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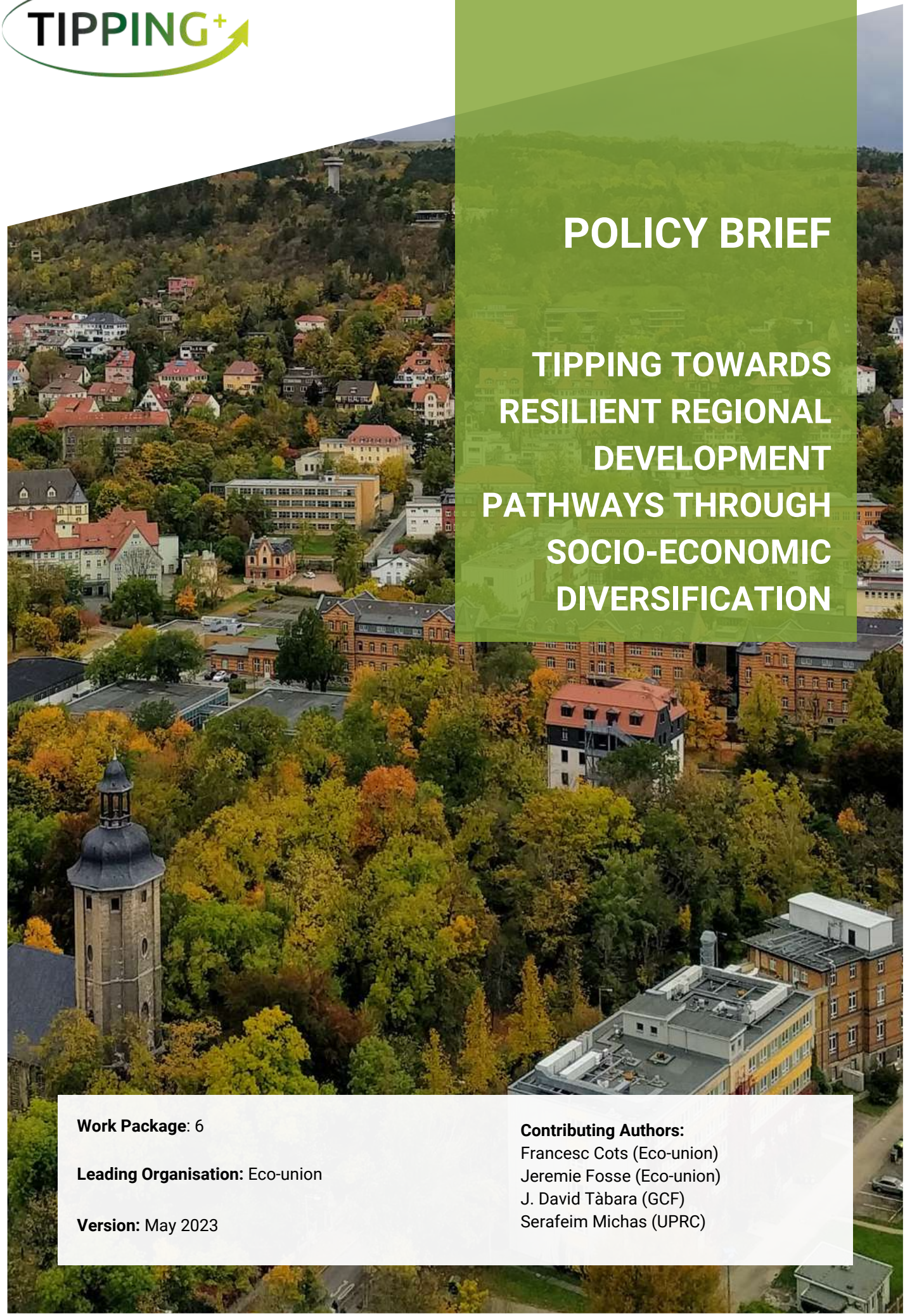
TIPPING+

POLICY BRIEF

TIPPING TOWARDS RESILIENT REGIONAL DEVELOPMENT PATHWAYS THROUGH SOCIO-ECONOMIC DIVERSIFICATION



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Summary

In Europe, **great regional differences exist in terms of economic and decarbonisation performance** that need to be taken into account in future re-regionalisation processes. This policy brief draws on the results of TIPPING+ research, case studies, published and ongoing publications, to summarise the insights on **how to promote economic diversification in Coal and Carbon Intensive Regions (CCIRs) in order to accelerate the adoption of just and resilient development pathways at regional and local level**. For this reason, it is aligned with the goals of EU mission on Adaptation and Climate change, supporting the transformation of at least 150 regions in becoming climate resilient by 2050.

The policy brief addresses how policy makers could drive transformations, from regional economies largely based on a single high-energy-intensive sector, to more diversified, inclusive and regionally resilient ones. It also addresses the potential expected resistances of local stakeholders, by emphasising **the need to design regional visions that integrate sustainability goals**. **This approach involves implementing full-inclusive processes to co-produce these visions**. The role of new forms of regionally place-based entrepreneurship, business models and investments in a variety of low emissions projects is emphasised. Finally, it formulates recommendations on how to address different kinds of actors including climate innovators, blockers, influencers or followers.

Overall, these recommendations seek how to trigger positive feedback processes, to accelerate continuous cascading positive effects, that further enhance economic diversification and promote climate mitigation and adaptation in other regions as well. Hence, **transitioning regions toward low-energy resilient pathways goes beyond merely managing energy issues. It concerns understanding how to deal with full-societal transformations** that include multiple socio-economic and cultural dimensions, such as, profound changes in governance mechanisms, individual capacities, local well-being, economic arrangements, and even collective and cultural visions about the kind of just societies and communities we want to live (e.g., more socially, open and resilience-oriented or not). **Regional actors can thus be at the forefront of low-carbon transformation processes, but they can also help to tip their regions (as well as other) to new structural patterns of development**, based on low-carbon technologies and sectors, and even cultural identities away from 'dirty' energies.

Objective

Coal and carbon-based industries have played a significant role in many regions' economies for decades, providing jobs and contributing to the local tax revenues. Therefore, the diversification of the economy is required not only to create stable employment opportunities, but also to ensure that local populations continue to live in these areas which tend to be subject to outgoing migration flows and ageing. However, stakeholders in these regions may be used to relying on single industries, and may lack the knowledge, resources, or incentives to diversify their economies.

For stakeholders who have built their livelihoods around these industries, such a transition can be daunting, and many may lack the entrepreneurship, or risk-taking attitude needed to explore new and uncertain socio-economic opportunities. Securing stable, alternative and place-based jobs and means of income is central to provide a buffer against future economic shocks. These must be less dependent on a single economic activity or to external resource flows and international distribution chains. In this policy brief, we look at what considerations should be taken into account by policy makers, when trying to trigger and manage regional transformations, from a region that depends on a single resource or a single economic activity, to a new regional system configuration based on cleaner energies and a more diversified social and economic structure.

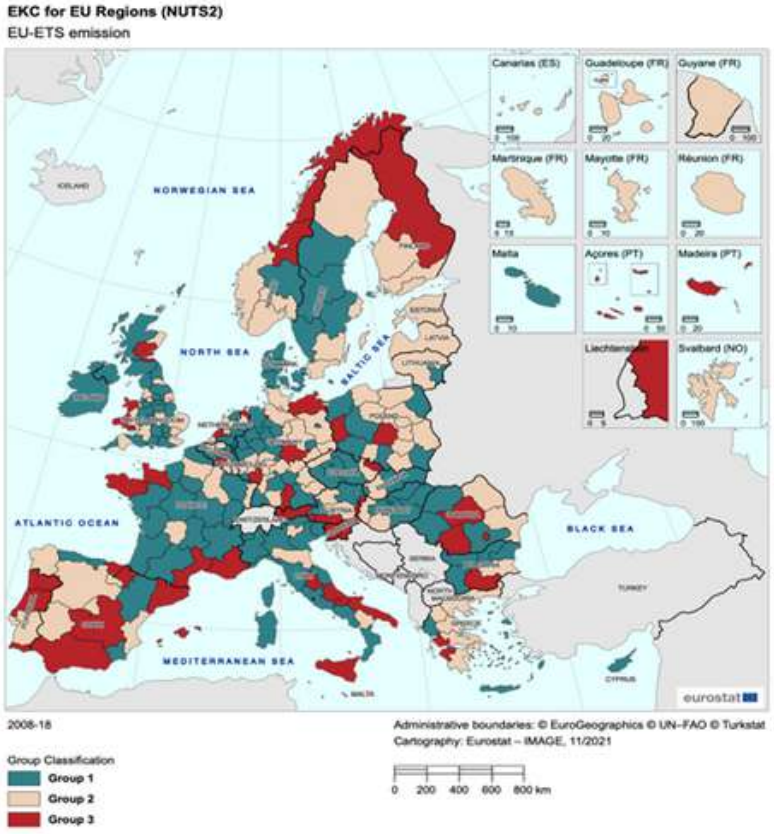
Background

The coal industry has been frequently associated with the "resource curse" theory (Perdue and Pavela, 2012), which stresses that regions whose development has been strongly dependent on the extraction of natural resources, particularly non-renewable resources like fossil fuels and minerals, experience economic vulnerability, demographic instability, negative health and socioeconomic impacts, increasing geographic isolation, imbalances of scale and power with respect to extractive industries, and the absence of realistic alternatives for diversified development.

Diversifying the economy helps to create more stable and sustainable sources of income for the region, reduces the level of dependency, creates job opportunities, attracts new businesses to the region, fixates its population, and encourages the development of new technologies and industries, which can drive innovation and create new opportunities for the region. Overall, economic and social diversification, if oriented towards the visions and orientations of sustainable development, can substantially contribute to more complex capacities of regional actors and overall regional configurations, which are more likely to cope with future shocks, thus increasing their resilience.

Key messages

✓ **CCIRs are not uniform and spatially homogenous entities. Great differences exist in their structural socio-economic components, cultural backgrounds, power distributions, social needs and options to engage in decarbonisation pathways that need to be taken into account.** For instance, regions differ in terms of the structural relationships between emission intensity and economic growth. The TIPPING+ project has identified where positive tipping points may occur in terms of reducing emission intensity and enjoying economic growth at the European NUTS2 regional level and clustered these regions according to their position on a macro-level environmental Kuznets curve (Figure 1). Hence, this econometric analysis allowed the clustering of EU regions according to the phase of the energy transition they are in.



EU regional evolution between GHG emissions growth and economic (2007-2017; Chakraborty & Mandel (2022))

Group 1: Emissions decrease with GDP and R&D, increase with investments. Regions where growth and innovation are reducing emissions intensity, but conventional investments are still increasing emissions, i.e., a split between green innovative sectors (though non-industrial) and brown conventional sectors where the former dominate.

Group 2: Emissions increase with GDP and R&D, decrease with investments. Regions where growth and innovation still are increasing emissions, but investment is leading towards decreasing emissions.

Group 3: Emissions decrease with GDP, increase with R&D and investment. Regions where growth is decreasing emissions, but current development pathway is leading to an increase in emissions.

✓ Therefore, there are differences in the socioeconomic and demographic patterns among CCIRs, both at the inter-regional level, involving differences between regions from different countries, and at the sub-regional level, i.e., differences between counties, municipalities and localities within the same regions. **Policies and measures taken** (e.g., distribution of money from energy transition funds, retrofit subsidies for households, etc.) **based only on aggregate data and analyses for regions, if not considering a broad approach to justice** (see TIPPING+ Policy Brief on Justice) **may perpetuate both disadvantages and advantages at the sub-regional level**. Furthermore, they may be inefficient or even regressive, reproducing existing inequalities between the metropolitan areas and the peripheries. Also, in the context of a just transition, attention should be paid to areas outside coal mining regions which might also require targeted economic support.

✓ **Many forms of regional resistance to avoid coal phase-out** are prevalent in CCIRs. In a first stage, existing actors try to deny or avoid the possibility of transformation by ignoring or contesting regional development plans. To overcome such resistances, **visions need to be developed at the regional level** to mitigate the negative socio-economic impacts on the coal sector, and foster socio-economic diversification, young employment and new businesses and opportunities for local entrepreneurship.

✓ Not all regional actors are prepared or willing to become green entrepreneurs and innovate with a net zero or a low emissions approach. This is because many businesses operate in sectors with limited exposure to energy or carbon prices, or they may not have access to financing. A portfolio of effective interventions for the business sector can be created by **segmenting the actors** into different categories: **innovators** (sophisticated players whose products and services could significantly reduce emissions across the economy); potential **blockers** (large, high- energy or carbon-intensive businesses with a lot to lose); **influencers** (large, trend-setting or industry-shaping businesses with leaders

that are likely to be followed); and **followers** (the rest of businesses that do not have the bandwidth to specifically address climate change but are also unlikely to swim against the tide, if others are adopting a net-zero approach) (Hepburn et al, 2020).

✓ Regional visions and strategies should explicitly involve a **fully participatory approach** that includes a fair representation of a diversity of stakeholders **throughout the processes of early strategy development, evaluation, implementation and monitoring of decisions**. If these energy transition processes are perceived as fair and well communicated to a wide range of knowledge sources and expertise, then it will be more likely that the outcomes of these processes will be implemented in an effective and successful way. **Fostering a sense of ownership** in processes aimed at tipping regions towards sustainability is crucial, as is creating new opportunities to help businesses start or reorient their activities towards net zero development pathways.

✓ **Public support for the development of new industries must contribute to the diversification of employment opportunities, to transformative economic cascades and to the creation of more complex networks** *(economic ecosystems)*, **which also include small and medium- sized local businesses**. For example, chains of activities can be created when renewable energy technologies are being developed alongside with other technologies, and with partnerships of companies that may compete but also cooperate for certain activities (coopetition). For example, the combination of solar panels with regenerative forms of agriculture can help boost agronomic activity in several regional sectors.

✓ **Policy makers should try to instigate positive feedback processes of low-carbon development at regional level, by implementing win-win actions that yield positive social, economic and ecological gains in different domains or realms at the same time**. For instance, a combined approach of introducing residential solar systems, capacity building and social entrepreneurship in Bangladesh triggered other positive effects on education, use of time, and in the use of other resources (Tàbara, 2021). But in order to do that, policy makers should be able to understand and assess the actual and potential relationships between different domains, how tipping actions affect them, or how they can be synergised.

✓ **Policymakers need to assess the potential sensitivity of a suite of different policy measures, to affect the potential reconfiguration of regional systems, and their possible power to accelerate self-reinforcing cycles of transformative change**. For example, subsidies leading to early deployment and higher diffusion of clean technologies, can have wider effects in the economic system, resulting, among others in an employment shift from fossil-based sectors to low-carbon ones (Furtado et al., 2019). Therefore, it is important **to anticipate the potential impact of diversifying the economy in the area**, training future employees and securing the future supply chains and the necessary infrastructures.

- It is necessary to **incentivise low-carbon innovators, that can trigger chains and networks of low-carbon innovators and service providers in other businesses**. For example, if one business provides a low-carbon service or product that another business needs, this can help the second business save time and resources that otherwise would be spent to its development. In this way, the second company also reduces its environmental footprint, and at the same time, the two companies may be able to identify and address common challenges or opportunities, that each business alone could not address or identify. By linking mutual low-carbon gains and economic benefits, businesses can achieve higher levels of eco-efficiency, new forms of collaborative innovation and competitiveness, and thus create more resilient regional economies, aligned with the objectives of the EU Mission on Climate Change.

Insights from Case Studies

In the **Ruhr Region, Germany**, since the late 2000s, positive trends have been driven by an economic diversification in the fields of healthcare (with over 330,000 employees), digital communication, logistics and the chemical industry. Large national coal subsidies kept the cities of Essen and Duisburg locked into the coal regime for several decades, despite the fact that they were economically inefficient. The decision to end national coal subsidies gave (further) impetus to the local governments of Essen and Duisburg to progress customized opportunities for their cities based on new visions and narratives. Essen was promoted as a green capital, while Duisburg was developed as a logistic hub.

In **Jiu Valley, Romania**, the restructuring of the mining industry in the past decades led to significant layoffs and, consequently, outward migration of the population, despite efforts to retain the affected workforce by providing compensatory payments. Migration trends were even more intense in smaller towns with a marked focus on coal mining and related activities. Given the lack of investment in economic diversification, decrease and aging of population are reported in the region since the 1990s. Furthermore, there is not yet a clear vision and agreed coal phase-out plan or timeline. Therefore, the future, as well as the speed and nature of the transition of extraction and power generation industries, remain uncertain. Despite this uncertainty, there is a pressing need to address the challenge of economic diversification while ensuring a coordinated approach to regional development.

There has been a strong dependence of **Balearic** inhabitants on tourism as a way of survival for many decades, which has produced a variety of symbolic meanings and cultural attributes that have shaped their identity. In this context, measures oriented to limit or reduce tourism activity in order to speed up the energy transition do not generate social acceptance, and create resistance. As an example, some automobile rental companies denounced the Climate Change and Energy Transition Act (2019), which foresees the prohibition of circulation of diesel and gasoline cars after 2025 and 2035 respectively. Such automobile companies would be an example of “blockers”.

In **Andora, Spain**, after the closure of the coal plant in 2020, civil society is quite reluctant on starting new business on their own since they still believe that big projects are needed first to attract other small business units. Throughout the interviews and workshops, barriers to local entrepreneurship were identified. Such barriers include the fear to risk personal capital, lack of entrepreneurial culture, lack of labour force, youth exodus, bad internet quality, poor training offer and difficulties for "bringing" trainers and instructors to small towns like Andorra. Also, a large share of the region’s population benefits from early retirement, but without investing it on local projects. Hence, aging of population also constrains the local capacities for transformation.

Policy Recommendations

Enhance regional development plans and strategies to mitigate the socio-economic impact of the declining mining sector, by building competitive networks of small and medium enterprises, attracting young employment, as well as, local entrepreneurship.

The adoption of a strategic approach based on incentives is necessary to counteract expected patterns of opposition and actions aimed at avoiding or slowing the phase out of coal in CCIRs, due to stakeholder resistances' associated to inertias created by years of predominance of the coal and mining industry/culture. Regional plans and strategies should consider the differences existing in the cultural, socio-economic and power distribution components in each CCIR, taking into account they are not uniform and spatially homogenous entities.

Regional visions, plans and strategies should include a fully participatory approach that includes a diversity of stakeholders and considers multiple time scales.

Such strategies ought to equip key agents with the required transformative capacities to achieve sustainable development goals at the local level (for instance, ensuring a more active role and commitment with regard to the expected outcomes of the vision). Also, they have to provide individuals with a sense of ownership to implement their own pathways towards decarbonisation, and open new opportunities for achieving transition tipping points in their own regions and link them to the transitions of other regions.

Transforming regional patterns of development toward low-energy, and resilient pathways entails more than just managing energy issues.

It requires a comprehensive understanding of how to deal with full-societal transformations that include multiple socio-economic and cultural dimensions, and profound changes in governance mechanisms, individual capacities, local well-being, economic arrangements and even collective and cultural visions about the kind of just societies and communities we aspire to live in. Regional actors must therefore decide to what extent they wish to move forward. Towards sectoral or full regional transformation? The exchange of experiences can help to trigger broad low-carbon tipping cascading processes to new structural patterns not only within a particular region but also across other regions. Through this process, cultural identities can be reshaped, moving away from the stigmatization associated with regions dependency on 'dirty' energy sources.

Public engagement, aimed at supporting system-wide positive tippings, is about creating a second-order learning process to bring a system-wide collective perspective of the common good and of the possible alternatives for community reorganisation.

Such second-order processes should necessarily be inclusive to ensure that all relevant and diverse voices are considered in terms of gender, age, geographical areas, social class or ethnicity. With this regard, it is important to keep in mind that low-carbon transformations often provoke important new migration flows and demographic changes at regional level, which also have an impact on local identities, traditions and job expectations. Hence, such demographic changes need to be anticipated and integrated in a way that can contribute positively to sustainability transformation processes, using a strict and multidimensional perspective of justice, instead of becoming a source for resistance and opposition.

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About TIPPING+

TIPPING+ provides an empirical in-depth social science understanding of fundamental changes in sociodemographic, geographical, psychological, cultural, political, and economic patterns which give rise to Social-Ecological Tipping Points (SETPs), both positive and negative in relation to socio-energy regional systems. Such empirical and theoretical insights sheds new light on the interdependencies between changes in regional socio-cultural structures and the technological, regulatory and investment-related requirements for embracing (or failing to embrace) low-carbon, clean-energy and competitive development pathways in selected coal and carbon intensive case study regions (CCIRs). The overall goal is to understand why and under which conditions a given social-ecological regional system heavily dependent on coal and carbon-intensive activities may flip into a low-carbon, clean energy development trajectory – or on the contrary may fall into an opposite trajectory with all its negative implications. Towards this goal, main focus of TIPPING+ is the participatory co-production of knowledge on the driving forces and deliberate tipping interventions leading to the emergence of positive tipping points toward clean energy transitions in European CCIRs.

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PARTNERS

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