

**A thesis submitted to the Department of Environmental Sciences and Policy of
Central European University in part fulfilment of the
Degree of Master of Science**

**Coal or nothing. Environmental and social challenges of energy transition in the mining
region of Jiu Valley, Romania**

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Budapest

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ABSTRACT OF THESIS submitted by:

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Energy transition from fossil fuels to renewable sources has become a necessity to solve the current climate crisis the world is facing. But this transition also creates a series of social and environmental problems for communities dependent on fossil fuels production. The research focuses on how this transition can be done in a just manner in coal regions, where local people are witnessing the end of an industry that ensured their livelihoods and cultural identity for generations. Using the energy justice framework, this research consists in an analysis of the case of Jiu Valley, an emblematic coal region in south-western Romania. In here, the coal industry is on the verge of a complete shutdown, while the locals are being left behind without employment alternatives. A professional reconversion program launched in 2019 brings new hope in the region. The program is part of Romania's energy transition efforts and its aim is to train 5.000 miners to become wind power technicians. Based on qualitative research, the dissertation's argument is that while the program has a high potential in the area by addressing the pressing issue of unemployment in Jiu Valley, so far, the program fails to positively impact the community. Two of the main reasons identified for this failure are, on the one hand, national political instability and lack of funds, and, on the other hand, a lack of recognition and procedural justice during the process of selecting, interviewing, training and employing the candidates from Jiu Valley. Out of tens of miners and formers miners who applied for the program, only one person was selected, trained and employed in the wind power industry. Further research needs to be done to assess the impact of utilizing European funds for the professional reconversion program.

Keywords:: energy transition, just transition, coal regions, coal communities, coal miners, energy justice, professional reconversion, wind power.

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List of Abbreviations

EU European Union
EC European Commission
GHGE Greenhouse Gas Emissions
IEA International Energy Agency
IPCC Intergovernmental Panel on Climate Change
RWEA Romanian Wind Energy Association
UK United Kingdom
US United States of America

1 Introduction

1.1 The case of Jiu Valley

As the world aims to move away from fossil fuel-based economies toward a clean energy future, guaranteeing a just transition for all the parties involved is a major challenge. In the transition process, people living in coal producing communities are struggling to adapt to a very different reality. In many of these communities around the globe, the coal industry started its long, windy road to closure years ago, but the transition towards clean energy never happened, either because it is not geographically feasible or because of political or economic reasons (Tagliapietra 2017). These people are stuck between a past that offered them a livelihood around the coal industry and an uncertain future. In my research, I focus on the community of miners and former miners of Jiu Valley, in south-western Romania, where the coal mines started to close down in 1997, without other opportunities to absorb the unemployed labor force it generated. I will analyze a professional reconversion program that gives new hope to people in Jiu Valley by promising to train miners and former miners to become wind power technicians, a move that is part of Romania's energy transition efforts.

Romania is an European Union (EU) member state with a population of around 19 million. The country has a diverse mix of energy including almost all sources: coal, oil, natural gas, nuclear, hydropower, biomass, wind and solar. Coal represented 17% of the total energy consumption in 2018 in Romania, meaning 26 Mt of coal, which is a major decline from 47 Mt in 1990 (Enerdata 2019). Within the electricity mix, coal represented 22% of total electricity sources in 2016, while wind and solar represented 18% in the same year (IEA 2019).

A historically coal dependent country, Romania moves more and more away from the fossil fuel because of its economic inefficiency and climate protection measures. The two main coal basins in Romania – Oltenia and Hunedoara – currently employ around 15.000 people, down from around 100.000 in 1990. By comparison, the wind and solar power sectors employ around 3.000 people in Romania. The negative social consequences of the coal decline are still a problem today, as no other industry compensated for the job losses.

Energy transition in Romania is occurring without a clear national commitment. At the moment, Romania is one of the EU member states that did not announce a coal phase-out target. Instead, according to a National Energy Strategy draft for 2019-2030, coal is a “strategic” primary energy source that will not be decommissioned unless it becomes too expensive. Moreover, the expansion of the biggest coal power plant in the country is announced in the strategy draft as one of the main four strategic investments. At the same time, there is no ambition to deploy renewables at the level of 34% of energy mix, as recommended by the EU. Romania committed to a 30,7% share of renewable energy for 2030 (PNIESC 2020). In these conditions, the energy transition is mostly boosted from Brussels through climate targets for reducing emissions and increasing renewables in the electricity mix.

The EU positioned itself as a global leader in fighting climate change. The environmental commitment of the EU goes back to the 1980s when Europeans were talking about a common climate policy. In 2002, the EU distanced itself from the United States of America (US) as climate leader by ratifying the Kyoto Protocol. Moreover, in 2007, the EU came out with a landmark climate and energy package, called “20-20 by 2020” that stipulated: 20% unilateral GHGE reduction by 2020, 20% renewable target by 2020, non-binding 20% energy

efficiency, and stabilize temperature rise at 2 Celsius degrees (Wurzel *et al* 2011). By 2014, the EU had reduced its GHGE by 24% compared to 1990 levels and had a 16% share of renewable energy in its final energy consumption. The Paris agreement of 2015 was considered an accomplishment in terms of international climate policy and much of its success was due to the EU that moved from being a only leader to also play a roles a mediator, a “leadiator” (Oberthür *et al* 2017). The most recent proof of the European environmental commitment is the 2019 Green Deal proposal that made headlines with a net-zero emissions target for 2050 and many innovative measures such as the “carbon border” in the form of a tax for products coming from less climate ambitious countries (EC 2019).

The Green Deal includes the Just Transition Mechanism available for the coal regions which are part of the Just Transition Platform. This Platform builds on the Initiative for Coal Regions in Transition, a network of 20 coal regions that struggle to reinvent themselves. In 2018, there were 207 coal-fired power plants in 103 regions in the EU and 128 coal mines in 41 regions. The coal sector directly employs 237.000 people, 185.000 of which in coal mining. Half of this workforce is located in Poland, and other countries employing more than 10.000 workers are Germany, Czech Republic, Romania, and Bulgaria (Mandras *et al.* 2019). Jiu Valley is part of the Platform, an affiliation that opens the door for funding and assistance that, according to a Bankwatch report (Burlacu *et al.* 2019), can make a difference for people still living in the region.

1.2 Aims and objectives

The aim of this thesis is to show the impact of energy transition on labor and the environment. To reach this aim, I focus on a recent professional reconversion program for miners and former miners of Jiu Valley, whose goal is to train more than 500 persons per

year in order to employ them in the wind industry in Romania and other European countries. Since Jiu Valley because is the oldest coal region in Romania and an emblematic coal region for all European regions that are going through the process of just transition, it offers a vantage point to, first, analyze the attitudes of miners and formers miners towards energy transition and professional reconversion. As the main stakeholders in the energy transition process of Jiu Valley, it is important to understand miners' degree of participation in transition projects. Second, explore their expectations and motivations around the professional reconversion program. This is an important part in the evaluation of the potential of professional reconversion programs. Third, investigate the relationship between miners and former miners and other stakeholders involved in Jiu Valley just transition case because communication and collaboration between stakeholders are important to build just transition projects. And last, explore the way the program was designed and implemented to identify the ways to improve the program.

My objective is to compare people's expectations with designers' intentions and discover where they overlap and where they are in contradiction. I believe that understanding this interaction is crucial to understanding the real needs of people from Jiu Valley and determine the feasibility of the program and of the grand just transition project. My findings can contribute to better policy making for just transition in coal regions.

1.3 Outline

My thesis consists of six chapters, starting with the **introduction** where I describe the context of energy transition and just transition in Romania, moving on to the **literature review** where I explore the coal phase-out in the world and the impact on coal communities, as well as the energy justice concept that I apply for coal producing communities. Furthermore, I explain

the **methods and limitations** of my qualitative research based on semi-structured interviews with miners and former miners of Jiu Valley, as well as other stakeholders. In the **results** chapter, I outline the findings of my data collecting and analysis process, based on secondary research questions related to people's attitudes towards energy transition, professional reconversion, their expectations, their motivations and their relationships with other stakeholders. In the discussion chapter, I will use the three main tenets of energy justice – distributional justice, recognition and procedural justice – to interpret the results. In the end, I will draw a **conclusion** and indicate further research that needs to be done on this topic.

2 Literature review

2.1 Climate change and energy transition

Climate change is affecting ecosystems and livelihoods, as the Intergovernmental Panel on Climate Change (IPCC) states in its latest “Special Report: Global Warming of 1.5 C”. To keep global warming below 1.5 C, a limit that gives us some hope to still avoid irreversible loss of the most fragile ecosystems and more crisis for the most vulnerable people, the report suggests world governments should commit to a sharp decline of greenhouse gas emissions by 2030. To stay within the 1.5 C limit, the world has to reduce its GHGE by 45% from 2010 levels by 2030 and reaching net zero around 2050.

The most important ways of limiting global warming to 1.5 C, as envisioned by IPCC scientists, are: reducing energy demand, decarbonization of electricity, and electrification of energy end use. This is a confirmation of the arguments so many scholars make about energy being the most carbon-intensive economic sector and the vital need for an energy transition to cleaner sources to ensure the health of the planet (Creutzinger 2014; Graça Carvalho 2012; Sims 2004). The word of the hour here is *transition*. What we need, according to IPCC, is

moving away from a fossil fuels-based energy system to a clean sources-based energy system.

This transition implies a change in the state of an energy system as opposed to a change in an individual energy technology or fuel source (Grubler *et al.* 2016). However, energy transition is a long and extremely complex processes, involving multiple kinds of changes in energy flows, technologies and policies. It is the result of the co-evolution of three systems: techno-economic systems defined by energy flows, socio-technical systems delineated by knowledge, and systems of political actions (Cherp *et al.* 2018).

The history of energy transitions is a combination of development, crisis and shortages (Gruber 2012). The first big transformation is the Neolithic revolution, when hunters-gatherers settled and turned to agriculture. They relied on natural energy flows, animal work and human physical labor. As Mitchell (2011) pointed out, before the Industrial Revolution, solar energy was used to grow crops as fuel for humans, grassland to raise animals for labor, woodlands to provide firewood, wind energy and waterpower were used for machinery. The fuel crisis triggered by wood shortages led to the innovation of steam engine powered by coal which defined the “steam age” (Gruber 2012). This period has two stages: one that is dominated by coal and a second, “diversification” stage, mainly characterized by electricity and communications technologies. In the 20th century oil emerged to a dominant position in the energy system, natural gas expanded, and commercial nuclear power plants were put into operation.

Current times are characterized by a global effort to decarbonize the economy and move to less carbon-intensive energy sources and technologies. In other words, our current

civilization is in the process of energy transition from fossil fuels that built the world as we know it – “the modern democracy and its limits” (Mitchell 2011) – back to renewable energy that “sustained human existence until 200 years ago” (Mitchell 2011). This is all the more urgent as the coal has seen a resurgence since 2000 in developing economies around the world (Gruber 2012). In 2018, there was a record 2.3% growth in energy demand for this decade, according to IEA data (2019b). While solar and wind generation grew at double-digit pace, fossil fuels met 70% of the demand growth. This global picture depicts a very slow energy transition in the world, but there are big regional differences: European Union is the main driver of the decarbonization, while Asia accounted for 90% of all coal-fired capacity built worldwide in the last 20 years.

2.2 History of coal regions

Coal was first extracted in Europe in 1113 in Belgium, but England is the country that glued its history to the history of coal by inventing the steam engine, the “leading inanimate prime mover of the nineteenth century” (Smil 2017). Most of Europe went through the first great transition from biomass fuels to coals, crude oils, and natural gases, and the shift is still underway in some low-income countries (Smil 2017). But the coal-steam engine apparatus should not be overstated as a determining factor in the Industrial Revolution (Daggett 2019). The biggest increase in coal consumption happened only in the last half of the nineteenth century, at the “tail end of industrialization” and was triggered by a number of factors: technologies, scientific cultures, forestry practices, river flows, the geology of coal deposits, slavery, and the global circulations of resources and money (Daggett 2019).

Although some countries skipped the coal stage and became dependent on domestic or imported crude oil, countries that chose the coal way towards economic development still

depend on coal. For example, the precursor of the European Union is the European Coal and Steel Community. This first attempt of a supranational entity in Europe was prioritizing the production of coal, which was seen as a backbone of a successful economy. Only 68 years later, the EU is in the middle of a coal phase-out strategy which is essential to avoid the catastrophic effects of climate change. Currently, there are six countries in the European Union that rely on coal for more than 20% of their energy demand. But generally, coal declined from providing 41% of the gross energy consumption and 39% of power generation in EU28 in 1990 to providing 16% of gross inland energy consumption and 24% of power generation in 2018 (Alves Dias *et al.* 2018). Coal represents a fifth of total electricity production in the EU and it provides jobs for 230.000 people working in mines and power plants across 31 regions and 11 member states. In order to achieve the block's climate neutrality by 2050, the EU is phasing out coal, closing down the mines and the coal fired power plants that once supported the European development. As part of the European Green Deal, the European Commission (EC) introduced the Just Transition Mechanism which offers financial and technical assistance to coal regions in transition. At the moment, the Platform for Coal Regions in Transition counts 20 coal regions in nine member states.

Coal phase-out may be encouraged by economic factors – the price of CO₂ allowances under the EU's Emissions Trading System increased fourfold from 5 euros per ton of CO₂ to over 20 euros in 2018 (Bayer *et al.* 2020), reaching almost 30 euros in 2019 and making coal a very expensive resource – but it is a very difficult political decision taking into consideration that closing down coal mines and coal-fired power plants means leaving hundreds of thousands of people without jobs. More powerful western European countries took this decision after intense debate and negotiations. UK, the country where coal started its European history, announced plans for closing down all coal-fired power plants by 2025

(DECC 2016), and Germany, the largest coal consumer in Europe, plans to be coal-free by 2038 (IEA 2019). But most of the Eastern European countries did not put on the table such coal phase-out announcements. Probably the most important example is Poland, a coal-based country in Eastern Europe, that plans to reduce the share of coal in energy generation from 80% in 2017 to 60% in 2030, which is not even close to a coal phase-out. Romania is another coal-based Eastern European member state that did not commit to a coal phase-out strategy.

Romania has a balanced and diversified energy mix, with coal historically being the pillar of the energy generation and also economic development of the country. Despite the lack of a coal phase-out target, the production of coal continuously declined, from 41 Mtoe in 1990 to 25 Mtoe in 2018 (Enerdata 2019). The 25 Mtoe represent 17% of energy production in Romania, overpassed only by natural gas (32%). The rest of the energy mix includes oil, biomass, hydropower, nuclear, wind and solar. Romania has two main coal basins – Hunedoara and Oltenia – that provide energy for the whole country. While Hunedoara, the basin that Jiu Valley is part of, is on downhill trend, Oltenia has the biggest coal-fired power plant in the country which has development plans.

	Mines	Energetic blocks	Production capacity	Employees
Hunedoara	4	6	1,225 MW	4,081
Oltenia	12	11	3,240 MW	11,681

Table 1: The coal basins (Source: Romanian Ministry of Energy website)

2.3 Social, environmental, and economic aspects of coal regions

2.3.1 Coal, as a way of life

Coal communities have long been recognized in the literature as particular communities, dominated by one industry, isolated from the society and displaying special work patterns (Winterton 1993). The vision of coal as a way of life goes way back, to the anthropological study by Dennis, Henriques and Slaughter (1969) who analyzed the mining community of Featherstone in Yorkshire, UK. The researchers described the life of mine workers, from the type of houses they inhabited to the leisure they engaged in, pointing out the wage-driven settlement in the mining town, the solidarity between the miners, the gender-based employment in the town or the trade unionism. The authors' main point is that the year 1868 - when the first "colliery" opened - is the year that decided the community's destiny (Dennis et al. 1969). Population rose from 6-700 in 1801-1861 to 13,925 in 1951. Unchanged for 60 years, the population rose to 2,265 after the first colliery opened. In 1911 there were 5,001 occupied males, and 3,790 (76%) of them were employed in the coal mining industry. The community grew in a harsh environment, dominated by spoil heaps: „there is no point in town from which they are not visible”.

As Winterton (1993) points out, generations of social scientists talk about the stereotypical mining community, but the diversity of coal communities also came into play, a diversity that mostly comes from the way the specific histories shaped the communities. As Dennis et al (1969) remark, “families have a common fate determined by virtue of their similar relationship, through a wage-earning husband, to the coal industry”, but at the same time „the detailed life of no two families is the same”.

In many coal communities, workers come from different parts of the country in search of a job and a piece of the economic prosperity that industrialization brings. This is the pattern described by many researchers. Marilyn D. Rhinehart (1992) writes about the coal community of Thurber, Texas in the United States where coal exploitation started at the end of the 19th century. The “carboniferous coal beds running through the isolated and desolate western fringe of North Central Texas” saw an influx of immigrants as the coal exploitation extended. In 1890, the population of Thurber was 978 and surged to 2,559 residents in 1900, 75% of males who listed occupations identifying themselves as coal diggers or coal miners. Two thirds of the miners were of sixteen different nationalities (Rhinehart 1992).

West Virginia has also gone through the process of industrialization at the turn of the 20th century with coal mines developing in the “narrow valleys and on the steep hillsides which had been least attractive to agricultural settlers” (Lewis 1993). The composition of the population was radically influenced by the coal exploitations. Before World War I, the population of four counties in West Virginia consisted of “11,000 white Americans, 9,000 black Americans, 8,000 Italians and Hungarians, 2,800 European immigrants of 24 other nationalities, and 5,800 people of unknown origins”. Lewis (1993) writes that “the miners themselves struggled to overcome their differences, however, and a sense of class solidarity grew out of their shared grievances and sense of powerlessness.”

2.3.2 Environmental side of coal regions

Burning coal is one of the main sources of GHGE contributing to climate change. Coal related emissions rose globally from 5 Gt in 1990 to 10 Gt in 2018 (IEA 2019). Coal generates multiple hazards for health and the environment during all stages of its life cycle – extraction, transport, processing, combustion – and affects individuals, families,

communities, ecological integrity, and the global climate (Epstein *et al.* 2011). These costs are considered “externalities” and are not accounted for by the coal industry. Accounting for them with double or triple the price of electricity per kWh generated from coal (Epstein *et al.* 2011). Some of the environmental hidden costs are: methane emissions, damage from abandoned mine lands, loss of biodiversity, sludge and slurry ponds, air particulates, loss and contamination of streams, destruction of local habitat, acid mine drainage, water pollution from runoff and spills, heavy metal pollution, acid rain, coal ash pollution.

Living with pollution is a daily reality for people in coal regions (Crăciun *et al.* 2002). But, despite the obvious impact of ecological damage on their health and quality of life, local people tend to defend the coal industry and contest outside voices that draw the attention towards the negative environmental impact (Crăciun *et al.* 2002). The connection between coal workers and the industry - which proves to be a dependency – is something that scholars struggled with. What makes a coal worker, the first one exposed to the environmental damage of the coal industry, to be such a fervent supporter of the coal exploitations? Shannon Bell and Richard York (2010) use the “treadmill of production” framework to explain the ecological devastation and the decline in coal employment as the technological improvements increase. But the “treadmill of production” does not explain the dependency of workers to the coal industry when there is large scale unemployment; in this case the explanation is to be found in the sphere of tradition-based ideology. “This tendency for many in a community to identify with an industry that was historically important in the local economy, but that may not be any longer, is regularly exploited by extractive industries to maintain their political influence” (Bell and York 2010).

Analyzing the apathy of local residents in a mining town of Appalachia towards negative environmental effects, Bell (2016) discovered that it comes from the power of members of the local elite, who have indirect or direct ties to the coal industry and who benefit from the maintenance of the status quo.

2.3.3 Socio-economic impact of coal decline

The process of decommissioning coal infrastructures comes with negative effects on the coal producing communities. The Joint Research Center of the European Union (Alves Dias *et al.* 2018) conducted a socio-economic analysis of coal industry decline based on gross domestic product (GDP), the unemployment rate and the share of jobs at risk within the economically active population. The results show that regions with coal power plants and coal mines are regions with lower economic power than regions without any of these facilities. Also, the analysis demonstrated that countries with either coal power plants or coal mines have lower levels of unemployment. Many coal regions were found to have high level of jobs at risk within active population in coal regions.

Socio-economic evaluations of the lignite phase-out in Germany show that “compared to the negative effects of demographic change on the labor force, the drop in the number of employees caused by lignite phase-out is rather small” (Oei *et al* 2020). The negative effects of structural change appear at early stages of phase-out, but quick recovery – like targeted labor market, social policy and retraining – can counteract the negative effects in following periods.

The South Yorkshire coal region in the UK is one that suffers social and economic consequences since 1981 when coal mines started to close down. From 211 “collieries” in

1981, only 5 were active in 2005. “Over 90% of all the coal industry jobs held by men in 1981 disappeared by 2004” (Beatty *et al.* 2005) and the region had the lowest gross domestic product in UK in 1998. (Murray *et al.* 2005).

2.4 Conceptual framework: Energy justice

Just transition is the result of recognizing that energy transition comes with uneven costs and benefits for people and that the only possible transition is the one grounded on the energy justice principles. Many scholars (Jenkins *et al.* 2015; Sovacool *et al.* 2017; Heffron *et al.* 2015) tackle the topic of energy justice – part of the climate justice framework – showing the multiple aspects of the problem: access to reliable energy, energy poverty, fossil fuel dependency or even pursuing clean energy for future generation (Newell 2013). Newell says that just transition has to address the political economy questions of “who wins, who loses, how and why” and who lives with the side effects of the energy sites of extraction, production and generation, as well as who will bear the social costs of decarbonizing energy sources and economy.

Energy transition is, as I mentioned above, a complex process which reorders the geopolitics of energy production, distribution and consumption and comes with high social and environmental costs. The literature does not question the timeliness of coal phase-out anymore but questions the ways in which is being conducted. The related effects of „energy revolution” are producing winners and losers between regions and within affected communities (Betz *et al.* 2015). The energy transition from coal to clean sources of energy must be not only sustainable in the sense of ensuring a zero-carbon future, but also sustainable in terms of local economic and social issues in communities where the phase-out will be mostly felt (Johnstone *et al.* 2017).

While acknowledging the numerous implications of energy transition, this thesis deals with the social and environmental impact within energy producing communities. Among the first formulations of the “just transition” concept is the one coming from trade unions in response to various environmental regulations that affected the industries and, subsequently, people’s jobs. This is pointed out in “The political economy of the just transition”, where Peter Newell (2013) says that the first meaning of the just transition is “to protect jobs in vulnerable industries”.

Energy justice is a recently emerged cross-cutting social science research agenda (Jenkins *et al.* 2015) which applies justice principles to energy policy, energy production and systems, energy consumption, energy activism, energy security and climate change. Most researchers refer to three core tenets of the energy justice – distributional, recognition and procedural – that I will also employ in assessing the case of coal phase-out in Jiu Valley. Distributional justice is the tool for investigating where energy injustice emerges, the recognition tool aims at identifying who is ignored or misrepresented, while the procedural justice explores whether the processes are fair or not (Jenkins *et al.* 2015).

The just transition concept is just starting to be part of the energy transition related debates and it was recently included in the Paris Agreement that stipulates “to take into account the imperatives of a just transition of the workforce” (UNFCCC 2015). The premise of the concept is that workers in the fossil fuel industry “should not bear the economic brunt of a low-carbon transition” (Brown *et al.* 2019). This means that the way we talk about energy transition should not only refer to market mechanisms and new technologies but include “reflections on how the emancipatory promise of energy can become embedded into the fabric of everyday

life” (Brown *et al.* 2019). The discussion about just transition is also necessary to ensure that the energy transition to renewable energy doesn’t replicate the same exploitative pattern of the mining culture.

2.5 Professional reconversion

After conducting a review of 33 academic articles about just transition, Sandip *et al* (2020) concluded that there are 17 vital elements of the just energy transition to be taken into consideration by policy makers. Out of the 17 elements that are classified according to four types of justice – distributional, procedural, restorative and recognition justice – seven are related to jobs and workers: local jobs and diversified economies, the gender gap in energy sector jobs, worker pensions, job quality, job guarantees and compensation, worker transition service, retraining workers (Sandip *et al.* 2020).

Retraining workers is one of the important 17 elements described by the literature as necessary towards a just energy transition. Recognition justice would require that retraining programs for fossil fuels workers appropriately identify the workers affected by energy transition, the skills they have, and the skills required for them to be working in clean energy industries (Sandip *et al.* 2020). “The global climate stabilization project” (Pollin *et al.* 2019) works on two concomitant levels: phasing-out fossil fuels and building new clean energy projects. This also means losing fossil fuels jobs and creating new clean energy jobs. While some of the new jobs require skills closely aligned with those that the displaced workers used in their former fossil fuel industry jobs – like construction related jobs or management, administrative, and transportation related positions – other jobs require new skills. This is why any just transition program must include “a provision for retraining for the displaced fossil fuel industry workers” (Pollin *et al.* 2019).

Pollin and Callaci (2019) estimate that a just transition for US workers and communities that are currently dependent on domestic fossil fuel production would cost a modest 600 million dollars per year, which represents 0.3% of the revenues that could come from a carbon tax. The researchers conclude that the just transition is affordable, but most important is “a moral and strategic imperative”. “It will be virtually impossible to move forward at the pace that is necessary with a clean energy transformation without making firm commitments to generously supporting the workers and communities that will be hurt by this transition” (Pollin *et al.* 2019).

To interpret the decline of South Yorkshire coal region in UK, researchers from the University of Sheffield conducted over 40 interviews with former miners and discovered that there is a lack of adaptation to changes in the environment. “Adaptation and retraining are crucial areas of investigation” (Murray *et al.* 2005), but despite growing number of jobs as a result of economic and industrial investment, “large numbers of unemployed miners will not be reduced if individuals feel that the jobs created are unsuitable or unattractive”. Researchers discovered that former miners were “disheartened by the closure of mines and disgruntled with a lack of understanding and help from employment agencies” and they are resigned to the idea of finding a good job. Most ex-miners reported that they were never asked what they wanted to retrain as, instead they were presented with a series of choices, which demotivated them.

2.6 Limitations and conclusion

While acknowledging that China is the number one coal producer in the world and the most coal dependent country globally, with many coal power plants in the making, I deliberately

left out China from my literature review as the differences between the EU and China are too big. While EU has a coal phase-out target and witnessed constant coal decline, China is on the reverse trend, with coal booming and growing. My focus is on social consequences after the coal phase-out, which is not the case in China.

The literature on coal regions is abundant and paints a very good picture of the way coal shapes communities across the globe. A coal region is usually a region with harsh natural conditions, and the coal extraction adds on a few layers of harshness: forced urbanization and industrialization, hard work for locals and immigrants, extensive environmental damage and health risks, and so on. Burning coal is one of the main drivers of climate change, a scientific consensus that decided the fate of fossil fuels. Lack of competitiveness and climate protection measures put coal regions on an energy transition track towards clean energy future.

But coal phase-out comes with major social issues, like unemployment, which is why it is important that the transition be just for the people. I focus in my research on energy justice in coal producing communities because it has been left out of the discussion about energy transition for too long. I will look into the case of Jiu Valley, the oldest coal region in Romania, where coal mines started to close down in 1997 and triggered social and environmental consequences that the community is still fighting today. The energy transition process creates a window of opportunity for sustainable projects in the area in a just manner for the local community. My research looks into the possibility of creating jobs in the renewable energy sector for people formerly employed in Jiu Valley mining sector. Similar tracks were studied for different regions in the world, like China, India, US, and Australia (Sandeep *et al.* 2020). My research aims at filling a gap in the literature regarding the

feasibility of renewable energy to replace coal industry in terms of jobs in Jiu Valley and how the process of professional reconversion contributes to this goal.

3 Methodology

3.1 Qualitative research

In my quest of understanding “the world of Jiu Valley” and explore people’s experiences related to specific social problems (Silverman 2016), I chose to conduct a qualitative research based on semi-structured interviews. This approach, extensively used in social sciences, helped me understand people’s attitudes towards energy just transition in order to assess the feasibility of the professional reconversion program which is the topic of my thesis. As the focus of my thesis is the “just” transition, namely the social aspect of the energy transition, it was the clear choice for me to employ the qualitative methods, methods that are usually meant to add the “what” and “how” to a quantitative research (Silverman 2020).

The main method of my qualitative research is the semi-structured interview which I used to collect primary data from the Jiu Valley community as well as from the other stakeholders.

The semi-structured interview offered me both a fair amount of information about my interviewees, and enough flexibility to discover nuances in people’s stories. During the interviewing stage of my research, I had in mind that “interviewing is inextricably and unavoidable historically, politically, and contextually bound”, which refutes the “tradition of the interview of gathering objective data to be used neutrally for scientific purposes” (Fontana *et al.* 2005). I conducted 15 interviews, which are categorized as follows:

1. Initiators of the professional reconversion program:	2. Local people from Jiu Valley:	3. Observers:
<ul style="list-style-type: none"> - The Minister of Energy's advisor in charge with the design of the program - The director of the Monsson company, in charge with training and employing the candidates. - The rector of the University of Petroșani. 	<ul style="list-style-type: none"> - Three miners who applied to the program. - Two former miners who applied to the program. - Three former miners who didn't apply to the program. - One person employed after the training. 	<ul style="list-style-type: none"> - One just transition campaigner from Bankwatch Romania. - One local activist involved in cultural regeneration projects. - One energy transition campaigner from the national NGO Greenpeace.

Table 2: Participants in the qualitative research

Given the current circumstances generated by the coronavirus pandemic, I conducted my interviews by phone in the course of two weeks during the month of April 2020. Only one interview was conducted face to face in October 2019, when I also went on site and conducted personal observations during a short trip. I used the snowballing method to reach my interviewees starting from the former miner I met face to face. She is the former miner used by the Ministry of Energy in the PR campaign related to the professional reconversion program. Her pictures as a miner and as a wind power technician up on a wind turbine appeared extensively in the mass-media to promote the project of reskilling, in a “before and after” frame.

Through her, I managed to get in contact with other miners and former miners from Jiu Valley, whom I categorized in relation with the professional reconversion program: miners

who applied, former miners who applied, former miners working in different sector who didn't apply, people employed. Speaking to people from these various categories helped me paint a larger picture of people's attitudes towards the energy just transition efforts. Other miners and former miners interviewed were reached through the representatives of the wind power company that trains and employs the people.

Miners and former miners I interviewed:

1. A.T. is 49 years old. She lives in Vulcan, was an underground engineer at Paroşeni mine for 21 years. She left the mine in 2017, received redundancy payments and applied to the professional reconversion program. She still struggles to find a long-term job.
2. D.S. is 50 years old. He lives in Lupeni, works at Vulcan coal mine as an underground locksmith. In total, he has 30 years' experience as a miner. He applied to the professional reconversion program that he learned about from A.D..
3. E.B. is 43 years old. He lives in Vulcan, works as an engineer at Paroşeni power plant. He applied to the professional reconversion program that. He learned about from the local newspapers.
4. L.V. is 52 years old. He lives in Petroşani, works as an electrician at the state-owned water facility in the city since 2012. Previously he worked as an electrician at Petrila and Paroşeni coal mines. He didn't apply to the professional reconversion program.
5. M.M. is 50 years old. He lives in a city in Czech Republic where he works at a car component factory. Previously he worked as a locksmith at Paroşeni power plant until 2013. He didn't apply to the professional reconversion program.

6. P.J. is 48 years old. He lives in Lupeni and works as a welder at Paroşeni power plant for 30 years. He applied for the professional reconversion program which he knew about from A.T..
7. M.Z. is 48 years old. He lives in Vulcan and is retired from working as an underground miner. He applied to the professional reconversion program which he learnt about from A.T..
8. V.B. is 55 years old. He lives in Vulcan and is retired from working as an underground foreman in the Vulcan mine until 2010. He didn't apply to the professional reconversion program, but he is the father of the only person employed through the program.
9. S.B. is 26 years old. Originally, he is from Vulcan, but now lives in Sweden where he works on a wind power farm. He intends to relocate to Constanta, close to the Romanian wind power farm. He is the only person employed in the professional reconversion program.

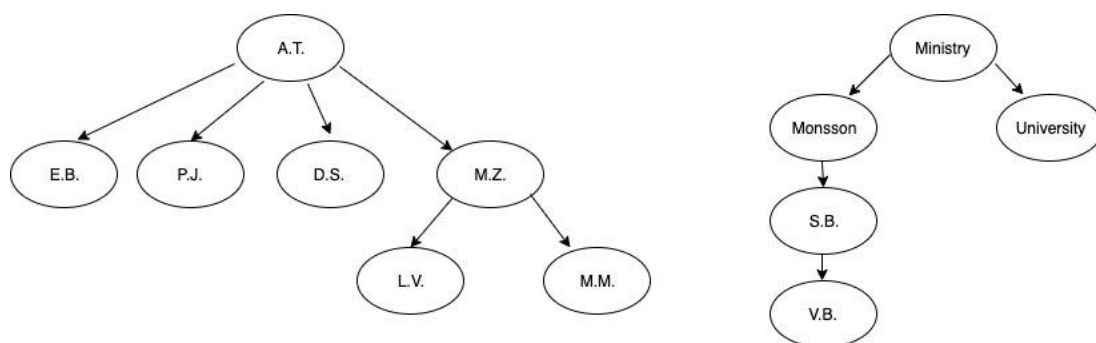


Figure 1: The snowballing method of reaching the interviewees

Apart from semi-structured interviews, I also used the observation as a qualitative research method. My short trip to Jiu Valley in October 2019 helped me understand the context of the decaying coal industry in the region. The images of abandoned mines and power plants, the vegetation growing out of the ruins, and the visual tailing dumps engulfing the forests gave me a sense of local people's perceptions about the energy transition based on what they see every day.



Figure 2: The ruins of one of the coal mines in Jiu Valley (photo by Ștefan Voicu)

Among the secondary sources, I used official documents and mass-media coverage. I studied national energy strategies – past and present – as well as European documents about energy transition. Moreover, I researched the World Bank archives and different think tanks' reports about just transition. In the same time, I followed the local mass-media to understand the position of different stakeholders involved in the Jiu Valley case.

3.2 Analysis

To analyze the data, I used the coding method. Coding is the main analytic process in grounded theory, which “defines what is happening in the data and begin to grapple with what it means” (Charmaz 2006). The first phase is to name each segment of the data followed by a selective phase that uses the most significant codes to understand what is happening (Charmaz 2006). The number of interviews allowed me to conduct a manual coding after identifying five main questions and themes. Based on them I extracted relevant information from the interviews, which I further analyzed in the context of the professional reconversion program.

In my semi-structured interviews, I focused on the following topics:

- Standard information: age, employment, residence, family, education, connection with the professional reconversion program.
- Attitudes towards the future of coal and the energy transition in Jiu Valley.
- Motivation for applying/not applying to the professional reconversion program.
- Expectations from the professional reconversion program.
- Their relationship with other stakeholders.
- Attitudes towards environmental protection and renewable energy.
- Social challenges in Jiu Valley.
- Livelihood options in the area.

3.3 Ethics

During my research, all CEU ethical research guidelines were taken into consideration. I respected the consent principle while conducting my interviews, all my interviewees were

aware of my position, the purpose of the data collecting and the general academic goal of my endeavor. Given that my interviews were conducted by phone, the consent was oral. Also, in order to respect the privacy of my interviewees, I decided to only use name initials, as to avoid any possible repercussions, even if they agreed to give their full names. My interviewees were also informed about the fact that the interviews were recorded.

3.4 Limitations

The main limitation is that I had to switch from face to face interviews to by phone interviews which had an impact on the interactions with my respondents. Unlike a face to face interview that can offer the chance to connect on different levels with the interviewee, the interview by phone is more limited to a “question and answer” type of conversation that lacks the nonverbal communication, as well as information about the person’s environment.

Another limitation refers to the pool of subjects. Without being able to go in the field and connect with various people through multiple ways, I was limited to the subjects that my initial source knew already, who are her friends, former co-workers or acquaintances. I intended to address this limitation by interviewing people from multiple categories, as described above.

Not least, the pandemic-imposed restrictions prevented me from having access to the library and to a research-friendly environment.

4 Results

4.1 Jiu Valley, an emblematic coal region

Jiu Valley is the oldest coal region in Romania, located in Hunedoara county, in south western Romania. The valley has a population of 119.484 inhabitants, according to the last national census in 2011, and consists of six small towns – Petroșani, Lupeni, Vulcan, Uricani, Petrila, and Aninoasa – as well as other small villages. The coal exploitation started around 1850, when the Habsburgs opened the first mines and initiated the first wave of industrialization in the Jiu Valley. The second wave occurred during the communist regime, in the 20th Century, when over 100.000 people from all over Romania, mainly Moldova, came to the valley to work in the coal mines (Crăciun *et al* 2002). Being a hard coal region, the exploitation was very profitable, and the region registered an economically booming period, during which population of the Valley enjoyed high paying jobs and prosperity.

The transition away from coal started after the end of the communist party rule in 1989 when the restructuring of the coal sector combined with a shift towards natural gas led to a decrease in production and consumption of coal and furthermore to mine closures and layoffs. The biggest moment in the de-industrialization process of Jiu Valley are the conditions imposed by a 1997 World Bank structural adjustment loan that was followed by a massive round of mine closings and layoffs. The number of mine workers dropped from 40-50.000 in 1989 to around 4.000 today (Burlacu *et al* 2019). Out of 14 coal mines active at that time, there are only 4 left, which will close down soon as well. The government's attempts at re-developing the area relied mostly on an administrative designation of Jiu Valley as a disadvantaged area. This initiative's goals were to attract investors through tax cuts and invest in public road infrastructure to encourage tourism, but it failed (Murg 2011). In fact, people's options for securing dignified livelihoods gradually disappeared. Laid off from the mines, people went

into informal activities like collection of building materials and scrap metals from abandoned mines or gathering forest fruits and mushrooms and harvesting trees (Murg 2011). After Romania joined the European Union in 2007, people from Jiu Valley migrated en masse to other European states, like Italy, Spain or Germany, to work in domestic activities like cleaning, cooking, assisting elderly people (Murg 2011).

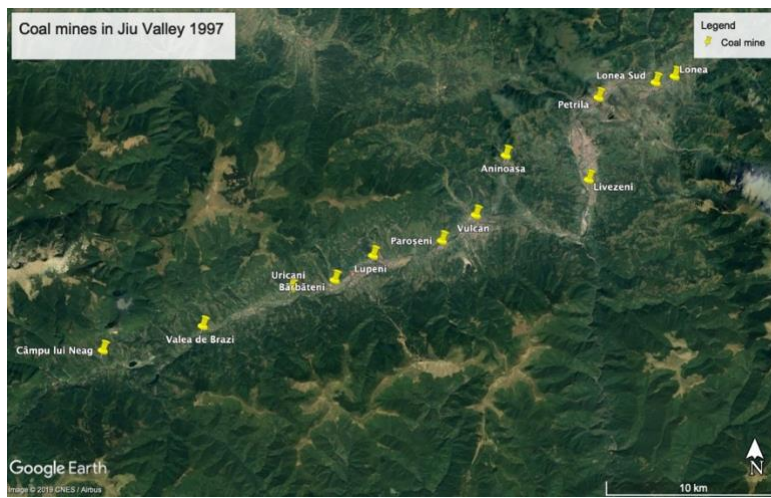


Figure 3: Coal mines in Jiu Valley in 1997

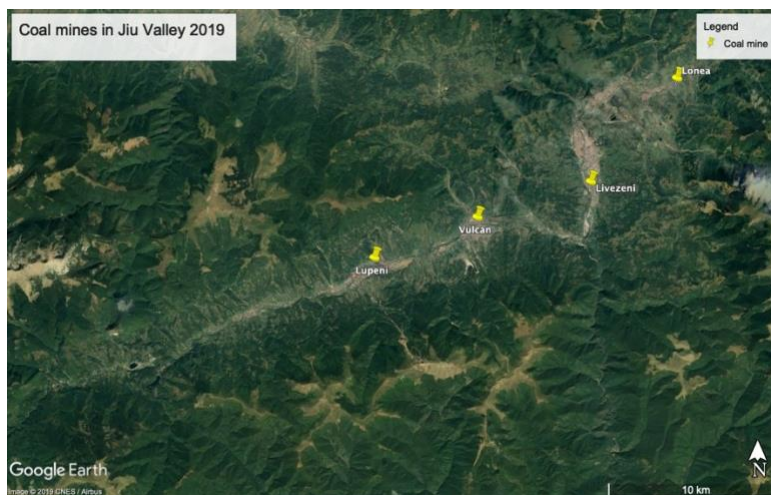


Figure 4: Coal mines of Jiu Valley in 2019

The hardship of everyday life in the valley has been extensively documented by sociologists and anthropologists. David A. Kideckel conducted extensive research in Jiu Valley, he published several times and also made a film – Days of a Miner (2003) - about the valley. He

describes the incredibly precarious ways of mining which put miners' lives in danger. He acknowledges that the coal industry has a big impact on people's health, especially because of the stress of not losing their jobs (Kideckel 2008). The hardship of working in the mine is what unites miners and I always come across statements of trust from my interviewees in Jiu Valley who put their lives in the hands of their coworkers while mining underground.

The image of the miners' community in Romania is also very political. During the transition from socialism to democracy, miners of Jiu Valley played a key role when they travelled to Bucharest in June 1990 attacking students in the Capital. The image of miners is strongly connected to "political violence during the early phases of a political transition" (Gledhill 2005).

But the unity and homogeneity of coal communities is challenged in "The World of the Valley. The Unity of the Mine, the Diversity of the Miners" (2002), a sociological study of the Jiu Valley, conducted by three Romanian anthropologists. Visiting the Valley as young students, they were expecting to see "a coal country" and were "naively" surprised to see that in this "country" there are also bookstores, theaters, interior design stores, music clubs, many churches and so on. Expecting to see "a miners' country", researchers were "naively" surprised to also meet young people, women, old people, to eat in local restaurants and fast food places, where the food and the service were very good.

The cultural perspective that defines the miner exaggerates the coherence and the homogeneity of the mine, standardizes behaviors and lead to a representation of the mine as a "total institution" (Crăciun *et al.* 2002). There is a professional culture in Jiu Valley which is defined by a few elements: the rituals and the imaginary of Jiu Valley, the structure of work

relationships, extending work relationships outside of work, the demanding practices. But the participation of the miners is different, which is why the unity and homogeneity of the coal community of Jiu Valley is lower than it looks like (Crăciun *et al.* 2002).

4.2 "The Wind Power Academy"

Training and Professional Reconversion for Renewable Sources and Distribution of Electricity Academy is a program initiated by the Romanian Ministry for Economy, Energy and Business in 2019 with the aim of training a minimum of 5.000 miners and former miners over the course of 10 years in order to employ them in the wind power industry in Romania and other European states. The program started as a partnership between the Ministry of Energy, Romanian Wind Energy Association (RWEA), Oltenia Energy Distribution, and University of Petroșani who signed a cooperation memorandum in May 2019, which marks the beginning of the professional reconversion program.

"The Wind Power Academy", as it was dubbed in the press, targeted all coal regions in Romania, but started in Jiu Valley, the most emblematic coal region in Romania. As announced by the Romanian Minister of Energy, the program was part of the energy transition efforts in Romania and was addressing the “life of those involved in producing coal energy” (Ministry of Energy 2019). It is the most ambitious professional reconversion program to date in Jiu Valley and it follows a string of failed reskilling programs for miners in the last 20 years. In this chapter, I will address the differences and similarities between past programs and the "The Wind Power Academy" and I will also explore people's attitudes towards the professional reconversion programs in general and towards the current one in particular.

Jiu Valley in Romania is a coal region where de-industrialization already happened, and the community is fighting long standing social costs that nobody paid since the coal industry began its decline. Analyzing the time period between 1990 and 1999, Chiribucă *et al* (1999) say that the population was relatively stable during this time, but the employment fell by 40%, which means that the economic decline of Jiu Valley started in 1990, right after the revolution of 1989 that replaced the socialist regime. But the biggest hit on the community took place in 1997, when a World Bank imposed mine closing strategy started. Between September 1997 and June 1999, 18,343 people were laid off, representing 20% of the active population of Jiu Valley. The government strategy regarding the social cost was effective on short term, but disastrous on long term (Chiribucă *et al.* 1999). In the absence of alternative economic programs for regional development, the government responded with redundancy payments which had the double function of compensating the workers and also encouraging entrepreneurial initiatives. “In reality, the main function of such compensation salaries was to minimize resistance to the planned restructuring of the local mining industry” (Chiribucă *et al.* 1999).

Chiribucă *et al* (1999) say that labor reconversion is a “key element” for just transition, but data shows a negative image of the efficiency of the retraining programs for the period 1997-1999. The employees made redundant reported high degree of distrust in the programs, lack of confidence in those who organize them and a perceived lack of utility in completing the programs (Chiribucă *et al.* 1999). In 1999, in Petroșani, the largest town of Jiu Valley, 75 unemployed people were enrolled in retraining programs at the Center for Professional Qualification. 57 of them completed the course, and 27 found a job. In four out of six courses organized in Petroșani, none of the unemployed persons who completed it found employment.

"The Wind Power Academy" surpassed the financial possibilities of the initiators, as well as those of the Romanian state. The initiators estimated the training cost for one person at 10.000 Euros, which takes the total cost of the professional reconversion program for 800 people per year (500 for the wind power parks and 300 for electricity distribution) at 80 million Euros. As a consequence, the intention was to apply for European funds on the base of the 410/2018 EU Directive dedicated to large energy projects. In august 2019, the government fell and the Minister of Energy responsible for the program was replaced, which also represents the end of the professional reconversion program as it was initially designed. Nonetheless, the program was carried on by Monsson, a European company that develops, operates, maintains and installs wind turbines. It is part of the RWEA and, within the professional reconversion program, is the company responsible with selecting the candidates for training, conducting the training and employing the reskilled miners and former miners within their own wind farms or partner wind farms throughout Europe.

During the course of the program in Jiu Valley, there was a round of interviews with local people who applied for training. The number of people interviewed was, according to different accounts, at least 50 and no more than 70. Monsson also organized two visits on site at the Cogeaalac wind farm in south east Romania, the biggest wind farm in the country, owned by CEZ, a company also involved in the program through its subsidiary Oltenia Electricity Distribution. The first visit was limited to seven candidates from Jiu Valley and the second one was organized for around 40 candidates who visited the wind farm to learn about the project. In the end, one person was selected for training and was employed in the wind power industry, currently working in Sweden. In order to carry on with the project and stick to the 800 miners and former miners trained and employed in renewable energy industry every year, Monsson is also looking into applying for European Funds.

4.3 Energy transition, through the eyes of the local people

4.3.1 The eyewitnesses of the coal's decline

The local community of Jiu Valley is largely aware of the fact that coal is history and energy transition is the new reality. They have witnessed the coal industry's decline in the last 20 years, as mines and power plants closed down reducing the coal workforce by 90%. People I interviewed during my research agree that coal has no future in Jiu Valley, but don't know what the future holds either. They are still supporters of the coal-based energy and they believe that phasing-out coal is a political decision, somewhere in the area of sabotage. They also have a positive opinion about renewable energy, but they don't consider it as feasible and as reliable as coal.

Respondents interpret the future of coal in relation to the future of their jobs and the probability of keeping the job until the minimum age for retirement. One respondent (D.S., age 50) told me that whoever just started out as a miner two or three years ago is crazy to think they will retire from this job. Miners who are still employed in the coal industry hope that the industry will survive until they have the age for retirement. "With help from God I hope to retire from the mine, but when your hope is in God is clear how far-fetched it is" (D.S., age 50). The youngest respondent (S.B., age 26) told me there is no chance to build a future around coal industry, so young people are moving to bigger cities or other countries. The general feeling is that people have been living with the decline of coal for a long time. One respondent (M.Z., age 48) points to the year 1997 as the start of the decline when the first mines closed down and a lot of workers accepted the redundancy payments and got out of the industry. He defines the energy transition as "a transition from the living state to the dying state" (M.Z., age 48).

People I interviewed are not convinced that this is the timely death of coal in the context of climate change but believe instead that the mine closing strategy served someone's interest, and this is why they are left without jobs. One respondent (M.Z., age 48) said that there is enough coal in Jiu Valley for another 50 years, so stopping the exploration will force us to buy coal from other countries, which puts us in a disadvantageous position in the region. Another respondent (E.B., age 43) says that keeping coal industry active at least partially is crucial for energy security.

Climate change and air pollution are not big enough reasons to phase-out coal, in my respondents' opinion. They are aware that coal is a major source of air pollution, but they believe air quality was heavily improved in recent years thanks to technological improvements and financial investments (M.M., age 50). One respondent (A.T., age 49) connects the coal phase-out in Jiu Valley with the global trend of reducing CO₂ emissions and moving towards clean energy.

Renewable energy is a "good idea" for all my respondents, but mainly in theory. In practice, they don't consider it as viable and as reliable as coal energy. One respondent (D.S., age 50) referred to a feasibility study for wind energy in Jiu Valley which demonstrated that it is not possible to install wind turbines. As for solar panels, they are not feasible either, because there is a high level of humidity in the area. Another respondent (E.B., age 43) says that unlike wind that sometimes blows, sometimes not, and unlike sun that sometimes shines, sometimes not, unlike hydropower which depends on water and rain, coal is there all the times.

Overall, people agree with the transition to clean energy, but they don't see how it can be implemented and how it can solve the main social problem in the Jiu Valley: lack of jobs. In the absence of a clear path towards a clean energy future that can bring them jobs, and of proofs that renewable energy is viable, people are still loyal to the coal industry that offered them a livelihood for generations.

4.3.2 The attitudes of local people towards the professional reconversion program

There is a consensus among my respondents that energy transition creates a big social problem: unemployment. "The Wind Power Academy" started in Jiu Valley amid already existing general disappointment related to professional reskilling for other industries. All the miners and former miners I interviewed, except for the youngest one, remember at least one other professional reconversion program from the past.

A.T. (age 49) recalls that, in 2014 or 2015, the National Company for Mine Closing in Jiu Valley, the operator of Paroşeni mine, where she was working as an engineer in underground mining, imposed a professional reconversion program to all employees. They had to choose a profession from a list and take two weeks long mandatory classes. A.T. says that the options – hairdresser, tailor, plumber, etc. – were “offensive” for people who were working in the mine. She picked the mountain guide option because it was somehow connected with her passion for climbing. But it turned out that the two weeks program was not enough for her to obtain the certification, which actually requires a nine months long training. In the end, she did not get a job as a mountain guide and she doesn't know any co-worker who got another job after the reconversion program. She qualifies the program as a “scam” and attributes the initiative to a “senator” who made some money after this.

The same senator is invoked by D.S. (age. 50) who heard about the past professional reconversion program. He recalls some of the options on the list: travel agent, work security agent, welder, human resources officer, etc. He considers that there is no workforce market in Jiu Valley to absorb these professions, that the classes were in vain, and the only goal of the program was to make some influent people richer. He did not hear about any employment after the program.

Apart from occasional professional reconversion programs conducted by private companies, the regional state agency for employment regularly organizes trainings for various professions. L.V. (age 53) enrolled to the only available course in 2004-2005, the one for web developer, which was not the best suit for him, as he had only a high school diploma and previously worked as an electrician at Paroșeni coal mine. He did not get a job after completing the course.

University of Petroșani also has a role in the professional reconversion efforts in Jiu Valley. According to the rector, the University offers two kinds of professional reconversion programs: one is for those who are already employed in a company and want to learn new technologies to advance in the company and one is for those who get a qualification and then wait for the jobs to be created in that industry. He admits that the relocation of people trained at the University is inevitable because Jiu Valley has no opportunities for them.

In this context, the local community received "The Wind Power Academy" with suspicion. A.T. (age 49), who was asked by the initiators to gather a few people from Jiu Valley for a visit to the wind power farm, had a hard time to convince a handful of people to go to Cogealeac. As the word spread and the local mass-media advertised the academy, people

become interested. My respondents' initial feelings towards the program varied from "interesting" to "hopeful" to "excited". After participating in the job interviews and not hearing anything back from the initiators for a long time, feelings changed to "waiting for nothing" to "moonshine" to "deception". All my respondents correlated, at least partially, the deadlock of the program with the political change in Bucharest.

4.3.3 "The something else". Reasons for making the transition

One of the most surprising findings after conducting the interviews with miners and former miners from Jiu Valley was that quite a few of them responded with "looking for something else" when asked why they applied to the professional reconversion program. When going more into detail, they all nuanced their responses to incorporate more concrete reasons, but the "something else" expression is what the interviews have the most in common.

For people still employed in coal mines or coal power plants in Jiu Valley, the fear of losing their job before reaching the age of retirement is what made them apply for the professional reconversion program, hoping to get a job in the wind power industry. D.S. (age 50) has four more years until he fulfills the minimum requirements for retirement. After 30 years of working in the mines, he is afraid the mines will close down before he gets to retire. E.B. is 43 years old, working at Paroşeni power plant, where the minimum age for retirement is 65. He applied for the academy in search of job security for long-term.

Romanian law grants underground miners to retire at 45 years old if they have a minimum experience of 20 years of underground work. Two of my respondents qualified for these conditions and retired from working in the mine. One of them (M.Z.) is 48 years old and applied to the professional reconversion program to "supplement" his revenues. The other

one (V.B.) is 55 years old, retired 10 years ago, and didn't take into consideration to apply to the academy because he wants to let the available jobs for the young generation.

A.T. (age 49) accepted the redundancy payments in 2017 after working in the mine for 21 years. After one sabbatical year, she started looking for jobs in the region and was disappointed with the low offer. She started working as a sales agent for a medical equipment company but was deeply unsatisfied with the job. The opportunity to work in the wind power industry was extremely exciting for her and was very eager to change her workplace from 100 meters underground to 100 meters above the ground, up on the wind turbines. She talks passionately about her work as a miner and is very happy to transfer the passion to the wind power industry. While waiting for a job offer from the academy, she changed jobs two more times, at the moment working within a constructions company.

S.B. (age 26) is the only person selected after the interviews, who conducted the three months training and is now employed by Monsson. At the moment of the interview, S.B. was working on his first project, in Sweden. He applied to the program because there are not many options for young people in Jiu Valley. After he graduated from university, he changed various jobs – from catering to working at a gas station, and even a short experience in the mine – and was very excited about the opportunity to work in wind power industry, which he considers a “job for the future”.

Two of my respondents, who are both formers miners, did not apply to the “wind power academy”. One of them (M.M. age 50) didn't find any job opportunities in the country after accepting the redundancy payments in 2011 and went abroad to work. The other one (L.V. age 52) managed to get a steady job at the regional state-owned water facility after years of

struggle. For both of them, the breaking up with the coal industry happened a long time ago, which forced them to find different paths in life on their own.

While the main advertised aspect of the wind power industry jobs was the high salary, the candidates that applied to the professional reconversion program were mostly interested in job security, but the financial aspect is not negligible either. I discovered that the financial satisfaction related to coal jobs is very subjective, and I couldn't identify a consensus regarding this. One of the pensioners I interviewed complained about his revenue, while the other was very satisfied, even if they retired from similar positions in the mine. As for salaries, respondents agreed that coal jobs do not pay so well as before. Overall, wind power jobs do seem to offer a bigger hope for prosperity.

4.3.4 High expectations, low results

Even if the reskilling project was overshadowed by doubt, my respondents also showed a great deal of hope for a better job, more secure, safer and better paid in the wind power industry. Respondents who applied to the program consider themselves very good candidates for wind power technicians based on their skills acquired in the coal industry. They see a lot of similarities between coal jobs and wind power jobs and are willing and capable to learn the new parts. A.T. (age 49) worked as a mechanical engineer at Paroşeni mine and believes that she could easily adapt to working in the wind power farm. She says that the mechanical principles are the same in both industries and she is willing to start from the low-level job to learn all the new things. Moreover, she believes she is more than prepared to deal with safety situations, as underground mining is a life and death job and you learn how to avoid fatal accidents, whereas the wind power industry is a safe environment to work in.

Respondents who applied to the program are all open to start from the bottom in the wind power industry, as it is a new sector. P.J. (age 48) works at Paroşeni power plant and applied to the professional reconversion program considering that his knowledge and passion for mountaineering recommend him as a suitable candidate for working at height in wind power. He mentioned that his expertise as mechanical locksmith is compatible with the available job of stitching blades in wind turbines. V.B. (age 55), retired from working as an underground foreman at Vulcan coal mine, did not apply to the professional reconversion program because he wanted to leave the opportunity for young people. But he is certain he would have been selected because of his expertise and multiple qualifications acquired in his life.

“The Wind Power Academy” implies partial relocation for people trained and employed by Monsson. Even if they end up working in the wind power farm in Romania or abroad, the new wind power technicians would have to move away from Jiu Valley, at least 600 kilometers away, where the closest wind power farm is located. All my respondents are aware of this implication and react differently to this condition. Since the wind power jobs are project-based, it would involve for the employees to move away to some country for a project and then come back and so on. A.T. (age 49) is very open to the scenario of working for a few weeks away and then come back to Jiu Valley for another few weeks and repeat this pattern. She is not married, she doesn’t have children, so she is willing to embark in this journey and reduce the time living in Jiu Valley, but still getting to live here partially for her parents and for the mountains.

Another respondent who is open to relocation is S.B., the only one employed through the program. Not only he is open to relocation, but he already decided to settle in Constanța, the biggest city near the Cogeaalac wind power farm, to be closer to the wind power industry and

to enjoy the life in a big city. Constanța is 600 kilometers away from his hometown in Jiu Valley. On the other end, there is P.J. (age 48) who applied for the professional reconversion program, but he is not willing to move away and work abroad because he has a daughter who is still studying in Jiu Valley and he does not want to leave her alone. Other respondents also invoked reservations regarding the relocation based on family obligations.

4.3.5 The miners and the stakeholders

Stakeholder	Stakeholder's interest in the project.	Level of support / Opposition for the project	Notes and strategies for obtaining support or reducing obstacles
Ministry of Energy	Initiated the program as part of the energy transition objectives.	Strong support.	The position changed when the governing party changed. Not involved anymore.
Ministry of Environment	Authority in environmental regulating, but not involved in the project.	Not showed a position.	Obligation of coordinating strategies with the Ministry of Energy.
Romanian Association for Wind Energy	Partner of the project, interested in promoting wind energy.	Strong support	No risk to withdraw the support.
Monsson	Partner and responsible for selecting participants, organizing the training, and employing the candidates.	Strong support	Depends on European Funds to go on with the project.
University of Petroșani	Partner in conducting the training.	Strong support	It is in stand-by until the project gets the funds.
People who applied for the program	They are interested in getting a job.	Hesitant at first, but on board after applying.	Risk of dropping out or falling demotivated with the program.

Broad local community	Potential participants; people affected by governmental programs; great number of unemployed people.	Divided: part in favor of the project, looking to get a job for themselves or someone from the family; part against because they support the coal industry.	Might create a wave of dissatisfaction that further demotivates people to join the program.
Jiu Valley Involved, coalition of local NGOs	Potential partner in the project.	Support the project with conditions.	They have their own projects for Jiu Valley.
Local administration	Not directly involved but has the power to promote or denigrate the project on local level, depending on political decisions.	Doesn't have a clear position.	The mayors of Jiu Valley are involved in a coalition for just transition. This project is not part of that, so the support of local administration is primarily based on political cooperation.
Miners' Union	Not directly involved; sets the position to be followed by all workers in the coal mines.	Against, they only support the coal industry.	The unions still play a big role in the community and have the power to change people's minds.
Hunedoara Complex, state-owned company that exploits the coal	Not directly involved; operates coal mines of Jiu Valley.	Against, they only support the coal industry.	The company is a „source” of unemployed people as it closes more and more mines.
Politicians from EU Just Transition Platform	Not directly involved; they promote energy transition projects in European coal countries.	In favor of the project.	They are not in a decision-making position in the project. They can only recommend.
Greenpeace & Bankwatch (NGOs)	Monitoring the program.	In favor of the project, with mild criticism.	They will always support energy transition projects and have a good collaboration with the Association for Wind Energy.
Local mass-media	Monitoring the program and reporting.	Divided based on their previous endorsements.	Can have a big influence on local people's decisions.

National mass-media	Reporting on broad energy transition issues.	Divided based on their previous endorsements.	Can have a big influence on governmental decisions.
CEZ (Company that owns the biggest wind farm in RO)	Beneficiary in terms of qualified employees.	In favor of the project.	The company is in the process of selling its Romanian operation; the new company is unknown.

Table 3: The stakeholders in Jiu Valley

My respondents with a long experience of working in the coal industry have a habit of talking about “they”, an abstract character who is usually responsible for political decisions regarding the mining activity. Within this frame of “miners” vs. “they”, my respondents describe their lack of power over their own destiny or the destiny of the community. “They” are not only those who decided to close down the mine, but also those who keep the Jiu Valley in an economic impasse, they are the government, or those who get rich out of Jiu Valley, like the “senator” responsible for failed professional reconversion programs.

The entity that is responsible with defending the rights and interests of miners in Jiu Valley – the trade union – is also the one that saw the biggest decline in trustworthiness among the miners. Historically connected with the act of mobilizing the miners to participate in the riots of June 1990 in Bucharest, the trade unions lost their influence over the miners as more mines were closed and more jobs were lost, a strategy that they were supposed to fight back. D.S. (age 50) says that the role of the trade union is to save miners’ jobs, but “when the trade union guy’s office is on the same floor as the company’s director is difficult to fight for anything”. Implying a complicity between trade unions and coal company to close down the mines is common among my respondents.

The deadlock of the professional reconversion program is caused by the national political changes, in the eyes of my respondents. “It’s a project started by one political party, another political party comes into power, the project dies” (D.S., age 50). My respondents consider that the politics are involved in the local administration as well, which determines the vision of the mayors. “The mayor has a certain age; the old ones are not so open minded to new things. They pass from one political party to another, based on where there are more benefits for them” (A.T., age 49).

4.4 The blind state. Designing the professional reconversion program

Monoindustrialization of Jiu Valley, the process of building a community around the coal industry and making people dependent on coal exploitation, is a case of radical simplification as described by James C. Scott in "Seeing Like a State" (1998). With coal becoming history in Jiu Valley, the initiators of the professional reconversion program are designing a new social order, which requires another simplification, namely converting the miners into renewable energy technicians, in parallel with the grand transition from fossil fuels to clean energy. Social simplifications do not represent the complexity of social relations, but only a slice that interests the official observer (Scott 1998). By simplification, the state (or another designer) ignores the complexity of a functioning social order. In the case of the professional reconversion of miners and former miners in Jiu Valley, the designer of the new social order is a wind power private company that selects employees for the wind power farms. As Scott points out, “large-scale capitalism is just as much an agency of homogenization, uniformity, grids, and heroic simplification as the state is, with the difference that, for capitalists, simplification must pay” (1998). In this part of the chapter, I will show how the designers of the professional reconversion program made use of two of the elements of social engineering scheme, as stated by James C. Scott.

The first step in a social engineering process is a transformative state simplification. The idea of the professional reconversion program came from the office of the Minister for Energy's personal advisor in 2019, a year after the inclusion of Jiu Valley in the Just Transition Platform. M.M. (age 50) is originally from Jiu Valley, was a director of the Hunedoara Energy Complex for six months, "the only director who made profit", and after his time in the government he came back to the valley to manage his business in tourism. I interviewed him after the governmental change and the Monsson company taking over the professional reconversion program. His idea was to unify the growing demand of wind power industry for qualified workers with the social problem of Jiu Valley. According to M.M., the most urgent jobs in the wind power industry are those of technicians for blades, and therefore the criteria they had in mind during the interviews were: young and slim people.

The high-modernist vision, a by-product of progress in science and industry, is another element of the social engineering. In the case of the professional reconversion program for miners of Jiu Valley, it is represented by Monsson company, service provider for wind power farms and employer of the trained miners and former miners. S.E., director of Monsson, told me that the installation rate of wind turbines in the region outpaces the rate of training and absorbing specialists to work in wind power farms. Monsson has its own training center for renewable energy specialists, and they want to incorporate miners, former miners and other people from coal regions within the center. Unlike the coal industry, which he describes as dirty, unsafe, underfinanced, and decayed, wind power industry offers a "white", clean and safe work environment, latest available technologies, two- or three-times better salaries, high mobility, a chance to see the world. In his view, miners and former miners should not only adapt their skills for the wind power industry, but also how they relate to the workforce

market, as the renewable energy sector requires performance and efficiency. S.E. says that miners and former miners are “spoiled” workers who do little work for good money. He also expressed the preference for younger candidates who are more adaptable to this worldview and he explained that the only criteria for selecting S.B. as the only trainee was knowledge of English language.

Designed or planned social order fails because it ignores essential features of any real, functioning social order (Scott 1998). Putting miners’ expectations face to face with designers’ intentions, I identified an unrealistic project of training thousands of miners and former miners who got old waiting for alternatives after the coal industry started to close down 20 years ago, while looking for young and English proficient candidates for the wind power industry.

5 Discussion

5.1 Potential and real impact of the program

In this chapter, I will go back to my research question and discuss how the professional reconversion program changed or not the lives of people in Jiu Valley. In order to do so, I will analyze the attitudes of miners and formers miners towards energy transition and professional reconversion; I will explore their expectations and motivations around the professional reconversion program; and I will investigate the relationship between miners and former miners and other stakeholders involved in Jiu Valley just transition case.

My goal is to discuss how just is the process of professional reconversion. The latter’s initial aim of training miners and former miners has a clear just transition component, addressing not only the environmental aspects of the energy transition but also the pressing issue of job

losses affecting the region's coal phase out. But the way in which the reconversion program unfolded shows the difficulties encountered in the interaction between the initiators and the beneficiaries and highlights the weak changes of successfully getting miner and former miners employed in the wind power industry.

The loss of 90% of coal jobs lost in the last decades in Jiu Valley is the result of an unjust process of phasing out coal with no consideration for the livelihoods of people. As demonstrated in my research, the state's only response to job loss was redundancy payments, which did not prove to be a long-term solution. As shown in an analysis of the Polish coal sector, redundancy payments are responsible for greater social problems, like professional inactivity. The analysis concludes that "every instrument of labor restructuring in coal mining should include obligatory professional retraining" (IISD 2018). The several professional reconversion efforts were unsuccessful, and the development of other sectors – like tourism or agriculture, that are already happening at small scale in Jiu Valley – was blocked by the status of mono-industrial region of Jiu Valley.

In this context, "The Wind Power Academy" brought new hope for a just energy transition in Jiu Valley. The program had a clear social dimension, targeting the miners, former miners and their relatives living in coal regions, that is those most affected by the coal industry jobs decline. Prioritizing the people affected by coal phase-out, the program declared its just transition goal and clearly made the program more than just about employing already skilled people in the growing wind power industry.

The case of Jiu Valley is a particular case of "energy transition", if we understand the energy transition as a two-part story: on the one hand, the end of fossil fuels, and, on the other hand,

the deployment of renewable energy instead. The coal industry of Jiu Valley is approaching the end, but there is no renewable energy deployment in the area, as it is not geographically feasible. If the natural conditions were an obstacle for renewable energy development in the area, political conditions were an obstacle for the development of any other sustainable economic sector to transition to. However, the professional reconversion program attempted an energy transition at workforce level, moving unemployed miners from a dying coal industry to the wind power industry, a sector with a great future.

People I interviewed agree with the energy transition only in theory. In practice, they are loyal to the coal industry that provided jobs for generations. I interpret their reluctance towards clean energy based on the fact that wind or solar industries did not directly provide jobs for miners and former miners so far. But there is a window of opportunity for a change of heart as people acknowledge the danger of working in the mine (V.B. prohibited his sons to get jobs in the mine) and consider the wind power jobs “a good thing”.

Based on the social component of the professional reconversion program and on the positive attitude of people regarding employment in the wind power industry, I consider that the professional reconversion program has a major potential to positively impact people’s lives.

But the real impact of the professional reconversion program did not meet its goals, judging on the number of people from Jiu Valley employed in the wind power sector. Only one person was employed thanks to this reconversion program. The number is preliminary, considering that the program is in the phase of applying for European funds that would help un-lock the progress of the program and continue to train and employ people. But the first phase, which ended up by selecting a single candidate to train an employ out of 50-70 miners

and former miners who applied, is relevant for analyzing the initiator's process of assessing the needs of people from Jiu Valley and the criteria used in the selection of candidates.

In my endeavor of recreating the process of assessing the needs of miners and former miners, I identified a disconnection between people's expectations and initiators' intentions. While people are confident on their skills and their potential to adapt to a new industry, the initiators are looking for criteria that most miners and former miners do not meet: young age and English language proficiency. Moreover, the initiators have a negative opinion about the miners and former miners, which they consider "spoiled" workers. Based on this disconnection, I consider that the professional reconversion program has a low success potential in Jiu Valley.

The relationships between stakeholders in Jiu Valley also indicate a low success potential for the professional reconversion program, considering that there is little to no communication between the main stakeholders. There are a few indications of this, like the fact that the community of Jiu Valley was represented at Brussels meetings by people from the national government or that people who applied for the "wind power academy" never heard back from the interviewers. The "us" vs. "them" framework that my respondents describe in their interviews is also undermining the cooperation and carry on a distrust culture in the Jiu Valley.

5.2 Energy justice and the "wind power academy"

Based on the qualitative research I conducted in Jiu Valley I identified multiple aspects of the energy justice framework that I will discuss in this chapter. I will use the three core tenets of

the energy justice – distributional, recognition and procedural (Jenkins et al, 2015) – to assess the injustices of energy transition in the oldest coal region in Romania.

Distributional justice is the tool for identifying where the injustices are. In the case of Jiu Valley coal producing region, the injustices happen within the coal region where people live and work. The process of coal production as well as the process of coal phase-out are responsible for social and environmental effects that unequally impact people who live and work in the region.

People I interviewed, the majority of them between 40 and 50 years old, recall a level of pollution in Jiu Valley that people considered “normal”. The Jiu river that crosses the valley was a “black paste” for all of their lives, and as children they were used to play in the “black snow” during wintertime. The air and water pollution was part of people’s lives back when most of the coal mines were still active and before some minor technological improvements. The coal phase-out brings around another set of environmental problems, like the tailing dumps and landslides, which are also the burden of the local community.



Figure 5: Tailing dump in Jiu Valley (photo by Ștefan Voicu)

The coal production also impacts people's health. Based on the hardship and risks of underground mining, the law in Romania stipulates that miners can retire from work at 45 provided that they have a 20 years' experience in the mine. When asked what do her coworkers do after they retire at 45 A.T. said: "Many of them get sick and die. Many coworkers couldn't enjoy the retirement not even for a year or two. Even if they look fine, they are rotten inside after working in the mine. Some retire to the countryside for a while, but they carry with them respiratory diseases, rheumatism, spinal disorders and other".

Coal phase-out is also producing a social effect – job losses – that is mainly felt by the local people. Coal communities are most impacted by the national strategy of energy transition from coal to clean energy sources because the first consequence is unemployment in local coal industry. In Jiu Valley, 90% of coal industry workers lost their jobs since the coal decline started and no other industry replaced the job losses.

Recognition justice means to properly identify social categories that are affected by the injustices. The "wind power academy" initiators identified the miners and former miners of Jiu Valley and their families as victims of the coal industry's decline and they became the beneficiaries of the professional reconversion program. The process of interviewing, selecting and training them revealed a lack of properly identifying the differentiated needs of people within the group of "miners and former miners and their families". In the end, the process was not about how the miners' skills that could be adapted for the wind power sector. Instead, the selection was based on the company's needs for young and English-speaking candidates.

As the interviews with miners and formers miners of the Jiu Valley reveal, the “victims” of the coal phase-out consider themselves highly skilled and easy to adapt to the wind power industry. They believe that even if the two industries are very different, some of the systems behind are similar. Moreover, they have acquired in the mine more skills than one needs in the wind power industry, like being prepared for life and death occurrences in the underground. Their skills are not recognized by the wind power company that prioritize other criteria like age and foreign languages.

Procedural justice is the tool to explore the ways in which decision-makers sought to engage with communities. In the case of Jiu Valley, miners and former miners I interviewed reported a lack of communication and information regarding the professional reconversion program. After the job interview, most of my respondents said they never heard about the program again and they were left waiting for a follow up email that never came. They drew their own conclusions about the impasse of the program following the national news about political changes in the government.

There is a general feeling of isolation in Jiu Valley, a geographical isolation between the mountains, but also a disconnection from the decision making in the Capital. Interviewing observers of the just transition process in the region, I found out that the local community of Jiu Valley wasn’t aware of its own participation in the European Union’s Just Transition Platform. The region was represented by government officials from Bucharest.

In conclusion, my findings show where the injustices are, who is ignored and the fairness of the process. My recommendation is for a better understanding of the real needs of people in

Jiu Valley and for a fairer consultation with the local community in order to find the best way to retrain and employ them in different industries.

5.3 Why is the program not working?

"The Wind Power Academy" started in the office of the Ministry for Energy in the social-democrat government in 2018. The Romanian politicians of all parties who passed through the government since 1997 to present days are judged in bulk for the perpetuation of social and environmental problems of Jiu Valley and other coal regions. It is common knowledge that politicians don't take the electoral risk of confronting the end of coal and fully supporting the energy transition. Instead they feed people in coal communities with false promises regarding the future of coal and the stability of their coal jobs. But the political moving sands intervened again, and the professional reconversion program was left somewhere in a drawer when the liberals came into power in 2019.

The program was taken over by the Monsson company, already a partner in the "wind power academy", which carried on with the job interviews, the selection of the candidate, the training and the employment. They did this with their own funding, which is one of the explanations for the low number of people selected and employed. But they keep the initial goal of training more than 500 miners and formers miners per year for 10 years and are working to absorb European funds in order to do that.

As nonprofit organizations who conduct just transition campaigns in Jiu Valley put it, the European Union could bring new hope to the region. They describe the inclusion of the region within the EU's Just Transition Platform as an incredible chance for the local community to access funds, to get technical assistance and to see new sustainable

developments in the area. The most important event that happened so far under the umbrella of the EU's Just Transition Platform is the signing of the memorandum for collaboration between all mayors of the Jiu Valley in 2019 in Brussels. The Just Transition Platform offers assistance to EU countries to unlock the support available through the Just Transition Mechanism, part of the Green Deal. In July of 2020, European leaders approved a EU budget that includes money to help carbon-intensive economies ditch fossil fuels. However, the Just Transition Fund fell from 40 billion Euros to 17.5 billion Euros, in a move that raises questions about the European Commission's green commitments and casts a shadow of demotivation regarding the fate of coal regions like Jiu Valley.

My research goes only so far. The question of how successful professional reconversion would be in a stable political environment and with an appropriate funding still stands and can be the object for further research. Are political will and money enough to make professional reconversion work in Jiu Valley or is energy justice with all of its tenets – distributional, recognition and procedural – the key to provide a just and effective transition in coal regions?

6 Conclusion

My research contributes to the literature around energy just transition with the case study of a just transition project in the coal region of Jiu Valley, Romania. My interest in energy transition, in general, and in energy justice, in particular, is what made me look into the novel process of just transition in coal regions, where people are somewhere on the timeline between a dying coal industry and the development of clean energy sources. The particular case of Jiu Valley is situated after the closing of the majority of coal mines and before any

clean industry replacement. Local community is struggling with unemployment for the last decades but sees new hope in a new professional reconversion program aiming at training more than 5.000 miners, former miners and relatives to become wind power technicians. The just transition endeavor under the umbrella of grand energy transition from coal to renewable energy is the focus of my research.

Energy transition is an imperative of the climate crisis, largely determined by the way we produce energy in the world. Staying within the 1,5 degrees Celsius of global warming recommended by climate scientists requires moving away from fossil fuels and deploying clean energy sources around the world. The European Union is a climate leader in the world by embracing climate policies to phase-out coal. On local level phasing-out coal producing social negative consequences, like unemployment, which the just transition movement tries to overcome. The literature reveals a common socio-economic impact in coal regions across Europe where coal industry phased-out or is phasing-out. In this context, I look at professional reconversion as a tool for overcoming unemployment in coal regions and encourage the energy transition towards clean sources.

I conducted qualitative research based on semi-structured interviews with miners and formers miners of Jiu Valley, but also with other stakeholders involved in the professional reconversion program. I conducted 15 by phone semi-structured interviews to explore both the potential beneficiaries' attitudes, as well as the initiators' intentions around the professional reconversion program. In order to gain a larger picture of the impact of the program, I interviewed various categories of local people: miners who applied for the training, miners who didn't apply, former miners applied and former miners who didn't apply, as well as persons selected, which in this case is one. The semi-structured interviews

allowed me to collect data and have flexibility in exploring the nuances of people's expectations.

My findings show a largely disheartened community of Jiu Valley who witnessed the constant coal decline since 1997, after a World Bank-imposed decision to close down coal mines due to economic inefficiency. During the transition, no other industry managed to replace the job loss and social and environmental consequences aggravated over time. In my interviews, I discovered a community that is aware of the dying coal industry, which they blame on the political decisions. People are in favor of energy transition towards clean sources, but they don't see it feasible for their region, which is another reason for supporting coal. In this context, people who still work in the remaining coal mines and power plants are afraid they will lose their jobs before reaching the age of retirement. The professional reconversion program started in 2019 gave them hope for new jobs in the post-coal era. The promised wind power jobs come with a different set of requirements and expectations from miners and former miners, which they are mostly open to adapt to. These new conditions involve training, partial relocations, and more money. While local people apply in fairly high number to the program, the initiators see the interviews as testing the ground and they only select one person that fits the wind power company's needs. The deadlock of the program because of political instability and lack of funds further built on the local community's lack of trust in just transition programs.

Using the energy justice core tenets – distributional, recognition and procedural justice – I assessed the level of injustice in the Jiu Valley professional reconversion case. I concluded that the community of Jiu Valley was distributed the negative consequences of both the coal exploitation – air pollution, water pollution, etc. – as well as of the coal phase out –

unemployment, tailing dumps, landslides, etc. As for the recognition, I discovered that miners' skills were not properly taken into consideration, since the criteria for selecting the only trainee was benefiting the wind power company. Procedural justice was also deficient because of lack of communication between the job applicants and the program's initiators. The low impact of the professional reconversion program is explained, on one hand, by the lack of political cooperation and lack of funding, and, on the other hand, by the unjust process of selecting and training the miners and former miners.

I believe that my research can contribute to better policy making related to energy just transition and could benefit future professional reconversion designers to achieve better results in training and employing miners and former miners affected by the energy transition.

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