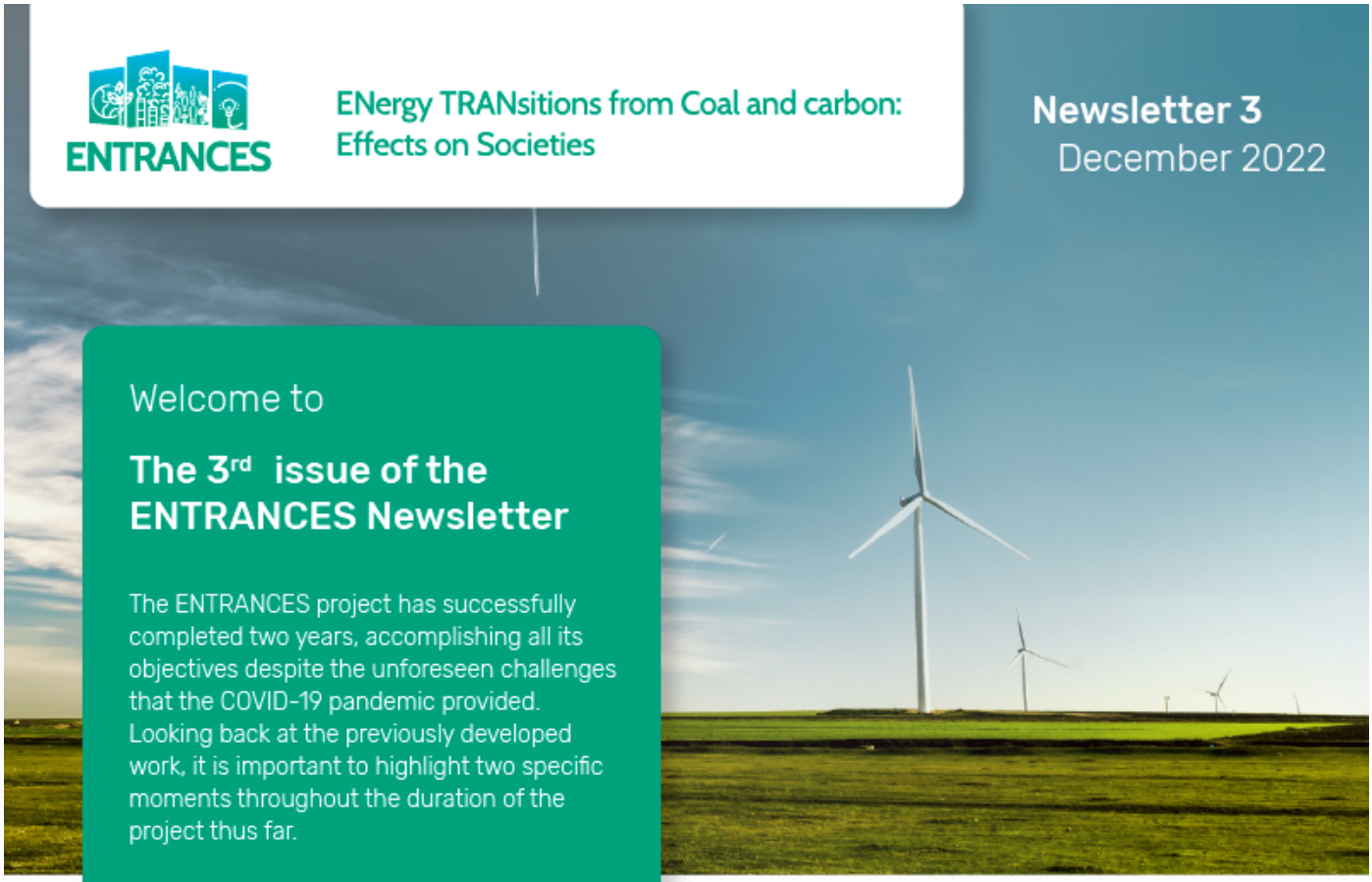
ENTRANCES

ENergy TRANsitions from Coal and carbon: Effects on Societies

Newsletter 3
December 2022



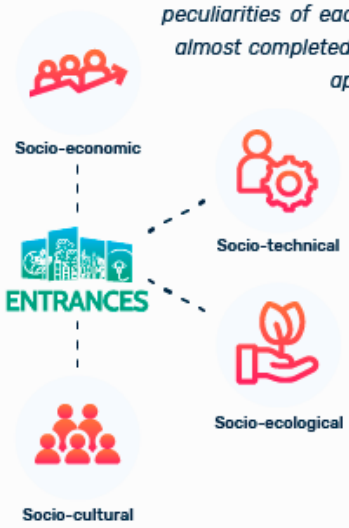
Welcome to

The 3rd issue of the ENTRANCES Newsletter

The ENTRANCES project has successfully completed two years, accomplishing all its objectives despite the unforeseen challenges that the COVID-19 pandemic provided. Looking back at the previously developed work, it is important to highlight two specific moments throughout the duration of the project thus far.

Ricardo García Mira, UDC
Project Coordinator

The project is now at a turning point. In the first year of activity (up to April 2021), it has developed a Multidimensional Analytic Framework (MAF) devised to analyse different dimensions of change, i.e., socio-economic, socio-cultural, socio-psychological, socio-political, socio-ecological & technical, and gender as a cross-cutting dimension. In its second year (from April 2021 up to now), the research has applied such a framework for developing a set of 13 regional case studies, focused on describing the peculiarities of each case (ideographic approach). With the data collection almost completed and the case study reports underway, the project is now approaching the next step, consisting of a comparison between the analysed cases, and regional modelling and scenario building. This effort is aimed at generalising knowledge on the class of cases analysed, i.e. the coal regions in transition (nomothetic approach).



The co-creation session in Rome attempted to be a juncture between these two phases, and it was configured as an evidence-based dialogue which provided inputs for answering our research questions related to the transitional trajectories embraced by European coal and carbon-intensive regions in our 13 case studies, and to the most influential variables in the deterritorialisation and re-territorialisation processed under analysis. Thus, in general, this series of meetings are contributing to the development of a deeper understanding concerning the issues related to "Clean Energy Transition" in Europe. It is worth mentioning that our work in the regions tries to ensure that the results of the ENTRANCES project auspiciously tackle the real challenges, as well as creating approachable recommendations that directly affect the decisions and policies of the European Union.

During the meeting, a number of aspects were addressed. First, interim results of the case studies containing empirical knowledge of coal and carbon-intensive regions were shared and discussed. Second, a process of co-creation of queries, conjectures and remarks were promoted, which was used as input informing the research agenda. On the other hand, through a cross-fertilisation among different projects and different social and human disciplines, the meeting allowed an interdisciplinary understanding to take place related to the territorial change in the framework of the clean energy transition.

Therefore, a significant moment worth mentioning was the accomplishment of the

co-creation meeting, organised with the aim to ascertain and consolidate the knowledge on these domains. Thus, the meeting included the participation of relevant stakeholders (EU policymakers; regional stakeholders, researchers of the ENTRANCES' sister projects - CINTRAN, TRACER, Tipping Plus -, and members of the project's scientific advisory board), who contributed to the creation of a stronger connection with the EU policy agenda. Furthermore, the meeting also aided the development of knowledge regarding the requirement to support the territories that are in risk of being forgotten amongst the transition towards clean energy.

Socio-psychological

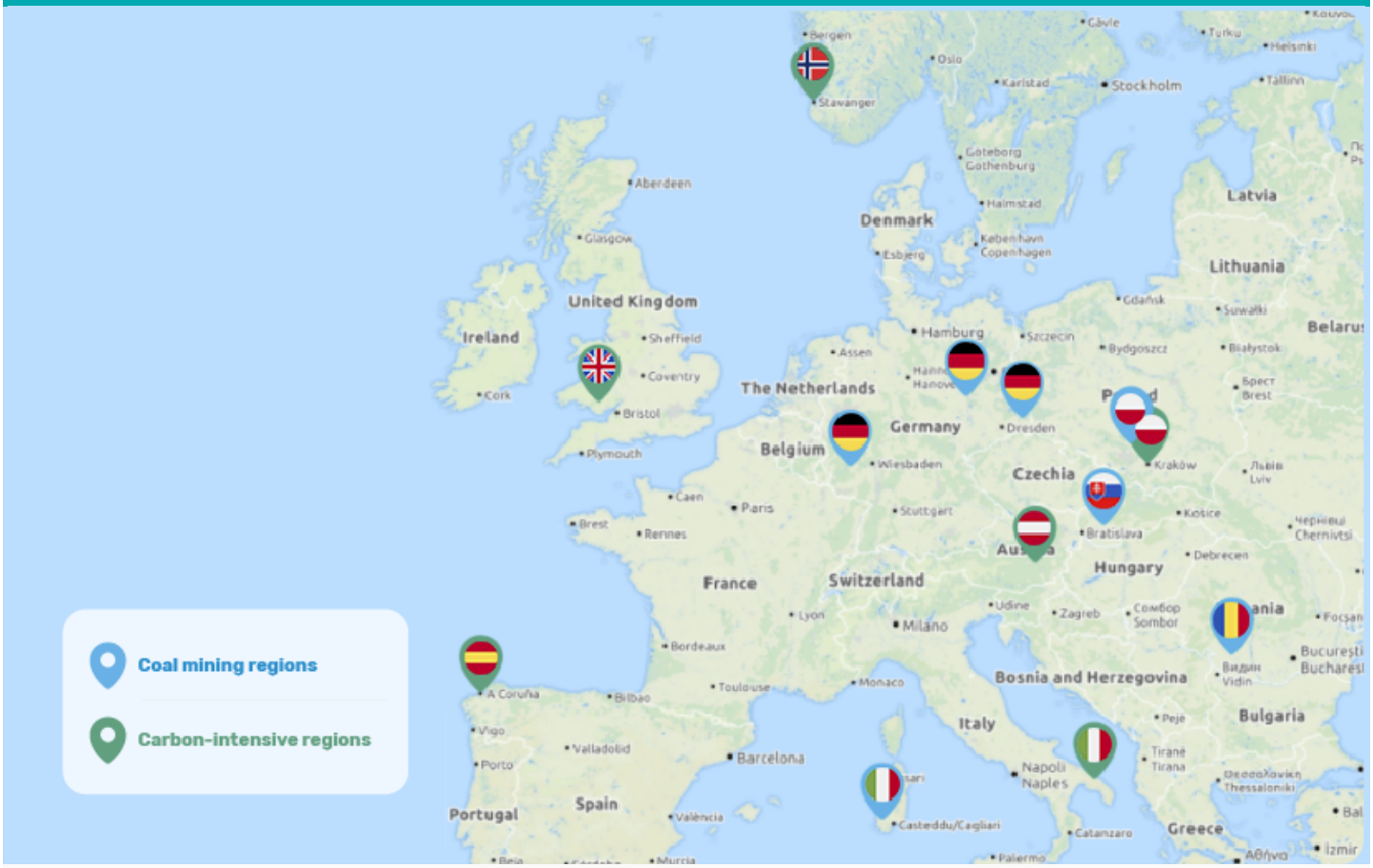
ENTRANCES

Socio-political

Finally, another noteworthy moment to highlight was the adoption of a gender-sensitive perspective, considering gender is a key factor in the transition of coal and carbon-intensive regions and its relationship between its community and territory. The role of this research was to unveil hidden, or less addressed, dimensions such as socio-economic, socio-ecological, social-technical, and to provide evidence of how they relate to each other across the 13 case studies.

With a clear focus and confidence in our research work, we continue to strive for excellent results and to successfully address the multi-dimensional challenges we face – at territorial, regional, national, European and global levels.

Meet Our Case Studies



Meet Our Coal mining regions

Silesia, Poland

The case study covers Silesia which is Poland's main hard coal mining region and the largest hard coal mining area in the European Union. Currently 19 out of 20 coal mines operating in Poland are located in this coal territory, which account for approximately 85% of the domestic hard coal production, including 100% coking coal. There are 4 large coal-fired power plants and 3 large coal-fired heat and power plants. In spite of coal mining Silesia is dominated by the metallurgical industry and is related to the steel and aluminium industries. In recent years, the Silesia Province has been the largest hard coal consumer in Poland. The use of hard coal has a negative impact on the air quality in the region. The Silesia Province is ranked first in the amount of methane produced (91% of national emissions) and second in terms of the amount of carbon dioxide produced (16.8% of national emissions).

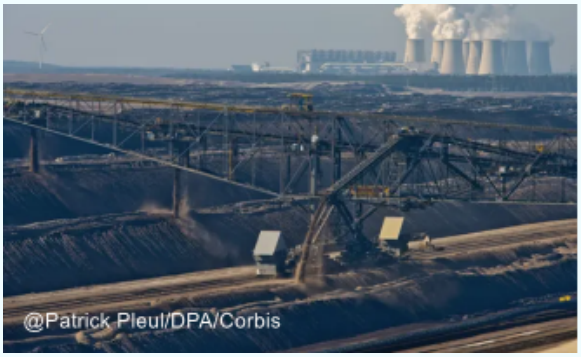
The main objective of the Silesian case study was to answer the question of what are the main socio-economic, socio-technical, socio-ecological, sociocultural, sociopolitical, socio-psychological and gender-related challenges facing coal and coal-intensive regions in transition, what are the most effective strategies to deal with them, and what policy or policy mix would be most appropriate to regain the bonds of territory and communities in coal and coal-intensive regions, while supporting their transition towards clean energy. To answer these questions, we undertook several parallel research strategies. We collected relevant socio-economic data from national sources, Eurostat and regional entities. We also explored 'strain situations' through a focus group with eight local stakeholders. The socio-psychological component was investigated through a questionnaire completed by 224 regional residents. The socio-political component was explored through text analysis in several types of sources. The socio-ecological and technical component, focusing on the region's capacity for transformation, was explored through mixed quantitative-qualitative interviews with six stakeholders.

The main findings / results so far are the following:

- Mining restructuring and the closure of further mines have also had an impact on the socio-cultural dimension of the territory's functioning. As a result of the disinvestment in the mining sector and related sectors, the status of the mining professions has been significantly devalued, resulting in the increased depopulation process (emigration).
- Profound changes are also affecting the cultural and identity aspect of CCT inhabitants. For decades, work in the mines has been a very important part of local identity, shaping both the work ethos and other elements of culture, as well as determining the structure of the Silesian family and the social roles assigned to men and women.
- The significant degradation of the status of workers in the mining sector and the progressive disinvestment in the mining sector is reflected in the results obtained in the survey on the socio-psychological consequences of the energy transition.
- Katowice Sub-region has relatively little scope to influence the direction and dynamics of change associated with the coal phase-out. Decisions in this regard are taken at national and international levels within the EU structures. At the same time, the local government is heavily burdened with the need to mitigate the negative effects of the energy transition.

Find out more about the background, main activities and result of this case study **here**.

Lusatia, Germany



The clean energy transition in Lusatia is both further advanced and better funded than many of the other case studies in ENTRANCES. As part of the German "Strukturwandel", enacted in August 2020, a total of 17.2bn Euros has been allocated to public investments aimed at compensating the loss of the lignite sector and promoting economic growth in the mining area alongside the phase out of coal-fired energy generation by 2038 at the latest (and sooner if possible). Yet this is no easy task. Integration into market economy following the dissolution of the German Democratic Republic led to precipitative deindustrialisation, mass unemployment, and outmigration as well as peripheralisation trends that have continued into the present day: notably outmigration, declining and ageing population, and weak public services. Additionally, the two federal states, in which Lusatia falls – Brandenburg and Saxony – have opted for different governance approaches with weak cross-border coordination and already perceptible differences in outcomes.

For Work Package 3, IOER conducted the following activities: (a) text analysis of how decarbonisation is framed by key stakeholders in the region, (b) a survey of 87 respondents in the core affected area to assess the impact of the CET on people's attachment to the region, (c) a focus group examining local perceptions of challenges facing the region, and (d) interviews with key stakeholders to assess the "transformative capacity" available in the region to overcome path dependencies and shape its decarbonisation path towards sustainability outcomes. The researcher also gave an interview to local media on the ENTRANCES project and observations thus far.

The main findings / results so far are the following:

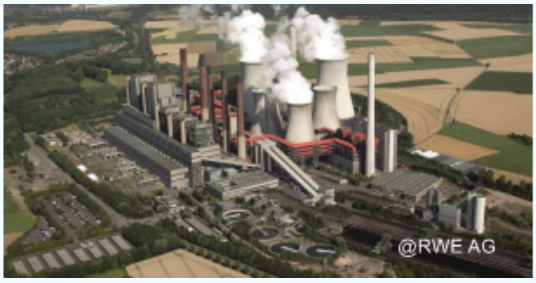
- While the Strukturwandel is a "just transition" in the sense that it is the product of a "hard-won compromise" between actors and considerable funds have been allotted to cushion the phase-out of the lignite industry, it is unlikely to result in a broader transition towards sustainability as this is not explicitly prioritised: there is neither a sufficiently articulated vision nor leadership to promote action in this direction.
- The impacts of ongoing peripheralisation are of more significance to the region than those of decarbonisation. Focus group members highlighted the social consequences of demographic trends – old age isolation and poverty, generational gap, collapse of community life – as well as the effects of dismantled mobility infrastructure and public amenities. To this can be added homogenisation of the population and hardening of attitudes towards right-wing populism. This necessitates an approach to regional economic development that goes beyond attracting big players to the region.
- The institutional framework matters. Brandenburg has opted for a collaborative process of project qualification through multi-stakeholder "workshops" in five priority areas for the transition, which means that the process is broadly inclusive and enjoys legitimacy among stakeholders. In Saxony, municipalities are tasked with project development and also given a key role in approving projects at periodic meetings of the regional monitoring committee. This has led to a highly conflictual battle over distribution, in which particular interests are prioritised over a broader regional vision.
- As a public financing directive, the Strukturwandel is limited to funding public sector projects. It is hoped that the Just Transition Fund will support the broader involvement of the private sector in the clean energy transition.

Find out more about the background, main activities and result of this case study **here**.

Rhineland, Germany

Through its rich coal deposits, the Rhineland has economically always been interesting for mining and quarrying. In 2020, a Coal Phase-out Act has been adopted by the German government. It sets far-reaching energy policy guidelines for energy supply in Germany for the coming decades. This implies a reduction and cessation of lignite and hard coal electricity generation in Germany by 2038 at the latest. Furthermore, it poses challenges to a region that historically and culturally puts a strong focus on those

industries when deposits are exhausted or political and societal change demands for restructuring. As a high-performance industrial and science region, the Rhenish mining area is facing major challenges in the structural transformation against the backdrop of climate change and the energy transition.



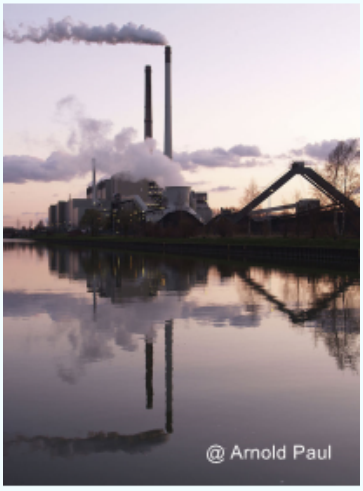
Different methodological approaches were adopted to grasp the multi-faceted aspects. According to the results of the socio-cultural component, the major issues are the relative scarcity of land and water. Furthermore, a polarisation of political culture with environmental protests and reactions by the state is observable, in addition to a critical view of the gap between energy policy aims and their implementation, in particular with lagging viable sources of renewables. The socio-psychological component analysis revealed that the factors of place rootedness and life satisfaction are remarkably high in Rhineland. At the same time, the overall decarbonisation process is perceived as being quite fair. The socio-economic component identified migration as a key driver in the region, which counteracts the natural population trend. The main socio-economic consequences are more likely to be the result of the transformation in the energy-intensive manufacturing industry rather than in the mining and utility industry itself. According to the socio-political component, two main conflicts prevail—first, the speed of the coal phase-out and second, how the public transition funds are used. Finally, an assessment of the transformative capacity (socio-ecological and -technical component) of the region is rated by the interviewed stakeholders as slightly above intermediate although stakeholders from different sectors perceive the transformative capacity differently.

The main findings / results so far are the following:

- The upcoming structural change and the development of new energy and mobility strategies are the most important challenge.
- The extent of climate change and climate mitigation policies even foster the speed of the coal phase-out and the associated structural change. While the energy transition in Rhineland is ongoing, accelerating the coal phase-out by rescheduling it from 2038 to 2030 for example was seen as a breach of word to a certain extent.
- However, the state government put forward the State's Energy Supply Strategy with the aim to remain an innovative centre of business and industry whilst providing crucial support to the national and international climate effort.
- The most recent energy crisis due to Russia's invasion of Ukraine can cause a faster clean energy transition or a delay.

Find out more about the background, main activities and result of this case study **here**.

Central Germany, Germany



Central Germany was the most important lignite region in Germany until the 1970s. Today, the region has the smallest number of employees in the lignite industry and lignite reserves among the three remaining coal regions. The reunification process of East and West Germany in the 1990ies has shaped the region's socio-economic situation until now. The migration outflow from the region, in addition to a negative natural population change, led to a decline in the total population by more than 15% since 2000. The region has already experienced a severe structural change with strong socio-economic consequences in the past 30 years. After the German Coal Phase-out Act had been passed in 2020, the public discourse switched from the feasibility of a coal phase-out to the appropriate speed of the coal phase-out.

Different methodological approaches were adopted to grasp the multi-faceted aspects. According to the results of the socio-cultural component, the outmigration after the reunification changed the population structure significantly. There is a solid stigma for the region as a weak economic region with a disadvantage in competitiveness. However, the socio-psychological component finds a high level of life satisfaction, which is highly correlated with a low level of perceived stress, and high levels of resilience, and optimism. The socio-economic component reveals that

regional economic inequality declined due to convergence in labour productivity in the coal industry, producing industries and services. According to the socio-political component, two main conflicts prevail—first, the speed of the coal phase-out and second, how the public transition funds are used. Finally, the interviewed stakeholders rate the transformative capacity of the region as neutral. The socio-ecological and socio-technical component shows that stakeholders from different sectors perceive the transformative capacity differently. Public sector stakeholders, for instance, consider the level of disruptive experimentation in the region as good, while representatives from civil society perceive the level of experimentation as poor.

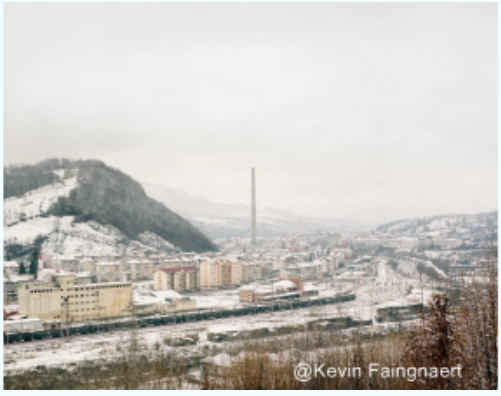
The main findings / results so far are the following:

- The clean energy transition in Central Germany coincides with a shrinking working-age population and an increase in the average age of inhabitants of the region. Consequently, it will be harder for the territory to establish new industries and develop a clean energy industry.
- It is important to increase the attractiveness of the region to potential immigrants. However, the current popularity of right-wing parties in the region is not supporting this coping strategy.
- The selection of funded projects needs to be more transparent and better communicated.
- The most recent energy crisis due to Russia's invasion of Ukraine can cause a faster clean energy transition or a delay.

Find out more about the background, main activities and results of this case study **here**.

Jiu Valley, Romania

Jiu Valley is a micro-region in the Hunedoara County of Romania, comprising seven localities in which coal mining has represented the dominant employment opportunity. At the beginning of 1990, the Jiu Valley could be characterized as a strong urbanized zone, almost exclusively related to coal mining, with more than 60,000 of the inhabitants employed directly or indirectly in this industry and with 17 coal mining perimeters exploited. Since 1997 the Romanian government has implemented programs of labour contract buyouts, which resulted in the closure of several mines. There are four coal mines still active and two coal-fuelled power stations in the area.



The main research aim of ENTRANCES is to identify the principal socio-economic, socio-technical, socio-ecological, socio-cultural, socio-political, socio-psychological, and gender-related challenges facing coal and carbon-intensive regions in transition, and the coping strategies that have emerged in recent years. The relevant socio-economic data was collected from national sources, Eurostat, and regional firms. The socio-cultural component is focused on the territorial stress induced by different sources or "stress vectors", which we investigated through a focus-group in which six local stakeholders participated. The socio-psychological component was explored through a survey completed by 126 residents of the region. The socio-political component was investigated through text analysis on several types of sources. The socio-ecological & technical component, focused on the transformative capacity of the region, was explored through mixed quantitative-qualitative interviews with ten stakeholders representing four groups

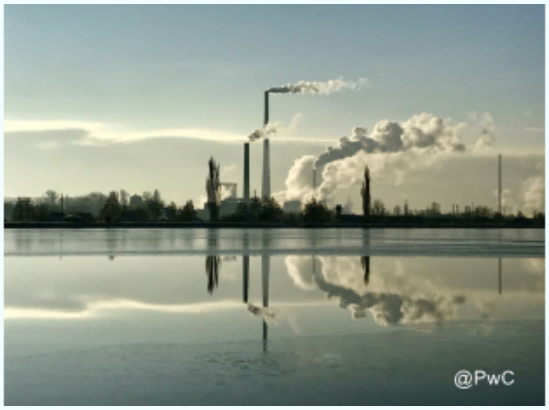
The main findings / results so far are the following:

- The main results on the socio-economic component indicate that from 2000 to 2018 Jiu Valley showed a higher percentage of population loss compared to the other regions, including the country and the EU, representing about 28% of the local population, and a significant lag in the socio-economic development of this region, for instance through the fact that the share of employed individuals in this region is lower by 10% than the country’s level.
- The research on the socio-cultural component concluded that there are four stress vectors (further causing more than twenty strain situations in the territory): the dependence of the region on political interests, the rapid disintegration of the mono-industrial economy, the dissolution of the Jiu Valley administrative cohesiveness, and the reluctancy towards new alternatives and inertia.

- On the socio-psychological component, findings indicate that in comparison to the other case studies from ENTRANCES, Jiu Valley participants have higher place attachment, optimism and resilience, more intense nostalgia and perceived unfairness regarding decarbonization and its impacts, as well as less economic optimism.
- Results of the research on the socio-political component suggest that the most important issue in the realm of the Jiu Valley decarbonization debates has been the actual decarbonisation itself, in terms of closing the remaining coal mines in the areas and proposing alternative development pathways, or, alternatively, procrastinating the phasing out process. Furthermore, our findings on the socio-ecological & technical component indicate that important decisions within the governance of the Jiu Valley clean energy transition are perceived as made in a top-down manner by governmental authorities, while local and regional authorities have a minor role.

Find out more about the background, main activities and result of this case study **here**.

Upper Nitra, Slovakia



The coal and carbon territory in Horná Nitra consists from two districts Prievidza and Partizánske in self-governing Trenčín region, Slovakia. The key historical moment that defines the identity of the Horná Nitra was socialist industrialization in the 1950s- 1980s based on soviet models of modernization of the economy and society. The region has a long tradition, especially in the engineering, textile, chemical and rubber industries and it ranks among the economically strongest regions in Slovakia. The stability of the region, however, has been heavily influenced by extensive coal mining activities and the region faces problems associated with slope deformations, the management of undermined areas and mining areas and facilities. Moreover, the Nováky coal power plant has been the second largest producer of sulphur dioxide and nitrogen oxide emissions and the third largest producer of solid pollutant emissions in the country. The decision of the central government to phase out coal mining in Horná Nitra was made in 2018 and the mines will be definitely closed after the end of the inflow of subsidies in 2023.

The methodology of the research was mixed. Socio-economic data has been collected from national sources, in particular national statistical office, but also from databases on the firm-level. Furthermore, Eurostat data has been used to provide an overview of the region's economic, financial and demographic composition based on a descriptive analysis. The focus group focused on the territorial stress induced by mine closure and rapid decarbonisation policies introduced in the region of Horná Nitra. The aim of in-depth interviews was to obtain and contrast differential stakeholder assessments of transformative capacities. The survey was conducted using a structured self-report questionnaire consisted of 90 items representing 17 socio-psychological constructs. The data collection process has been completed and the case study report, which summarises the first results, is ready and available.

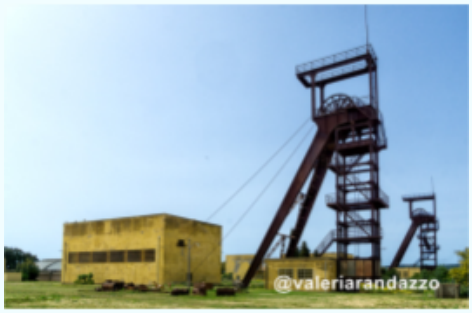
The main findings / results so far are the following:

The challenges of transformation are quite demanding, especially regarding of people's living standards, jobs as well as the depopulation of the region. Despite all the strain situations ongoing in the area we can identify several copying strategies:

- Insistence on climate and energy policies implementation
- Speeding up regional economy transformation
- Building local capacities
- International networking

Find out more about the background, main activities and result of this case study **here**.

Sulcis, Italy



The case study was focused on Sulcis, one of the historical regions of Sardinia island. As indicated by the ENTRANCES analytic framework, we focused on the Sulcis "Coal and Carbon Territory" (CCT), the portion of Sulcis territory composed of nine municipalities that has a strong identification with coal mining and that is dependent on carbon-intensive industries. This is the area that historically hosted the only Italian coal mine (that stopped production in 2015), where the non-ferrous metal industries proliferated, and where one of the two main coal-fired power plants of Sardinia is based. The area is relatively small (534.6 sq Km) and with a limited population (64474 inhabitants), a good part of which lives in the Sulcis capital, Carbonia (26,813 inhabitants), a city founded in the 30s by the fascist regime and whose name means "city of coal". The Coal and Carbon territory (in yellow) may be appreciated in the Sardinia chart.

The Sulcis coal and carbon territory has been subject to significant and ongoing economic restructuring since the 90s when the publicly owned aluminum companies were privatized. In the period 2008-2012, following the economic crisis, two out of three of the biggest employers in the local non-ferrous metal industry closed or stopped production. It has been estimated a loss of 3000 direct and 10000 indirect jobs in the area. In the same period, following an infringement investigation on competition rules by the EU, the extractive activities of the local coal mine stopped, with a further loss of jobs. In this critical context, further pressure on the territory arrived with the decision of the Italian government to phase-out coal in Italy by 2025, and with the energy crisis started before the Russian war in Ukraine. The combined effect of these events endangered other two main employers in the area, the coal-fired power plant and the Portovesme Srl, the only non-ferrous metal industry still active after the economic crises of 2008-2012.

The case study was developed across three different foci.

Firstly, an analysis of territorial change in the Coal and Carbon and Territory was carried out through the implementation of a focus group mapping of the strain situations in the area, which allowed us to identify how different changes are conflicting with how the territory is organised an structured; and a Survey with 386 respondents, aimed at discovering how citizens place attachment is challenged by the decarbonisation process.

Secondly, an analysis of the underlying dynamics of structural change, i.e. change in the socio-economic and the socio-demographic structure of the region. The analysis was conducted through extensive data collection and elaboration.

Thirdly, an analysis of the Clean Energy Transition that is taking shape in Sardinia was conducted through the implementation of text research, which focused on the narrative battles that are ongoing among different actors for the interpretation of the transition; and in-depth interviews focused on an overview of the capacity available in the Sardinia region to shape its decarbonisation pathway.

The main findings / results so far are the following:

- Four fundamental challenges for the Sulcis Coal and Carbon Territory were identified: saving the metallurgic sector; diversifying the local economy; advancing ecological remediation and conservation; combating peripheralisation. The territory managed to mobilise a significant amount of human and financial resources to deal with these challenges and several coping strategies have been adopted to achieve them.
- Despite these attempts, the challenges and coping strategies are often experienced in conflict or competition with each other. The territory is fragmented and divided about what should happen next and there is not a clear vision of what new kind of territorial development will integrate or substitute the current model based on the non-ferrous metal industries. Against this background, few if any attempts have been conducted so far to address the existing conflicts and re-compose a shared interpretation about what the territory is and what it should be in the future.
- Against this background, the Clean Energy Transition is perceived in the territory both as a further factor that will deepen the current crisis and as a possible window of opportunity to rethink the territory. The case study shows, however, that the energy transition, as it is currently taking shape in Sardinia, is characterised by a change toward a more centralised energy system and a centralisation of the related decision-making process, by a weak and opaque vision, and by a lack of capacity to respond to social and

territorial needs. So far, the clean energy transition is not producing a new vision for the Sulcis territory, but rather is having a divisive effect on the local community, and is further decreasing the autonomy of the territory.

- Despite the critical situation highlighted above, the research has shown how the Sulcis territory is also endowed with an active civil society, an inclination to innovation and a rich cultural and natural heritage, whose potential for "territory-making" is still untapped.

Find out more about the background, main activities and result of this case study **here**.

Meet Our Carbon-intensive regions

Brindisi, Italy

The carbon intensive region of Brindisi case study includes the whole territory of Brindisi Municipality in the Apulia Region in Southern Italy. The establishment of the two coal power plants and the chemical plants was dictated by the central government over 30 years ago to support the development of the southern Italian area. Thanks to many national interventions, the territory experienced a period of economic growth until the end of the 90s. However, these projects have pushed the industrial and economic development of the area, away from an agricultural and tourism-based development and towards an industrial development. At the end of 2012, with the globalization and the economic crisis, the Brindisi east coal plant stopped its activity. Further pressure on the territory derived from the decrease of coal plant activities due to planned phase-out of the coal. All this is creating a vacuum in the economy with relevant impact beyond the originating sectors. The loss of jobs and income in the region has started to affect the standard of living in the area. Harbour activities and ancillary businesses are closing due to falling demand. An unemployment crisis and a lack of attractive work opportunities are accelerating youth out-migration, progressive ageing of the population and impoverishment of the territory. Local businesses are failing and require assistance to achieve an economically viable transition to a new green energy landscape.

The Brindisi case study was carried out analysing different components/dimensions:

- To analyse the socio-cultural component, a focus groups was carried out with the aim to identify and map the stress strains, as conflicts, uncertainties, impasses and dependence situations in the Coal and Carbon and Territory (CCT). For the socio-psychological component, a survey with 127 respondents analysed place attachment and the general perception of the clean energy transition in the region.
- For the socio-economic component, several factors that lead to structural change both in a economic and demographic composition of Brindisi province and Apulia Region were investigated. The analysis was based on an extensive set of data collected from national sources, mainly national statistical offices and Eurostat.
- For the socio-political component, the implementation of text analysis identified the narratives and conflicts among different social actors on the energy transition and coal phase-out in the area. Moreover, for the socio-ecological component, in-depth interviews provided an overview of the capacity available in the Apulia region to shape its decarbonisation pathway and to undestand how to deviate from its current (carbon-intensive) path toward sustainable outcomes.

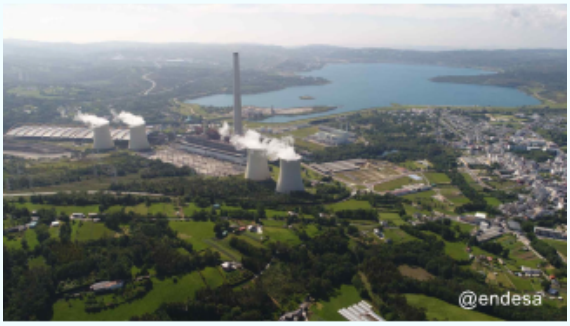
The main findings / results so far are the following:

- The main challenges for the Brindisi Coal and Carbon Territory are four: diversifying the local economy; saving the energy sector; land remediation and use; bridging the infrastructural divide and human capital formation. The territory is actively working towards the energy transition.

- The challenges and coping strategies are often producing different strains within the territory. The territory is experiencing a deep ambivalence about what the territory is and what it should become. Moreover, due to the dependence on national decisions in the matter of energy and industrial development, the uncertainty about the future is exhacerbated by the lack of a clear alternative to the current industrial development despite the desire to take other paths (i.e. tourism). The stakeholders from different sectors perceive differently the transformative capacity; therefore, a broader change could be obtained only by fully involving citizens in the change processes.
- The Clean Energy Transition is perceived positively in the territory as it will improve the quality of the environment and open new perspectives and opportunities. The energy transition is seen, mainly from young people, as an opportunity for the redemption of the territory and for the revaluation of its resources. However, the current transition plans create uncertainty regarding their own future. The centralization of the energy transition process and the lack of synergies across scales have not helped to align the energy transition with the territorial efforts to diversify the local economy.
- The research has shown how the territory is endowed with positive and motivating symbols for the territory. The harbour and natural heritage are perceived as elements of territorial rebirth on which to lay the basis of the diversification of the local economy. Finally, the territory has a good degree of optimism among its inhabitants, a good openness to innovation and capacity to nurture its distinctive elements.

Find out more about the background, main activities and result of this case study **here**.

As Pontes A Coruña, Spain



The carbon-intensive region of As Pontes (A Coruña) is located in the northwest of Spain. It has one of the largest coal-fired power plants – La Central de As Pontes - in Spain. This power plant was commissioned in the 1970s to exploit the lignite mines of As Pontes. For the last four decades, the coal mines and the power plant were the main source of income and employment in the region. As a result of Spain's decarbonisation policies, coal mining in As Pontes stopped in 2007, leaving a large number of miners unemployed. In 2019, Endesa, the owner of the plant, submitted the closure request to the central government, which will further deteriorate the economic strength of the region. Currently, the closure process has been postponed due to rising gas prices and electricity shortages. All these decarbonisation measures have created many uncertainties about the future of the region.

In the As Pontes case study, we focus on the impacts of decarbonisation policies on the relationship between people and territory (de/re-territorialisation process) in the region. We explore the socio-economic, socio-political, socio-cultural, socio-psychological and socio-ecological and technical aspects of the energy transition in the region, as different components of the study. During the first half of the project, we contributed to the development of a multidimensional analytical framework and collected data from different sources, such as socio-economic records, surveys, focus groups, interviews and textual material. In addition, we participated in the two co-creation meetings to discuss different aspects of the energy transition with stakeholders and sister projects. The data collection process has been completed and the case study report, which summarises the first results, is ready and available at the link below.

The initial findings suggest that the ongoing decarbonization process and the closure of the power plant wil:

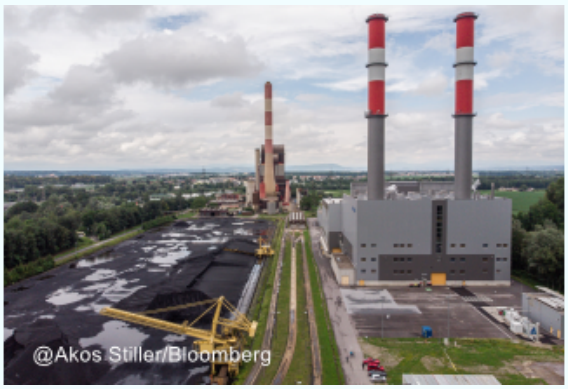
- Directly affect a large number of workers employed at the power plant, in ancillary businesses and in the transport of coal to the plant. It will create a vacuum in the local economy that will be difficult to fill with the proposed green energy projects, leaving the younger generation with no future prospects except to emigrate from the region. It will lead to depopulation and deterritorialisation.
- Damage the socio-cultural fabric of local society and leave many people with an identity crisis and nostalgia for their mining and industrial past.
- Increase economic hardship, which in turn will increase the level of perceived stress and affect the socio-psychological well-being of the region's population. It will reduce the level of life satisfaction in the region.

- Affect political power of the region and support the rise of extreme right-wing political parties in Spain.
- Affect the transformative capacity of the region. The people of As Pontes are very reluctant to personal reinvention, which will be the most important challenge for policy makers

Find out more about the background, main activities and result of this case study **here**.

Upper Styria, Austria

Upper Styria is a highly industrialized region, situated in the province of Styria, Austria. Upper Styria defined as labor market area, where main commuter flows to worksites are taking place, includes three NUTS 3 regions in the centre of Austria. Main cities in the area where industry is concentrated, are Bruck an der Mur, Judenburg, Kapfenberg, Kindberg, and Leoben.



Steel production has been playing a major role for the local economy for centuries. Steel production has started in the 17th century, experienced an important upswing in the 19th century, and has continued up until today. In the 1980s the local steel industry had sled into a deep crisis marked by important lay-offs of workforce and restructuring. Also environmental problems were still persistent (e.g. "red dust").

Today, the industry is flourishing, innovative and searching for skilled labour. But the region is also one of the most important CO2 emitters nationwide; e.g. the steelworks in Leoben Donawitz are in second position in terms of CO2 emissions among Austrian industry and produce 3mio tons of CO2 equivalents annually (data for 2021). The provision with energy, and the transition to a zero emissions and renewable energy regime ("post hydrocarbons regime") is therefore one of the main concerns not only for the local industry players, but also for an important part of the local population.

In Upper Styria, a particularly large number of jobs depend on the steel industry, which will have to change enormously in the coming decades in order to become CO2-neutral. As in many other regions of Europe, which are also dependent on fossil fuels due to mining, industry or power plant operation, the clean energy transition will also go hand in hand with economic, social and cultural transformation processes.

The text research as one of the methods applied in ENTRANCES has shown that publicly led discourses on the energy transition have been before the Ukraine war predominantly technological in nature, e.g. how the steel production processes can become carbon neutral with the use of hydrogen. The voestalpine plant in Leoben Donawitz is implementing the project SuSteel on hydrogen-based green steel.

Media reports are less critical or do miss to elaborate on multidimensional effects of CO2 reduction when it comes to investigate the current and future challenges of the energy transition on a broader basis. A recent publication on climate action programmes in Styria, written and published by Styrian representatives of the Austrian social partnership observes that at present regulations are "still in force that promote environmentally harmful behavior". These "so-called counterproductive regulations" result in a "fossil lock-in", i.e. the persistence on fossil dependency". This is due to the missing "framework set by policymakers, and a result of investments made in the past that shape the infrastructure available today". These infrastructural capacities will also be crucial to the success of the decarbonisation.

The results of our socio-psychological survey have shown that the residents of Upper Styria do not reject the energy transition. As to the reasons why the expansion of renewables is nevertheless proceeding slowly, regional decision-makers who were also interviewed in the course of the study named "the usual suspects": energy prices that were too low (prior to the Ukraine crisis), the ongoing promotion of fossil energies (fossil lock-in), or a lack of incentives to save energy. In addition, there are long procedural delays in energy projects and a lack of skilled labour. An important role in the energy transition is attributed to regional development agencies, which promote projects and network regional organisations. The lack of coordination between the federal government and the provinces in Austria on the energy transition were viewed critically by interviewees.

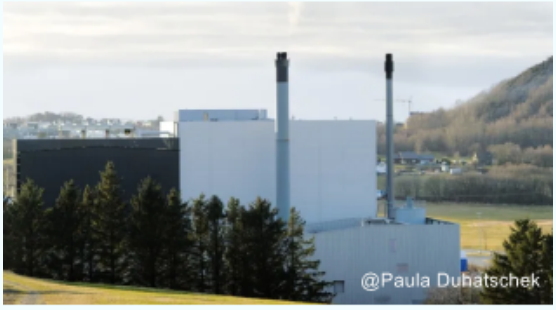
Finally, a focus group discussion has revealed socio-cultural aspects around the energy transition in Upper Styria. Intertwined regional challenges have their origin mostly in the 1980s. Image issues related to the crisis of the steel industry have still an influence on the attractiveness of the region, although it does not reflect at all the current situation with a flourishing industry. Short sighted policy decisions in which the residents of the region were not given a say are also currently leading to various challenges, such as a neglect of housing renovation in favour of new individual housing construction and related soil-sealing. A significant gender pay gap between male and female incomes was identified, as well as deficits in local transport and care infrastructure (e.g. for elderly). Outmigration from main cities in the region is driven by these issues.

The main findings / results so far are the following:

- Upper Styria is a flourishing industrial region; its steel industry has gone successfully through restructuring in the 1980s and has addressed environmental concerns during this period. However the big issue of energy provision and transition to zero carbon emission looms.
- Industry is working on the energy transition, and residents of Upper Styria do not reject the energy transition.
- Expansion of renewables has nevertheless been proceeding slowly due to energy prices that were too low (prior to the Ukraine crisis), and due to the ongoing promotion of fossil energies (fossil lock-in), or a lack of incentives to save energy.
- Social partnership and regional development agencies play an important and beneficial role in the clean energy transition – CET.
- Lack of coordination between the federal and the provincial governments, as well as between the nine provinces on energy transition has been highlighted in interviews.
- Socio-cultural challenges in Upper Styria around the energy transition concern neglect of housing renovation in favour of new individual housing construction and soil-sealing, significant gender pay gap, deficits in local transport and care infrastructure (e.g. for elderly), outmigration from main cities in the region.

Find out more about the background, main activities and result of this case study **here**.

Stavanger, Norway



The investigation of the Stavanger area consists of Stavanger kommune (municipality), and the surrounding municipalities of Randaberg, Sandnes, and Sola. The Stavanger case in the ENTRANCES project is led by the Norwegian University of Science and Technology (NTNU) and started in 2021 and the case studies are expected to last until Summer 2022.

The Stavanger area was chosen as a Coal and Carbon Territory (CCT) as it is the onshore and offshore centre for oil and gas in Norway after the discovery of oil fields in the North Sea in 1969. This finding resulted in a rapid increase in employment opportunities and now Stavanger houses about 35 oil and gas companies and 400+ oil service and technology companies, as well as over 45,000 employees in oil and gas in the business area "Forus" alone. Today the oil industry is a key industry in the Stavanger region and the city is widely referred to as the Oil Capital of Norway. Presently, Stavanger is making a shift and is focusing more on clean energy, although financial incentives are by some considered a hindrance towards the transition to cleaner energy.

Several investigations have taken place and several rapports have been written. The first component was the socio-political component that looked at how the region is viewed by media, Norwegian citizens, and the government. The socio-psychological component consisted of a survey of 483 respondents that investigated consequences of the decarbonization process in the carbon region of Stavanger. The socio-cultural component was analysed in April and May of 2022 and a team from NTNU conducted a workshop in the Stavanger area where four participants discussed strain situations related to the oil industry, and how these situations started, and how they are affecting the region. The analysis of the socio-ecological and technical component was finished in May 2022, and consisted of five semi-structured interviews from four key stakeholder categories were asked to assess the Stavanger-regions ability to deal with the clean energy transition (CET). When

looking at the main findings, it needs to be acknowledged that most of the empirical work has been conducted before the energy crisis in Spring / Summer 2022 dominated the societal discourse.

The main findings / results so far are the following:

- The divide between the financial benefits of the oil industry in Stavanger and the negative outcomes and effect on the environment not only in Norway but also worldwide has been an ongoing debate for several years. On the one side there are several people, including political parties, companies, and interest groups that emphasise the effect oil has had on the economy and what it has meant for Norway coupled with concerns about the possible negative consequences of a "post-oil" society. Some political parties (among them the Green Party) have argued for a decrease and end to oil production and excavation arguing environmental effects and are favouring investments in green energy such as wind farms and carbon capture and storage. This has led to a regional oil identity crisis. Norway is still heavily reliant on oil and gas, and there is little reason to believe that any immediate change is coming or that there will be a complete transition towards green energy in the near future. However, many former oil companies like Equinor are now among those who are investing large sums in green energy thus diversifying their energy portfolio, although they have been accused of green washing by some stakeholders.
- A lack of focus on nature has been commented upon in several of the components and the argument is that nature comes last. This ties in with the previous point, as well. Highlighting the financial benefit of the current oil and gas industry as a detriment to a more serious focus on environmental concerns. The modern need for increase in infrastructure and energy is very important, but this comes at the cost of intrusions in and the destruction of nature. Offshore fish farms' negative impact on nature in the form of emissions and run-off are well-documented in Norway. Research on the improvement of wind turbines should be accelerated, and their damaging properties on biodiversity and natural areas should be ameliorated. Furthermore, as the infrastructure appears to solely benefit foreign interests, policies should be introduced for the local government and population to benefit equally. Altogether, these factors are likely to contribute towards the acceptance of green energy infrastructure.
- During the semi-structured interviews that investigated the Stavanger-regions capabilities in relation to the CET the "average citizens" lack of input and inability to participate in the transition was brought up. One of the main worries was that regular citizens do not have the same access to information as some of the stakeholders or those who work for companies, in the municipalities, NGOs, and business associations. Those who are involved in the CET have access to information about the current development and the opportunities about new technology. The concern was that the average citizen will be unprepared and might find themselves without a job and the necessary qualifications. An increase in unemployment might lead to social unrest, and this risk of unemployment and the possible negative consequences were shared among several participants. Local and national government should take this possible future problem into account when planning the CET. The need for education both for current and future employees in and around Stavanger should also be noted. This was something the participants focused on, and local businesses might be helped by focusing on further and continuing education for employees currently working in carbon intensive jobs. Furthermore, the Norwegian Labour and Welfare Service might also benefit from planning for the CET, so that possible future unemployment is alleviated.

Find out more about the background, main activities and result of this case study **here**.

South Wales, United Kingdom

Port Talbot, in South Wales, has a legacy of metal working stretching back to the 1770s. Steelmaking has not only shaped the local economy, but also the social and cultural heritage and the natural environment. Today, the town is dominated by the Tata Steel UK plant, the largest slab steel manufacturer in the UK and one of the largest in Europe. In 2018 the local authority area of Neath Port Talbot had the highest rate of CO2 emissions in Wales and was the source of around one quarter of all Welsh emissions, much of which emanates from the steel production process. To meet the decarbonisation targets of the Welsh and UK governments will require a transformation of economic activity in and around Port Talbot.

To explore the cross-cutting issues associated with the prospective energy transition and its consequences for the area of Port Talbot, the study used the common methodology developed for the ENTRANCES project. This

included the analysis of socio-economic datasets; an exploration of socio-cultural dynamics with representatives of the local community; the quantification of socio-psychological perceptions through an online-survey with members of the local Citizens Panel; interviews with key stakeholders to identify the capacity of socio-ecological transformations, and an interrogation of the wider socio-political context through the textual analysis of policy, strategy and media documents. Three spatial geographies formed the foundations of the analysis: a focused 'carbon' territory (Port Talbot), a wider labour market area and a broader political and administrative territory (Wales/UK).

The main findings / results so far are the following:

- Our survey findings suggest that decarbonisation is viewed positively by respondents in Port Talbot. The socio-political analysis found, however, that there is a dominance of technology-centric net-zero narratives in the discussion of Port Talbot and steel decarbonisation. This is noteworthy in the context of sustainability transition as it outlines the positive momentum for change, but at the same time the focus on technology has the potential to limit the extent of transformative change that will be embraced. The limited economic complexity of the locality, with a reliance on steel as an employer, poses a risk to a "just transition" that addresses structural inequalities. Evidence shows that there is a strong focus on the local community by Welsh and Port Talbot governance actors, making this research important to future policy considerations.
- The socio-ecological and technical components identified a range of actors that are undertaking purposive actions around decarbonisation – different layers of the Welsh Government, the public sector, and universities amongst other civil society organisations. There are several collaborative projects that seek to drive forward Net Zero initiatives. However, concerns were raised that not all sectors of society that will ultimately contribute to the transition are engaging, and this was attributed to lack of knowledge and capacity. Importantly, experimentation in decarbonisation is taking place but it is noteworthy that ENTRANCES research in South Wales identified a need for a clear roadmap that is supported by extensive system thinking to co-ordinate decarbonisation approaches across actors to better assure a positive outcome.
- Overall, residents express a very strong sense of attachment to Port Talbot as a place and as a community, but note that it is not 'unique'. Respondents valued strong social ties, close-knit family, and had a sense of satisfaction with their current home. Respondents reported a strong sense of personal resilience and ability to adapt, with an optimistic outlook on life. Almost three-quarters reported that they are not easily discouraged by failure. This perhaps reflects the outlook of a community that has been subject to economic restructuring for many decades. It suggests a community that will seek to adapt to the challenges and opportunities of decarbonisation, does not regard itself as determined by steel-making, and looks to be engaged as a partner in future decision-making rather than simply being subject to the outcome of external decisions.

Kraków Metropolitan Area, Poland

Krakow (CCT region of the Krakow Metropolitan Area (KMA) is one of Poland's oldest cities. Apart from its rich history, universities and cultural institutions, KMA has also been an important industrial centre for centuries. Sectors such as metallurgy, chemicals, pharmaceuticals, tobacco, machinery, clothing, food, electrical engineering, printing, leather and footwear industries developed in Krakow.

In communes belonging to the KMA, more than 50% of households still use hard coal to heat their houses. The decommissioning of old coal-fired boilers has been ongoing in these municipalities since 2015. Although the introduction of Anti-Smog Resolution in the city of Krakow contributes to positive changes, the effect remains insufficient.

The challenges require decisive measures toward changes in regulations not only in communes adjacent to Krakow but also at the level of the entire province or country. However, the ecological challenges are related to social and economic challenges. Low incomes, high heat and energy costs, and low energy efficiency in buildings result in the energy poverty phenomenon in some households. The Krakow power and district heating systems are also based on hard coal. Although the coal phase-out is expected in the coming years, natural gas turbines are planned instead.

The main objective of the KMA case study was to answer the question of what are the main socio-economic, socio-technical, socio-ecological, sociocultural, sociopolitical, socio-psychological and gender-related challenges facing coal and coal-intensive regions in transition, what are the most effective strategies to deal with them, and what policy or policy mix would be most appropriate to regain the bonds of territory and communities in coal and coal-intensive regions, while supporting their transition towards clean energy. To answer these questions, we undertook several parallel research strategies. We collected relevant socio-economic data from national sources, Eurostat and regional entities. We also explored 'strain situations' through a focus group with eight local stakeholders. The socio-psychological component was investigated through a questionnaire completed by 234 regional residents. The socio-political component was explored through text analysis in several types of sources. The socio-ecological and technical component, focusing on the region's capacity for transformation, was explored through mixed quantitative-qualitative interviews with seven stakeholders.

The main findings / results so far are the following:

- The examination of socio-political aspects shows the greater involvement of local policymakers in the transformation process compared to the national governments. The national government often introduce documents that implement documents of European coping strategies in the context of the energy transition, whereas the local resolutions respond to the grassroots initiatives. Moreover, the provincial government is dependent on the current ruling party and also stands in opposition to the city administration.
- The region faces four main challenges, including (1) intensive and unsustainable development, which includes (2) the shrinking of green spaces, (3) consequences of being a pioneer of decarbonisation in the country, and (4) conflict between the city and adjacent municipalities. The local governments undertake the following coping strategies to address these issues. They develop local strategies, transport policies, and programs to encourage citizens to pay their taxes in the region. They also create conditions to increase the involvement of inhabitants in the sustainable development of the Krakow Metropolitan Area.
- The energy transition takes different forms depending on the region since the needs and interests of the city (CCT region) and province (PAR region) vary significantly. The most advanced level is observed in Krakow, where regulations banning the use of solid fuels in households and public buildings have been introduced in 2019. The city is a leader – also at the national scale – in introducing innovative solutions aimed at reducing emissions. The other communes of the province were obliged to introduce the anti-smog law by 2023. However, the most recent energy crisis caused by the invasion of Ukraine by Russia reopened the discussion about the deadline for these regulations. This being the case, the decarbonisation of households can be postponed to 2024.
- Although energy policies should have long-term goals, the implementing acts and coping strategies should have greater adaptability. The regulations and framework should address the current issues and propose solutions to the decarbonisation challenge with consideration to the emerging problems. In addition, the changes should be more transparent and available to society. The increasing awareness and involvement of individuals about transformations should not be stopped by inconsistent regulations and a weak flow of information. The analysed case study, therefore, emphasises the importance of the dilemma of whether the institutional system should show greater adaptability to changing conditions in the energy market, or whether it should focus on the durability and predictability of the framework for all actors of the ongoing transformation.

Find out more about the background, main activities and result of this case study **here**.

Comments on the 5 SSH dimensions of analyses

Socio-ecological

Socio-technical

The socio-ecological and socio-technical dimensions of the project are addressed through the framework of transformative capacity. Drawing on the insights of systems thinking and capacity development literature, this approach seeks to examine the capacity available in case study regions to shape their decarbonisation pathways in the context of the clean energy transitions being investigated. We understand transformative capacity to be an evolving collective ability to conceive of, prepare for, initiate and perform path-deviant change towards sustainability within and across multiple complex systems, such as the stakeholders involved in or affected by a regional or urban decarbonisation transition. As a systemic capacity, it is not attributable to any single actor but rather results from the interactions and orientations of multiple actors in the system who collectively shape its decarbonisation pathway. By diagnosing transformative capacity, we seek to draw attention to the key factors that hinder or facilitate purposeful transformation from the perspective of sustainability transitions research, thus permitting them to be addressed as part of capacity development activities.

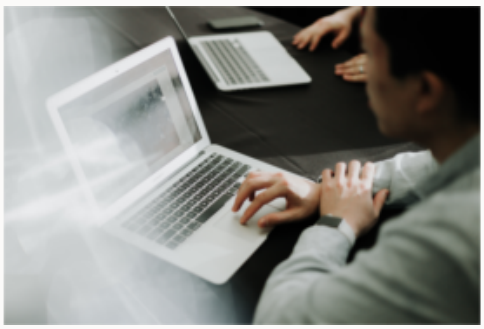
In each of the ENTRANCES case studies, we have investigated stakeholder perceptions of a range of factors, such as the connectivity and responsiveness of governance, effective leadership for transformation and empowerment of communities of practice, as well as stakeholder understanding of the system(s) of which they are a part, and whether this informs visions and pathways to orient experimentation and ultimately embed successful innovations. Such factors are of high policy relevance because they determine the likelihood of the clean energy transitions in each context being successful.

At the Rome workshop the cases of Kraków and Lusatia were presented. These underscore the diversity of settings being investigated by the ENTRANCES project. In Kraków, at issue is the decarbonisation of the metropolitan areas heating system, an urban development setting with a range of diverse and networked stakeholders that need to be taken into account within the metropolitan area. Lusatia, on the other hand, presents a case of coal phase-out in a peripheralised region of former East Germany. The regional context is important, as it means that there is a weaker concentration of actors and less capacity readily available to engage in the kinds of experimentation (e.g., real-world laboratories) that may be performed in urban transitions. Further work will aim to compare cases to identify differences in transformative capacity in relation to different national and spatial contexts, the types of system being carbonised, and the influence of EU policy on national decarbonisation processes. These will feed into scenario building in support of co-creation workshops at a later stage of the project.

Important factors for economic development are population dynamics, labour force, capital accumulation and technological progress. The socio-economic component focuses on structural change in the economy, i.e., the reallocation of economic activity across different economic sectors and regions.
Structural change can lead to a change in a region's economic, financial and demographic composition. The component is focused on a descriptive analysis of technological progress, demography, economic inequality, employment and economic activity based on various data sources over the last three decades.

Socio-economic

The socio-economic component focuses on the labour market area but also relies on the other units of analysis, i.e. the coal and carbon territory and the political and administrative region, as a reference and as a comparison. In the socio-economic component, ten different factors are taken into consideration. All the factors are mainly investigated from a quantitative perspective. The clean energy transition leads to structural change, which impacts the demography. Further, it has direct implications for the depletion of coal reserves, the expansion of alternative energy sources, direct employment and production effects in the coal industry and carbon intensive industry, indirect employment and production effects on other industries. Investments into the stock of capital will respond to the regional economic development. Further, the clean energy transition can change economic inequality, energy security, technological progress and migration patterns.



For the socio-economic component, an extensive set of data has been collected from national sources, mainly national statistical offices, but also Eurostat and company data. Besides data on demography, i.e. population (by age and gender) and migration, data for coal/carbon-intensive industry has been collected covering labour income, production, employment, and emissions. For the overall economic picture, data on gross value added, employment and labour income by industry has been collected as well as regional public finance data. First, a quantitative analysis of the respective region is conducted in the case study reports based on the descriptive statistics. Second, simulations from a quantitative macroeconomic model will be employed to investigate the potential impact of the decarbonisation in each region. For this, the model is calibrated to reflect the respective economic structure in each case study region. Each case study region is simulated together with the respective country and other case studies within the country. Simulations are conducted for different countries based on the emission projections for the period 2015 to 2050.

Socio-cultural

In a globalized age, the traditional forms of territorial organization are constantly challenged by several societal-induced processes such as migrations, technological advancement, financial flows, climate change,etc. that trespass the political and administrative boundaries through which territories are organized and managed. The socio-cultural component of the ENTRANCES project was aimed at mapping whether and in which way the socio-cultural changes associated with globalization are provoking “stress” in the territorial organization of coal and carbon-intensive regions.

While the difficulties of facing global challenges are widely acknowledged, when it comes to development or strategic plans, the tensions, conflicts and contradictions produced by these changes at the territorial level are rarely taken into consideration, as they do not appear in official data and statistics, even though they are relevant aspects for the success on any intervention that aims to leverage on the active participation of local actors and stakeholders. As the project aspires to inform the Regional and European policy on Coal and Carbon-intensive regions in transition through a set of policy and practical recommendations, the socio-cultural component of the ENTRANCES project was aimed at filling this gap. Through an activity of focus group mapping, in each region, key informants were invited to discuss and disclose their “local knowledge”, to identify and describe (and thus map) the "strain situations" that have occurred or are still occurring and that are an indicator of stress in the territorial organisation. The maps produced represent a view “from within” about the challenges faced by the territory, and it will be compared with other sources of available knowledge (data, statistics, previous studies) as well as with the other results of the ENTRANCES project.

During the co-creation meeting in Rome, the results of the mapping of the strain situations in two case studies have been presented: the Sulcis and the Port Talbot cases. The two cases presented a lot of similarities, both are former coal mining sites, both heavily relying on the metallurgic industry, and in both cases, such industries have been privatized during the 90ies exposing now the territories to forms of dependence on private investors, and regional and local governments. Despite their similarities, the two cases differ in the stress experienced: while in Port Talbot a set of

new orientations have been shared and adopted by the local community, in Sulcis the presence of several internal and external conflicts are hindering the effectiveness of the multiple actions that have been undertaken so far to cope with the territorial challenges. The discussion that followed, allowed us to understand some key points to be incorporated in the socio-cultural analysis, such as the centrality of a territorial agency - i.e. an agency oriented toward territory making -, as well as the observation that the clean energy transition, so far, has not played the role of a catalyst of such agency, as it often is sparking further strain situations, such as conflicts, impasses and increased dependency and uncertainties in the territories analyzed.

The results of the socio-cultural component will be a key in the analysis of the deterritorialization and reterritorialization dynamics ongoing in the regions. The component is expected to be a key source for the qualitative comparative analysis of the cases.

The socio-psychological component is one of the main components of the ENTRANCES project. It focuses on the social and psychological impacts of the closure of carbon-intensive activities in regions that are highly dependent on these activities. The sudden closure of large industrial units results in the loss of economic activities, a decrease in the availability of jobs and the disappearance of identity symbols and cultural artefacts, which in turn creates enormous psychological stress in the local population about their own future and that of their next generations. This psychological stress often forces people to migrate from their places of origin, making them vulnerable to the psychological impacts related to displacement and loss of identity.

Socio-psychological

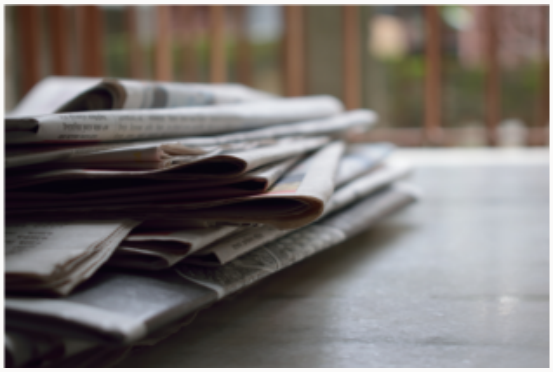
A detailed quantitative survey, containing questions related to place attachment, optimism, resilience, impacts of decarbonisation, coping strategies and life satisfaction, was conducted to measure the level of stress of local people and the coping strategies adopted by them to mitigate the negative impacts of ongoing decarbonisation processes in nine different EU countries. In the first results, we found that place attachment plays an important role in affecting local people's decision to stay in the territory or to migrate after the closure of carbon-intensive activities. People with high levels of optimism and resilience have a positive attitude towards the decarbonisation process and show little desire to move out of their cities. They want more funding for their regions to create alternative jobs and see their future in renewable energy projects. In general, the level of perceived stress is high in areas where large numbers of families depended on carbon-intensive activities for their livelihoods for several generations. They also fear that the closure of mines and power plants will result in the loss of their personal identity and cultural heritage. As per coping strategies, a significant number of people are reskilling and plan to leave the region in search of work in other sectors. The level of resistance and protest against decarbonisation policies is low in most CIRs. The recent war and rising energy prices have increased economic hardship for many households and small businesses, resulting in higher levels of perceived stress among the local population.

Socio-political

In the ENTRANCES project, emphasis was given to socio-political effects and dimensions connected to the framing of the energy transition. For this purpose, a discourse analysis was conducted, including mainly national and regional reports and strategies, contributions from the media (articles, etc.), NGO statements, and political party programs. The theoretical and conceptual background, implemented by all partners is based on Pierre Bourdieu's concept of field (Bourdieu 2005).[1] The analysis was underpinned by the concept of technological dramas.[2] The focus is here on "statements" and "counter-statements" with which different perspectives regarding the clean energy transition are publicly "negotiated". A technological drama is a narrative "battle" among different actors to determine the meaning and implications of a technology or technologically based shift.

The focus of interest was on how federal, regional and local actors express and position themselves socio-politically and thus either regulate, adapt or fight the energy transition.

During the co-creation meeting in Rome, individual results from the case studies were presented and discussed. As one example, central results of the text analysis of the Austrian case study were presented. We note that texts were analysed, which were published before the Ukraine war and the ensuing energy crisis kicked in. It became clear that in both political programs and media discourses, discussions about technological progress and economic factors dominated. Discourses are shaped by calls for action, massive



investment in future technologies (in particular steel production with green hydrogen), and a commitment of policy makers from all political spectrums to reach the climate goals till the mid of this century.

Reacting to the case study from Upper Styria, Lukas Hermwille from Wuppertal Institute (coordinator of sister project CINTRAN[3]) addressed commonalities, trends and developments in steel transformation research in the European context. Discussants emphasized the role of EU member countries that have a history of state-owned industries and therefore share a common past of coal & carbon industry:

- Further research is necessary to identify how different regions have dealt with the privatisation of state-owned industries to create a deeper understanding of the extent to which this is affecting the actual energy transition.

Media narratives have drawn an overall positive picture of the challenges, but missed a deeper discussion of e.g. possible barriers in the implementation or effects of the transition process on all societal levels. The decarbonisation process in the Upper Styria region is headed towards a future scenario, where technologically optimised production processes and the usage of green and renewable technologies and infrastructures are pronounced and common efforts strive for solutions in the urgent need of "turning the wheel".

With regard to the SSH and gender perspective, it became apparent that gender aspects and social relevant topics and challenges, e.g. the future workforce and labour market, education system, etc. have been almost invisible, if not completely neglected.

- In the subsequent discussion, it was debated which methodological changes should be considered and taken into account in projects on the clean energy transformation (e.g. use a variety of methods, include gender aspects much closer into focus group methods and interview guidelines, etc). In addition, it was raised how gender aspects in general have to be taken into account in projects on energy and steel industry transformation in order to contribute to an inclusive gain of knowledge.

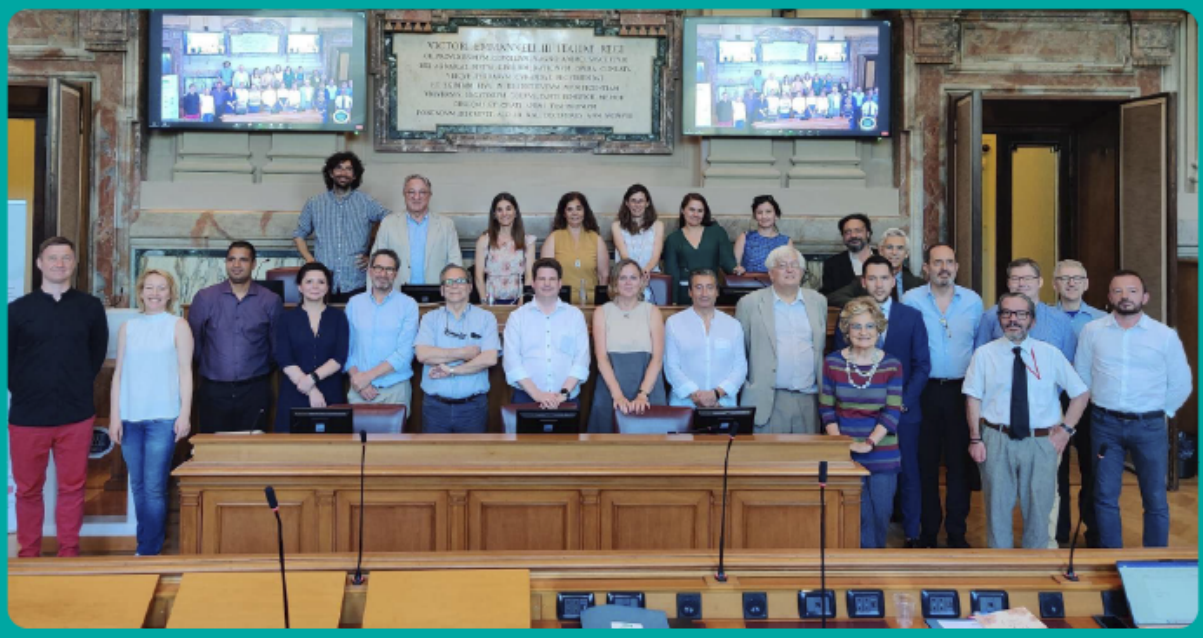
1 *Fields denote arenas of production, circulation, and appropriation and exchange of goods, services, knowledge, or status, and the competitive positions held by actors in their struggle to accumulate, exchange, and monopolize different kinds of power resources (Swarzt 2020), Swartz, D.*

2 Pfaffenberger, B. (1992). Technological Dramas. Science, Technology, & Human Values, 17(3), 282–312. https://doi.org/10.1177/016224399201700302

3 CINTRAN - Carbon Intensive Regions in Transition – Unravelling the Challenges of Structural Change https://wupperinst.org/en/p/wi/p/s/pd/882

News

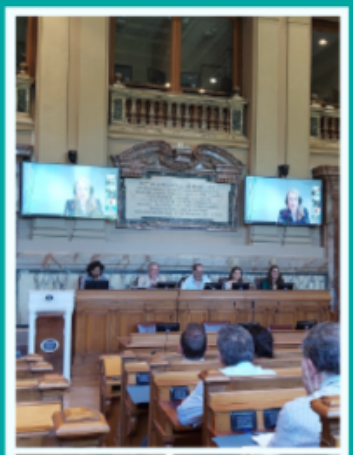
Co-creation session in Rome (June 2022)

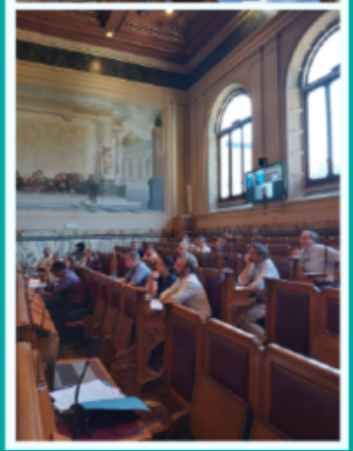


Rome: The co-creation session, officially called "Co-creating knowledge on coal+ regions in transition: Towards an interdisciplinary understanding of territorial change in the context of the clean energy transition", took place in Rome, Italy from June 16th to June 17th, 2022. The physical venue for the hybrid co-creation session was Villa Lubin, headquarter of the Consiglio Nazionale dell'Economia e del Lavoro (CNEL), the Italian National Council for the Economy and Labour. The first day featured and

introductory session, wherein Project Coordinator Ricardo García Mira and the Project Coordinators of the sister projects CINTRAN and TIPPING+ welcomed the attendees, alongside Giulia Monteleone from the Italian National Agency for New Technologies, Energy and Sustainable Economic Development (ENEA), Manuel Conconi from the European Climate, Infrastructure and Environment Executive Agency (CINEA), Giovanni Caiati from Knowledge and Innovation and Marcela Norena from Women Engaged for a Common Future (WECF).

The second part of the first day featured a "Coal and Carbon Territory Session", with empirical panels on the socio-economic, socio-cultural and socio-psychological dimension. Key insights were delivered by representatives of 7 of the 13 case studies developed in the ENTRANCES project, alongside researchers who provided additional input for the discussion. We heard from the Central Germany case, the Silesia case in Poland, the Sulcis case in Italy, the Port Talbot case in the United Kingdom, the A Coruña case in Spain, the Stavanger case in Norway and the Jiu Valley case in Romania. Between panels, there was time for an active and engaging discussion and co-creation session. ENTRANCES Advisory Board members David Uzzell (Surrey University) and Philip J. Vergragt (Clarke University) concluded the first day of the co-creation session.





The second and final day of the co-creation session was dedicated to a "Clean Energy Transition Session", which featured presentations of the interim results of the Upper Styria case in Austria, the Brindisi case in Italy, the Rhineland and Lusatia cases in Germany and the Krákow case in Poland. These were split across two additional empirical panels, on the socio-political and socio-ecological & technical dimension, respectively. Just like on Day 1, participants had enough time to actively engage in a co-creative discussion between these empirical panels.

The final session began with an extended discussion on questions arisen, conjectures identified and any additional remarks found relevant to be addressed. ENTRANCES Advisory Board members Paul Baker (ECORYS) and José Donoso (Spanish Photovoltaic Energy Association) presented the conclusions of Day 2 before ENTRANCES Project Coordinator Ricardo García Mira delivered the concluding speech and summarised the overall conclusion and next steps for the project partners.

Full agenda
(Co-creation session):

Upper Styria case published in Austrian newspaper

The ENTRANCES project partners are delighted to see that the Upper Styria case study has recently been published in the Austrian newspaper "Der Standard".

The article reflects how the shift away from CO2-intensive economies, such as the local steel industry in Upper Styria, is bringing about major changes for the region. The 13 case studies of the project are mentioned, along with the distinction between coal-intensive and carbon-intensive regions, and how the methodological approaches put in place in ENTRANCES aim to create comparable findings across all of the 13 case studies.

The article also addresses a number of challenges specific to the Upper Styria region, such as a decline in an already ageing population and an image problem of the industry that originated in the 1980s, which stands in contrast to the reality of a flourishing industrial sector with a growing demand for human resources.

Please find the full article and more information on the Upper Styria case study**here**

Sister Projects

Together with CINTRAN, TRACER and Tipping Plus, ENTRANCES is a member of a cluster of EU-funded Research and Innovation projects on regional Energy Transitions research. With similar aims and objectives, all four projects will contribute to the achievement of "European-level Clean Energy Transition" individually and as a whole with optimised impacts.

CINTRAN

CINTRAN (www.coaltransitions.org) or "Carbon Intensive Regions in Transition – Unravelling the Challenges of Structural Change" will study the structural changes of decarbonisation in order to find ways to minimise the risks. The researchers will combine quantitative model-based research with qualitative in-depth analysis. The qualitative research will focus on four highly fossil-fuel dependent regions: Western Macedonia (Greece), Silesia (Poland), Ida-Virumaa (Estonia) and the Rhenish mining area (Germany).

cintran
Unravelling the Challenges of Structural Change

In a nutshell, CINTRAN will:

- Focus on four highly fossil-fuel dependent regions
- Study structural changes of decarbonization
- Combine quantitative model-based research with qualitative in-depth analysis

TRACER

TRACER (tracer-h2020.eu) supports 9 coal-intensive regions in Europe to design (or re-design) their R&I strategies in order to facilitate their transition towards a sustainable energy system. Six of these nine European target regions are from EU Members States (Bulgaria, Czech Republic, Germany, Greece, Poland, Romania), and three from countries outside the EU (Serbia, Ukraine, UK), yet all of them facing the same challenges.

TRACER

In a nutshell, TRACER will:

- Support nine coal-intensive regions
- Identify best practices and relevant social challenges in the target regions
- Develop smart strategies towards a sustainable energy system

Tripping Plus

Tipping Plus (tipping-plus.eu) intends to advance the scientific understanding of the critical concept of Social-Ecological Tipping Points (SETPs) to support successful clean-energy transitions in Coal and Carbon Intensive Regions (CCIRs). It will provide an empirical in-depth social science understanding of fundamental changes in socio-demographic, geographical, psychological, cultural, political, and economic patterns. The project will comparatively analyse 20 European and non-European regions.

In a nutshell, Tripping Plus will:

- Address 20 case studies (EU MS and non-EU)
- Analyse regional social-ecological systems
- Recommend on the most effective tipping interventions toward low-carbon, clean energy transitions

ENTRANCES
entrancesproject.eu

If you'd like to receive more project related information, please send an email to:

info@entrancesproject.eu

Coordinator

ENTRANCES project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement nº 883947. This newsletter represents the view of the author only and is his/her sole responsibility: it cannot be considered to reflect the views of the European Commission and/or the Innovation and Networks Executive Agency (INEA). The European Commission and the Agency do not accept responsibility for the use that may be made of the information it contains.