

## THE RESPONSIBILITY OF STAKEHOLDERS FOR THE REGENERATION OF FORMER MINING COMMUNITIES

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### ABSTRACT

*The new environmental criteria, stated in the Paris Agreement, calls for action to establish the necessary responses for carbon neutrality in the European Union (2050). There is a new regional metabolic setting, in which the greatest processual responsible are the stakeholders and the people's representatives: the mining companies and the local administrations. This paper brings a relevant contribution to research by proposing a management system that transforms closing mining assets into new development centers during the mine closure procedure. After an overview of the processes in industrial zones, in parallel to the state-of-the-art examples of post-industrial regeneration in Europe, the paper highlights the role of stakeholders as the ones responsible for the regeneration of former monoindustrial regions. The paper concerns a particular case in this type of areas: the coal mining regions struggling to emerge in new economic processes on the free market frame. We find ourselves now, at the emergence of the third industrial revolution in these areas (with the fourth going on worldwide), producing a series of vital changes. The most affected regions are those once dependent on production and processing activities specific for the first and second stages of the industrial age. This shift is not familiar for stakeholders that were once dependent on the state economy and they are now looking to establish new procedures and activities in order to keep up in the market economy.*

**KEYWORDS:** *coal transition, mining regions, responsibility, stakeholders, urban regeneration.*

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### 1. INTRODUCTION

After the first and second industrial waves, observed in the Eastern Europe countries through a new rapid industrialization in the second part of the 20th century, we face today a period of just transition, from coal to other industries. This period is characterized by a lack of occupational identity because the former mining identity was removed, leaving the groups without the object with which they identified. Some of the most important tools are in the hands of the public stakeholders, to rethink the post-mining identity: their companies and administrations own the most valuable assets and they have an overwhelming control over the community management tools. These urban actors have the mission to gather communities around new ideals and purposes, respondent to the new economic situation. Communities that pass through the most complex economic processes are those once dependent on only one sector of the industry, specific only to one stage of industrialization. Considering these and the modern processes of production, consumption and extinction, there is a question about the *raison d'être* of the former mono-industrial communities and their role nowadays, when we cross to the fourth industrial revolution and, respectively, to the new paradigms. In the first place, we consider three separate mining

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communities that have now passed to other significant dominant industries. These case studies are used to highlight the most important aspects of the post-mining regeneration: the new economic environment, a regenerated education system and a new post-mining identity.

## **2. METHODOLOGY**

In this paper, we use the review of the latest literature relevant for shaping the new economic paradigm to which the communities must respond, and the most relevant methods of analysis in terms of spatial planning and flow of materials and information. Then, we take a closer look at the good practice case studies in similar economic (mining) regions and make a portrait of the current situation in the Jiu Valley. At last, there is a proposal for a new type of stakeholders' structure, applied to the case study region. Taking these into consideration, the paper manages to cover qualitative aspects of the research, leaving future investigation to analyze the quantitative aspects based on the regional economic profile.

## **3. LITERATURE REVIEW**

There are two themes that we address to understand the situation of former industrial communities. These concepts are related to urban areas as organisms formed by communities existing as components of the ecosystem, influenced by material and immaterial forces and processes.

### **3.1 The next economy**

The next economy is the economy of cities that have to be greener, healthier and more inclusive than today (Brugmans & Van Dinteren, 2016; IABR, 2016, p.7) as well as being productive in the same time (Francke et al., 2016). This is a type of economy based upon the creation of green collar jobs, a component of the environmental economic sector, with a focus on economic development of the communities.

The most important characteristics, according to the Democracy collaborative (n.d.), Irimie and Danciu, (2016) are the ones who use a mixed approach. They encourage those strategies that are focused on local cycles of acquisitions and sales, in this way keeping money circulating locally. In this case the opposite attitude is paying less attention to the leak of money outside the community. Another characteristic is to bring as many stakeholders to the table as possible, including nonprofit organizations, anchor institutions and authorities, instead of leaving the decision-making to be influenced by the intentions of governmental institutions and private sector representatives. Meanwhile, it aims for the creation of inclusive jobs, helping every family to enjoy economic security. This attitude opposes all the jobs created without any attention towards the period, wages or the social profile of the candidate.

Another characteristic is to link training to employment, focusing on offering jobs to the disadvantaged people instead of relying on training programs disrupted from the actual practice and jobs. In this respect, it is necessary to develop supportive institutions and ecosystems for the creation of a new economic activity standard, opposed to the acceptance of wealth inequality. Other typical aspects include promotion of local ownership as the main and most important feature of the thriving local economy, opposing the elite ownership supported by the traditional economics and, the last but not least, to be able to develop local assets for the benefit of local residents, in opposition to the traditional economic development. The former seeks to attract companies using incentives and increasing taxes to be paid by residents.

### **3.2. Community leadership**

In the new emerging economies, leaders have the capital role to envision the development of the community (Brugmans & Van Dinteren, 2016), overriding the loop of the current paradigm and marking its new reason to be. But the vision can only be built in accordance to the sustainability

trends in economy, if there is to be a hope for a sustainable community (Izvercian et al., 2014; Irimie, 2014).

The practices in enhancing community leadership generated a relevant democratic model for every case of urban regeneration. This is a model based on four pillars: the external policy environment, the structural arrangements of partnerships, the individual community leaders and the actual local community. The general model of community leadership (Evans, 2012) states that each pillar is an important change driver. The regeneration policy is the most important of the four, because it determines the rules and resources for community regeneration through financial resources that flow into a community, together with specific rules. The policies are implemented through local partnerships, where there are formal and informal rules governing the structural arrangements. The most important actors representing the local interests are the community leaders and the partnership between various institutional arrangements (Brugmans & Van Dinteren, 2016). In the specific case of former industrial communities, the role of institutions is more important than anywhere, because they are all remnants of the former socialist situation where relations between directors and employees were strict and the only ones who were allowed to think outside the box were the superior hierarchic chiefs. This hierarchy is kept until today in the social structure, and in consequence, the institutional leaders have a much more important responsibility than anywhere else.

#### **4. GOOD PRACTICE CASE STUDIES**

The general trend in the regeneration of former mining regions is to ensure that they are as open as possible to opportunities. From this point of view, as the economic issues specific to the mining areas undergoing restructuring are common across Europe, we can see some examples of good practices that have a positive contribution in all cases. There are also certain specific identifying elements that, once established, become the main drivers for economic growth. These are conditioned by the existence or absence of entrepreneurial and managerial culture, the ability to identify the local specificity by analyzing the fundamental indices and recognizing the high value of the natural and built environment where it exists.

In the following paragraphs, we propose to address the three fundamental needs for the regeneration of former mining regions: the integrated development of the local entrepreneurial environment, the implementation of a research and education system geared to the new technologies and trends in the economic market and, in the end, the emergence of post-mining identity, on the basis of the special cultural and natural heritage. We outline three specific initiatives across Europe: Belgium, Poland and the Czech Republic.

##### **4.1 Locate in Limburg – the investment agency**

«Locate in Limburg» is a government-funded nonprofit organization that promotes the Belgian region as attractive for investments and businesses and provides support for foreign companies interested in setting up business or branch offices (Zwerts, 2019). The region benefits from a European-friendly USP (unique sales proposition). The non-governmental organization coordinates and provides free services to attract investment partners, identifying suitable locations, support for obtaining authorizations, support for favorable employment in the local tax and tax system, creates opportunities to connect with talents in the research, business. In fact, the body acts as a unique welcome office for investors.

The organization is relevant for transitioning mining regions because it operates in two complementary directions, necessary for integrated economic development: developing local entrepreneurship and internationalization in order to accelerate, fill the gaps and inspire the local economic environment. For the local economic environment, this agency shows best practices and brings international knowledge and skills to locals.

On the whole, this type of activity hastened the development and post-mining regeneration. By 2006, the work was implemented under the coordination of the development agency in the region, later under various governmental organizations, for the best results to be achieved in the last 5 years as an independent entity – a non-profit association. For the smooth running of its business, Invest in Limburg cooperates with a number of local, regional and governmental stakeholders: local, regional and provincial authorities, regional development and investment development companies as well as regional trade and industry chambers and professional organizations.

The geolocation is favorable by addressing to a region of 4 million inhabitants, with the potential to reach up to 120 million inhabitants in a single transport day. In order to promote itself, Limburg chose a niche, that of business-to-business solutions in the field of biotechnology. They also took advantage of the favorable position in an intensive activity area. For this, Limburg is an example of integrating the local scenario into one already previously accepted, as well as a successful strategy developed at the low speed imposed by local particularities, but long-lasting and long-term, in cooperation with local stakeholders. Limburg is a favorable destination because it involves low costs, yet it is within the acceptable limit for an economic connection with the Antwerp East, East Brussels and in the middle of the knowledge and research triangle formed by Eindhoven, Brussels and Aachen. Within a 100-kilometer limit, there are 8 universities, 16 colleges and 15 recognized research centers funded from government or private sources. There is still a low-cost trained workforce in the area. Other positive particularities are knowledge, low cost of land and construction, the fast and predictable process of obtaining authorizations, as well as opportunities for funding. The basic economy is a niche one, from manufacturing to alternative energies, from medical equipment to logistics.

The lessons learned through this approach primarily address those issues that help any public authority to understand its strengths. To access and capitalize on those strengths, it is necessary to train the entrepreneurial environment, to train the local economic leaders, make use of or create the connection to the international financing circuits and a plurisectorial specialization on several levels: technologies, manufacturing and logistics. At the same time, the approach requires a permanent update and the regulation of the business spirit at the regional level. To implement the projects, it is necessary to connect with the local business environment and communities. Among the companies that have opened offices in Limburg are Nike (logistics campus), Stanley Black & Decker (production center), Hyundai (distribution center), Sunward Intelligent Equipment Group (Manufacturing Center).

#### **4.2 Coal transition process in Silesia – Poland**

The Silesian Region must take notice of two moments in time, albeit at the extreme: the year 2000, with 42 mines still in operation, and the 2040-50 time period when the goal is to have a zero-carbon economy. They must focus on the components of the transition from the traditional industry to a competitive and sustainable economy based on low carbon emissions. For this, it is necessary to reindustrialize and revitalize the post-industrial areas through technological and social innovations, create a coherent development strategy, make new investments and provide an increase in the quality of life. This goal can only be achieved through multi-level management and partnership.

Strategic challenges include reindustrialization and revitalization, co-operation between the administration, the industrial and scientific sectors, financing and new financial models, innovation and knowledge integration in the process of sustainable transformation (Bondaruk, 2019). Post-industrial assets have a number of advantages, including the existence of residues that can be reintroduced into the circular economy, underground water for geothermal energy, methane gas, post-mining infrastructure or ecological services, as well as assets belonging to the cultural heritage, leisure, education and services.

Examples include the transformation of Eminenzgrube (Katowice) into the Silesia City Center and the transition from coal production to new cultural functions in the early 2000s. Other success

stories include the transformation of the Świątchłowice mine into cultural landmarks. Once mining activities shut down, new uses are proposed for the affected land. Successful scenarios include the rehabilitation of heaps and the creation of recreational areas with low maintenance costs, with elements reminiscent of previous use, local and historical identity.

An example of a software project is the OPI-TPP, an information platform that identifies potential spatial and environmental conflicts between needs and proposals. This tool is accessible to the public to acquire, process and distribute data on industrial areas. The platform involves integrating various spatial information sources, including revitalization scenarios, environmental assessment, and potential conflict analysis. The platform provides advanced reports and analyzes, easy to access and generate. Another project of this type is LoCAL, which uses mine waste water as a source of geothermal energy, thus minimizing post-mining risks.

In essence, a transformation model of post-industrial assets is created by the integration of knowledge, resources and capital as means of regional specialization, reindustrialization and successful transformation of the spatial and economic structure and the introduction of the circular economy principles – post-mining assets are thus introduced into the social and environmental cycle. It is important to underline, also, the fundamental consideration of a low-carbon economy and the protection of natural resources.

Thus, a post-mining asset transformation model (PMA) is created, for which it is necessary to cooperate on the following lines of action: planning, coordination and monitoring, cooperation between public and private partners, a permanent support and access to financial mechanisms (grants, loans) and legal, technical and organizational support for the revitalization system.

It is therefore necessary to cooperate with the regional innovation system, governmentally supported through the Technology Development Program for Silesia (PRT) 2010-2020, the Network of Specialized Regional Observers (SO RIS) between local authorities, business environment support organizations, the research and development sector and the technological specialization businesses diagnosed in the PRT, respectively the implementation of the entrepreneurial discovery procedure in Silesia, as part of the above-mentioned specialized observatories. This model of cooperation has led to the creation of an action network on the following levels of activity: energy, health and medical systems, information and communication technology, environmental protection and development or a nano cluster.

For this purpose, there are several goals needed, including building awareness, through trainings, conferences, workshops, publications, participatory approaches, technology trends observatory, strategic and planning studies, through regional adaptation strategy, low emission plans, flood protection plans, EIA, cost and risk analysis and DSS, development and implementation through pilot, investment, innovation and engineering solutions and, last but not least, consultancy and R & D activities through laboratory tests, large laboratory and PDU scale, technology proof.

In conclusion, we can state four separate aspects. At first, we understand that through the reconversion of post-mining areas approximate 40,000 new jobs will be created in the entire region and generate a measurable economic value for the Silesian region. The post - mining period opens a wide variety of other perspectives and new areas of collaboration between industry, research and administration. These two aspects are backed by other two: development of the PMA reduces the use of green areas and, as it is obvious, a new energy and heating scheme can be implemented in urban areas.

#### **4.3 Revitalization of the Dolní Vítkovice area, Ostrava, Czech Republic – science, technology and education park**

Dolní Vítkovice is an outstanding destination for industrial architecture, education, culture and an interconnection of communities in the heart of Europe (Konczynska, 2018). Here, coal was mined between 1828 and 1998 and pig iron was produced since the Archbishop of Olomouc Rudolf Habsburg issued an appendix on the founding of the ironworks plant in Vítkovice. Today, this

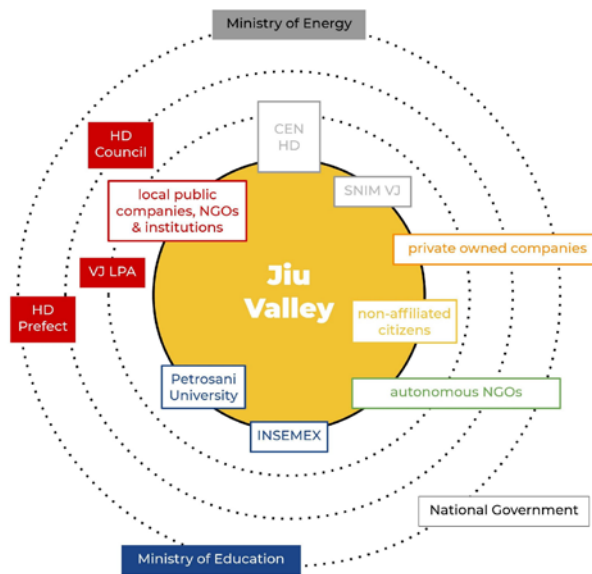
industrial complex is a unique educational, cultural and social center with an international reach, destined for the local citizens of Ostrava and, nonetheless, for the tourists in the Ostrava area. Three types of approaches for the industrial assembly have been taken into account. Approach 1 considers the unsustainable mining museum, and non-economies for a similar spatial scale. Approach 2 proposes demolition, obtaining land with a high value in the semi-central area plus revenue from the sale of iron. The immediate profit without a long-term effect implied a complicated scenario, taking into account the level of protection imposed by historical quality. Finally, approach 3 states the removal of non-original objects and reactivation of the significant historical ones, introducing new functions into protected historical objects, based on a memorandum with the Czech National Heritage Institute.

The third option, finally adopted, involved the creation of an educational, social and cultural center with an international impact. The objective is to popularize science, technology, engineering, physics and mathematics in an interactive and fun way. The goals that are being achieved through this project are the need for better education, the need to revitalize the area, generate jobs, the emergence of scientific and research functions, and the replanning of the regional economy. The area of over 14,000 square meters is managed by an NGO whose mission is to make accessible industrial monuments for education, leisure and cultural activities. Funding comes from multiple sources: own businesses (rental services), grants and subsidies from local and regional authorities, affiliate programs, national and European funds. The ensemble is the framework for the largest festivals in Europe (Colors of Ostrava, Beats 4 Love), corporate events and actions, permanent opening (24/7) for visitors to public spaces.

The ensemble is privately owned since 2003/04, a year after declaring it as a protected historic ensemble. In 2006, studies were conducted and the three scenarios on the development of the ensemble were discussed. In 2007, the Dolní oblast VÍTKOVICE Association, which currently manages the ensemble of 3 private companies belonging to the Vítkovice Holding and the Ostrava Technical University, was set up. In 2009, the fundamental theme for the revitalization of the whole: education was set, so that from 2010 the process of revitalization and reactivation can begin. The group benefits from a private initiative of the owner, with an exceptional architecture, willing to be funded by European, national or local institutional partners, mobilizing partners to make use of the facilities (scores of schools, universities, innovation institutions, and all the cities in region), realizing synergies at the level of the particular territory of influence and being connected to the regional strategy of intelligent specialization. Among the key actors in this project, we can list the owner and architect, The National Authority for the Protection of Cultural Heritage, The Moravian-Silesian Region (a contributor to funding and funding for cultural heritage maintenance), The National government (Ministry of Culture and Ministry of Regional Development, Infrastructure Subsidies), City of Ostrava (works infrastructure to connect the city and funding of educational activities), university (concept and cooperation for educational programs) and private partners.

## **5. JIU VALLEY – CURRENT SITUATION AND PROPOSALS**

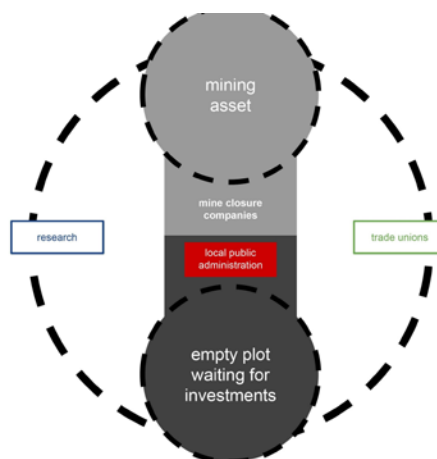
In the past three years, with the integration of the Jiu Valley into the Platform for Coal Regions in Transition, the pressure to implement sustainable policies for post-mining regeneration has become increasingly high (Danciu, 2019). Following the contemporary principles highlighted by Dumitrescu (2008), sustainability can be achieved only by treating the area we live in, the surrounding bioregion and its own climate, current habits and activities as being the property of each of them who live and live. This membership can only be achieved as a first response to the needs of rethinking architecture and the city, lifestyle and cultures.



**Figure 1. Jiu Valley stakeholders diagram**  
 Source: authors

The only scenario for the former Romanian mining region of Jiu Valley is established by an NGO coalition formed by associations that coordinate activities in participatory democracy, urban regeneration, tourism development and social services. This scenario states that the Valley can be a resilient 100.000 inhabitants polycentric Functional Urban Area, exploiting its natural resources sustainably and being one of the most important touristic destinations in Romania. The realistic objective for this vision is to reinvent and adapt to sustainable local resources, meaning smaller cities but performing much better than before. The most important stakeholders in the region are the public owned/subordinated organizations. The consultation of private companies, NGOs and local initiative groups is optional in the mines' closure procedure (Danciu et al., 2015).

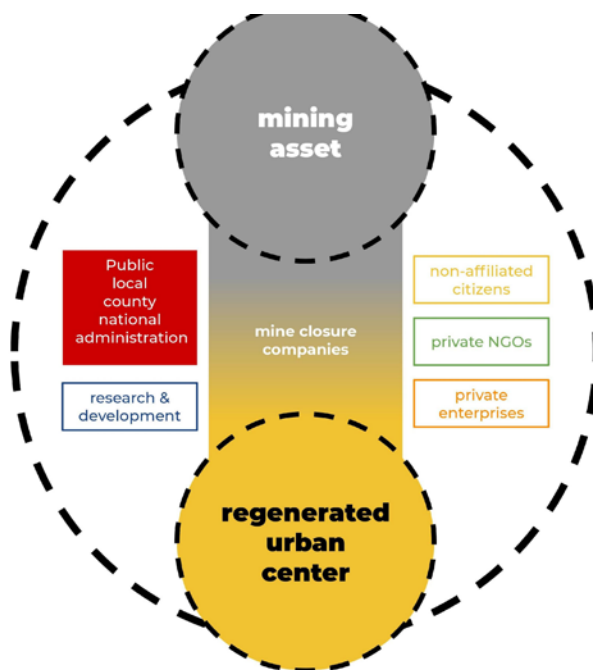
The directly involved national authorities are the Ministry of Energy (with the belonging Hunedoara Energy Complex (CEN HD) and the Jiu Valley Mine Closure Company (SNIMVJ)), the Ministry of Education (with the University of Petroșani and the INSEMEX Institute), and the Hunedoara County Prefect. The local public authorities and the County Council build the local public companies, NGOs & institutions sector. Together with those presented before, the other stakeholder groups include privately owned companies, non-affiliated citizens and autonomous NGOs.



**Figure 2. The decisive role of coal companies for the most valuable assets in the region**  
 Source: authors

In this situation presented above, the coal mining companies have the most important advantages. They have the moral authority, the most valuable real estate assets, the highest number of employees, a direct communication to the national public body, administrative capacity and technical and professional capacity. Meanwhile, they lack: the possibility of changing objectives according to circumstances, the vision for sustainable local development and knowledge of good international practice. It means that we can observe divergent objectives and actions, between these companies and the urban regeneration promoters. The coal mine closure companies allow the market value of former industrial assets to be reduced, implementing mine closure plans that limit future perspectives on the assets. They have a limited running life, considering the assets as goods to be valued at fair value and act according to rigid national regulations and necessary standard safety procedures. This is specific to a top-down process. In opposition to this situation, the urban regeneration promoters seek the valuable assets and search for the best repurposing options, considering the regional economic transition. They consider the assets (buildings, infrastructures and sterile heaps) as valuable resources for regeneration, they act flexible, according to circumstances and international best practices in the field (Roberts & Sykes, 2000). This is specific to a bottom-up process.

The objective is to see a change of the current paradigm: the mine closure companies bring the assets to their lowest value, the local public administration take the plot and wait for investments. Instead, the proposal looks for a much more proactive attitude, giving a more complex role to the mine closure companies: and evolution from coal activity closure management to urban regeneration process management (Irimie & Danciu, 2015).



**Figure 3. Proposed stakeholders involvement diagram**

*Source:* authors

What this proposal is suggesting is that the coal mine closure companies should act as economic regeneration agents, supporting links to international partners (Irimie & Danciu, 2016). There is an example of good practice, the partnership for Planeta Petrila cultural events and tourist visits in 2018-19, through the adaptive reuse of former industrial interior and exterior spaces at Mina Petrila, ensemble listed as a heritage ensemble of National importance. The Planeta Petrila projects states that Mina Petrila should be the administrative, economic and sociocultural center of Petrila, with the



following objectives: conversion of the former coal mine, a mining museum, the headquarters of the local town hall, R&D, industry 4.0, (re)connection to the city, new public spaces, restoration of the river shores.

## 6. CONCLUSIONS

Considering the general economic principles that govern the next economy, the necessity of stewardship for the former mining regions, the current situation in the Jiu Valley and the proposed system, we understand that the former mining regions are particular settings, waiting for a much bigger responsibility assumed by every stakeholder involved in the regeneration process. The gap filled by NGOs must be replaced by a far greater scope than the mining companies, local authorities or R & D institutions. The three examples propose specific solutions to include all relevant stakeholders in the postindustrial recovery plan.

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