

UDC: 711.585/.586-163:005.418(234.3)
doi:10.5379/urbani-izziv-en-2022-33-01-03

Received: 31 January 2022
Accepted: 29 March 2022

Manca KROŠELJ
Tomaž PIPAN
Naja MAROT

Are EU policies for brownfield redevelopment sufficient? A case study of Alpine industrial landscapes in the context of small and medium-sized towns

Small and medium-sized industrial towns in the Alpine area are often peripheral and degraded. These areas have also experienced declines in population and business opportunities as well as substantial environmental remediation costs, and they have undergone complex transformations. This research investigates what options towns with Alpine industrial brownfields have for redevelopment, what support is offered by the European Union, and how much development potential is fully valorized in this way. The evaluation was undertaken using four case studies of peripheral regions in four Alpine countries: Austria, France, Italy, and Slovenia. The results reveal that

brownfields are not sufficiently covered by current EU policies, and that financial incentives are spread among several resources and, consequently, are difficult to absorb. In addition, the regions in question do not possess the required knowledge or capacity (both individually and collectively) to obtain the funds needed to turn their ideas into successful redevelopment stories.

Keywords: small and medium-sized towns, brownfield redevelopment, Alpine regions, policy analysis, EU policies

1 Introduction

Forty years after the start of redevelopment initiatives in the UK (Parkinson, 1988; Oc & Tiesdell, 1991), the redevelopment of brownfield sites has become part of the agenda of Alpine regions (Modica, 2019). Although EU Interreg programmes have supported transnational projects that have addressed multidimensional (financial, design, regional development, and environmental) redevelopment issues (Wirth et al., 2012; Harfst, 2015; Görmär & Harfst, 2019; Bole et al., 2020; Marot & Harfst, 2020), this topic has only recently been broached by Alpine stakeholders. Whereas the urban centres of the Alps, such as Turin, Munich, and Innsbruck, have already recognized brownfields as a political and development issue, peripheral Alpine areas have placed more emphasis on tackling demographic changes, creating innovation, and protecting their natural resources (Dax, 2008; Steinicke et al., 2012; Humer & Palma, 2013; Bausch et al., 2014; Marot et al., 2015; Chilla et al., 2019). Given this, only a few Alpine-focused studies have discussed the management of land-use challenges, including brownfield sites (Cortinovis & Geneletti, 2018; Cotic, 2019; Modica, 2019; Migliorati & Veronesi, 2020).

Brownfield sites are a multifaceted phenomenon and can be defined as any land or premises that have previously been used or developed even if they are currently not fully in use. A brownfield site can be vacant, derelict, or contaminated, and it may have a negative impact on the surrounding environment (Alker et al., 2000; Bergatt Jackson et al., 2006). This is especially true of sites that were previously used for industrial purposes (Walker, 2000; Jigoria-Oprea & Popa, 2017). The definitions of brownfield sites are numerous, and we highlight two. One is the statement by Yount (2003, p. 25), who argued that the brownfield “conceptual definition should contain terms that are unambiguous, and should allow policy makers and practitioners wide latitude in addressing the dual nature of brownfields as both environmental and economic problems.” The second definition, claimed to be best known among European countries, derives from the CABERNET project (2006): brownfields are “sites that have been affected by the former uses of the site and surrounding land; are derelict and underused; may have real or perceived contamination problems; are mainly in developed urban areas; and require intervention to bring them back to beneficial use.” In previous years, many projects funded by the EU – such as CLARINET (2002), CABERNET (2006), COBRAMAN (2009), TIMBRE (2012) and – have addressed the issue of brownfields and policy approaches to rehabilitating them. Thornton et al. (2007) and Vanheusden (2009) dedicated their research to EU and national initiatives, and they identified the different types of incentives and approaches that member states use to address the issue. As the

most important initiatives, national programmes were mentioned, including the German efforts described by the Umwelt Bundesamt (Stallmann, 2014) and those of France (EUGRIS, 2021), which date back to the 1980s. Several countries, such as Slovenia (Lampič et al., 2017; Cotič & Kerbler, 2019; Cotič & Azman Momirski, 2020) and the Czech Republic (Skrabal, 2020), have put substantial effort into preparing registries and categorizing brownfields.

Brownfields were put on the EU policy agenda through the European Spatial Development Perspective (1999), and they were subsequently integrated into the cohesion policy via the territorial cohesion concept. The older Territorial Agenda (2011) recognized brownfields as potential regions that could be valorized via development initiatives. The newer Territorial Agenda 2030 (Territorial agenda, 2020) mentions areas in economic transformation and industrial transition as the ones that possess various development potentials and challenges. Furthermore, the agenda argues a place-based development and utilization of the development potentials and challenges that EU regions have. Harfst et al. (2020) also defined brownfields as endogenous potentials of small- and medium-sized towns (or SMESTOs, an acronym adopted within the ESPON project *The Role of Small and Medium-Sized Towns*; ESPON, 2006). First, they classified brownfields as natural potentials, and then they argued that the most important factors that limited their redevelopment were human capacities and a lack of knowhow with regard to how to benefit from the European context.

This article reflects on brownfield redevelopment efforts in an Alpine context. The Alpine governance context has been evaluated in several articles (Sielker, 2016; Teston & Bramanti, 2018) as being complex and diverse. The governance constant in Alpine areas is the Alpine Space Programme which, strategically and financially, supports transnational projects. The topic of brownfields in the 2014–2020 programme period fell under priority 3 (Liveable Alpine Space), specific objective 1 (Sustainably Valorise Alpine Space Cultural and Natural Heritage). In our research, brownfields were more specifically defined as Alpine industrial landscapes (AILs). With this term we describe a framework of research that was adopted by the project partners of the trAILS project of the INTERREG programme Alpine Space (2018–2021), which comprehensively investigated the transformation and redevelopment potentials of former industrial SMESTOs of Alpine regions from five points of view: spatial, social, economic, environmental, and policy assessment (Weilacher et al., 2021). To explain the Alpine context of the redevelopment initiatives, we address the following research aims and questions. First, current EU policies were screened for how well they steer and facilitate the redevelopment of the industrial landscape. Second, the

Table 1: Reviewed documents divided by sectors under investigation.

Sector	Policy
General	Europe 2020 Strategy (2010)
	DG REGIO: Strategic Plan 2016–2020 (European Commission, 2016b)
	Territorial Agenda of the European Union 2020 (2011)
Planning (spatial, regional)	Leipzig Charter on Sustainable European Cities (2007)
	Alpine Convention from 1991 (2011)
	EU Strategy for Alpine Region – EUSALP (2014)
	EUSALP: Action Group 2 (AG 2) (European Commission, 2015)
	European Landscape Convention (2000)
Industry	DG GROW: Strategic Plan 2016–2020 (European Commission, 2016a)
	A Renewed EU Industrial Policy Strategy (2017)
	Strategies for Resilient, Inclusive and Sustainable Growth (2017)
Biodiversity	EU Biodiversity Strategy to 2020 (2011)
Energy	Energy 2020 (2011)
Culture	A New European Agenda for Culture (European Commission, 2018b)
	2019 Annual Work Programme of the “Creative Europe” Programme (European Commission, 2018a)
Agriculture	Common Agricultural Policy (European Commission, 1999)

national governance frameworks that regions need to rely on were inspected. Third, we investigated what EU financial instruments and incentives are well known in these areas, and how many of them are valorized as a supporting instrument for brownfield redevelopment, and to what extent. In addressing these points, we elaborate on the situation in four case study areas: Eisenerz in Styria (Austria), L’Argentière-la-Bessée in the Hautes-Alpes department (France), Borgo San Dalmazzo in the province of Cuneo (Italy), and Tržič in the Upper Carniola region (Slovenia). The analysis had a bottom-up approach, and so the case study areas were selected by the regional development agencies based on overall project criteria: a town or a wider area with a large degraded industrial landscape in need of redevelopment.

The answers to the research questions are provided in the following order: in the first part of this article we introduce the methodology, in the second the EU context, and in the third the results of the case studies. The discussion focuses on the lessons learned in both Alpine and wider contexts, and the factors that have impeded the redevelopment of Alpine industrial landscapes in the selected areas.

2 Method

The methodological work undertaken for this research was structured in three phases. First, desktop research was undertaken on Alpine industrial landscapes in the context of SMES-TOs at a supranational level (i.e., the EU). Second, a more

detailed analysis was performed on the case studies, whereby their current national, regional, and local policies were analysed and a questionnaire was formulated that made it possible to garner more in-depth knowledge about the actors and initiatives at the regional and local levels. Four representatives of the regional development agencies responded to the questionnaire (Krošelj et al., 2020).

The policy analysis of the EU’s framework focused on reviewing documents pertaining to EU and macro-regional policies that target AILs, and performing the ground analysis. In the first step we collected documents from policy sectors relevant to AILs’ redevelopment. We categorized the documents based on their content context: the general sector (containing umbrella documents such as constitutions and comprehensive strategic plans, including spatial and regional planning), industry, biodiversity, energy, culture, and agriculture. We also considered tourism among relevant sectors; however, no common EU policy was found that exclusively targets the tourism sector.

In the first phase we reviewed sixteen documents, of which twelve were strategy documents, three were treaties, and one was an annual work programme from the culture policy sector (see Table 1). A majority of the documents reviewed were adopted for the period from 2011 to 2020 and correlated with the EU budget period (2014–2020) as well as the Europe 2020 Strategy (2010). Older documents, such as the Alpine Convention (2011) and the European Landscape Convention (2000), were included because they either covered the right

geographical area or were the most relevant document on landscapes. The majority of documents reviewed were endorsed by the European Commission and were prepared by various directorates-general or adopted by the Council of Europe. Given that the next funding period (2021–2027) was approaching at the time of the research, we also briefly looked into more current policies, and especially the newest cohesion policy. This was important to note given that it will be the instrument to support territorial development in the SMESTOs. However, these policies were not investigated in the same way as the previously mentioned policies because no finalized versions were available at the time of the research.

The ground analysis was based on the results of a keyword search for each selected policy document. The keywords were selected based on the most common and frequently used associations (i.e., terms and descriptions) for the AILs, as discussed and approved by the experts on the project team. The keywords used were *reactivation, reconversion, redevelopment, regeneration, remediation, restoration, reuse, brownfield, degradation, derelict, fallow land, marginal, pollution, polluted, vacant, wasteland, Alps, Alpine, cultural heritage, industry, industrial, landscape, mountain, periphery, peripheral, rural, and small and medium-sized towns*.

The data for the case studies were analysed via the regional reports that the project partners had prepared, and the questionnaires focused on the performance of the regions with regard to EU initiatives. The regional reports supplied information about the governmental frameworks of the regions: the administrative levels, governance, planning or other instruments, the regional and local actors' networks, and the levels of their interest and influence in decision-making processes for brownfield redevelopment. The questionnaires provided more targeted and detailed data input, including personal experiences of utilizing EU incentives for brownfield redevelopment, and the current challenges that the regions are facing in this regard. For comparison of the regions, the data were based on the NUTS 2 and NUTS 3 territorial unit classification.

3 Regions in question

The regions investigated are smaller regions located near larger national capitals (see Figure 1). Their first common characteristic is their industrial past; however, their economic sectors were not always the same. In Austria, the economy relies on the manufacturing sector transitioning toward the service sector, whereas in France and Slovenia the economies are shifting from industry toward tourism. The unemployment rate is highest in Styria (Austria), whereas the Upper Carniola region (Slovenia)

has the lowest registered unemployment rate. What all the regions have in common are transformation problems, and especially the out-migration of young people to larger urban agglomerations.

3.1 Eisenerz and the former Mönichtal blast furnace area in Austria

Today the town's economic prospects are shifting from the industrial sector toward tourism. In the recent past, the brownfield site of the Mönichtal blast furnace area saw many investors and inspiring development plans and ideas (such as the Re-design Eisenerz concept from 2006). However, only minor changes have been implemented. The main concerns pertaining to the site are the extent of pollution in the surrounding environment, the burden of rehabilitation costs, and the unexplored opportunities that the site has to offer potential investors (Pechhacker & Tiffner, 2019).

3.2 L'Argentière-la-Bessée and the former Péchiney factory in France

Similar to Eisenerz, the town has shifted its economic focus toward sports tourism. The industrial brownfield is located on the embankment of the Durance River in L'Argentière, and it has already been successfully redeveloped due to recent depollution of the site carried out by the public intercommunal cooperation agency. Depollution of such industrial areas is a common practice in France, and it is supported through national incentives. Even though these programmes fund only the initial phases of rehabilitation, they do relieve some financial burden from future investors. Today the site's buildings and open space are mainly used by local SMEs. Many of them specialize in industrial and tourism services and products (Kleitz, 2019).

3.3 Borgo San Dalmazzo and the Italcementi factory in Italy

The town's economy is exploring new development opportunities in gastronomy and the potential to redevelop the current cement plant site for tourism purposes. Currently, the cement factory is still partially in operation. Due to a lack of policy documents that address industrial brownfields, local officials and investors lack the support required to redevelop the area. Moreover, the local governance bodies do not have any instruments or power by which to prevent the current industrial uses of the area from polluting the environment (Abluton & Curato, 2019).

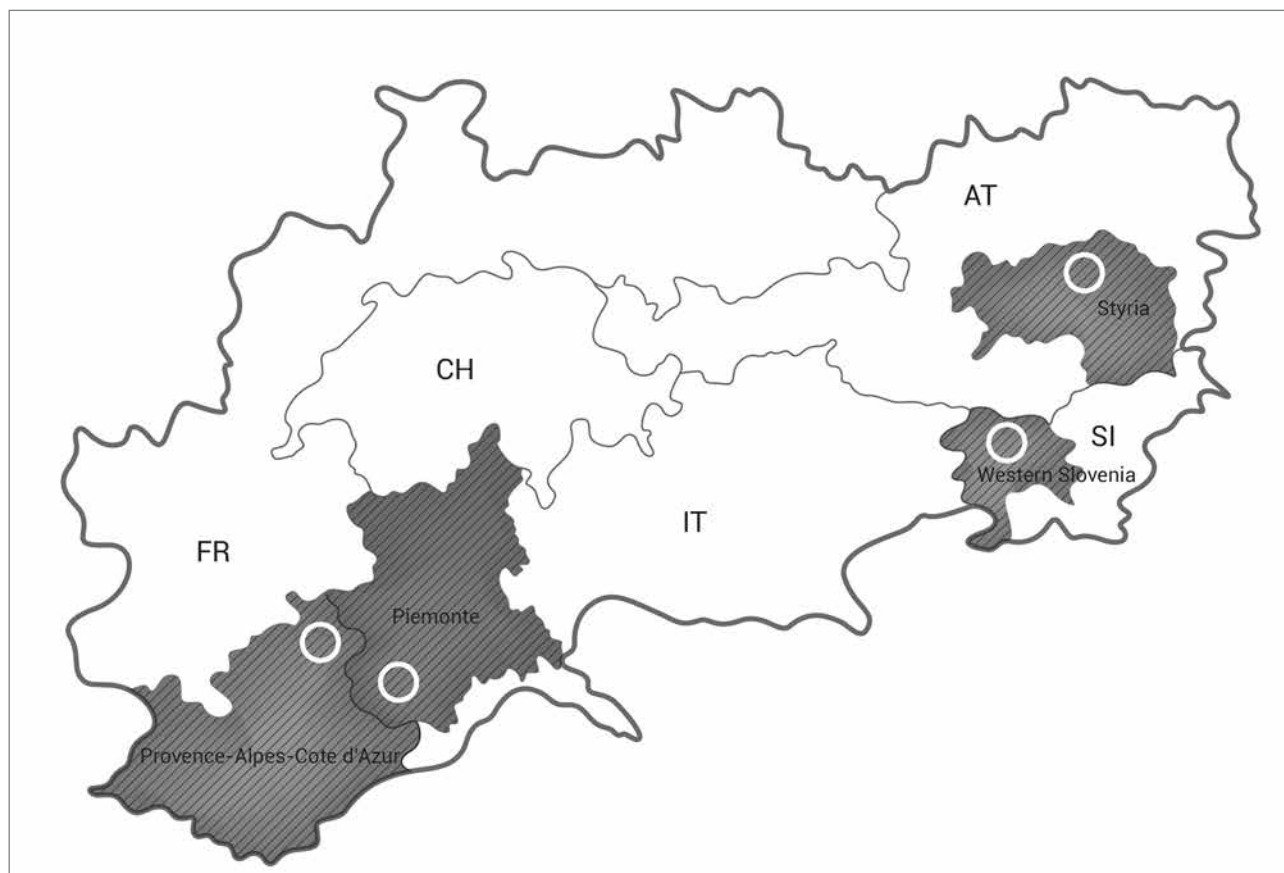


Figure 1: Case study regions by the NUTS 2 classification. White circles mark the small and medium-sized towns in the case study (illustration: Manca Krošelj).

3.4 Tržič and the former cotton spinning and weaving mill factory, Slovenia

In the recent past, the brownfields of the former cotton spinning and weaving mill factory in Tržič underwent a successful transformation, with increasingly more areas of the factory being used by local SMEs. This is an example of good practice. The ownership of the site is shared by the municipality and a private investor. The main concern of the local officials is the future opportunities that the site has to offer for sustainable cultural and sports tourism in the area. With regard to this, many interventions have already been undertaken; a successful public-private partnership has resulted in endorsed spatial plans that foresee a mixed use of residential, commercial, and general interest services at the site. Currently the main concern with regard to the site is the uncertainty of future investments in the area because the regional level of government does not have the autonomy to strategically support brownfield redevelopment in the long term (Brankovič et al., 2019).

4 Results of the policy analysis

4.1 Coverage of brownfields at the EU level

This article draws attention to the need to prove the legitimacy of AILs by exploring the coverage of commonly attributed associations of AILs (i.e., the keywords) at the supranational level of government. It does so by case-proving which policy documents, and thus sectors, most support the territorial development of SMESTOs in the alpine regions. Based on the keyword search and analysis, the most comprehensive support comes from the planning sector; specifically, the Territorial Agenda of the European Union 2020 (2011). Analysis at the supranational level shows not only a variety and combination of keyword occurrences, but also proves that AILs are a multifaceted subject addressed by many disciplines.

At the EU level, we were interested in three policy elements: recognition of brownfields and their integration into current policy documents; the suitability of the policy objectives for the redevelopment of brownfields; and the variety of financial incentives targeting brownfields.

4.2 Acknowledging the brownfields at the EU policy level

Surprisingly, the keywords *brownfield*, *redevelopment*, and *remediation* did not show up in any of the policy documents reviewed. Although some of the keywords may have been too specific, the term *brownfield* is well known today and is frequently used across Europe for describing degraded areas that face multiple development challenges (Alker et al., 2000). In a similar manner, the term *small and medium-sized towns*, the geographic scope of our research, was only mentioned in the Territorial Agenda of the European Union 2020 (2011) as areas lagging behind that need special attention for development. When looking at the positive or negative connotation of the keywords, policies generally do not recognize any in relation to brownfields. The group of keywords without a connotation only assumes either a morphological characteristic or a certain land use (such as industry, rural, or landscape). Almost none of the keywords with a negative connotation appeared in our search, the exception being the keyword *degradation*, which was a frequently used term in many sectors. The presence of this word in policies would mean that brownfields were recognized as a challenge or a problem. We found a high occurrence of the term *industry*. This was expected because it is common for brownfields in industrial regions to either be sites of former industrial activity or present redevelopment opportunities, especially in the context of the “reindustrialization” of the EU, the introduction of regional development concepts such as “Industry 4.0”, and the promotion of industrial culture.

The most comprehensive combination of the keywords was found in the Territorial Agenda of the European Union 2020 (2011). This document introduces guidelines for spatial development and is thus, by default, more integrative, whereas the Common Agricultural Policy (European Commission, 1999) comprehensively addresses many aspects of rural and regional development.

4.3 Identification of the policy objectives

In total, the documents reviewed contained ninety-two policy objectives and measures, out of which thirty targeted AILs. The majority were identified in the policies of the planning and industry sector. The general, culture, biodiversity, and agriculture sectors each had a few objectives and measures targeting AILs, whereas the fewest objectives and measures were found in energy policies. Under the planning sector we identified objectives that targeted the cohesive and sustainable development of the (Alpine) region in the most integrative manner; by enhancing biodiversity, improving territorial integration, and connecting ecological, landscape, and cultural values of

the regions. Furthermore, they promoted sustainable growth by enhancing innovation and stimulating the transformation of the industrial structure to create jobs, empower people, and promote businesses.

The exception was the spatial planning sector because it did not have any legally binding policies or implications at the supranational level. The EU has no action plans assigned in this area. As a result, the guidelines and declarations that have been published mainly in the Territorial Agenda of the EU (2011), Alpine Convention (2011), and EU Strategy for Alpine Region (2014) were understood as objectives and measures that address AILs. With regard to other sectors reviewed (biodiversity, culture, agriculture, and energy), there were no objectives and measures beyond those already mentioned that targeted AILs directly.

4.4 Review of available financial incentives

A variety of incentives are offered by various policy levels and EU funds to aid AIL brownfield transformation. Moreover, the purpose of the EU budget is to implement policies and address challenges by allocating resources for investment and thereby provide long-term planning stability across the EU's territory. Two-thirds of the managing structure of the EU budget is managed in shared partnership with member states through the European Structural and Investment Funds (ESIF). In the context of AILs, we reviewed the accessibility and usefulness of these incentives to support brownfield redevelopment.

The funds most relevant for AILs were the European Regional Development Fund (ERDF), the European Social Fund (ESF), the Cohesion Fund (CF), and the European Agricultural Fund for Rural Development (EARDF). The greatest number of incentives for AILs were offered by the Cohesion Policy, which covers environmental, economic, social, and other aspects of territorial redevelopment. The most versatile fund in terms of supporting AILs was the INTERREG programme of the ERDF. The financial instrument supports the cooperation of EU regions across borders through project funding programmes. However, it only supports the development of soft solutions, such as studies, networking platforms, databases, action plans and so on, and in most cases there is a demand for a certain rate of co-financing. On top of that, the competition for funds is high, with the applicants – a consortium of partners – expected to be experienced and to have the skills and motivation necessary to successfully apply for the funds without reimbursement.

We can conclude that, at the EU policy level, the redevelopment of brownfields is not a major policy topic, nor is there a

Table 2: Reasons for not utilizing an individual incentive.

Incentive	Challenges and barriers
Competitiveness of Enterprises and SMEs (COSME)	Lack of connections to potential project partner (FR)
	Overly demanding application (FR)
	Lack of human capacity (FR)
	Lack of expertise (SI)
Connecting Europe Facility (CEF)	Lack of connections to potential project partner (FR, IT)
	Overly demanding application (FR)
	Lack of human capacity (FR)
	Lack of expertise (IT)
Creative Europe (CE)	Lack of connections to potential project partner (AT, FR, SI)
	Overly demanding application (FR)
	Lack of human capacity (FR)
	Lack of expertise (SI)
HORIZON 2020 (H2020)	Co-financing rate is too low (IT)
	Lack of connections to potential project partner (AT, FR, IT, SI)
	Overly demanding application (FR, IT, SI)
	Lack of human capacity (FR, IT)
	Lack of expertise (SI, IT)
	Limited nature of financial incentive (hard vs. soft outputs) (IT, SI)
	Very high competition (low probability of success) (IT)
LEADER	Abundance of administrative work in implementation phase (SI)
	Lack of connections to potential project partner (FR)
	Overly demanding application (FR)
	Lack of human capacity (FR)
LIFE	Lack of connections to potential project partner (FR, SI)
	Overly demanding application (FR, SI)
	Lack of human capacity (FR)
	Lack of expertise (SI)
	Pre-financing requirement (SI)
	Co-financing rate is too low (IT)
	Abundance of administrative work in implementation phase (SI)

Note: AT = Austria, FR = France, IT = Italy, SI = Slovenia.

targeted policy focusing solely on this policy matter. However, indirectly, there are several funding options for brownfield initiatives, but they are spread among EU programmes and policies; for example, the Just Transition Fund for mining regions in Europe through the DG REGIO, and the integrated territorial investments for sustainable urban renewal through the Cohesion Policy.

5 Comparison of the four case studies

Each of the selected towns has a rich industrial history. In addition to the most visible impacts of brownfields, there are often invisible legacies, such as pollution, and the deconstruction costs are such that the private sector will not take economic responsibility. As a result, SMESTOs are left to deal with

expensive redevelopment on their own. As a consequence of globalization, the lack of jobs results in the SMESTOs suffering from brain drain, making them unfavourable to either invest in or live in. How do these specific areas of SMESTOs benefit from EU policies?

By examining the four quite different administrative frameworks, we learned about the workings of governing structures, actors, and implementation tools, and also identified which organizations or persons had the most power and/or resources to steer brownfield redevelopment. Through this, we gained essential knowledge by which to understand how current transformation practises are implemented at lower levels of governance. The results showed that the four regional development agencies had different levels of experience in dealing

with brownfields. Furthermore, the results showed that the most influential actors for brownfield redevelopment were administrative bodies and institutions at regional or local levels, the owners of sites, and the local inhabitants directly affected by the given brownfield.

The policy analysis of the four case studies showed similar results as the policy analysis carried out at the supranational level. None of the countries had reported or knew of any kind of national policy that was targeted specifically toward industrial brownfields or other degraded areas. However, strategic documents addressing the issue at the regional and local levels did exist, such as regional development programmes, the LEADER/CLLD strategies, and spatial plans at the municipal level. More support for brownfield redevelopment can be expected through the incentives introduced by the EU Cohesion Policy, such as the INTERREG programme, COSME, and Creative Europe. This greater level of support is also evident through the recent actions supported by the programmes: utilizing the industrial cultural heritage concept as a tourism economic driver of areas (Austria, Slovenia, Italy, and France), the activation of brownfields via endogenous resources in partnership with local inhabitants (Slovenia), and innovative approaches to re-naturalize areas through the implantation of pilot investments (Slovenia; Abluton & Curato, 2019; Brankovič et al., 2019; Kleitz, 2019; Pechhacker & Tiffner, 2019).

The results of the questionnaire showed that utilization of EU financial incentives for brownfield development from 2014 to 2020 was low, with the exception of the Slovenian case study. With the exception of the LEADER/CLLD and INTERREG programmes, the prevailing funding support for reported brownfield development projects were national incentives. The analysis of the questionnaire also identified several factors that limited the absorption of the funds: 1) a lack of connections to potential project partners, 2) overly demanding application forms, 3) a lack of human capacity, and 4) a lack of expertise among the potential project partners. To overcome these barriers, the EU or national institutions should offer more support to improve the knowledge of actors at the regional level (Table 2).

From the selection of useful and planned incentives and the challenges listed, it is concluded that the number and variety of instruments is not as great a concern as the ability of regional development agencies to utilize them. Regional development agencies are burdened by overly demanding applications, and most of them lack sufficient expertise or do not have the partnership network or human capacity necessary to successfully compete for the incentives.

6 Discussion

Based on our assumptions, the supranational level provides a general framework and guidance for member states to follow and integrate into their domestic policies. However, the availability of incentives does not ensure the ability of potential beneficiaries to utilize them. According to our analysis of supranational level policies between 2014 and 2020, no strategic policies directly targeted brownfield redevelopment. A similar situation was observed with regard to domestic policies at national levels. Regarding regional and local levels, individual examples of strategic documents were traced, mostly in documents such as regional development programmes, LEADER/CLLD strategies, and municipal spatial plans.

We found that support introduced by the EU, such as INTERREG programmes, COSME, HORIZON 2020, and others, is useful not only for brownfield redevelopment but also for all SMESTOs because it provides a more integrative and comprehensive approach. Even though this does not directly address brownfields, the regions and their SMESTOs have multifaceted transformation issues that should be strategically targeted to ensure sustainable solutions for brownfields. Specific priorities of dedicated resources for a variety of transformation objectives such as protecting the environment, supporting cultural heritage, developing sustainable energy resources, and improving territorial cohesion are welcomed.

Although several options to support transformations are available, the findings of the questionnaire showed that they are only moderately used. The use of incentives depends on how familiar and experienced the regional development agencies are in utilizing them. Factors inhibiting the absorption of the incentives include a lack of connections to potential project partners, overly demanding application forms, lack of human capacity, and a lack of expertise among partners. These factors should be addressed by the EU or by national institutions, and support should be offered to improve the knowledge of the actors dealing with these issues.

Due to the actual improvements in the New Cohesion Policy in favour of regions and better implementation prospects, we expect to see changes in the future. Moreover, and because the New Cohesion Policy reduced the number of thematic objectives from eleven to five, we expect there to be more targeted instruments. This may in turn make it possible for regions to focus on only one instrument – that which is most suited to their capacities, range of expertise, and experience. At the same time, national support should put more effort into supporting regions' transformations, not only by monitoring and

Table 3: More recent policies addressing brownfield redevelopment

Policy	Example of objectives directly targeting brownfield redevelopment
Territorial Agenda 2030 (2020)	Healthy environment: better ecological livelihoods, climate-neutral and resilient towns, cities, and regions. The policy objective foresees building resilient communities, local and regional strategies in response to climate change, and loss of biodiversity, including brownfield redevelopment.
The New Leipzig Charter (2020)	Empowering cities to transform: strengthening urban governance to ensure the common good – active and strategic land policy and land use planning. The policy objective foresees resilient and long-term development by prioritizing the renewal and complex regeneration of urban areas, including brownfield redevelopment.
EU Biodiversity Strategy for 2030 (2020)	EU Nature Restoration Plan: restoring ecosystems across land and sea – addressing land take and restoring soil ecosystems. The policy acknowledges the need to fortify efforts to rehabilitate polluted brownfields. To address these challenges, the policy updated the EU Soil Thematic Strategy for 2030 and will adopt concrete measures in the new EU Soil Strategy for 2030, a key deliverable of the policy.

preparing brownfield registries, as in the case of Slovenia, but also through providing targeted incentives. As can be seen in the more recent policies, there have been efforts to provide a more targeted approach to addressing brownfield redevelopment, as evidenced in Table 3. All three policies specifically target urban (re)development or land management issues. The Territorial Agenda 2030 (2020) mentions brownfield redevelopment, whereas the New Leipzig Charter (2020) prioritizes the renewal of brownfields and strengthening the land policy and land-use planning. The EU Biodiversity Strategy for 2030 (2020) focuses on soil sealing and land take to prevent the build-up of agricultural land, and instead promotes brownfield redevelopment.

Regarding administrative frameworks, the context of countries being “Alpine” does not distinguish them from any other regions because the national or supra-regional level was not recognized as being as important as the local level. The prevailing administrative bodies that have the major role in steering brownfield redevelopment are the municipalities. According to territorial governing approaches, countries mostly rely on bottom-up approaches, but they still depend on financial and regulatory support from the state. The French national level is the only case in which a national level implements a cross-administrative mechanism by the Ministry for Ecological Transition and the Ministry for Higher Education, Research, and Innovation to directly support rehabilitation of brownfields, via the so-called French Agency for Ecological Transition (ADEME, 2021), which not only develops knowledge but grants the actual financial support to brownfield redevelopment projects for former industrial areas.

A greater role was expected from the regional development agencies in Slovenia because they are the bodies in charge of preparing regional development programmes: the seven-year strategy plan for absorbing EU funds. Although it should be individual municipalities’ priority to improve their knowledge, skills, and capacities to successfully tackle brownfields, finan-

cial incentives should be more user-friendly for the municipalities, especially because transformation activities demand a vast amount of financial resources and a large non-refundable financial input to prepare land for further development. With regard to the nature of solutions imposed on brownfields, current transformation practices in the pilot regions primarily address only “soft” solutions, such as action plans, studies, cooperation platforms, databases, action plans, and so on. We assume that the reasons for these unsustainable practices are the limitations of the seven-year perspective of the EU agenda, which forces regional development agencies to cyclically seek resources for short-term or “soft” solutions, and the fact that brownfields are recognized as opportunities for the development of AILs.

7 Conclusion

The policy analysis of this research has shown that brownfields, and Alpine industrial landscapes in particular, are currently dispersed among several sectors as a policy topic. To overcome this dispersion, also recognized as one of the reasons for lower absorption of funds, a specialized strategy led by the EU should be prepared and accompanied by financial measures. Currently, the transformation focus is very limited and comprises energy efficiency and energy innovation interventions, but it neglects softer approaches, such as tourism. The case studies, although they are all located in the Alpine area, are in different phases of their transformations and, more importantly, they possess different capacities to react pro-actively to transformation opportunities, especially with regard to their abilities to absorb funds.

What all the regions with SMESTOs have in common is the EU framework, whereby some are more resourceful than others. Measured by both incentives absorbed and levels of knowledge, we argue that the approach to redevelopment is mostly bottom-up and is not supported by the national level.

However, all of them are aware of the importance of the EU policy level, and especially the triggers presented in EU funds. For better absorption of these funds, all of them agree that they should be centrally managed and not dispersed between programmes and funds because this makes it difficult for regions with lower capacities to monitor, comprehend, and absorb. The lower capacity of the regions presented might be connected to the context of the SMESTOs, although the Slovenian case suggests that this is more dependent on local initiatives and the institutions in charge. The INTERREG programme was identified as the most useful among the EU initiatives, although the weakness of its funds, supporting only soft measures and not infrastructure construction, was also exposed. According to CABERNET (2006), public financial support should not be granted in the same way to all brownfields, but should instead be differentiated based on three models. Cases classified as “model A” are so-called “self-developing” sites: those that are very likely to be redeveloped in no time by private investors due to their relatively low regeneration costs and high land values.

This research also provides some generalized guidelines that may be applicable for other similar locations in the Alps. First, the study can empower awareness of the need for and added value of transformation processes. Second, it can allow better foresight into the specifics of this long-term and continuing path full of uncertainties, and thus encourage stakeholders that it is worth following it. Third, national and regional stakeholders should be inspired to invest more time and effort into building human capacity to support redevelopment. There is also a need to ensure that they obtain expert knowledge, develop potential project partner networks, and invest in building strong communities with clear visions for future brownfield redevelopment. Through doing so, it may become more possible to predict more sustainable spatial changes within the Alpine area, with improvements such as locally initiated and place-based transformations: reusing built-up areas, preventing greenfield soil sealing, improving the visual image of areas, and so on.

All in all, we argue that regions' needs for financial support and knowhow for transformation should be acknowledged and recognized by the EU. A more targeted, place-based approach is needed. The approach whereby the EU speculates that all regions comprehend what is available is also proved by our case studies not to be working and should be amended accordingly to allow a more targeted approach that will bring with it, *ceteris paribus*, more satisfying results.

Manca Krošelj, University of Ljubljana, Biotechnical faculty, Department of landscape architecture, Ljubljana, Slovenia
Email: manca.kroselj@bf.uni-lj.si

Tomaž Pipan, University of Ljubljana, Biotechnical faculty, Department of landscape architecture, Ljubljana
Email: tomaz.pipan@bf.uni-lj.si

Naja Marot, University of Ljubljana, Biotechnical faculty, Department of landscape architecture, Ljubljana
Email: naja.marot@bf.uni-lj.si

Acknowledgements

The research presented in this article was financed by the project Alpine Industrial Landscape Transformation (trALLs, project number 639, 2018–2021), part of the EU Interreg Alpine Space Programme, Priority 3: Liveable Alpine Space.

References

- Abluton, S. & Curato, V. (2019) *trALLs – Alpine industrial landscape transformation. WPT2: Existing policies on local/regional level assessment report: Borgo San Dalmazzo – Italy*. Final report. Borgo San Dalmazzo, LAMORO Development Agency.
- ADEME (2021) *Our organisation*. Available at <https://www.ademe.fr/en/ademe-the-french-ecological-transition-agency/our-organisation/> (accessed 31 May 2022).
- Alker, S., Joy, V., Roberts, P. & Smith, N. (2000) The definition of brown-field. *Journal of Environmental Planning and Management*, 43(1), pp. 49–69. doi:10.1080/09640560010766
- Alpine convention: Sustainable rural development and innovation*. 2011. Innsbruck, Permanent Secretariat of the Alpine Convention. Available at: https://www.alpconv.org/fileadmin/user_upload/Publications/RSA/RSA3_EN.pdf (accessed 31 May 2022).
- An EU strategy for the Alpine region (EUSALP)*. 2014. Brussels, Directorate General for Regional and Urban Policy. Available at: <https://www.alpine-region.eu/sites/default/files/uploads/page/24/attachments/eu-salpcoredocument03072014.pdf> (accessed 31 May 2022).
- Bausch, T., Koch, M. & Vesper, A. (eds.) (2014) *Coping with demographic change in the Alpine regions: Actions and strategies for spatial and regional development*. Heidelberg, Springer Berlin. doi:10.1007/978-3-642-54681-5
- Bergatt Jackson, J., Drobiec, L., Ferber, U., Gorski, M., Nathanail, P. & Petriková, D. (2006) *Brownfields handbook*. Ostrava, VŠB-TU Ostrava. Available at: http://fast10.vsb.cz/lepob/index1/handbook_eng_screen.pdf (accessed 31 May 2022).
- Bole, D., Kozina, J. & Tiran, J. (2020) The socioeconomic performance of small and medium-sized industrial towns: Slovenian perspectives. *Moravian Geographical Reports*, 28(1), pp. 16–28. doi:10.2478/mgr-2020-0002
- Brankovič, U., Mrak, I., Cvenkel, H. & Terčon, S. (2019) *trALLs – Alpine industrial landscape transformation. WPT2: Existing policies on local/regional level assessment report: Tržič – Slovenia*. Final report. Kranj, BSC Kranj.
- CABERNET (2006) *Concerted action on brownfield and economic regeneration network*. Available at: <http://www.eugris.info/displayproject.asp?Projectid=4415> (accessed 31 May 2022).
- Chilla, T., Heugel, A., Streifeneder, T., Ravazzoli, E., Laner, P., Teston, F., et al. (2019) *The Alps 2050 atlas—ALPS 2050: Common spatial perspectives for the Alpine area. Towards a common vision*. Luxembourg, ESPON. Available at: https://www.espon.eu/sites/default/files/attachments/ES-PON_Alps_2050_FR_annex_ATLAS.pdf (accessed 19 Oct. 2020).

- CLARINET (2002) Contaminated land rehabilitation network for environmental technologies. In: Grimski, D., Lowe, J., Smith, S., & Ferber, U. (eds.) *Brownfields and redevelopment of urban areas*, pp. 1–137. Vienna, Federal Environment Agency Ltd. Available at: https://clu-in.org/wales/download/3CLARINET_brownfields_report.pdf (accessed 31 May 2022).
- COBRAMAN (2009) *Cobraman brownfields project*. Available at: <http://cobraman.uirs.si/Home/Aboutproject/tabid/92/language/en-US/Default.aspx> (accessed 31 May 2022).
- Cortinovis, C. & Geneletti, D. (2018) Mapping and assessing ecosystem services to support urban planning: A case study on brownfield regeneration in Trento, Italy. *One Ecosystem*, 3, e25477. doi:10.3897/oneeco.3.e25477
- Cotic, B. (2019) Industrial symbiosis in brownfields in Kranj, Slovenia. *IOP Conference Series: Materials Science and Engineering*, 471(11), 112073. doi:10.1088/1757-899X/471/11/112073
- Cotič, B. & Ažman Momirski, L. (2020) Inventory of brownfield sites in Slovenia: Towards a new methodology. *Prostor*, 28(1), pp. 166–179. doi:10.31522/p.28.1(59).11
- Cotič, B. & Kerbler B. (2019) The analysis of brownfields related topics in Slovenian spatial planning legislation from 2002 to 2017. *Igra ustvarjalnosti – Creativity Game*, 7, pp. 22–27. doi:10.15292/IU-CG.2019.07.022-027
- Dax, T. (2008) *The role of mountain regions in territorial cohesion, a contribution to the discussion on the green paper on territorial cohesion*. Final report. Vienna, Euromontana.
- Energy 2020: A strategy for competitive, sustainable and secure energy. 2011. Luxembourg. Available at: https://ec.europa.eu/energy/sites/ener/files/documents/2011_energy2020_en_0.pdf (accessed 6 Mar. 2019).
- ESPON (2006) *ESPON 1.4.1 The role of small and medium-sized towns (SMESTO)*. Available at: https://www.espon.eu/sites/default/files/attachments/fr-1.4.1_revised-full.pdf (accessed 31 May 2022).
- EU biodiversity strategy for 2030: Bringing nature back into our lives. 2020. Brussels. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020DC0380> (accessed 31 May 2022).
- EUGRIS (2021) *HomePortal for soil and water management in Europe*. Available at: <http://www.eugris.info/index.asp> (accessed 31 May 2022).
- EUROPE 2020: A strategy for smart, sustainable and inclusive growth. COM(2010) 2020. 2010. Brussels. Available at: <http://ec.europa.eu/eu2020/pdf/COMPLETE%20EN%20BARROSO%20%20%2007%20-%20Europe%202020%20-%20EN%20version.pdf> (accessed 5 Mar. 2019).
- European Commission (1999) *The common agricultural policy. 1999 review*. Luxembourg. Available at: http://aei.pitt.edu/94108/1/1999_REVIEW.pdf (accessed 31 May 2022).
- European Commission (2015) *Concerning a European Union strategy for the Alpine region. COM(2015) 366 final*. Brussels. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52015DC0366&from=SL> (accessed 5 Mar. 2019).
- European Commission (2016a) *Strategic plan 2016–2020 – DG GROW. Ref. Ares(2017)6342466*. Brussels. Available at: https://ec.europa.eu/info/sites/info/files/strategic-plan-2016-2020-dg-grow_july2016en.pdf (accessed 6 Mar. 2019).
- European Commission (2016b) *Strategic plan 2016–2020 – DG regional and urban policy. Ref. Ares(2016)1566833*. Brussels. Available at: https://ec.europa.eu/info/sites/info/files/strategic-plan-2016-2020-dg-regio_april2016_en.pdf (accessed 6 Mar. 2019).
- European Commission (2018a) *2019 Annual work programme for the implementation of the Creative Europe programme. C(2018) 6687*. Brussels. Available at: <https://culture.ec.europa.eu/sites/default/files/library/c-2018-6687.pdf> (accessed 31 May 2022).
- European Commission (2018b) *A new European agenda for culture. COM(2018) 267 final*. Brussels. Available at: <https://culture.ec.europa.eu/document/new-european-agenda-culture-swd2018-267-final> (accessed 31 May 2022).
- European landscape convention and reference documents. 2020. ETS 176/2020. Strasbourg, Council of Europe.
- European spatial development perspective (ESDP) Towards balanced and sustainable development of the territory of the European Union. 1999. Luxembourg, European Communities. Available at: <https://www.eea.europa.eu/policy-documents/european-spatial-development-perspective-esdp> (accessed 31 May 2022).
- Görmar, F. & Harfst, J. (2019) Path renewal or path dependence? The role of industrial culture in regional restructuring. *Urban Science*, 3(4), p. 106. doi:10.3390/urbansci3040106
- Harfst, J. (2015) Utilizing the past: Valorizing post-mining potential in central Europe. *The Extractive Industries and Society*, 2(2), pp. 217–224. doi:10.1016/j.exis.2015.01.003
- Harfst, J., Wirth P. & Marot, N. (2020) Utilizing endogenous potentials through EU cohesion policy: Examples from central Europe. *European Planning Studies*, 28(11), pp. 2193–2212. doi:10.1080/09654313.2020.1712675
- Humer, A. & Palma, P. (2013) The provision of services of general interest in Europe: Regional indices and types explained by socio-economic and territorial conditions. *Europa XXI*, 23, pp. 85–104. doi:10.7163/Eu21.2013.23.5
- Investing in a smart, innovative and sustainable industry: A renewed EU Industrial Policy Strategy. 2017. Brussels. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2017%3A479%3AFIN> (accessed 31 May 2022).
- Jigoria-Oprea, L. & Popa, N. (2017) Industrial brownfields: An unsolved problem in post-socialist cities. A comparison between two mono industrial cities: Reșița (Romania) and Pančevo (Serbia). *Urban Studies*, 54(12), pp. 2719–2738. doi:10.1177/0042098016655057
- Kleitz, T. (2019) *trAILS – Alpine industrial landscape transformation. WPT2: Existing policies on local/regional level assessment report: L'Argentière-La-Bessée – France*. Final report. L'Argentière-La-Bessée, CAUE84.
- Krošelj, M., Marot, N. & Pipan, T. (2020) *trAILS – Alpine industrial landscape transformation. WPT4: Comparative analysis of policies targeting Alpine industrial landscapes (AILS)*. Final report. Ljubljana, Biotechnical Faculty, Department of Landscape Architecture.
- Lampič, B., Kušar, S. & Zavodnik Lamovšek, A. (2017) A model of comprehensive assessment of derelict land as a support for sustainable spatial and development planning in Slovenia, *Dela*, 48, pp. 33–59. doi:10.4312/dela.48.2.33-59
- Leipzig charter on sustainable European cities. 2007. Berlin, Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety, Press and Information Office.
- Marot, N., Gantar, D., in Mali Černič, B. (2015): Added value from European Territorial Co-operation: the impact of demographic change in the Alps on the young. *Bulletin of Geography. Socio-economic Series*, 30(30), str. 87–108. doi:10.1515/bog-2015-0037
- Marot, N. & Harfst, J. (2020) Post-mining landscapes and their endogenous development potential for small- and medium-sized towns: Examples from central Europe. *The Extractive Industries and Society*, 8(1), pp. 168–175. doi:10.1016/j.exis.2020.07.002
- Migliorati, L. & Veronesi, L. (2020) The consequences of modernity in the deep Europe: The transformation of industrial landscapes in Alpine regions. *Italian Sociological Review*, 10(1), pp. 1–29. doi:10.13136/isr.v10i1.315

- Modica, M. (2019) Industrial brownfield sites in the Alps. A first quantitative overview and potential implications for regional development. *Revue de géographie alpine*, 107(1), pp. 1–17. doi:10.4000/rga.5274
- Oc, T. & Tiesdell, S. (1991) The London docklands development corporation (LDDC), 1981–1991: A perspective on the management of urban regeneration. *The Town Planning Review*, 62(3), pp. 311–330. doi:10.3828/tpr.62.3.j3qt6w7572484271
- Parkinson, M. (1988) Urban regeneration and development corporations: Liverpool style. *Local Economy*, 3(2), pp. 109–118. doi:10.1080/02690948808725933
- Pechhacker, J. & Tiffner, G. (2019) *trALLs – Alpine industrial landscape transformation. WPT2: Existing policies on local/regional level assessment report: Eisenerz – Austria*. Final report. Eisenerz, VESTE.
- Sielker, F. (2016) A stakeholder-based EU territorial cooperation: The example of European macro-regions. *European Planning Studies*, 24(11), pp. 1995–2013. doi:10.1080/09654313.2016.1221383
- Skrabal, J. (2020) What can we learn from brownfield databases? Exploring specifics of the location of brownfields in the Czech Republic. *Geographia Technica*, 15(2), pp. 191–201. doi:10.21163/GT_2020.152.18
- Stallmann, M. (2014) *Brownfield redevelopment and inner urban development*. Dessau-Roßlau, Umweltbundesamt. Available at: <https://www.umweltbundesamt.de/en/topics/soil-agriculture/land-use-reduction/brownfield-redevelopment-inner-urban-development> (accessed 6 Jul. 2021).
- Steinicke, E., Čede, P. & Löffler, R. (2012) In-migration as a new process in demographic problem areas of the Alps. Ghost towns vs. amenity settlements in the Alpine border area between Italy and Slovenia. *Erdkunde*, 66(4), pp. 329–344. doi:10.3112/erdkunde.2012.04.04
- Strengthening innovation in Europe's regions: Strategies for resilient, inclusive and sustainable growth*. 2017. Brussels. Available at: https://ec.europa.eu/regional_policy/sources/docoffic/2014/com_2017_376_2_en.pdf (accessed 6 Mar. 2019).
- Territorial agenda 2030*. 2020. Available at: https://territorialagenda.eu/wp-content/uploads/TA2030_jun2021_en.pdf (accessed 31 May 2022).
- Territorial agenda of the European Union 2020: Towards an inclusive, smart and sustainable Europe of diverse regions*. 2011. Gödöllő. Available at: https://ec.europa.eu/regional_policy/sources/policy/what/territorial-cohesion/territorial_agenda_2020.pdf (accessed 19 Oct. 2020).
- Teston, F. & Bramanti, A. (2018) EUSALP and the challenge of multi-level governance policies in the Alps. *Worldwide Hospitality and Tourism Themes*, 10(2), pp. 140–160. doi:10.1108/WHATT-12-2017-0079
- The EU biodiversity strategy to 2020*. 2011. Luxembourg. Available at: <http://ec.europa.eu/environment/nature/info/pubs/docs/brochures/2020%20Biod%20brochure%20final%20lowres.pdf> (accessed 6 Mar. 2019).
- The new Leipzig charter: The transformative power of cities for the common good*. 2020. Leipzig, Federal Ministry of the Interior and Community. Available at: https://ec.europa.eu/regional_policy/sources/docgener/brochure/new_leipzig_charter/new_leipzig_charter_en.pdf (accessed 14 Mar. 2022).
- Thornton, G., et al. (2007) The challenge of sustainability: Incentives for brownfield regeneration in Europe. *Environmental Science and Policy*, 10(2), pp. 116–134. doi:10.1016/j.envsci.2006.08.008
- TIMBRE (2012) *Tailored improvement of brownfield regeneration in Europe*. Available at: <http://www.timbre-project.eu/timbre-project.html> (accessed 31 May 2022).
- Vanheusden, B. (2009) Recent developments in European policy regarding brownfield remediation. *Environmental Practice*, 11(4), pp. 256–262. doi:10.1017/S1466046609990202
- Walker, G. (2000) Urban planning, hazardous installations, and blight: An evaluation of responses to hazard – Development conflict. *Environment and Planning C: Government and Policy*, 18(2), pp. 127–143. doi:10.1068/c9782
- Weilacher, U., et al. (2021) *Alpine industrial landscapes transformation – trALLs. Project Handbook*. Munich, Technical University of Munich. Available at: <https://www.alpine-space.org/projects/trails/en/home> (accessed 6 Jul. 2021).
- Wirth, P., Černič Mali, B. & Fischer, W. (2012) *Post-mining regions in central Europe: Problems, potentials, possibilities*. Munich, Oekom Verlag.
- Yount, K. R. (2003) What are brownfields? Finding a conceptual definition. *Environmental Practice*, 5(1), pp. 25–33. doi:10.1017/S1466046603030114