Just energy transition in coal regions: Innovative framework for assessing Territorial Just Transition Plans 3-012-24



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JUSTEM

Reducing local energy poverty by engaging the population in the transition to a greener future



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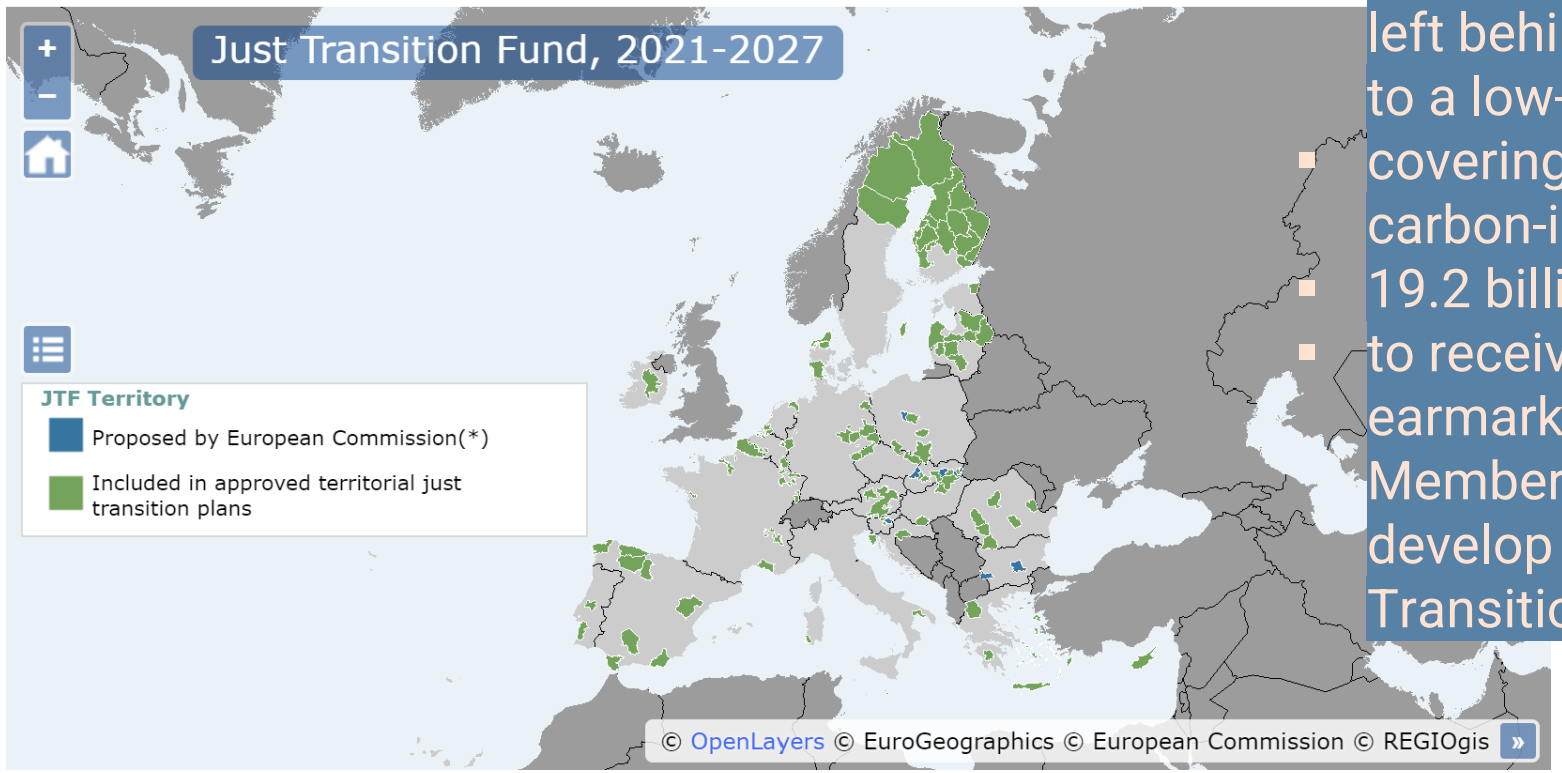


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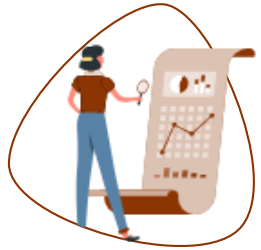
https://ieecp.org/projects/justem/

The Just Transition Fund



- 93 territories,
- key tool to ensure “no person and no region is left behind in the transition to a low-carbon economy” covering coal regions and carbon-intensive regions,
- 19.2 billion,
- to receive part of the earmarked fund, each Member State (MS) had to develop its Territorial Just Transition Plan (TJTP)

Objective of the paper



1. Identify the multiple impacts resulting from the implementation of just transitions in coal regions
2. Develop and apply a framework for assessing whether TJTPs address multiple impacts of just transitions
3. Understand how these impacts can be quantitatively assessed through the use of indicators

Methodology



1. **Literature review** on multiple impacts of just transitions
2. **Development of the impact matrix**
3. **Impact assessment** of just energy transition in six coal regions
   - Assessment of TJTP
   - Quantitative data analysis

Considered regions – JUSTEM regions



Just transition impacts

Impact dimension	Impact	Impact identifier
Social (S)	Reskilling/upskilling of workers	SIm1
	Access to public infrastructure and services*	SIm2
	Gender implications	SIm3
	Community cohesiveness*	SIm4
	Socio-cultural identity*	SIm5
	Energy poverty	SIm6
	Living conditions	SIm7
Economic (E)	Unemployment	EIm1
	Closure of mines and extraction sites	EIm2
	Decomissioning of fossil fuel-fired powerplants*	EIm3
	Structural changes in related industries*	EIm4
Demographic (D)	Migration of (young) people	DIm1
	Population density	DIm2
	Attractiveness to live and work in the region*	DIm3
Environmental (Env)	Greenhouse gas emissions	EnvIm1
	Health, including pollution*	EnvIm2
	Nature restauration/revitalisation*	EnvIm3

- Different impacts were considered from 4 different dimensions
- *impacts were only qualitatively assessed with the analysis of the TJTP



Results from the qualitative analysis on TJTPs

Traffic light: green = overall positive impact expected; yellow = mixed impacts expected; blue= impact unclear; red = overall negative impact expected; grey = impact not considered.

Impact dimension	Impact categories	Expected impacts on the just transition territories					
		Stara Zagora (BG)	Istria (HR)	Western Macedonia (EL)	Silesian Voivodeship (PL)	Hunedoara (RO)	Asturias (ES)
Social impacts	Reskilling/upskilling of workers	Highly educated labour force; but reskilling and upscaling needed	Retraining of working via dedicated programmes	Risk outflow of skilled labour; reskilling need of workforce mentioned	Retraining need of thousands of workers	Investments in upskilling and/or retraining of jobseekers	Training and requalification of people is critical
	Access to public infrastructure and services	Developed educational and transport infrastructure	Reference only to education	Lack of adequate social infrastructure; objective to develop and improve social and health infrastructure, and access to services	Objective to improve education and quality of the environment, access to social services	Support rural communities without access or with limited access to social services, pre-hospital medical infrastructure and health units	Objective to promote social infrastructure
	Gender implications					Promotion of the principles regarding non-discrimination, equal opportunities, and gender; support female and youth entrepreneurship and enterprise development	Consideration of women in (re)training, along young people, and people over 55 years
	Community cohesiveness, social inclusion/exclusion	Disadvantaged and youth groups to be considered in upskilling and reskilling measures	Planned retraining and education programmes also for socially vulnerable and disadvantaged groups	Population movement expected to increase demographic problems and lead o disruption of social cohesion; measure mentioned for active inclusion of jobseekers	Objective to increase territorial cohesion (no details provided)	Consideration of disadvantaged workers and disabled workers to contribute to cohesion between people	"Social piece" at risk
	Socio-cultural identity	Contribution to the preservation of the region's energy profile	Reference only to cultural heritage and mining and industrial heritage in relation to products and services to be offered	Maintenance of the energy identity	Challenge of preserving identify; thus, plans to increase the level of social activity, particularly in the aspect, incl. social activation programmes		Reference only to promotion of historical and cultural heritage
	Energy poverty	Measures planned to with focus on energy poor and vulnerable consumers to addressing energy poverty.		Objective to tackle energy poverty (no details on status quo and how)		High energy poverty; measures planned to combat energy poverty	Only mentioned energy poverty must be considered in context of renewable energy and self-consumption
	Living conditions		Objective to provide better living conditions	Objective to improve living conditions	Challenge and objective to increase quality of life of residents	Measure planned to retrain quality of life; greening and conversion of buildings	

Economic impacts	Unemployment	Up to 80% of the jobs in coal-based mining and energy production facilities could be affected; shift to new employment in industry-based jobs	Reduction of workforce in business that are closed; creation of new jobs in new businesses	Risk of increased unemployed; possibly new jobs in energy, industry and agricultural production	Reduction of employment; absorption of workers in the industries, incl. transport, logistics and construction	Unemployment of young workers; support service and active employment measures planned	Jobs will be affected; but potential to create more jobs than lost
	Closure of mines and extraction site	Pre-mine-closure planning (no details)	Planned investments in mining heritage and related tourism and products and services	Negative impacts on GDP, but positive ones on natural and ecological environment	Decrease in electricity production; decrease in incomes of municipalities		
	Decommissioning of fossil fuel-fired power plants	Planned substitution of coal-based power generation with renewable energy and other industrial activities		Reduction in activity, and this impacts on unemployment	Decommissioned enterprises negatively affect the economic and living attractiveness		
	Structural changes in related industries	Promising region for R&D and innovation in the field of new clean technologies	Plans to diversify the economy in agricultural, ICT, gaming, tourism; entrepreneurship support			Plans for sustainable economic diversification, incl. automotive, food, tourism, health, CT	Carbon-intensive industry needs to transform; opportunity for regional diversification
Demographic impacts	Migration of (young) people			Population movement, intra-regional transfer of businesses and workers of the regions	Objective to prevent or at least minimise outflow		
	Population density						
	Attractiveness to live and work in the region		Objective to increase attractiveness		Abandoned industrial activities (brownfields) reduce their attractiveness both in economic and residential terms		
Environmental impacts	Greenhouse gas emissions	Objective to transition to a carbon neutral industrial centre					Decarbonisation as opportunity for economic development
	Health, including pollution			Positive impacts on health due to emission reductions, but lack of social infratsrcuture expected to bring negative impacts	Improved air quality due to radical elimination of primary sources of air pollution		
	Nature restauration/ revitalisation, renaturation	Rehabilitation measures	Reduction of air, soil and water pollution	Promotion of natural wealth	Restoration of post-industrial land		Recovery of land



Results from the qualitative analysis on TJTPs – Social impacts

- Great emphasis on **reskilling** and **training** – mentioned in ALL TJTPs
- **Gender aspects** are hardly addressed – no mention in Istria, Silesia, and Stara Zagora TJTPs
- **Energy poverty** is mentioned in all TJTPs except in Istria's
- The promotion of renewable energy, hydrogen and self-consumption are seen as ways to combat energy poverty in the TJTPs of the Jiu Valley, Stara Zagora and Western Macedonia

"Detailed assessment of the skills and competencies of the existing staff of the […] coal mines has not been performed but is considered essential for the successful modelling of the measures for reskilling and up-skilling of the affected workforce" (TJTP of Stara Zagora)



Results from the qualitative analysis on TJTPs – Economic impacts

- **Unemployment** was the main focus of ALL TJTPs
- Positive impacts are foreseen for unemployment, as the energy transition will create new jobs
- The TJTP of Asturias states that a potential 6,300 jobs will be created compared to the 1,316 direct job losses foreseen
- The **closure of mines and extraction sites** presented both positive and negative impacts depending on the region
- Diversification of economy is foreseen as the main way to counter this impact, be it from new energy sources or tourism (e.g., Asturias, Istria)
- The **structural changes in related industries** are foreseen to have mostly positive impacts, such as the creation of a hydrogen-based economy in Stara Zagora



Results from the qualitative analysis on TJTPs – Demographic impacts

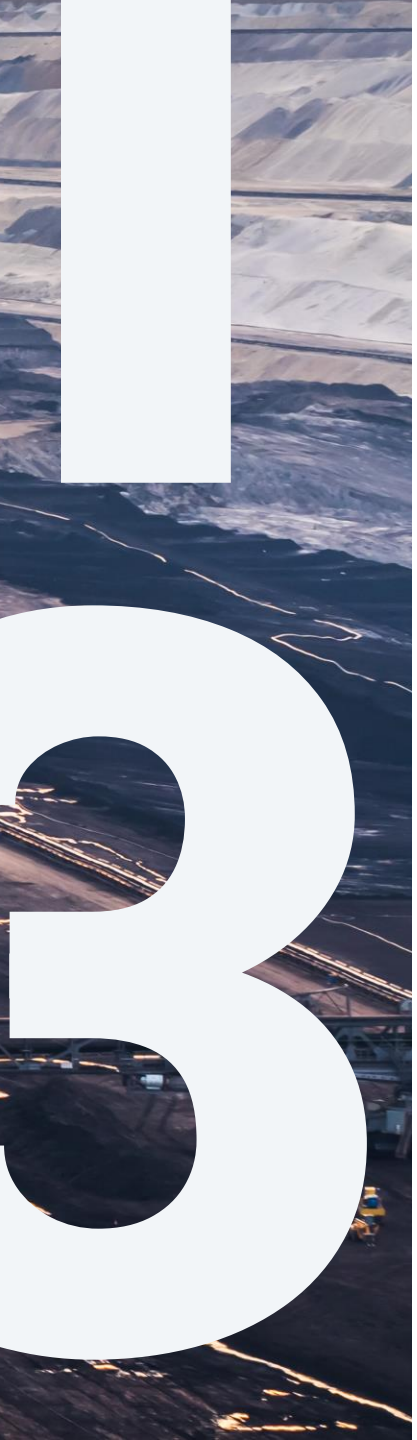
- The **outmigration of (young) people** from the regions is not dealt with in none of the TJTPs
- Nonetheless, negative demographic impacts are foreseen
- The **lack of attractiveness to live and work** in the region is foreseen to have negative impacts in all regions
- The TJTP describes Silesia as an already “problematic and unattractive area to live in”



Results from the qualitative analysis on TJTPs – Environmental impacts

- Positive impacts are foreseen in relation to the **emission levels** resulting from the energy transition
- Similarly, the reduction in pollution is foreseen to have positive impacts on **people's health**
- However, TJTPs also mention the weak health infrastructure of regions (i.e., the Jiu Valley and Western Macedonia)

"lack of adequate social infrastructure is expected to have a negative impact on the health of the citizens of the region of Western Macedonia" (TJTP of Western Macedonia)



Selected indicators

Impact dimension	Indicator	Indicator identifier	Data granularity available
Social (S)	People living in households with very low work intensity	SI1	NUTS2 level
	Female unemployment rate	SI3	NUTS2 level
	Inability to keep the home adequately warm	SI6a	National level
	Arrears on utility bills	SI6b	National level
	Type of dwelling in cities or rural areas	SI7	National level
Economic (E)	Unemployment rate	EI1	NUTS2 level
	Severe material and social deprivation rate	EI2a	NUTS2 level
	Risk of poverty and social exclusion rate	EI2b	NUTS2 level
Demographic (D)	Net change in the population under 30	DI1	NUTS3 level
	Population density	DI2	NUTS3 level
Environmental (Env)	Energy intensity of GDP	Env1a	National level
	Share of energy from renewable sources	Env1b	National level
	Use of renewables and biofuels for heating and cooling	Env1c	National level

- Indicators were chosen to quantitatively define and measure each impact
- Whereas less precise, national indicators are still useful



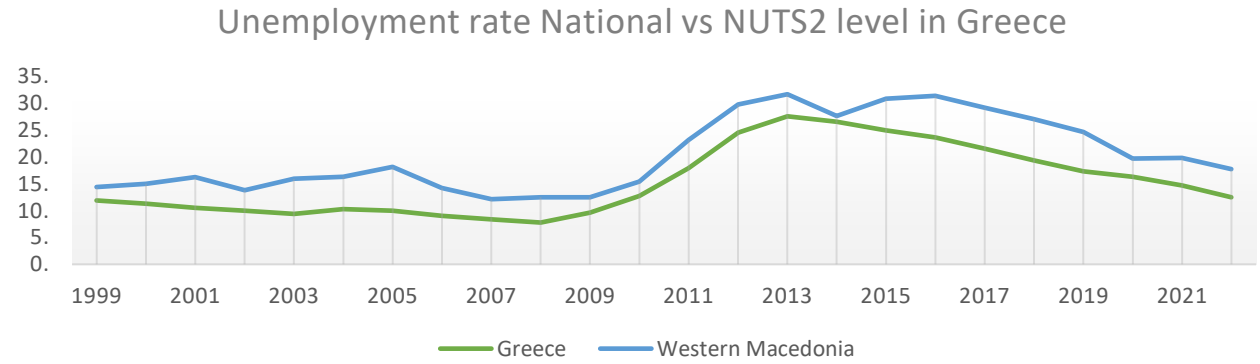
Results from the quantitative assessment of impacts in the regions for 2020

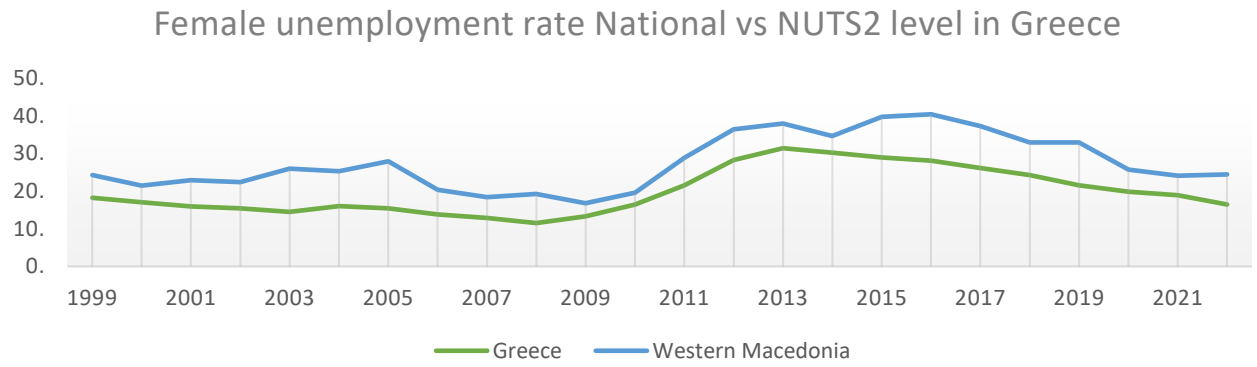
Impact dimension	Indicator	Stara Zagora (BG)	Istria (HR)	Western Macedonia (EL)	Silesian Voivodeship (PL)	Hunedoara (RO)	Asturias (ES)
Social	People living in households with very low work intensity (SI1)	10.10%	7.50%	19.50%	3.60%	8.40%	17%
	Female unemployment rate (SI3)	4.20%	7.70%	25.70%	3.20%	4.30%	14.40%
	Inability to keep the home adequately warm (SI6a)	27.50%	5.70%	17.10%	3.20%	10.10%	10.90%
	Arrears on utility bills (SI6b)	22.20%	13.60%	28.20%	4.70%	13.90%	9.60%
	Type of dwelling in cities or rural areas (rurality %) (SI7)	31.30%	36.50%	31.90%	41.30%	42.80%	26%
Economic	Unemployment rate (EI1)	4.60%	7.50%	19.70%	2.70%	4.60%	14.10%
	Severe material and social deprivation rate (EI2a)	29.70%	4%	13.30%	2.10%	19.20%	3.10%
	Risk of poverty and social exclusion rate (EI2b)	40.70%	20.40%	32.80%	11.40%	30.40%	27.20%
Demographic	Net change in the population under 30 (DI1)	3.70%	7%	-2.30%	-0.70%	-6.70%	3.70%
	Population density (people/sqKm) (DI2)	61.80	74.80	28.80	368.80	54.20	96.60
Environmental	Energy intensity of GDP (Kg oeq/1000€) (Env1a)	403.34	176.1	127.28	210.18	185.72	112.33
	Share of energy from renewable sources (Env1b)	23.32%	31.02%	21.75%	16.10%	24.48%	21.22%
	Use of renewables and biofuels for heating and cooling (1000 tonnes oeq) (Env1c)	1523.635	1198.085	1606.704	8506.741	3454.643	5076.373



Results from the quantitative assessment of impacts

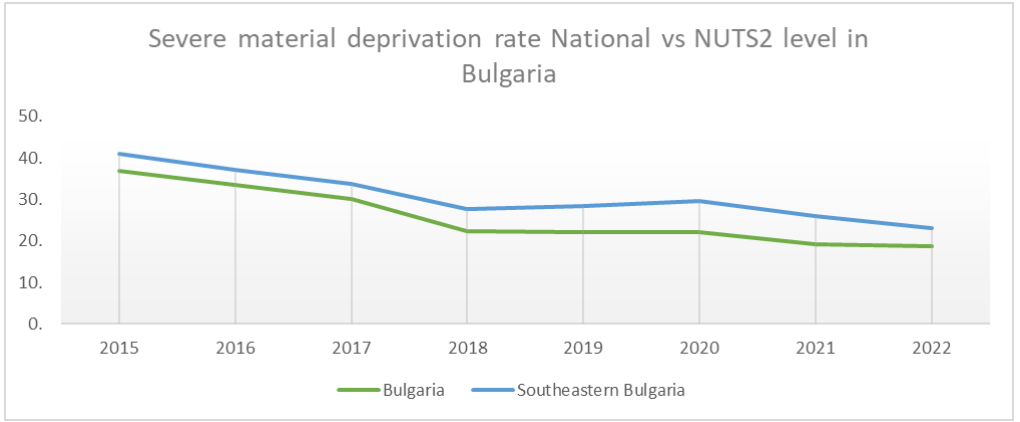
- Western Macedonia classifies as the most vulnerable coal region (in line with literature)
- Western Macedonia presents both *unemployment rate* and *female unemployment rate* higher than national average

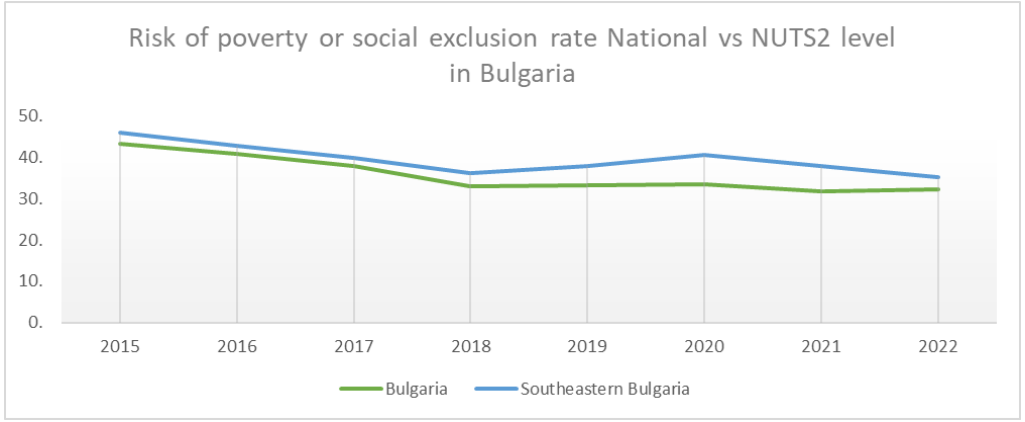




Results from the quantitative assessment of impacts

- Stara Zagora presented the highest energy poverty rates
- The two indicators considered were *severe material deprivation rate* and *risk of poverty and social exclusion rate*
- When compared to national averages, these were both higher

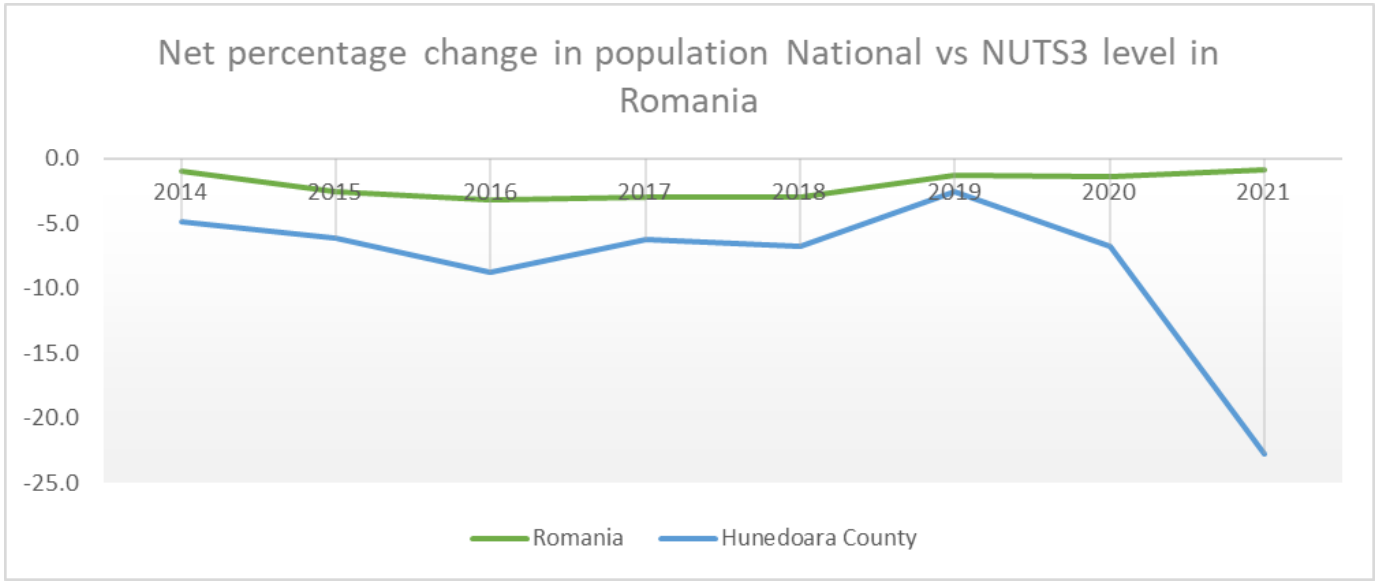


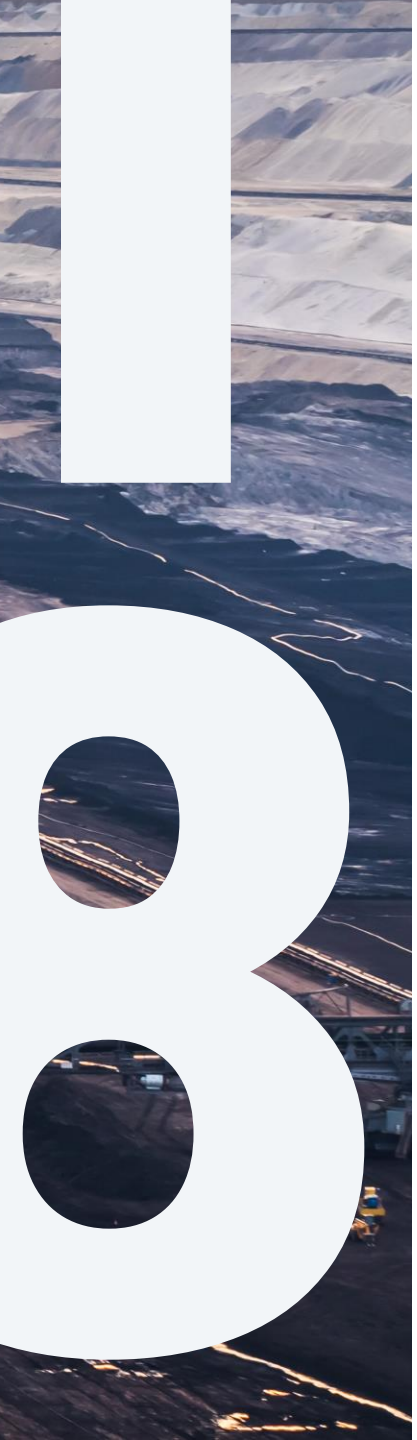




Results from the quantitative assessment of impacts

- The Jiu Valley presented the most dire situation when considering demographics and emigration
- The net change in population was lower than the national average





Limitations & Further Research

- The Eurostat repository was utilised as the sole source of data
- Out of 13 indicators, 7 were available at NUTS2 level (including 2 available at NUTS3 level)
- Each region should be further analysed utilising only regional level data
- Instead of analysing regions at EU level, lower breadth should be considered
- The indicator matrix should be extended to model and simulate future policy developments resulting from different policies being implemented

Conclusions

- Transitions away from coal have multiple impacts on societies and economies – our approach can assist in better defining and assessing
- The TJTPs of the pilot regions present the impacts of the just transition from de-lignification in each region, and further present solutions and measures to mitigate these impacts
- All TJTPs show a greater emphasis on unemployment and measures to tackle it
- A major blind spot is the impact the transition will have on the social and demographic fabric of society
- Quantification is crucial to better tailor regional interventions

Thank you.

Any questions?

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Energy poverty & micro-enterprises

- Where to “put” homeworkers and family companies in the context of energy poverty and how to use and adjust indicators?
- Induced effect of business poverty to household poverty?
- Data availability on national level and the need for disaggregated data collection?

