.019	2.534	2.763	6.758	2.842	3.458	0.624
RO32	9.389	0.127	1.306	1.514	5.061	0.725	0.654
RO41	19.801	2.027	1.118	2.142	11.900	2.197	0.379
RO42	11.826	2.051	1.044	3.842	1.919	2.249	0.675

Data source: OECD Statistics



# Environmental impacts of past and present economic activity

“Despite the fact that environmentally friendly industrial means are being used in the last decade, the following activities have contributed to the release of heavy metals in the environment (according to ARM Bacău data) have taken place within Bacău: road transport, involving the combustion of petrol and diesel fuel; coal burning - lignite; combustion in the energy industry and transformation industries; non-industrial combustion installations; combustion in the processing industry; waste treatment and storage; other mobile sources and equipment. (...) The main events are characterized by the release of ammonia into the air, the spreading of petroleum products, oil and water mixtures on the soil and in the water, the spreading of slag powders into the air, the spillage of liquid fuels, the spillage of manure in watercourses, unknown pollutants on soils or water, and various events that have led to fish mortality.”

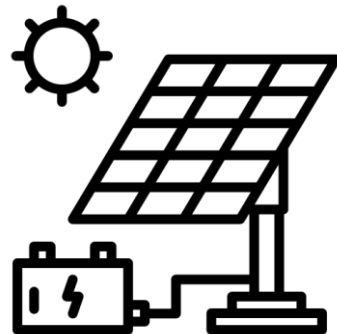
Source: Bontas et al. (2020)



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# Assets

New wave of internationalization and interregional cooperation



**Renewable energy**

Research & Development

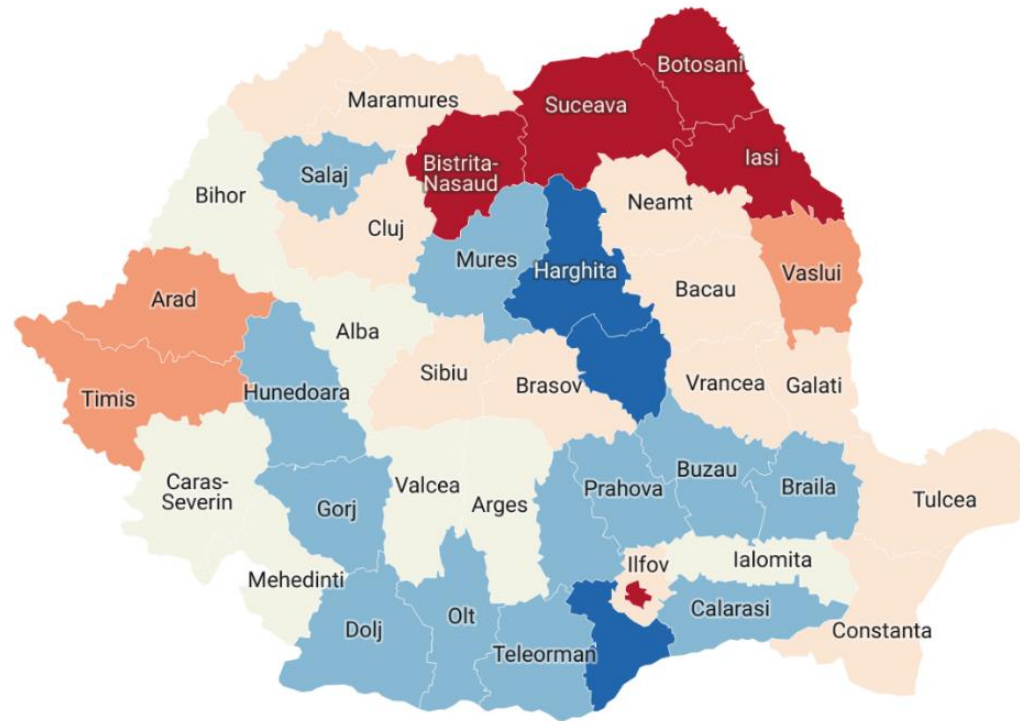


**New dynamics in and cross-fertilization potential with the agricultural sector**

# New wave of internationalization and interregional cooperation

## Net migration rate 2022

Legend for Net migration rate 2022:  
■ < -3 ■ -3-0 ■ 0-3 ■ 3-6 ■ 6-9 ■ ≥ 9



Contrary to its previous development trajectory, there has been a positive net migration rate in 2022

The inflow of Ukrainian refugees and other people relocating due to the Russian attack on Ukraine.

Sustaining social infrastructures in light of broader regional social challenges

Economic opportunities

Created with Datawrapper

Data source: National Institute of Statistics, Romania



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# New wave of internationalization and interregional cooperation

“The potential has always been here. We are very well placed in order to be a hub for the Republic of Moldova and Ukraine, Odessa. [...] Since the war started in Ukraine, we noticed that several Ukrainian businesspeople started to relocate businesses here or to look after possible relocations here. There are also European companies that are looking for a new place when they evacuate Russia. I'm also aware of companies that have already bought land to come here with logistics. [...] We are the west of the region, we have the Carpathians. So practically every single project in Romania stopped on the Carpathians. But now the projects of the region, the interconnection projects are being analysed and are receiving probably are receiving money [...] We start to we see them happening and that happened in the last year. I mean this is something very recent happen.”

*The quote is derived from the interviews with regional experts.*



# Research & Development

## Number of researchers, 2021

Per 100,000 inhabitants

< 25 25-50 50-100 100-200 ≥ 200



Created with Datawrapper

Data source: National Institute of Statistics, Romania



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# Research & Development

Project title	Topic / Objective
Intelligent Collections of Food Legumes Genetic Resources for European Agrofood Systems	Improving the <u>sustainable use of plant genetic resources</u> by enhancing the status of the genetic resources of four important food legumes: chickpea, common bean, lentil, lupin.
Breeding for Resilient, Efficient and Sustainable Organic Vegetable production	Tackling the nutritional challenges of a growing world population and changing climatic conditions by enhancing productivity of different vegetable crops in an <u>organic and sustainable farming infrastructure</u> .
Blockchain for a sustainable textile industry	Providing a complete, SME affordable and standardised platform to <u>support the adoption of sustainable and circular approaches</u> : it will enable enterprises to collect product data and to access to the necessary services on a dedicated marketplace, open to third party solutions.
Advancing Sustainability of Process Industries through Digital and Circular Water Use Innovations	<u>Development and validation of water efficiency management and optimization methodologies</u> , technologies and tools that will carry process industries forward to a near-zero water footprint target with minimum freshwater consumption and water-borne emissions.

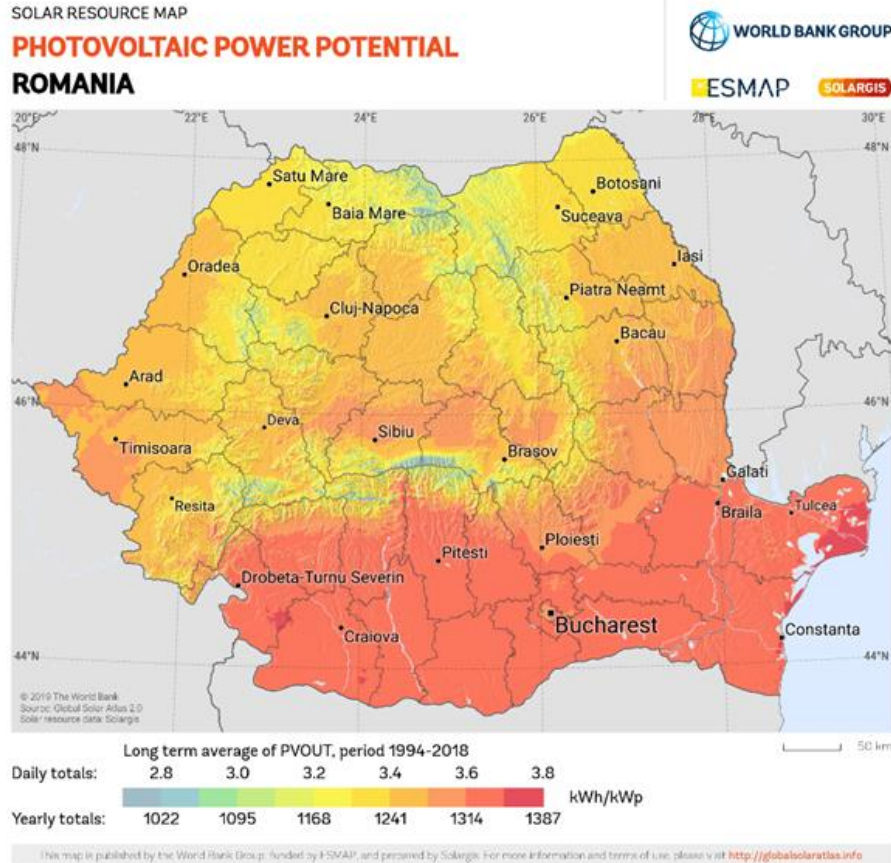
Source: Own collection by projects' websites



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# Renewable energy

## The photovoltaic power potential in Romania



## The mean power density of the wind power



Source:

<https://globalwindatlas.info/en/area/Romania/Bac%C4%83u>

Source: <https://globalsolaratlas.info/download/romania>



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# Renewable energy

“So we have these big rivers where [...] this big dam was put in now produce a lot of electricity by using small dams but small rivers. [However,] I don't know if they have some perspective. [...] *I think these main two rivers [...] can be adapted to, and the oldest power plant hydropower plants can be adapted to be more powerful, more integrated with the new systems.* But for the small rivers, the perspective is not so good. [...] I don't know if this is small solution can have a benefit also for the society and for the environment because all these small power plants can affect the entire habitats. [...] But I think that a better management of the existing hydropower plant can improve the production of the electricity in [...] all these big dams of Bacău and of Neamț County were built during 60 during 70. [...] They need only new technology put is there.”

*The quote is derived from the interviews with regional experts.*



# New dynamics in and cross-fertilization potential with the agricultural sector

Agricultural and animal products	Volume of production	Share within the total Romanian production	Ranking among the Romanian counties
Clover - in green fodder equivalent (in tonnes)	47,654	3.54%	10 <sup>th</sup> / 42
Dry onion (in tonnes)	12,782	3.58%	9 <sup>th</sup> / 42
Durum wheat (in tonnes)	2,931	9.88%	4 <sup>th</sup> / 42
Fodder roots (in tonnes)	5,593	3.71%	9 <sup>th</sup> / 42
Lucerne - in green fodder equivalent (in tonnes)	256,411	3.94%	7 <sup>th</sup> / 42
Multi annual fodder (in tonnes)	318,238	3.32%	9 <sup>th</sup> / 42
<i>Live weight of the animals for slaughter - poultry (in tonnes live weight)</i>	<b>68,870</b>	<b>10.39%</b>	<b>2<sup>nd</sup> / 42</b>
<i>Total live weight of the animals for slaughter (in tonnes live weight)</i>	<b>85,045</b>	<b>5.84%</b>	<b>3<sup>rd</sup> / 42</b>
Harvested honey production (in tonnes)	1,009	3.27%	9 <sup>th</sup> / 42

Data source: National Institute of Statistics, Romania

“Also, the region offers a good potential for performing agricultural activity, so there is not an issue about lack of water, lack of good field for agriculture, which is important to have natural resources into the region.”

*The quote is derived from the interviews with regional experts*



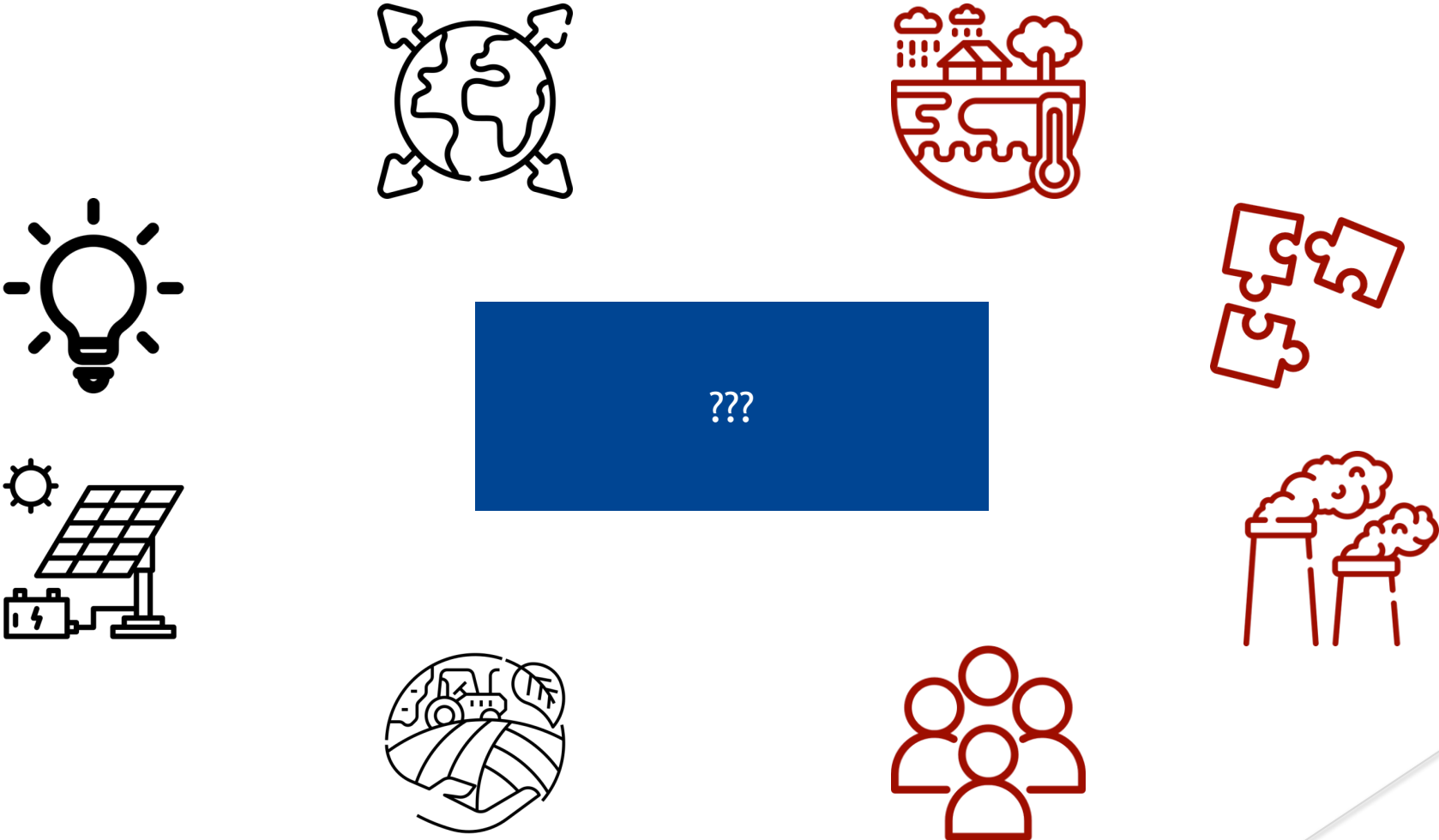
# New dynamics in and cross-fertilization potential with the agricultural sector

“So let's say you have mineral springs, you have salt mines, you have Slanic-Moldova [...] you have also the agricultural tourism. You have a very lovely area from the mountainous area which is underdeveloped now in terms of agriculture. There are possibilities to move towards another way of dealing with that in a competitive manner, in a sustainable manner. And once again, we rely on European expertise and European funds to move to this direction. The Regional Development Agency [...] is one of the most interested in this aspect and new kind of agriculture. And the food industry is on the short list of the smart specialisation of the region, which by the way, it was the very first region in Romania to have a smart specialisation strategy. [...] I think the figures we have are going to look a little bit better in the context of the new connectivity of the area with new possibilities to have a better logistic to have in the airports new cargo opportunities to have the new corridor. So I think that in agriculture, in food industry, you are going to see good approaches in the years to come.”

*The quote is derived from the interviews with regional experts*



# Conclusion



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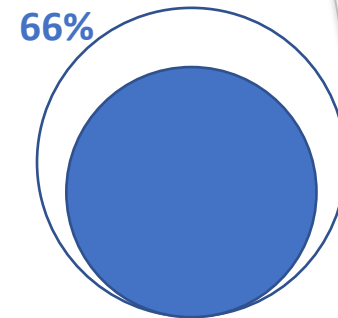
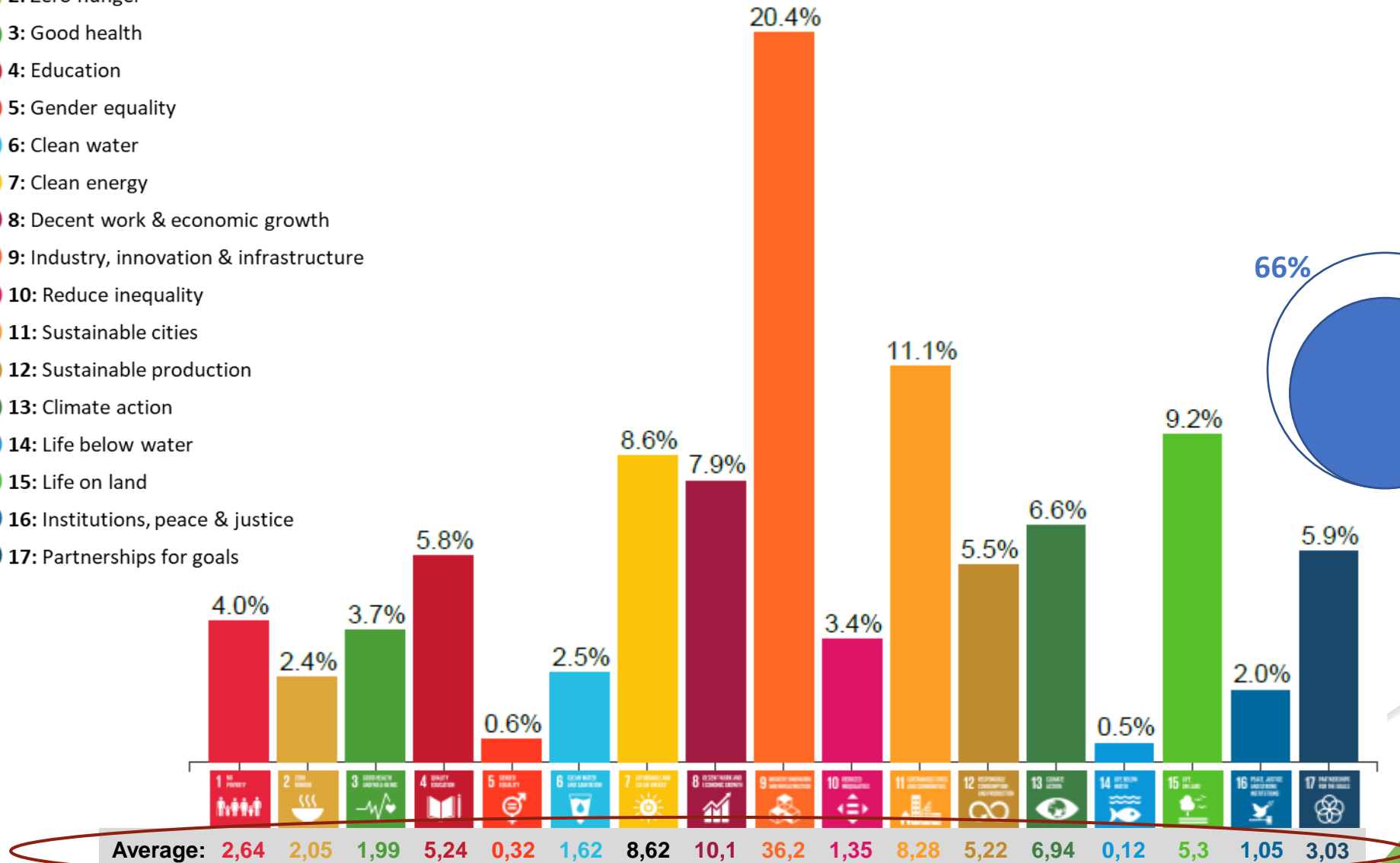
# Appendix



# SDG Mapping: Nord-Est region

-  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: 4\*  
 Pages: 771  
 Hits: 3.087  
 Hits/Pages: 4,00



- \*• RIS3 North-East Region 2021
- RIS 3 North-Est 2020 Results - Annex no. 4
- Strategie Smart City 2021-2027 - SLĂNIC MOLDOVA
- The Sustainable Development Strategy of the City of Sîlnic-Moldova (SDD) for the period 2021-2027

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



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- ▶ CORDIS - EU research projects under Horizon 2020 (2014-2020)
- ▶ ESPON: QoL (Quality of Life Measurements and Methodology) project
- ▶ European Commission: Regional Innovation Scoreboard 2021, 2023
- ▶ Eurostat: Regional statistics by NUTS classification
- ▶ JRC: The Energy and Industry Geography Lab
- ▶ National Institute of Statistics, Romania
- ▶ OECD - Climate and environment statistics
- ▶ OECD REGPAT Database (August 2022 version)

