Deliverable Proof – Reports resulting from the finalisation of a project task, work package, project stage, project as a whole - EIT-BP2020

Name of KIC project the report results from that contributed to/ resulted in the deliverable	REBOOST: A Boost for Rural Lignite Regions
Name of report	Mental Landscape Report Gorj
Summary/brief description of report	The report summarized the results of empirical work in the Gorj Region in the first project year 2020. The report focuses on investigating mental landscapes of the local stakeholders. The report is based on in-depth interviews with local stakeholders.
Date of report	31.12.2020

Supporting Documents: attach in pdf format

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Summary

The REBOOST project strives to involve and empower local stakeholders in European coal regions to develop resilient and robust sustainable strategies as part of a fair and just transition.

This report focuses on the Gorj region in southwestern Romania which is the backbone of the national energy production. Even though Romania has a fairly balanced energy mix with a high share of renewable energy, coal mining remains its main energy source. Most industries in the area are related to coal production, labour is highly concentrated in a small area and both cultural and social aspects sustain coal mining even though its economic and ecological legitimacy is fading.

The objective of this mental landscape report is to explore the differences in perceptions among different stakeholder groups on the shift away from coal. In this rationale, mental models are internal mental constructions which interpret and structure the (transition) environment. Thus, we explore the differences, but more importantly the similarities on conceptions how to adapt and govern major groups of stakeholders involved in the transition and development processes in the region.

For Gorj, the experts were selected to represent five groups: Administrative organisations (e.g. employment and statistical agencies), public organisations (e.g. municipalities and governmental agencies), private 'contractors' tightly linked to the government (water management Gorj) and companies (e.g. consultancy, training).

It has been found that stakeholder groups have diverse expectations for the future of the region. Yet, most stakeholder groups sense the need to advance from coal dependency and prefer looking ahead rather than preserving the current situation. Herein, it is critical to use the region's strengths to optimally live up to the potential sustainable pathways mentioned by the stakeholder groups. Perceived strengths of Gorj county are the strong ecological and historical values of the region which prevail as the local population feels a deeper connection with the region and the educational offers in combination with the presence of a highly skilled youth. Potential for (economic) development lies in the touristic and agricultural sector. We also asked the stakeholders whether they felt heard, which, on the one hand, was confirmed. On the other hand, many challenges of the region were mentioned: The lack of opportunity especially for the youth, dissatisfaction with the job market, the absence of a political sustainability vision and the dominance of national political steering. Lack of involvement of the local population and poor communication and cohesion between communities hinders regional exchange - NGOs exist but have more potential to participate politically than thus far realized. Furthermore, legislative and organizational obstacles complicate the development of the region.

For a successful energy transition in Gorj, all stakeholder levels need to cooperate along the lines of common visions. Simultaneously, to meet the requirements for a just transition, the local political level should be amplified, and state institutions must take initiative and truly adapt measures to the local needs.

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1. Introduction and research motivation

"A Boost for Rural Lignite Regions" aims to develop an online simulation tool that will be used for stakeholder engagement in three European energy transition areas. The project focuses on three regions: Lusatia in Germany, Eastern Greater Poland in Poland, and Gorj in Romania. Hereby, we strive to involve and empower local stakeholders in European coal regions to develop resilient and robust sustainable strategies as part of the European Green Deal Investment Plan and Just Transition Mechanism. The project takes place over the course of three years (2020-2022) and in the end will also explore the possibilities of actual implementation of promising future development options.

In the first project year, REBOOST is focused mainly on understanding the study areas, the stakeholders' perceptions and attitudes, the so-called mental landscape which encompasses the manoeuvre spaces as well as the barriers to and opportunities for decarbonisation actions. In this regard, emphasis is placed on how stakeholders see their own current and future situation and not on how it actually is in terms of a scientific analysis of their economic, social and political situation. This subjective approach is based on the idea that the mind-sets of the involved actors not simply reflect their current economic situation but are strongly influenced by what future developments they consider possible, most likely to happen or impossible, and by the opportunity space they see for their own asset structure. In our view, this perspective is crucial when it comes to orchestrate social transition processes. The knowledge gathered in the first year will be used to design three strategic simulations in which selected stakeholders from the three study areas will be asked to experiment and explore possible future transformation pathways in an interactive manner: through an online simulation tool. In this regard, interviews and strategic simulation techniques will be used to ensure the participatory character of the project and to create supportive conditions for knowledge co-production process in which local stakeholders play an active role.

The objective of this mental landscape report is to explore the differences in the perception of the shift away from coal among different stakeholder groups. In this rationale, mental models are internal mental constructions which interpret and structure the (transition) environment[1]. In this report, we explore the differences, but more importantly similarities on ideas how to adapt and govern major groups of stakeholders involved in the transition and development process in the three regions. For Gorj, the experts were selected to represent five groups: Administrative organisations (e.g., Employment and statistical agencies), public organisations (e.g., Municipalities and governmental agencies), private 'contractors' tightly linked to the government (Water management Gorj) and companies (e.g., consultancy, training).

[1] Denzau and North.

According to Denzau and North[2], mental models are defined as pre-existing mental constructs which people employ to interpret and understand an environment. These are then subsequently used to solve the problems they face. In this sense, it is a heuristic that allows for classification and retrieval of information's about situations, objects and environments based on the most prominent characteristics[3]. In this heuristics process, both the complexity of the problems and the abilities of individuals to deal with different levels of complexity are important in mentally organizing the surrounding environment. Such mental models are shared through communication and lead to the co-evolution of formal and informal that structure interpersonal relationships, so-called institutions[4]. Such mental models and institutions reduce uncertainties in decision-making as they structure our expectations about the environment and thereby describe, explain and predict behaviour of other individuals in this environment [5].

Mental models are more than simple mental handholds to understand the environment. As these mental representations of the world are typically incomplete, they are flexible and subject to manipulation[6]. As a result, when unexpected events happen that the mental model did not accurately predict, this leads to a correction of the employed model. In a complex environment, the information is insufficient or too contradicting to enable corrections and multiple ideas on how to address a particular problem remain[7]. Incomplete mental models in such a correction, lead to decisions which have an adverse effect[8]. Several authors have analysed the importance of such corrections[9,10,11.]

For the energy transition in the three chosen European transition areas, we argue that insecurity about the future increases complexity and makes it more difficult to describe, explain and predict the

[2] Arthur T. Denzau and Douglass C. North, 'Shared Mental Models: Ideologies and Institutions', *Kyklos*, 47.1 (1994), 3–31 <https://doi.org/10.1111/j.1467-6435.1994.tb02246.x>.
[3] N. John Castellan, 'Shared Mental Models in Expert Team Decision Making: Janis A. Cannon-Bowers, Eduardo Salas, and Sharolyn Converse', 2013, 222–47 <https://doi.org/10.4324/9780203772744-20>.
[4] 'North, D. C. (1990). Institutions, Institutional Change and Economic Performance. Cambridge: Cambridge University Press | Socialcapitalgateway.Org' <http://www.socialcapitalgateway.org/content/book/north-d-c-1990-institutions-institutional-change-and-economic-performance-cambridge-cam> [accessed 18 December 2020].
[5] Denzau and North.
[6] Denis Besnard, David Greathead, and Gordon Baxter, 'When Mental Models Go Wrong: Co-Occurrences in Dynamic, Critical Systems', *International Journal of Human Computer Studies*, 60.1 (2004), 117–28 <https://doi.org/10.1016/j.ijhcs.2003.09.001>.
[7] Denzau and North.
[8] Jay W Forrester Germeshausen, *System Dynamics and the Lessons of 35 Years Table of Contents*, 1991.
[9] Regina Schoell and Claudia R. Binder, 'System Perspectives of Experts and Farmers Regarding the Role of Livelihood Assets in Risk Perception: Results from the Structured Mental Model Approach', *Risk Analysis*, 29.2 (2009), 205–22 <https://doi.org/10.1111/j.1539-6924.2008.01153.x>.
[10] Claudia Pahl-Wostl and Matt Hare, 'Processes of Social Learning in Integrated Resources Management', *Journal of Community and Applied Social Psychology*, 14.3 (2004), 193–206 <https://doi.org/10.1002/casp.774>.
[11] Tania M Schusler, Daniel J Decker, and Max J Pfeffer, 'Social Learning for Collaborative Natural Resource Management' <https://doi.org/10.1080/08941920390178874>.

environment. Denzau and North (1994)[7] proposed that individuals form theories that enable them to deal with problems characterised with large uncertainties through mutual communication of ideas. In this sense, mental models converge for individuals that have common backgrounds and experience (stakeholder groups) and diverge for individuals with different learning experiences. Thus, the learning process in uncertain environments is not fast enough and this process is accelerated if individuals can learn or correct based on mental models already established by like-minded individuals. Sharing mental models increases understanding but also strengthens already existing mental models. In addition, Vatn (2005)[12] brings forward that efficient sharing depends on the type of values an individual wants to protect. In the context of this mental landscape report, we can expect that interpretations on how to transition away from coal varies across societal groups and their analogous experiences and will keep diverging as the transition environment remains uncertain.

This report is part of a series of three analogous reports, one for each case study area complemented with three policy briefs on the mental landscapes and three policy briefs providing an in-depth review of the political economy of the energy transition in Poland, Germany and Romania. Furthermore, 3 extra policy briefs will be produced to illustrate the challenge of regional coal phase-out and structural change as a multi-level problem, within the regional innovation system of the respective regions. Hence, the solution is to establish a framework that focuses on the analysis of (regional) innovation system and smart specialisations. Hereby, we take a comparative approach between the involved regions in Germany, Poland, and Romania. We assume that mutual learning will be a core asset of the project in the view of the local actors, especially if we consider them being peripheral regions. Taken together, the reports and policy briefs close of the first (successful) project year.

The remainder of each report is structured as follows: In section 2, the methodological approach and study design are described in detail. In the third section, the policy landscape is delineated after which the results of the mental landscape mapping are systematically addressed, and general outcomes of the interviews are provided in section 4. A short conclusion is provided in section 5 to complete the report.

2. Research Approach

The work summarised in this report evolved around three steps. First, we explored the political, socio-economic and geographical characteristics of the regions. Such a landscape screening helped us to identify key stakeholders (see step 2), and to identify key arguments/viewpoints (see step 3). In a fourth step, we have organised a strategic simulation workshop with selected stakeholders simultaneously in the three regions.

[12] Arild Vatn, 'Rationality, Institutions and Environmental Policy', *Ecological Economics*, 55.2 (2005), 203–17 <https://doi.org/10.1016/j.ecolecon.2004.12.001>.

2.1. Scoping

One of the concrete research objectives for this year was to get detailed insight of the views of stakeholders for their own region and the current situation of the coal mining, which by extension is critical to get an overview of the mental landscapes in the case study areas. This requires awareness of attitudes, needs and preferences as well as understanding of the current situation of different stakeholder groups. To get to know the different situations of the tree case studies, we started with desk research. Although, concrete studies on coal mining regions in Konin and Gorj are rare, it still provided a satisfactory picture along which the interviews were structured. In contrast, in Lusatia various studies have been undertaken already, most of the based on qualitative and quantitative data of businesses in the private sector. The studies focused on the future pathways for industry from a cultural point of view and an ecological point of view. However, the available data often does not show the standpoints of different interest groups. More likely, they show strategies that only apply to a single organisation and the effort to achieve its aims. Hence, in all three regions, we had to hold interviews with opinion leaders about the future, the main problems, difficulties and strengths.

2.1 Stakeholder identification

As a second step, we have identified the key stakeholders in the three regions, their roles, objectives and scope of action to engage expert interviews. We also assessed the stakeholders according to a power-vs.-influence map. Such stakeholder mapping helped to identify possible stakeholder coalitions as well as mutual and conflicting interests. This step was particularly relevant for the Gorj county, since this region is currently the most distant from intercepting the transformation pathway. We have actively searched for potential problem owners at the national and international level. Hereby, it was assumed that interests, involvement, education and financial means influence the coal phase-out. Therefore, we carefully determined and choose actors who were present in the media and who are expected to be effective when implementing the (planned) processes.

2.2. In-depth Interviews and deep listening

We carried out in-depth interviews framed as ‘deep listening’ with key stakeholders in the study regions. The aim of the interviews was to identify the important stakeholder groups and existing discourses, map stakeholders’ interests and perceptions, possible options for the regional transformations, as well as the opportunities, costs, risks and fears that different stakeholder groups associate with these transformation options (Otto & a.m., 2019, S. 5). We created a guided interview around five questions, which also allowed for potential add-in questions.

The interview contained the following questions:

1. Please explain your work / your commitment in relation to the region?
2. What are the advantages / strengths of the region from your personal point of view?
3. What main problems / difficulties can you identify?
4. Do you feel noticed and understood?
5. What do you expect from the future? (Since you have specific ideas, who could be responsible for the implementation in this case?)

This kind of interview is defined by Flick et al. (2016) as an episodic interview. Episodic interviews foster a narrative form through which respondents can explain their opinions, experiences and visions in relation to an object (Flick, 2016, S. 117). In this rationale, two questions were added at the end of each interview:

6. Would you like to say / add something else?
7. Would you be willing to take part in an online workshop that simulates the future?

In many cases, we presented the project on the phone to the chosen actors and inquired whether they were interested and available for an interview. When interested, we sent out more elaborate information via email. Due to the Covid-19 pandemic situation, many interviews were held via zoom (also taking into consideration security reasons). The interviews had been recorded, transcribed and translated using the software *happy scribe*.

In total, 34 hours of interviews with 30 participants were held as part of REBOOST in Gorj, Eastern Greater Poland and Lusatia. The input was then used to generate the publications, reports and policy briefs. Here, it is important to mention that the lion's share of the interviews was held in Lusatia. Unfortunately, due to COVID-19, we were reliant on a minimal number of partners to gather interviewees and data. This is inferior to the task, especially when considering that in Lusatia the energy transition is the most far and in Romania and Poland it is not. In Gorj, 10 interviews were held (Table 1). It must be noted that the stakeholder structure is different, e.g., many people do not have good access to internet and are unable to conduct long video calls, not to mention participate in online workshops. Here, we had to revert to telephone interviews.

Table 1: Overview of participants interviews in Gorj

Interviewee	Organisation/Position	Commitment in relation to the Gorj Region
1	School inspection, governmental organization	Involvement in projects in Gorj County and beyond.
2	Employee at the District Employment Agency	Employment and professional training in Gorj county
3	Employee at the Gorj County Directorate of Statistics	Gorj County Directorate of Statistics has as object of activity the collection, processing, storage, analysis, dissemination of statistical research results and the establishment at territorial level of official statistical data series of economic, financial, social, demographic, legal necessary for economic and social policies.
4	Institution of the prefect Gorj County	Duties specific to the subprefect function of Gorj County
5	Gorj Water Management System (Utility contractor)	Water management in Gorj County
6	Jiu Gorge National Park Administration	Forestry engineer in a protected area of national and international interest
7	SC Paidea SRL	Training
8	SA Computing Center	Director of a national Computing Center (IT) that operated in Gorj
9	Matca SRL	Consultancy for finance options in the region
10	Oltenia Energy Complex	Important employer in the energy sector for the region
11	Stăneşti municipality	Major office of the municipality Stăneşti
12	Bankwatch Romania	Employee at a non-governmental organization Bankwatch

2.3 Strategic simulation workshops

Information gathered in the previous research steps was used to construct a framing for the strategic simulation workshop and to provide basic options that could be further explored and modified during the workshops. The aim of the workshop was for the participants to create and explore future transformation pathways. Strategic simulation, a type of serious games, also known as policy simulations, is an interactive, participatory method to develop strategic insight. Within scenarios, stakeholders use their knowledge and available data in a deliberative manner to identify challenges, seek solutions, negotiate trade-offs and consequently develop strategies that can lead to desirable futures,

The simulation was prepared in 3 versions, each adapted to the characteristics of a different region and carried out in each region through online sessions. In this regard, the workshop provided us with information about the concrete positions of stakeholders, manoeuvring spaces, mutual perceptions and to select the appropriate method for steps in the next year. Moreover, elements were translated to the national languages to be more accessible to all involved stakeholders. During each workshop, there was ample of room to ask questions and provide feedback.

3. The policy context

3.1. Decarbonisation on a Romanian level

Coal in many countries is an affordable yet unsustainable means to meet energy demand since the initial costs of financing renewables remains considerably higher than what most countries can afford. To accomplish the target temperature outlined in the Paris Agreement, a global coal phase out is underway. The European Union requires all member states to develop a National Energy and Climate Plan (NECP) which includes a coal phase-out pledge by 2030. At present, the 6th version of this strategy is being drafted in Romania (8 years after the first version was released). Romania's draft NECP as well as the Energy Strategy 2019-2030 contain no concrete promises on a coal phase-out and are considered unambitious and below the recommendations of the European Commission. As an indication, Romania's National Energy Strategy proposes a yearly power generation from coal of 15 TWh from 2030 until 2050, which is only 1 TWh less than in 2018[13]. Moreover, 3.2GW out of the current installed capacity of 5.5GW are expected to still be in operation in 2030[14]. Similarly, the European Commission recommends increasing the share of renewable energies to 34% in 2039. At present, Romania's share of renewable energies is 25% and the goal is an improvement to 27,9%[15]. Furthermore, the strategy has a weak and non-transparent methodology.

Despite the high importance of coal production in Romania, the country actually has a fairly balanced energy mix with a high share of renewable energy compared to other countries in the Balkan area. The share of renewable electricity in 2017 consisted of 23.1% Hydro, 2.9% Solar, 11.5% Wind ,0.8% Biomass, which makes 38,3 % of renewable energy in total[16]. Hydropower plays a prominent role in the energy mix in Romania[17] but often lies within environmentally protected Natura 2000 areas with potentially large environmental impacts[18]. Wind generation is significant in the region of Southeast Dobrogea (which has the second-highest potential for wind generation of any region in Europe)[19], but is less relevant for Gorj County. An investment boom lasted only until 2013 due to a failed quota scheme introduced in 2008, with no comprehensive support scheme for new renewables is in place today with

[13] Europe Beyond Coal, 'Overview: National Coal Phase-out Announcements in Europe. Status March 2019', November 2017, 2020, 1–7 <https://www.klimareporter.de/images/dokumente/2020/07/Overview-of-national-coal-phase-out-announcements-Europe-Beyond-Coal-14-July-2020.pdf>.
[14] Felix; Heilmann, Rebekka; Popp, and Ada Ámon, *The Political Economy of Energy in Central and Eastern Europe* (E3G, 2020) <https://doi.org/10.4324/9780429438509>.
[15] Heilmann, Popp, and Ámon.
[16] Heilmann, Popp, and Ámon.
[17] Heilmann, Popp, and Ámon.
[18] Felix; Heilmann and others, *The Politcal Economy of the Low Carbon Transition. Climate and Energy Snapshot: Romania*, 2019 <https://www.euki.de/wp-content/uploads/2019/02/Romania-PEMM-Snapshot-Publication.pdf>.
[19] Renewables Now, 'EC Calls on Romania to Raise Renewable Energy Target to 34% by 2030' <https://renewablesnow.com/news/ec-calls-on-romania-to-raise-renewable-energy-target-to-34-by-2030-658648/> [accessed 8 December 2020].

only minor support programs for small-scale installations[20]. Solar power could play a major role in Gorj, especially in areas that were used for coal mining and which are now polluted. Lastly, Gorj County has about 35% of Romania's natural gas reserves. In this regard, two coal fueled power plants will be most likely converted to gas fueled power plants in the next years[21].

In the past, sustainable long-term solutions where not on the agenda, support frameworks in the late 2000s and early 2010s underestimated the pace of capacity additions that they would trigger which caused increases in energy prices to which governments responded by abolishing the frameworks instead of improving their design[22]. The political importance of coal jobs, public concerns about energy prices and the lack of strategic planning on how to replace coal power discourage politicians in Central and Eastern Europe from driving the phase out forward. Another issue at the national level is the prevailing Euroscepticism and the notion that Romania has a strong energy system and should maintain energy independence. Coal is seen as the backbone of the energy system despite the fact that coal comprises merely a small share of the energy mix. This is fortified by the misconception that coal is cheaper. Hereby, the government ignores Romania's enormous potential for green economy transition and the recently created funding opportunities for sustainable development, such as the European Green Deal.

The central government receives EU financial support to finance the transition strategy for the region, for example for the Jiu valley (started in 2019)[23]. Romania has an indicative total allocation of the Fair Transition Fund (2021-2027) of about € 1,947 billion (equivalent to Poland and Germany) which has a national funding of € 0,292 billion. The six counties which will receive funding through the JTF are: Hunedoara, Gorj, Mures, Prahova, Galați and Dolj. The priorities of this program are a fair transition to the development of entrepreneurship, SMEs, research and innovation and digitalization, a fair transition through investments in clean energy technology and infrastructure, a fair transposition by reducing pollution and consolidating the circular economy and a just transposition based on increasing the employment level. This endeavour would benefit from clear national guidance on a date and pathway for the phase out of coal[24]. Yet, these development options are deemed insignificant compared to the (economic) options coal offers.

[20] Heilmann, Popp, and Ámon.
[21] Heilmann and others.
[22] Heilmann and others.
[23] Dan Dobre, 'Jiu Valley Receives Technical Assistance from Coal Platform through START Programme : Just Transition' <https://www.just-transition.info/jiu-valley-receives-technical-assistance-from-coal-platform-through-start-programme/> [accessed 8 December 2020].
[24] European Comission, *Regional Profile Jiu Valley*, 2020 <https://ec.europa.eu/energy/sites/ener/files/documents/jiu_valley_regional_profile_-_start_technical_assistance.pdf>.

The assessment of strategies in terms of their successes and their accuracy is challenging, because quantitative data about the EU-funded projects is frugal and qualitative data is non-existent. Even though we have a picture of the main issue and analogous solutions for the period 2007-2013, we barely know their success rate[25]. Constructive contributions come from the scientific community. Braghină and others for example suggest, that Gorj needs "endogenous development which, besides the exogenous impulses, contributes to an optimal development of local economies"[26]. Funding priorities must be dictated locally, at the grassroots level and it is explicitly relevant that the public participates in the decision-making process[27]. The energy supply is a key political priority, and any current or future strategy should be devised with the energy transition in mind changing the whole sector whereby high potential sectors should be identified regionally.

3.2 Decarbonisation in Gorj

Romania has 19.30 million inhabitants[28] of which about 350,000 live in the Gorj region. Romania is generally experiencing a population decline, with a negative population growth of -0.6 compared to 2019, steadily declining since 2014[29]. The population in Gorj is declining, also due to migration, which could be particularly assessed since 2016[30]. The region is in the southwest of the country located and has Romania's key industries, namely extractive industries and industrial machinery production on site. As a result, Gorj is the most important region for Romania's energy industry, having a high capacity of coal fuelled power plants (70 per cent of the country's stock of inferior lignite coal is located in Gorj[31]) and of hydroelectric power[32].

Romania's real GDP growth was strong in 2019 at 4.1 (annual percent change), and weak in 2020 (-4.9 percent). The unemployment rate is around 4% which is below EU28 average (2019), it reached historic

[25] Mustață, Nazare, and Dobre.
[26] Cristian Braghină, Daniel Peptenatu, and Cristian Draghici, 'The Reorganization of Economic Activities and the Perspectives of the Endogenous Development in the Mining Areas from Gorj County', *Journal of Urban and Regional Analysis*, 1.1 (2009), 85–93.
[27] Mustață, Nazare, and Dobre.
[28] National Institute of Statistics, 'Welcome to National Institute of Statistics | National Institute of Statistics' <https://insse.ro/cms/en> [accessed 8 December 2020].
[29] Worldbank, 'Population Growth (Annual %) - Romania' <https://data.worldbank.org/indicator/SP.POP.GROW?locations=RO> [accessed 4 December 2020].
[30] Consiliul Judetean Gorj, 'Statutul Judetului Gorj', 53.9 (2020), 1689–99 <https://doi.org/10.1017/CBO9781107415324.004>.
[31] Cristian; Braghină and Cristian Draghic, 'Socio-Economic Restructuring of the Mining Areas of Gorj County', *Human Geographies*, 2008.
[32] Radu Matei Cocheci and others, 'Assessing Environmental Fragility in a Mining Areafor Specific Spatial Planning Purposes', *Moravian Geographical Reports*, 27.3 (2019), 169–82 <https://doi.org/10.2478/mgr-2019-0013>.

lows[33] and has remained relatively constant in recent years[34]. Especially the youth unemployment rate records a strong decline to 15.43% in 2020 from peaking in 2015 with 23.58 per cent[35]. In 2019, the World Bank classified Romania as a high-income country for the first time (per capita income of $12,630) which is an important development for investment rating decisions and for accession negotiations to OECD[36.] Gorj County, on the other hand, differs from national averages and exceeds the national unemployment average by 8 percent which is strongly related to decreasing mining activities[37]. After the economic crisis, the unemployment rate improved by 2-3 percent and was able to maintain the regional level at 7-8 percent[38]. However, the loss of jobs has resulted in migration. Hence the decrease in unemployment is deceptive as it has to be assessed in relation to the total active population, which implies that the actual number of people unemployed is higher. Based on Data from 2017, 18.600 workers were employed in the direct and supportive coal mining activities, which is a share of 0.23% in total employment[39]. The total number compared to other European coal producers, like e.g., Poland (111,555 employed with a share of 0.71 percent) is relatively low.

Even though the share seems negligible, energy production dominates the area and most of the industries are connected to coal production and consequently labour is highly concentrated in a small economic field. Lignite output within Gorj County represents about one third of the annual electrical power of Romania and 80% of the coal production[40]. Considering that, four of the major nine cities in the region can be characterized as mono-industrial[41]. Four power plants are located in the area (Rovinari, Turceni, Isalnița, Craiova) with an average annual electricity production of 14 TWh and provision of thermal energy to the city of Craiova for 200,000 inhabitants with an average annual production 700,000 Gcal[42]. The power plants are supplied by nine open cast lignite mines none of the power plants are fully compliant with the Industrial Emissions Directive[43], even though the responsible company OEC claims

[33] Worldbank, 'Romania Overview' <https://www.worldbank.org/en/country/romania/overview> [accessed 8 December 2020].
[34] Enache Steluța Georgeta, *The Economic and Social Situation in Romania*, 2015 <https://doi.org/10.18356/aa447e3b-en>.
[35] Worldbank, 'Unemployment, Youth Total' <https://data.worldbank.org/indicator/SL.UEM.1524.ZS?locations=RO&view=chart> [accessed 4 December 2020].
[36] Worldbank, 'Romania Overview'.
[37] Liviu Neamtu and Adina Claudia Neamtu, 'Energy Mix and Social Implications in Gorj County, Romania', *Energy Sources, Part B: Economics, Planning and Policy*, 12.9 (2017), 794–99 <https://doi.org/10.1080/15567249.2017.1280562>.
[38] Alexandru Mustață, Laura Nazare, and Dan Dobre, *Financing a Just Transition in Gorj*, 2020.
[39] Bruegel, *Coal in Europe: A Quarter of the Electricity, Three Quaters of the Emissions* <https://www.bruegel.org/wp-content/uploads/2017/11/PB-2017_05_SimoneTagliapietra-1.pdf> [accessed 8 December 2020].
[40] Braghină and Draghic.
[41] Cocheci and others.
[42] Oltenia Energetic Complexul, *Planul de Restructurare Al Complexului Energetic Oltenia 2021-2025 Cu Perspectiva 2030*, 2020 <https://www.investenergy.ro/wp-content/uploads/2020/11/Plan-restructurare-CEO-1.pdf>.
[43] Bankwatch Network, 'The Energy Sector in Romania' <https://bankwatch.org/beyond-coal/the-energy-sector-in-romania> [accessed 4 December 2020].

they are authorized in terms of environmental protection. OECs average annual production of carbon is 21 million tons, the market share in electricity production of carbon is 22,77 %[44]. Several sources report, that coal production in Gorj region has not been profitable for years, e.g., 50 percent of production costs for one tonne of lignite is represented by personal costs and 15 per cent by energy consumption[45]. Production is preserved through external financial support. Essential political premises are the independence from imports, autonomy in energy production, as well as security in supply - as a pillar of growth and development.

On a regional level, mistrust in the government (as citizens believe investments from the European Union do not reach the region) and devotion to the EU are moving to the foreground. Importantly, the local population should be able to trust the national government, hence the state institutions should take the initiative and adapt to the communities' needs and integrate regional interests into national ones. Previous operational programs should be better evaluated, and failures should be counted towards success.

3.3 Decarbonisation in the (private) coal sector

Part of the NECP is a decarbonisation plan by energy operators, such as Oltenia Energy Complex (OEC). The OEC was established in 2012 by merging Societatea Naţionala a Lignitului Oltenia with Energy Complexes Turceni, Rovinari and Craiova. Today, it is one of the biggest power producers in Romania and under state-control with a stakeholder share of 77,15 percent[46]. In the past, as stated by many non-governmental actors, OEC pressured the government to issue governmental decisions to continue coal exploitation resulting in the expropriation of land and homes sitting at the edges of the mines to expand them (e.g. lately in the Juilt Nord mine)[47]. The citizens in the villages were just compensated weakly. Also, from a legal point of view, the OEC found ways to circumvent legal frameworks, with for example, the application for deforestation permits but not for mining expansion, that were challenged in court by Bankwatch Romania[48]. In view of the experiences from the past, a turnaround of OECs previous politics is hardly credible.

In November 2020, OEC released a summary for the first time on the topic which has to be approved by the European Commission to become concrete. OECs Decarbonization plan (2021-2025) shows the intention of the Romanian government to finance the plan with the Modernization Fund. The total installed capacity of electricity production will reach from 3,570MW in 2020 to 3,094 MW in 2026, the

[44] Oltenia Energetic Complexul.
[45] Ioana Ciută and Pippa Gallop, *The Great Coal Jobs Fraud*, 2018 <https://bankwatch.org/wp-content/uploads/2018/06/Jobs-study-june-2018-update-ENG-CEE-Bankwatch.pdf>.
[46] Ciută and Gallop.
[47] Ciută and Gallop.
[48] Ciută and Gallop.

share of capacity in wood reaching 53% of the total capacity. Company-specific emissions should decrease from 0.82 tCO2 / MWh in 2020 to 0.74 tCO2 / MW for the year 2025, representing a reduction of approximately 38 percent[49]. In the conditions of closing some energetic and mining capacities, but also of putting into operation the capacities on natural gas and photovoltaic, the forecasted evolution of the number of employees within OEC is the following: The dismissed personnel should enter in professional reconversion programs for the exploitation of new production capacities, redistribution programs within OEC, dismissal programs and professional reconversion programs for external activities. From now on OEC is concerned with specific processes to absorb these changes. Whether these have validity must be assessed.

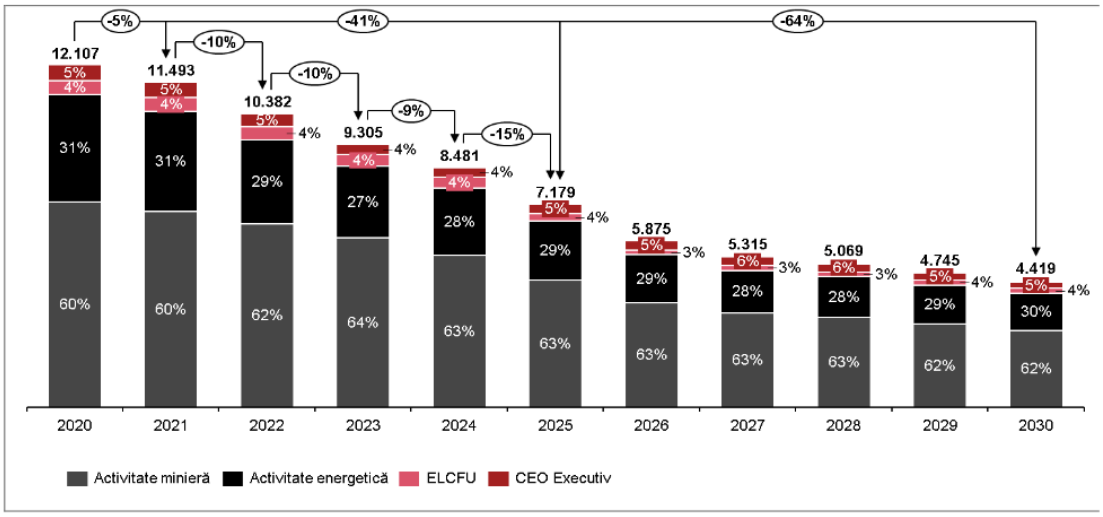

Figure 1: Staff turner over until 2030 proposed by Oltenia Energy Complex[50]

At last, the strategic objectives of OEC are included, that are highlighting the competitiveness of the activity (operational excellence, market share 18-20%), economic performance (profitability and sustainable cash flow and budget execution projects) and sustainable development (staff retraining, carbon footprint reduction). OEC will continue to play a major role in this change process and is very concerned about price stability, reducing unemployment, economic performance to ensure the viability of the company. In this regard, OEC should prepare a realistic plan for its downsizing and could focus its corporate strategy on solar energy. OEC is critical for the transition and has developed a new plan to meet the requirements. The objectives of the novel plan are based on the European Commission Framework Strategy for a Sustainable Energy Union with focus on enhancing energy efficiency and security while simultaneously decarbonizing the economy and creating solidarity and trust.

[49] Oltenia Energetic Complexul.
[50] Oltenia Energetic Complexul.

OEC receives regular and long-term governmental support - it has also taken commercial loans (>105 million in 2019) to be able to purchase its CO_2 allowances under the ETS[51]. Due to the losses accumulated in previous years (-200 mil in 2015, improvement to -31 EUR in 2016, -41 mil in 2017)[52], OEC has the status of a company in difficulty. It requested financial aid from the European Commission of 251 million EUR, to cover the cash flow required for a period of 6 months[53]. As OEC does not have the capacity to repay the loan, the company is pressures to communicate a restructuring plan for OEC in accordance with the "Guidelines on State aid for rescuing and restructuring non-financial firms in difficulty (2014 / C 249/01)". Through the strategic restructuring and the implementation of an investment plan (Decarbonization Plan), OEC wants to ensure its viability in 2026. This scenario is not only chosen voluntarily, as it is the only one in line with European law on state aid.Taking into account the fact that in the period 2012-2019, OEC registered losses in 5 of the 8 years (2014, 2015, 2016, 2018 and 2019), following the modeling of the figures without a contribution from the state, the company could not support a decarbonization plan and will not be able to achieve the organization's objectives. Without a restructuring aid especially for the expenses for CO_2 certificates, OEC will remain at a loss, failing to support under the current business model the support of the entire activity. In general, the restructuring aid involves covering the cash deficit in the period 2020-2025, the share of OECs contribution to the decarbonization plan was prudently considered 50 percent - the cumulative aid is estimated at EUR 1.33 billion. Considering also the contribution from the fund for modernization, the contribution of OEC is 42% of the total value of the restructuring measures.

Starting in 2026 the company depicts it will record a positive annual cash flow for the period until 2030. During the restructuring period, 2021-2025, investments in existing assets will generate annual reductions in operating expenses to ensure long-term economic viability with an adequate return on capital employed. The group's assessment sounds optimistic in view of the fact that further job cuts are expected to be inherent the more efficient the equipment gets. Regarding reports by Bankwatch[54], more mines got closed in the past than communicated (less available coal reserves), resulting in more unemployment. In general, OEC overestimated the lignite production trends, that is contrarily to OEC's predictions, similar to electricity production, a downward trend. One reason was the promises made by OEC regarding the energy market and the maintaining jobs in mining and operation. For example, job claims for new plants (Rovinari) compared with findings from Bankwatch differed extremely and showed the planned jobs fraud by Oltenia (ibid). In this respect, the production of coal takes place in the remaining mines (Rosia, Tismana-Pinoasa, Jilt, Rosiuta). After the implementation of the restructuring plan, the reduction of 4,473 employees in energy activities is expected, representing a reduction of

[51] Bankwatch Network.
[52] Ciută and Gallop.
[53] Oltenia Energetic Complexul.
[54] Ciută and Gallop.

approximately 40% in total compared to the number of employees in 2020. Starting with the year 2026, the activity will be carried out in 3 mining basins in Ruini, Jiltsi Motru.

4. Results Mental Landscape Scoping

4.1 General conclusions interviews

In Gorj, 10 interviews were conducted (See also Table 1). In these interviews, the emphasis is placed on how the stakeholders see their own current and future situation and not on how it actually is in terms of a scientific analysis of their economic, social and political situation. Such stakeholder mapping will help us to identify possible stakeholder coalitions as well as mutual and conflicting interests, which will be discussed in section 4.3. From the interviews, we have derived 5 general conclusions about the desired development pathways in Gorj.

First, the economy in Gorj is assessed as lacking diversity. In summary, the respondents reported a scarcity of jobs on the one hand and a lack of personnel on the other. In certain working fields, there is a lack of specialized staff, for example in information technology. On the other hand, the precarious economic situation and the need for professional reorientation is mentioned. A large share of the stakeholders highlight the lack of jobs and the case that basic economic preconditions like road infrastructure and missing investors are restrictions to Gorj's industry. Stakeholders also report that many people find work but still migrate because the partner cannot be employed in the region; They follow the family abroad or to other parts of the country. As a result, the region loses qualified workers if there is not enough work for all family members. Furthermore, the population also decreases as a result of high mortality compared to the birth rate. These demographic developments hamper the development of Gorj County. The perception regarding the job situation is difficult to assess for the local population as access to information is limited.

Second, many stakeholders emphasize the potential of the tourism sector and agricultural sector due to beautiful nature, many historical sites and high ecological value. Gorj's nature is described as unique in Europe, with a lot of hiking routes and tourist resorts (for example in Ranca and the Transalpina) inviting to outdoor activities and beautiful scenery with a rich hydrographic network with clean waters. Furthermore, the value of the forests, with its ancient trees, the unique ecosystems and biodiversity are recognized nationally and internationally by the scientific community (e.g., Natura2000 network and the national parks). Additionally, the region offers a rich history and a lot of testimonies of time, such as the Roman Camp, Lainici Monastery in Tismana, places of battle from the First World War (Vulcan Pass, Gorge, Parang), an ethnographic museum in Curtisoaram, Plaiul Bumbesti and Jiu and wooden mansions from the 19th century. For some stakeholders, a deep attachment to their homeland as well as pride can be observed. Citizens do not necessarily like to migrate to other regions

or countries, but their precarious living situation forces them. Unfortunately, the history of Gorj is negatively represented in local media or in units of education and consequently the value of the natural heritage and the importance of the environment is underestimated. As an indication, a stakeholder working in the field of water management emphasizes the need for a sustainable and more efficient use of water, the protection of water from pollution and wastewater treatment. In general, there is an absence of a sustainable perspective or a vision at the local authorities. One other strength mentioned by the stakeholders is the agricultural potential, namely animal husbandry and beekeeping. Nevertheless, infrastructure hampers the potential of the development of both sectors.

Third, a stakeholder from a governmental organization also positively assesses the educational offers at the regional level in different fields of training. Some structures of the educational sector exist and are perceived as a strength, especially the cooperation with the university. The research infrastructure in the county consists of 13 studies and research centres under the coordination of „Constantin Brancusi" University in Targu-Jiu. A constant concern of these centres is to maintain an interface with the private sector in the county, the independence of scientific institutions is in question. The young generation is touted as highly skilled and willing to participate actively in the transformational processes. It seems that the older generation, which has already experienced many structural changes, is resigning and fatigue. A stakeholder reports that it seems easier to live on government support than to forge yet another new path. In this regard, a rather aggressive mood was communicated. The professional qualifications are appreciated by the students which are considered in accordance with the requirements on the labor market. Positive assessments and optimism come from stakeholders that are either directly connected in the field of employment and professional training or work together with locals for example in the local tech-industry: They see a high potential in the quality of Gorj's local population as well as their involvement in activities. Nevertheless, it has been said that there is already a lot of qualified staff for several industries and especially the youth need further opportunities to find work in other economic areas. At least for modern industries like the tech industry, Gorj seems to have good research infrastructure and there are good conditions to carry out their activities. This contradicts with the implementation of our interviews, which was limited by the poor digital infrastructure and use of these technologies by the local population. An urban-rural differentiation could be explanatory.

Fourth, although there is infrastructure in the cultural and educational sector, the cohesion and activism in the civil society is weak or non-existent. Non-governmental organizations such as Bankwatch Romania, Fridays for Future Gorj, Greenpeace and WWF exist and are active on the ground but play a more and more important role in the process to counteract OEC's position of power. Especially the individual municipalities are poorly networked with one another and do not form alliances. The importance of the involvement of local actors as well as political participation, the sharing of

responsibility and the strengthening of trust in all stakeholders is mentioned several times. The involvement of external actors is accepted and even advocated, e.g. through the support of financial means, but it is demanded that they know the local conditions and thus cooperate with the local population. Constructive criticism was also mentioned in the interviews. Importantly, those involved in creating and launching projects are expected to gain a better knowledge of the area. More active involvement of local authorities in finding alternative, sustainable and closer solutions for local development would be desirable, both for the environment and for the communities, as there are enough alternatives to previous structures in Gorj County. More support is requested for those who want to work to develop activities and take responsibility. Furthermore, greater responsibility of employees and flatter hierarchies are also highlighted as important; There is a need for employees and community participation in decision-making processes. One stakeholder called for employing "people with a sense of management in decision-making positions to organize activities that are oriented toward citizens".

Fifth, there is a lack of opportunity for the young generation. Stakeholders communicate the need for a sustained and balanced development in several areas of activity to generate an environment of healthy and attractive life for the young generation. That is, acceptable paid jobs that highlight the professional quality of young people and a healthy social environment for example with quality hospitals, good schools and kindergartens or promoting people in general. As family planning becomes increasingly difficult, with people often lacking prospects, the state must become actively involved in the life of society in a positive sense.

Sixth, when asked to what extent stakeholders feel they are heard, most responded positively and feel heard and seen, while some do not at all. In general, the surveyed group is heterogeneous in terms of their attitudes and also expectations for the future of the region. The demand for change is countered by serenity that the development of the area will happen naturally. Those who feel not heard, feel that the administrative structures and new realities are not enough adapted to the local situation or area of interest. The implementation of specific ideas should be done on the initiative of those who generate them, with the support of those who manage the field. This positive attitude of one interviewee, who works in consulting to obtain financing for companies in the region, is not shared by many others. One stakeholder explicitly spoke of a fundamental disenchantment with policymakers and has no positive expectations for change. The only solution seems to be to adapt to ever-changing situations, as has mostly been the case in the past.

Seventhes, the "legislative and organizational mess". Control institutions should focus on rehabilitate illegal activities to establish fair and competitive market structures. The belief in democratic structures is weakened because of the lack of transparency of legal institutions and the assumption of illegal activities also in connection with Oltenia Power Complex. Stakeholders see great potential free market

economy with competitive opportunities for local companies that may play a reputable role on the international market. Energy and lignite production were mentioned less than expected. Specifically on this topic, support for the conversion of work is requested. In general, the highest priority is to involve local authorities in the search for innovative ideas. Simplifying bureaucracy is necessary for this. Although, the mental landscape of the stakeholders is different, it seems stakeholders have accepted the imposed changes and are looking forward instead of wanting to preserve a situation that has already been decided against politically, at least on a European level.

4.2 Mapping mental landscapes

The objective of this mental landscape report is to explore the differences in the perception of the shift away from coal among different stakeholder groups. In this rationale, mental models are internal mental constructions which interpret and structure the (transition) environment (Dezau and North, 1994). In this report, we explore the differences, but more importantly similarities on ideas how to adapt and govern major groups of stakeholders involved in the transition and development process in the three regions. For Gorj, the experts were selected to represent four groups: Administrative organisations (e.g. employment and statistical agencies), public organisations (e.g. municipalities and governmental agencies), private contractors tightly linked to the government (for example in water management) and companies (e.g. Consultancy, training).

The table below summarizes statements from section 4.2. Concluding from the table, it can be said that every stakeholder group states that the economy lacks diversity, except the contractors. However, as we couldn't speak to respondent 10 (OEC) and respondent 5 gave very limited answers we can conclude that in general stakeholder groups like to see the economy diversified. The same can be said for the economic potential in the tourism sector; All groups, except the companies, see a high potential here. Especially, when combined to agriculture and environmental protection. The research landscape is positively assessed by the administrative organisations and the companies. The groups including the administrative and public organisations would like to see a more active civil society. With regard, to the administrative organisations, they would like civil society to take a bigger role and thereby especially create opportunities for young people. The extent to which groups are heard is mixed among the respondent groups. Especially, the legislative and organisational complications seem to be important in this regard.

	Administrative organisations	Public organisations	Contractors	Companies	NGO
First, economy lacks diversity	Highlight the unfavourable demographics, uneducated and overworked staff, lack of specialised staff.	Like to see labour mobility between the coal industry and the touristic sector.		Low competitiveness, the staff structure (high age and qualification), age of energy production units and technological equipment lead to high production costs. Emphasise high unemployment numbers while the perspectives in other sectors are optimistic	Public opinion will shift naturally if coal phase-out is declared and structures are put into place. People are flexible and will find a way to live with the diversifying economics in the region and are differently willing to migrate. Illegal forestry activities overshadows coal-related issues.
High potential in which economic sectors?	See a strong potential of nature, tourism, agriculture, education, energy and history	Emphasize the high potential for tourism and energy	See potential for tourism in combination with environmental protection Emphasize that Gorj has a rich hydrographic network with clean quality waters		There is a huge potential for solar energy, potential of wind energy is not fully developed yet.
Research landscape	The educational offer that covers at regional level all the fields of training included in the nomenclature of qualifications, the professional qualifications appreciated by the students are in accordance with the requirements on the labor market.			Respondent 8 notes the professional quality of the people from Gorj County and their involvement in IT.	Better partnership with local university is planned.
Weak civil society	Assess community involvement as low. Thinks it is important that active local units specialised in economic sectors in the region unite and voice stronger opinions.	Discrepancies in support of the local community and the national decision-makers.			The civil society is not fully developed. In Jiu valley there is a huge coalition of NGOs which make an impact together and have a voice. This is not the case in Gorj. The trade unions are politicised. They are still an important actor, but not that reliable. Local government is a small organisation and doesn't play a role. The mayors of big cities and county councils are involved

					somehow. Their dominant viewpoint is indifferent. They are almost a bit more progressive, but in general they reflect the population. They wouldn't dare to say it with the election coming. Prospectively changing.
Lack of opportunities young generation	See favourable conditions for development of human resources.				Age structures will lead to a natural coal phase out, opportunities for young generation. There are some broad ideas, but these are not far developed yet and there is also no consensus.
Extent of feeling heard	Feel heard. Yet, face issues getting respondents in civil society and copes with technological issues (Statistical software).	Expert 4 feels heard, expert 11 not at all: Discrepancies between the national strategy and the local effects of these strategies.	Feel heard to some extent but sees that for better water management both support of the local community and the national decision-makers is necessary.	Feel unheard and would like the bureaucracy to be simplified as it is too complicated. This group want people with managerial sense in decision-making positions, to organize activities oriented towards citizens.	Good cooperation between NGOs and also to local actors as well as the European level.
Legislative and organisational complications	Face difficulties in collaboration with economic agents.			Stress that there is a lack of legislative predictability and a lack of clear objectives and directions for regional/local development	OEC is dominating the public and private life and is very powerful.

5 Conclusion and Summary

In general, Romania has improved its economic situation in recent years, but the persistence of these efforts is uncertain. Gorj County, on the contrary, is structurally reversely affected due to its focus on coal exploration and energy production despite the external pressure like EU directives. The government and the strongly affiliated OECs are aware of the pressure, and know it is imperative to act. This brings Romania and Gorj in particular, at a critical moment in the energy transition: Coal is still seen as the backbone of the energy systems and Romania's energy independence, but the notion that coal will not be viable after 2030 is gaining ground, especially in Gorj. The future of the energy transition depends on the dominant paradigms at three levels: The European Union, the National Level and the local level (Gorj).

Romania has different political structures and no regional political level, that are prevailing in other EU countries. The discourse takes place at the local and national level. Due to the strong connection between the OEC and the government, important decisions are made in the interests of the nation and not necessarily in the interests of the region. As a result, the gap between the national policies and the local implementations is large and the national benefits are deemed more important than the negative local consequences such as villages, which are being moved, because of the coal mines, noise, air and ash pollution. The urgency of achieving global climate goals and the pressure exerted by the EU should cause the further coal declination. Additionally, costs of renewable energy are falling and conditions for an increased role of renewables are thus improving[55]. Still, the Romanian government is a strong public supporter of coal power generation and heavily subsidises the sector. It is one of 11 EU Member States that do not plan to phase out coal by 2030, ignoring European agreements[56]. The role of the Oltenia Energy Complex, which is the third largest employer in the country, must be emphasized.

The economic potential in Gorj is largely based on lignite-related industries which employs 59% of all inhabitants and generates a turnover of 70%. On the one hand, this large network of specialized workers and the steadily growing investments in the energy industry can be considered a strength of the region. On the other hand, the industry in Gorj is not diverse. In this regard, important opportunities lie in the diversification of the economy and especially the improved recognition of renewable energies. Other possible economic opportunities are the agricultural potential after land sanitation and the opportunities for (winter) tourism. Agriculture occupies about half of the total area of Gorj. Unfortunately, as a result of mining activities, 70% of the agricultural soils are subject to erosions, landslides and acidity. Furthermore, the agricultural sector is subject to a high degree of agricultural land fragmentation as approximately half of the farms have an area less than one hectare. Especially in the North of the county,

[55] Heilmann and others.

[56] Joanna Flisowska and Charles Moore, *Just Transition or Just Talk ?*, 2019 <http://www.caneurope.org/docman/coal-phase-out/3545-just-transition-or-just-talk/file>.

there is a potential for animal husbandry as only two of the ten largest food producing companies produce meat products. Illegal forestry activities intensify ecological problems. At present, tourism is one of the most important drivers for economic growth and generates revenues in terms of economic, social and environmental protection. In Gorj there are four main tourist sectors: Eco-tourism, mountain tourism, business and transit tourism, cultural tourism and rural tourism. Especially in the Southern country there is unfulfilled potential. Here, the landscape is less spectacular as in the Northern part of Gorj and the main form of land use is coal mining.

With regard to the social and public dimension, the strength of Gorj lies in the increased interests of NGO's to support the energy transition, the proximity of Constantin Brancusi University and possible awareness of public authorities to stimulate labour mobility in combination with the large workforce that is available. NGO's offer a stronger voice to represent the local development wishes towards the national government. Consequently, the gap between the national policies and the local situation is diminished. Herein, also the close proximity of research organizations could be beneficial. These strengths can also be used to take advantage of opportunities, such as the increased interest of public-private partnerships to guarantee social development analogous to economic development. Hereby, the growing unemployment can be diminished by shifting attention to public services such as healthcare, education, public transport and waste treatment.

In the technical dimension, Gorj has a strong presence of physical transport- and energy infrastructure, especially in South-West Oltenia Region. The density of public roads in Gorj Is 39,3/100 km^2, which is the highest density for regions in Romania and slightly higher than the national average (35,8/100 km^2)[57]. Unfortunately, 40% of the roads in Gorj have a low reliability and do not meet current traffic requirements. As a result, the costs of maintaining the road network are high, while a satisfactory transport infrastructure is a necessary condition for sustainable development. The railway infrastructure in Gorj still has a significant potential for development. Another important technological strength is the available energy infrastructure. The coal phase-out leads to concerns that the investment costs will be sunken. However, opportunities lie in the fact that the infrastructure can be extended to take over part of the capacities for natural gas which is available from domestic production and the BRUA gas pipeline connectivity. Here, further opportunities such as existing national funding programs and the European Modernisation Fund can be supporting. Lastly, the large potential for hydropower and solar energy can directly contribute to the energy transition.

Gorj County has a natural environment and rich and diverse resources suited to both mining and tourism or agriculture. Gorj has 2 national parks, 49 protected areas of national interest, 9 of regional interest

[57] Gorj County Council, *Sustainable Development Strategy of Gorj County 2011-2020*, 2012 <http://old.cjgorj.ro/Date site/Programe - Strategii/Strategia de Dezvoltare Consiliul Judetean - engleza.pdf>.

and 8 areas of community interest. As a result, opportunities for Gorj in the environmental dimension lie in the development of eco-tourism outside of protected area, which is further enhanced by ongoing reforestation and enhanced water quality through reduced pollution and emission reductions in the lignite sector. However, the environment is still threatend by insufficient investments in waste treating facilities, overexploitation of natural resources, air pollution, and biodiversity loss, which is further enhanced by lack of efficient environmental protection policies. Along these lines, it is important to regenerate degraded lands through agricultural re-cultivation, forestry re-cultivation instead of deforestation, creation of lakes for different purposes and the use of so-called 'energy vegetation' (for example, the willow trees cultivated in the overburden dumps in Rovinari). In this regard, European nature directives and N2000-network are especially critical.

In 2020, Bankwatch has published a report on how to use EU funding to mitigate the impact of layoffs at Oltenia Energy Complex: *Financing a just transition in Gorj, Romania*. According to the organization, funding should be dictated at the grassroots level rather than at the central level, as traditionally has been the case and was unaware of the local issues. As a result, bureaucratic documents have been produced, which were poorly implemented and never fully supported by the local population. In this sense, Bankwatch stresses that the public participates in each phase of the decision-making processes, either directly or indirectly through representatives such as NGO's, worker unions and associations. With regard to the content of the energy strategies, Bankwatch emphasizes that strategies must bear the energy transition in mind. Decarbonization by 2050 requires differentiating a large part of the economy. Oltenia Energy Complex should prepare a realistic plan for its downsizing and strategically estimate how many workers will retire and how many workers have to be laid off. It is unlikely that coal plants will continue to operate after 2030 as the plants are aging and face production costs that will surpass the energy selling price. Furthermore, state aid for coal plants is illegal in the European Union (ibid). Oltenia's intention to build photovoltaic plants which deliver 300MW is a step in the right direction and allows the company to carry on its expertise in energy generation while keeping part of the workforce. Taking into account the challenge of a just energy transition in Romania, the state institutions must take initiative and truly adapt measures to the local needs. Here, the County Employment Agency, Constantin Brâncuși University and the various research institutions can help. At present, it is important to assess the regional operational programmes for the period 2014-2020 before the ones for 2021-2027 are finalised.

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