

# THE BROWNFIELDS OF HUNEDOARA. MAGNETS WITHOUT A FORCE OF ATTRACTION

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**ABSTRACT** – The main objective of this article consists of the analysis of brownfields in the municipality of Hunedoara, one of the most representative 20th-century industrial area in Romania. One typological classification of the decommissioned industrial areas has been elaborated, based on a few representative criteria (current functionality, degree of conservation, dimensions, type of property) in order to emphasize the suitability of brownfields regarding different rehabilitation and revitalization solutions. The GIS representation of existing data has showcased the spatial extent of these spaces. Applying a questionnaire to a sample of the population residing in the municipality (n=210) offered a perception of their desires regarding the destiny of brownfields. The main findings of the study have brought out a). the existence of large surfaces consisting of apparently vacant terrains in the context of increasing demand for spaces, b). the necessity of reinvesting former industrial platforms with other functions that correspond to the current needs of local communities, and c). punctiform initiatives regarding the valorization of some brownfields as creative spaces.

**Keywords:** brownfield, industry, Hunedoara, local community, creative spaces

## 1. INTRODUCTION

Hunedoara was, for the Romanian People's Republic, and later for the Socialist Republic of Romania, a model of development, prosperity, and industrialization, an industrial giant whose platform occupied 704 hectares or approx. 1739 acres (Irimuş & Sofia, 2017, p. 202), in the period of maximum growth. The Hunedoara Steelworks (formerly known as the Hunedoara Ironworks) represented an example of good practice for the steelworks in Galați, whose construction began in 1958. For the socialists, investments in this industrial center were necessary for the stimulation of the national economy as a whole, and later, on the long term, other aspects such as urban development, housing, the consumption of the population would be integrated into the national socialist management system (Mărginean, p. 49). Declarations made by the officials of the time stated that the municipality of Hunedoara, consisting of the

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new city, the old city, and the industrial platform, would become a pioneer of the socialist genius and progress: “*Consequently, the industrial resource of Hunedoara had the potential to open the path towards the modernization of the entirety of Romania*” (ANIC, ff. 1-37), „Hunedoara Ironworks”, in 1948, was to ensure the production of steel necessary for the next 30 years (Gheorghiu-Dej, 1945, p. 62, cited by Mărginean, 2015, pp. 48-49).

One after another, after 1989, most industrial installations were out of service, and a lot of them were demolished. Today, only the northern part of the platform, and locally, other surfaces are still occupied in industrial activities. Since 2003, steel-based activity is operated only on the platform north of the city. North of the city as well, on a former surface of the industrial platform, The Industrial Park of Hunedoara emerged, where economic units activate in the machine-building industry and metallic structures, as well as light industry (Irimuş & Sofia, 2017, p. 203). In 2019, there exist hundreds of hectares, situated immediately west and north of the Cerna River, that have no function – they became veritable brownfields, except for a few surfaces totaling a few tens of hectares, like “La Gudroane”, Stockpile 44 or the old terrain where the Coke-Chemical Hall had been built and where there is a high degree of contamination. All the other surfaces, except for the aforementioned, can be reutilized with minimal decontamination.

The hypothesis that started the study is that the municipality of Hunedoara has the capacity to reinvent itself through a functional changeover of existing industrial platforms.

The brownfield issue continues to be a contemporary one in the first quarter of the 21<sup>st</sup> century. This problem was intensively researched in the European Union, for example, *La Friche* (Andres, 2011), and its cultural regeneration of the tobacco factory in Marseille. Unfortunately, in Romania, there has not been much done to transform those veritable relics used in an actual Fordist model of development (Păcurar, 2006).

At European level, there is no common definition of brownfields in the legislation of EU member states. Still, a more complex definition has been given by the CABERNET report (Ferber, 2006), stating that these are sites affected by the former usage of the site and the surrounding terrain; they have poor conditions and are underutilized; they can have real or theoretical problems regarding contamination; they are more common in developed urban areas; they require interventions to bring them back to a usable state (Siebielec, 2012, p. 3; Petříková D. et al., 2013).

According to the *Cambridge Dictionary*, greenfields represent terrains both from the rural and urban areas, terrains on which there have been no interventions of organization (no built structures) or terrains on which there was nothing ever built. For the Hunedoara Industrial Platform, greenfields could be a

solution especially for capitalizing on the tourist area in the proximity of Corvin's Castle, by organizing recreational spaces. The foremost problem is represented by the high degree of soil contamination in the respective area. The respective terrain (138 ha) is managed by the local administration, and without greening measures it won't be suitable for such use.

## **2. METHODOLOGY**

### **Study Area**

Hunedoara is, in one way or another, a multi millenary settlement, even if not on the scale of cities such as Rome. Even so, as early as 7000 B.C.E., we find traces of the Starcevo-Criș civilization, followed by Turdaș, Petrești, Tiszapolgar, Coțofeni, early Bronze Age, Wittenberg, Igrița, Hallstatt, A-B, Basarabi, and Dacian cultures. All of these have been found during digging on Sânpetru hill (Ioan, 2007, p.10) and represent a testimony of the tradition of metal manufacturing in Hunedoara. Even in 2019, although with external ore, metal crafts are still active on a small scale.

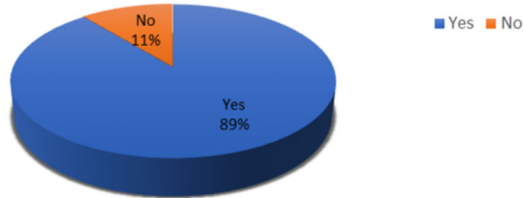
### **Materials and methods**

The analysis of all the industrial facilities that existed on the Hunedoara industrial platform was not done in reference to the way in which they functioned, what capacity they had or other technical aspects, the focus shifting to the occupied surface and the degree of contamination. All brownfields in Hunedoara were charted and spatially represented using ArcGIS, based on Google Earth satellite imagery (dating from 2006).

The main work instrument was the survey (questionnaire), applied to a sample consisting of, mainly, citizens of Hunedoara. Not every one of the respondents had their residence in the municipality, and it was decided to validate answers that corresponded with one or more criteria considered relevant to this study (23 respondents, totaling 11%): a) they lived for a period in the city; b) they worked at least for a while on the industrial platforms; c) they are attached to the municipality and are capable of having their own opinion on the subject of the survey. The survey was applied directly during the summer of 2019 and online as well, through Google Forms, and shared on Facebook groups that consisted of residents of Hunedoara.

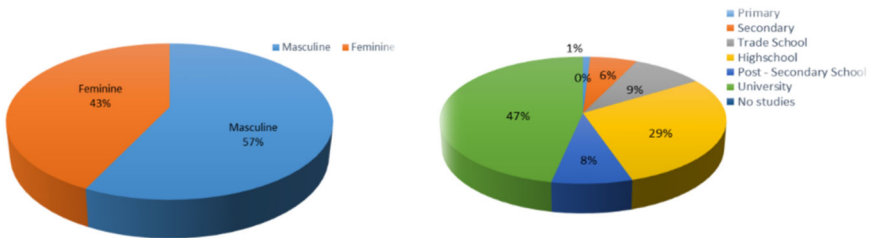
The items of the survey targeted a pattern through which the perception of the population regarding the brownfield situation could be assessed (a term masked in questions with names such as industrial platform or industrial center so casual respondents could understand). Moreover, there has been an attempt to assess the desires of the population regarding the destiny of the Hunedoara brownfield. The first 8 items refer to the ideas aforementioned. Items 9, 10 and 11 were added to test the rate of receptivity of respondents to the emergence of

creative industries, a relatively new term in the Romanian landscape. There were 210 forms applied in total, 187 of which came from residents of Hunedoara.



**Fig. 1.** Percentage of respondents residing in Hunedoara

Out of the respondents, 120 (57%) were male and 90 (43%) were female. In terms of age groups, the respondents were grouped in 4 of them, in an attempt to better pinpoint eventual differences in mentality, if they existed. This way, we identified one group below 25 years old, where the young high school graduates and university students could be represented; a group of 25-30 years of age where young adults were represented; two groups, 30-40 years old and 40-60 years old, representing the older and more mature population; finally, the over 60 years old group, retired and who lived during both the capitalist and socialist growth model.



**Fig. 2.** Respondents by gender and level of education

When talking in percentages, the under 25, 40-60 and over 60 years old groups share most of them (31%, 40%, and 21%, respectively). It is worth noting that a great number of the under 25 surveys came from online. The 25-40 age group is poorly represented in the diagram, totaling 9% (16 respondents). Without exaggeration, this small number could be due to the absence of this segment of the population, fit for work and gone to work in other cities from Romania or internationally. The 40% of those aged 40 to 60 could reflect an increased aging

rate of the population of the municipality, which will exercise an increasingly bigger pressure on the local economy in the following years.

The studies of respondents are varied, but dominant is the university level studies (47%) and high school (29%). The next ones by percentage are trade school (9%) and post-secondary (8%). It is possible that some respondents considered post-secondary studies as university studies, and this is why 103 responded this way, and the young people under 25, even though they didn't finish university, may have checked this option. In any case, it doesn't surprise that 93% of people have trade school, high school, post-secondary, or university studies. Hunedoara always had (and partially still has) many school units, from trade schools to post-secondary schools, foreman schools, multiple high schools and even a department of a State University.

### *Limits*

Materials from the City Hall of the Municipality of Hunedoara, the Municipality Library and the Faculty of Engineering, although valuable, didn't constitute an eligible source for the elaborated cartographic materials. The local authorities mentioned that the socialist plans of the Hunedoara Ironworks burned during a fire at the Library of the Ironworks. This situation reminds us of the melting of a few train cars filled with documents that constituted the archive of hundreds of years of the Ironworks, in the mid-1940s (Mărginean, pp. 49-50).

## **3. RESULTS**

### *Hunedoara's brownfields – past and present*

After the Second World War, once behind the Iron Curtain like most of the eastern part of Europe, Romania was subjected to an intense process of industrialization. Platforms and other industrial facilities were built all over the country, to increase economic production and use as much of the workforce as possible, even though in different parts of the country, the industrial segment occupied varying surfaces in terms of area. In small towns, the occupied surface was smaller - Târgu Lăpuș with 6,3 ha, Aninoasa with 12,5 ha, Uricani with 33,4 ha (Filip, 2012, pp. 158-159).

Evidently, for bigger cities, the industrial surfaces were proportional to the spatial extent of the city. Some cities were designed from scratch to serve the industrial production of the country, and so industrial cities developed. A relevant example in this situation was the mono industrial city of Hunedoara, specialized in the production of steel, cast iron and other derived produce of iron-containing minerals. The industrial function constantly attracted a workforce that soon elevated the population to 80.000 in 1992 (according to INSSE). According to Filip (2012, p.158), out of the total built area of the municipality (1222,7 ha), the

surface of brownfields is 580,1 ha, amounting to 47,1% of the total surface, which explains the necessity of the workforce for industrial production in Hunedoara.

Urban regeneration is a natural stage in a city's life. For Hunedoara, the current necessity of regeneration and revitalization comes after the downfall of the industrial function from the socialist period. The downfall after 1992 of the industrial platform of Hunedoara makes it necessary to conduct a postindustrial reconfiguration of the urban settlement. Urban regeneration could include rehabilitation, modernizing, renewal of urban buildings, purifying the environment of residential areas, sustainable development of all these components, aiming to satisfy the requirements of the population regarding the degree of comfort (Luca, 2009, p.138).

Even though there are multiple types of brownfields by genetic factors, the ones in Hunedoara appeared because of industrial activity. Industry produces the most profound changes in the geographic landscape through production and infrastructure distribution of industrial goods, and through stockpiling natural resources and dumped waste (Irimuş et al., 2009) due to processed resources (residue), therefore creating a new physiognomy of the geographic landscape, with new features (Irimuş & Mureşan, 1994), more exactly a new typology (the industrial landscape) (Irimuş & Sofia, 2017, p. 195). Hunedoara has a dispersed spatial pattern (the brownfields have an insular extension throughout the entire urban system).

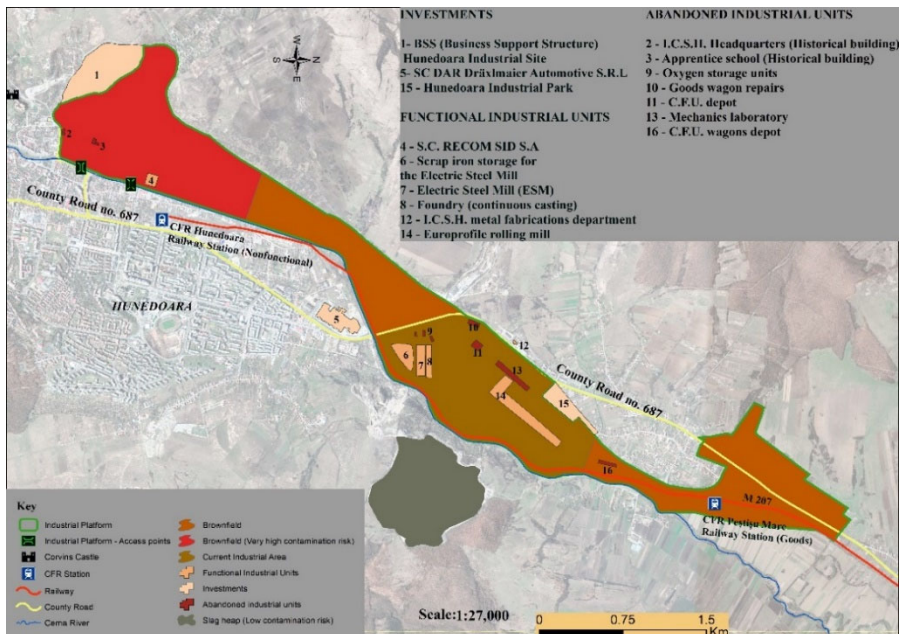


Fig. 3. Hunedoara Industrial Platform

Based on the consulted bibliography, Mitea and Zidăriță (1964, pp. 9-30) mention the development, from 1882 until 1964, of 34 industrial units in the intravillan of the municipality of Hunedoara. What is interesting is the period of reconstruction and modernization of the old facilities, between 1948 and 1951, followed by the start of the construction of *New Hunedoara* (idem, p. 13). What this means is that Hunedoara underwent another urban regeneration as far back as the socialist period. Gruescu (1972, p. 83) completes the aforementioned authors by adding at least 2 new industrial units up until 1972 when 8 furnaces were in service. Irimuş and Sofia (2017, pp. 199-200) signal the presence of 7 more industrial units during 1975-1989.

There have been identified 43 industrial facilities built in Hunedoara on the 704 hectares of the industrial platform. Utilizing the available cartographic resources and the bibliography, 25 of the 43 industrial units have been precisely identified (Fig. 3).

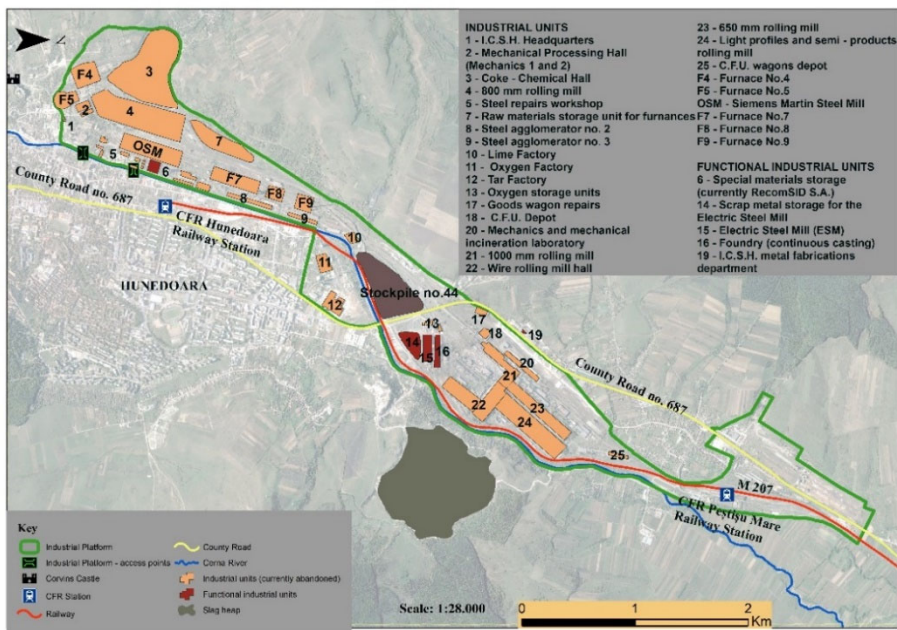
### ***The perception of the local community regarding capitalization on the brownfields***

A segment of the population, especially those who worked in the Ironworks before 1999, wish for a revival of industrial activity. The downfall of the Hunedoara Steelworks started as early as the 1970s. Through the relocation of the main steel centers, concerning the availability of resources, Hunedoara lost its forefront position in the industry in favor of the Galați Steelworks whose construction began in 1958. [...] Later, the feasibility of the project became problematic while the price of road transport continued to rise. In the 1980s, the price of ore from the port city of Constanța to Hunedoara was equal to the price of transport by boat from India or South America to Constanța (Mărginean, p. 122). The authors of this study consider that such a solution is not to be desired in the current context when Romania aligns with other countries on a postindustrial trajectory. In other words, a revitalization of the industrial function, on a bigger scale than that of punctiform production of subsets, seems unlikely.

The conception of the majority of the population that industry is the main motor of the economy has been dismantled by Cristea et. al. (2017), according to whom the tertiary and quaternary sector could very well be the spine of a settlement like it is in Cluj-Napoca. The authors consider that Hunedoara could reinvent itself as well through funding units of different services on the former industrial platform.

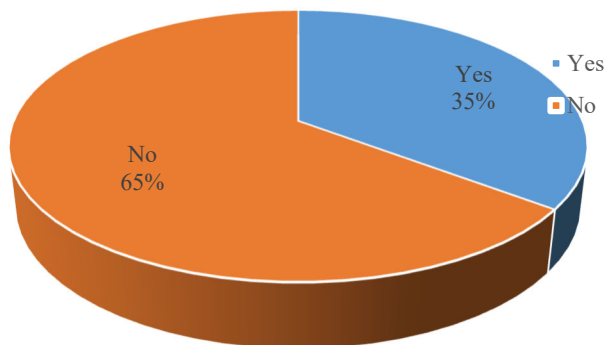
Differing from other approaches, this study considered necessary to study the brownfield problem from the filter of the local population; public opinion matters, more so when the population is the direct beneficiary of eventual measures taken in this direction.

Out of the 210 respondents, 74 mentioned that they worked in one of the branches of the Hunedoara Steelworks. Out of all departments, those questioned mentioned the Rolling Mills, OE2 (Electric Steel Mill 2), Arcelor Mittal (the current official name of the Steelworks under foreign ownership), ICSH (Metal Fabrications Department), OSM2 (Siemens-Martin Steel Mill 2), Transport Hall 7, Mechanics Hall, Siderurgica SA (another off-shoot, under private ownership currently), The Center for Research and Design, Furnaces, Coke-Chemical Hall, Foundry, the Thermo-electrical, and Recuperator Powerplant, Electric Steel Mill 1, Lisa Drăxlmaier (an industrial area owned by foreign investors), The Electronic Calculus center.



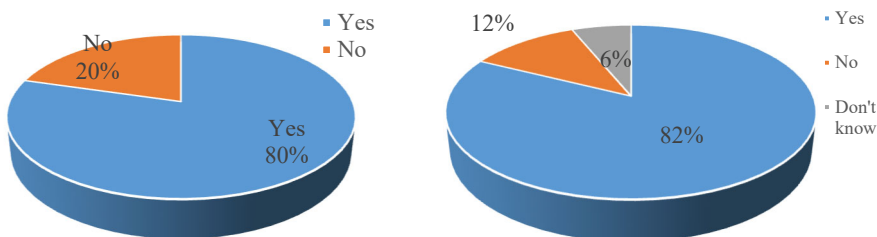
**Fig. 4.** Industrial units found on the Hunedoara Industrial Platform  
Source: verbal information gathered from the citizens of Hunedoara





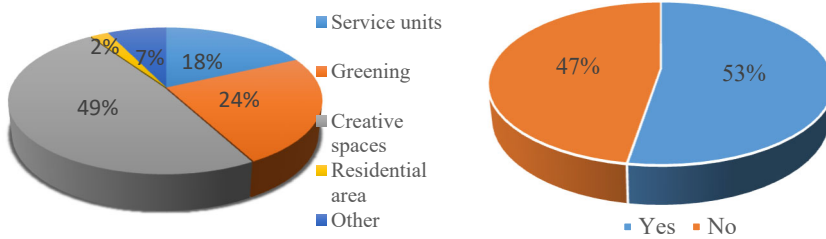
**Fig. 5.** Percentage of respondents who worked in the Hunedoara Steel Works

Through another item, the citizens were tested for their degree of information regarding the notion of an *abandoned industrial area*. 20% (43 answers) of them declared they are not familiar with the term, while 167 responded positively. 82% of respondents said that the industrial platform needs revitalization, while 12% infirmed the claim, while 6% were undecided (24 and 13, respectively). Approximately 93% of those surveyed would want, if possible, a reestablishment of an industrial center in Hunedoara. It is evident there is an appreciation for the industrial tradition of the city and proof that the symbols of one space are not forgotten in a short period.



**Fig. 6.** The respondents' knowledge regarding the notion of "decomissioned industrial land" and the probability of capitalizing on the industrial platform. (Left to right)

76% of respondents (160 answers) supported the idea of economic development towards something else other than industry. Among those functions that a former industrial platform can obtain, we can list residential areas, service units, greening measures, creative spaces (research, IT, cultural spaces). The high rate of non-answers or abstentions is visible (35 respondents).



**Fig. 7.** Percentage of respondents regarding the type of industrial reconversion and their familiarity with the notion of "creative space"(Left to right)

When talking about what type of activity they want on the industrial platform, the respondents opted for creative spaces, with 82 out of 151 total answers. Notably, the respondents showed an increased interest in particular creative activities to be held there (IT, cultural spaces, event halls, concert spaces, etc). Residential spaces were the least chosen; it is a reality that Hunedoara doesn't have a problem with overpopulation at the moment. Service units have been chosen by 26 respondents, while greening was an option for 25 of them. Out of the 24 who listed multiple choices, 2 opted for services and greening. Most of the other combinations include creative spaces. 13 respondents chose 3 or more options.

The suggestions of what to invest in from those interviewed are, on one hand, diverse, and on the other, showing some particularities. The citizens of Hunedoara told us about: production units (any kind), buildings (generally speaking), capitalizing on the potential of the tourist attractions (3 respondents), child spaces (parks), guesthouses, pools, terraces, a center for the disposal of electronics, a new 800 mm Rolling Mill (which existed in Hunedoara and was unique at a national level and is emblematic), recycling centers, a museum dedicated to the Ironworks, modular infrastructure, revitalizing of heavy industry, sport centers, logistical deposits, accommodation facilities, trade schools, photovoltaic panels, and green spaces.

A few general conclusions can be extracted:

- a) there is an increasing interest for capitalizing on the tourist attractions and heritage and the community wants to keep alive the memory of the Ironworks;
- b) respondents want more, while also varied, green spaces;
- c) respondents claim there are a lot of problems regarding infrastructure and also technical-municipal issues;
- d) One respondent, through their own words, had a generally valid opinion for others as well: *„I think you led me where you wanted with your questions. But I consider that in order to bring positive value to the city,*

*production activities are a must. After a citizen has money they can go and spend them in commercial areas and on art”* (a respondent from Hunedoara). In other words, there is a need for an increase in production in multiple domains in order to have a bigger flow of funds in the local economy;

- e) The affinity of some respondents for the restart of the activity of the Steelworks.

53% of respondents are familiar with the notion of creative spaces. Even so, under this name, a great number of respondents didn't understand what the term meant, needing further explanations. There could be observed a clear tendency in citizens to consider the creative industry beneficial or even very beneficial, this option being more prevalent than that of those who considered the creative industry unfavorable or indifferent.

#### 4. CONCLUSIONS

The expansion of a settlement is a natural phase in its life. Although the municipality of Hunedoara is not in an urgent crisis of space at the moment, the expansion of the city to the west could assure an increase in the standard of life for its residents and would conserve the feeling of “ventilation/open space” felt during the socialist period. More so when you consider the semi-mountainous depression in which the city is situated, which doesn't leave much room for expansion in other directions.

The creation of service spaces and creative spaces in the western sector could influence the decision of those who leave the city. Studies made by Cristea et. al. (2017) reveal that, nowadays, individuals choose their settlement of destination not so much because of the salary, but in relation to the quality of life and facilities offered. Although the municipality of Hunedoara, by planning the industrial platform, couldn't offer workplaces that are very well paid, it could still attract people. If life conditions, the quality of the environment, facilities of personal and professional development, cultural features and creative features would be raised to medium standards, this reality could counterbalance the moderate payment.

The importance of this study is that, through a successful implementation, a mono industrial giant like Hunedoara could revitalize itself in the Romanian society currently based around services. And this could represent an example of good practice to other industrial cities, and not just them, throughout Romania.

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**QUESTIONNAIRE REGARDING INDUSTRIAL PLATFORMS IN THE  
MUNICIPALITY OF HUNEDOARA**

1. Do you have your permanent residence in the municipality of Hunedoara?

YES     NO

2. Have you ever worked on the industrial platforms in Hunedoara?

YES     NO

3. If yes, in which department? (Please mention, if possible, the entire name)

\_\_\_\_\_

4. Have you ever heard about “abandoned industrial terrains”?

YES     NO

5. Do you think something needs to be done about the old industrial platform?

YES     NO     DON'T KNOW

6. If possible, would you like a new industrial center to open in Hunedoara?

YES     NO     DON'T KNOW

7. Do you think that the industrial platform should gravitate towards another economic sector?

YES     NO     DON'T KNOW

8. If yes, where to?

service units (commercial spaces, financial spaces, administration etc.)

greening (planning a continuous green belt)

creative spaces (research, IT, cultural spaces)

residential                       others \_\_\_\_\_

9. Have you ever heard about “creative industry”? What?

YES    \_\_\_\_\_     NO

10. How beneficial do you think would be for the industrial platform to reorient itself towards “creative industry” (IT, architecture, arts and crafts, entertainment, cultural function)?

Very beneficial     Beneficial     Indifferent     Unfavorable     Very Unfavorable

11. What percent of the total surface of the platform do you think should be used in the creative industry?

                            
0%   10%   20%   30%   40%   50%   60%   70%   80%   90%   100%

12. Suggestions: \_\_\_\_\_

13. Age: \_\_\_\_\_

14. Gender: M     F

15. Studies:  Primary     Secondary     Trade School     High School

Post-Secondary     University     None