



# Good practice examples of regional and sub-regional strategies in coal regions in transition

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# Table of contents

<b>Preface .....</b>	<b>3</b>
<b>Executive summary.....</b>	<b>3</b>
<b>Key insights and conclusions.....</b>	<b>3</b>
Transition can offer an opportunity for spurring regional reinvention.....	3
Strategies for transition need to be ‘smart’, building on a region’s context, resources, and assets .....	4
Strategies for transition require a comprehensive approach to preparation and development.....	4
Wide reaching stakeholder engagement helps build consensus and ‘buy in’ on transition strategies and actions .....	4
Transition strategy formulation and implementation can be strengthened by combining ‘top-down’ and ‘bottom-up’ approaches .....	4
Local governments need to be empowered to take a leadership role .....	4
Adequate financial resources to support transition need to be made available.....	5
<b>Introduction .....</b>	<b>5</b>
<b>Purpose of this report .....</b>	<b>5</b>
<b>Methodology .....</b>	<b>6</b>
<b>Structure of the report .....</b>	<b>6</b>
<b>Strategies for regional industrial transition .....</b>	<b>8</b>
Pathways to regional industrial transition.....	8
Innovation-led transition strategies .....	11
Leveraging legacy assets for industrial transition.....	13
Skills and employment aspects of industrial transition.....	17
<b>Processes for regional transition strategy development.....</b>	<b>19</b>
Preparatory activities for strategy development .....	19
Engaging stakeholder to achieve consensus on strategic goals and build support for transition actions .....	21
The leadership role of local and regional governments in transition .....	25
<b>Good practices examples .....</b>	<b>26</b>
Strategic transition pathways and themes .....	26
Strategy development processes and instruments.....	43
<b>Bibliography.....</b>	<b>58</b>

## Disclaimer

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## Preface

This background report has been developed within the scope of START (Secretariat Technical Assistance to Regions in Transition) support to Karlovy Vary Region, provided under the EU Coal Regions in Transition Initiative.

The report collates ‘good practice’ examples of regional and sub-regional strategies, and processes for strategy formulation and project identification and development, which aim to be relevant and applicable to the Karlovy Vary context and, specifically, the situation and transition challenges in the Sokolov district. Together with accompanying reports on ‘Employment and skills’ and ‘Renewable energy options’, this report on transition strategy good practices should contribute to the provision of an information and analytical base for the development of a future pathway to transition for Karlovy Vary.

The report aims to support stakeholders to consider options and approaches for the future direction of economic development and diversification, social transition, and environmental rehabilitation within the region.

## Executive summary

In recent years, transition from coal-based energy to cleaner forms of energy and innovative technologies has intensified in many European coal-dependent regions. Indeed, as envisaged by the European Green Deal and enshrined in the draft Climate Law, the European economy is on a path towards climate neutrality by 2050 and complete decoupling of economic growth from resource use.<sup>1,2</sup> The process has been driven by treaties, policies and strategies at international (e.g. Paris Agreement, UN Sustainable Development Goals) and European levels (e.g. EU climate and energy policies, Energy Union, Clean Energy for All Europeans). Other non-European countries, such as Australia and Canada, are also following the same path.

Previous and current experiences show that there is no one-size-fits all solution for industrial transition. Successful implementation of transition requires processes that are adapted to the specific features, needs, and challenges of each region. Nevertheless, completed, and ongoing regional transitions reveal common features and lessons learnt that can guide

and inspire other regions facing similar challenges. This report draws on these experiences to present a variety of examples of good practices of approaches and specific components of regional industrial transition, with particular emphasis on the transition away from coal production and power generation. The intention is that the examples can inspire thinking on approaches and ways forward that may be appropriate for Karlovy Vary to consider within the context of formulating a regional strategy for transition away from lignite mining and power generation.

The report is supported by the presentation of 19 good practice examples gathered from transition regions, mostly located in Europe. These examples are grouped in two broad categories. The first group is intended to illustrate broad approaches and thematic aspects of industrial transition. The second, to highlight more process-oriented aspects of transition strategy development and implementation.

## Key insights and conclusions

The analysis of current analysis of industrial transformation, together with the good practice described in this report, reveals a diversity of trajectories, approaches and supporting instruments for enabling smooth industrial and energy transition. Key insights from this report, include:

### Transition can offer an opportunity for spurring regional reinvention

Industrial transition is not a new phenomenon but processes for transition are being hastened by current economic, technological, environmental, and social developments. Particularly, national and supra-national commitments to decarbonisation of the economy are accelerating the phasing out of fossil fuel extraction and power generation activities. For coal regions, especially those with an industrial monoculture, where mining and power generation activities occupy a dominating position in the local economy, there is inevitable concern of the impacts that transition will have both on the most affected communities and for the region as a whole. For decision-makers, coal phase out presents immediate short-term challenges – for example, in terms of supporting the redeployment of displaced workers – and, for the longer-term, identifying and implementing strategies to enable their region to renew its economic base and find a new pathway for growth and development. There is no ‘one-size fits all’ policy

<sup>1</sup> European Commission (2020). *Proposal for a European Climate Law*. <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1588581905912&uri=CELEX:52020PC0080>

<sup>2</sup> European Council (2019). *Conclusions of European Council Meeting*. <https://www.consilium.europa.eu/media/41768/12-euco-final-conclusions-en.pdf>

prescription for addressing industrial change. However, past, and present examples of regions able to embrace the challenge, show that industrial transition can offer an opportunity to spur economic diversification and reinvention.

## **Strategies for transition need to be ‘smart’, building on a region’s context, resources, and assets**

Regional strategies to manage and accompany industrial transition need to recognise and build on the specificity of regional endowments, for example the endogenous (regional and local) potential of existing human and physical capacity and assets. This includes, recognising that regional potential for innovation-led diversification and growth may be conditioned by the depth, strength and connectedness of regional knowledge assets and infrastructure, whether in knowledge institutions, enterprises, or workers. Not all regions can jump into highly innovative, technologically advanced, knowledge intensive sectors. Often, transition may involve diversification into sectors with a similar knowledge base to existing industries, or innovation through combining existing knowledge with dissimilar knowledge ‘imported’ from elsewhere. Often it is through linking pre-existing exogenous assets (regional and local) with external new technologies and opportunities that regional development and diversification are stimulated. Such innovation processes are revealed in several of the examples in the report, notably in relation to diversification from fossil-fuel to new ‘green’ energy activities.

The report also highlights the potential scope to build on legacy physical, cultural and knowledge assets to support diversification of the regional economy. For instance, there are many examples of regions that have leveraged assets related to coal mining activities to develop tourism, recreation, and cultural activities.

## **Strategies for transition require a comprehensive approach to preparation and development**

Industrial transition is a lengthy process that can take several decades to achieve. Strategies and processes for the phasing-out of coal activities and transition needs to accommodate measures to address short-, medium- and long-term aspects of transition. There is also a need to recognise that not only ‘front line’ industries are affected, but also an extensive network of sectors along the supply or value chain, along with potential

spill-over effects to the wider regional economy. These considerations should be integrated in preparatory actions to build an evidence base aimed at providing a complete understanding of sectoral dimensions of transition challenges, impacts and opportunities.

## **Wide reaching stakeholder engagement helps build consensus and ‘buy in’ on transition strategies and actions**

Achieving successful transition depends on the collective effort of a variety of stakeholders that need to follow a shared vision. This can be supported by the participation of a broad range of actors from the private and public sphere, starting at the strategy preparation phase. It also implies that there should be alignment across different governance levels, so that national, regional, and local actors can agree on a shared assessment of transition challenges, objectives, and priority actions. The examples presented in this report illustrate a variety of mechanisms used to bring stakeholders together, to build cooperation, and to catalyse transition actions. They also emphasise the importance open, transparent, and participatory approaches to transition strategy formulation, which can further contribute to successful adoption and implementation of transition actions.

## **Transition strategy formulation and implementation can be strengthened by combining ‘top-down’ and ‘bottom-up’ approaches**

Another lesson from the case studies is the importance of integrating both a top-down approach – typically led by national or regional governments – with a bottom-up approach that allows local communities, civil society groups and citizens to be involved in shaping transition strategies and planning. Importantly, it helps to build awareness, acceptance, and engagement of local communities and citizens in transition processes.

## **Local governments need to be empowered to take a leadership role**

Local and regional governments, which are closest to affected communities, can bring understanding of regional context, and communicate effectively with

affected communities and other stakeholders. Many of the presented examples illustrate the potential for local political leadership and local public administrations to initiate and steer processes for the preparation of regional transition strategies. However, for local governments to play a leading role and to carry forward transition strategies and actions, they must be equipped with the necessary capacities, in terms of skills and know-how, resources, and planning and regulatory powers.

## Adequate financial resources to support transition need to be made available

Industrial transition is costly. Local governments may not be equipped to bridge the financial and economic voids left behind by the closure of mines and power plants. Financial support from regional, national, and supranational levels, as well as private investors, needs to be mobilised to support the transition strategy. Funds are also required to provide temporary income support and retraining schemes for displaced workers, to provide the necessary skills in the labour force to exploit new economic opportunities.

## Introduction

With climate change and its implications becoming more and more present on the political agenda of developed countries, the transition away from carbon-intensive fossil fuels is gaining momentum. Many former coal and carbon-intensive regions across the globe have already faced the challenges of energy transition and, more broadly, industrial transition. Many others will inevitably follow. Industrial transition is an ongoing feature of the modern global economy. Countries and regions have needed to adapt to changing political and economic circumstances that have necessitated transition away from old and towards new industrial structures, sometimes gradually and sometimes more rapidly. The reasons for industrial transition are multi-causal. In the case of coal-dependent regions, they have faced challenges from a variety of transition drivers<sup>3</sup>: resource depletion, industrial mechanisation, stricter environmental standards and climate targets, and competition from other fuels and renewable energy supplies. Where this brings about mine closures, the immediate impacts at a regional or local level are similar in all cases: job losses, economic downturn, and accompanying social and demographic challenges for

<sup>3</sup> World Bank Group (2018). *Managing Coal Mine Closure: Achieving a Just Transition for All*. URL: <https://openknowledge.worldbank.org/handle/10986/31020>

mining communities being the most apparent.<sup>4</sup>

Evidence from research shows, however, that some regions have coped better with industrial transition than others, while recognising that some places and societal groups are at greater risk of being left behind in the process of transition<sup>5</sup>. Difference in transition performance can, to some extent, be traced back to contextual factors, such as the economic stability and level of diversification before the transition occurred, as well as the general situation in terms of economic and social development, wealth, and employment of the region. More relevantly from a policy perspective, evidence suggest that the approaches and processes adopted to undertake regional transition can make a significant difference on regional outcomes. Specifically, in a wide ranging review of industrial regions in transition, the OECD (2019)<sup>6</sup> finds that active and tailored transition management by policymakers and key stakeholders in a region, which also connects with public, private and civil actors beyond the region, can positively impact on transition outcomes. Equally, transition outcomes can be influenced by the way a socio-economic shift is timed and designed, and by the ways in which stakeholders have been consulted and involved in the process. And finally, how a strategy was formulated and how measures have been put into action are important as well.

## Purpose of this report

This report is the outcome of an extensive screening and analysis of European and international good practices for regional energy transition strategies. The report aims to identify and collate international good practice examples that are relevant for the Karlovy Vary context. It includes examples from the national, regional, and sub-regional level that are of relevance to the situation and the transition challenges identified in the Karlovy Vary region and Sokolov district. The presented examples are intended to inspire reflection and thinking among key stakeholders in the Czech context and should spark both common and unconventional ideas for possible transition trajectories for the Karlovy Vary region.

The examples are not meant to provide an answer to what Karlovy Vary region and Sokolov district could

<sup>4</sup> Strambo, C et al (2019). *Navigating coal mining closure and societal change: learning from past cases of mining decline*. Stockholm Environment Institute working paper. URL: <https://www.sei.org/publications/navigating-coal-mining-closure-and-societal-change/>

<sup>5</sup> OECD (2019). *Regions in Industrial Transition: Policies for People and Places*. [https://www.oecd-ilibrary.org/urban-rural-and-regional-development/regions-in-industrial-transition\\_c76ec2a1-en;jsessionid=y5QTSfM\\_WL-\\_8aC-bi2Y80i.ip-10-240-5-1196!bid](https://www.oecd-ilibrary.org/urban-rural-and-regional-development/regions-in-industrial-transition_c76ec2a1-en;jsessionid=y5QTSfM_WL-_8aC-bi2Y80i.ip-10-240-5-1196!bid)

look like in the future after the end of lignite mining and energy production activities have ended but, rather, to consider how just transition could be achieved and which instruments and approaches have proved effective in other regions and localities. They are meant to give decision makers in Karlovy Vary an idea of how to approach the coal phase-out and what to consider in the definition, preparation, and implementation of a transition strategy. On purpose, the report includes, on the one hand, good practice examples from areas with similar socio-economic contexts and challenges, and, on the other hand, more distant international examples of industrial transition that could motivate decision-makers to think ‘out of the box’.

## Methodology

The report has been developed mostly through desk research, including a review of relevant toolkits, case studies, and working group documents from the Secretariat of the Initiative for Coal Regions in Transition. In addition to these internal resources, further desk research was carried out to identify additional good practice examples, including careful analysis of policy-related reports and academic literature.

## Structure of the report

The report is loosely organised in two main sections, with an accompanying categorisation of good practice examples:

- Strategic transition pathways and themes, which explores different regional industrial transition trajectories and considers some key elements underpinning and enabling transition in industrial – including coal mining – regions, namely: innovation, repurposing of legacy assets, and skills development.<sup>7</sup>
- Strategy development processes and instruments, which explores different aspects of the process of transition strategy development and instruments, including strategy formulation, stakeholder engagement, action plan formulation, and strategy implementation. of a transition strategy.

The focus for the good practice examples – which describe a variety of local and regional approaches – is to illustrate how successful transition can be achieved. Each example is presented in a fiche which, alongside describing key features of the transition experience, indicates the topic of transition, geographical location, contextual socio-economic indicators, a summary of transition challenges, and key learning points. Further, resources providing additional information are provided with each good practice fiche.

Most of the good practice examples come from Europe but some are from further afield (e.g. Canada, South Africa), as shown in the figure below and the subsequent table, which lists all the good practice examples. In addition, a bibliography identifying other relevant texts and materials for policy makers, together with a brief list of other known good practice examples, is provided at the end of the report.

<sup>7</sup> The topics of up-skilling and re-skilling and energy transition will be further discussed in the ‘Employment and skills’ report (Activity 2.2) and the ‘Renewable energy options’ report (Task 2.3), respectively.



**Figure 1: Geographical location of good practice examples****Table 1: Overview of good practice examples**

Strategic transition pathways and themes		Strategy development processes and instruments	
1	Örnköldsvik (Sweden): Transition through regional innovation policy	10	Latrobe Valley, Australia: Employment and training support service
2	Lausitz, (Germany): Lusatian Lake District	11	Asturias (Spain): Comprehensive sectoral assessment
3	Genk (Belgium): Projects for economic diversification	12	Latrobe Valley (Australia): Gippsland's Smart Specialisation Strategy
4	Humberside (United Kingdom): Repurposing of legacy assets by harnessing the external stimulus of energy transition	13	Western Macedonia (Greece): Scenario techniques
5	Northern Netherlands (Netherlands): From gas fields to hydrogen valley	14	Canada: Task Force on Just Transition
6	Visonta (Hungary): Matra power plant	15	North Rhine-Westphalia (Germany): Historical tripartite engagement
7	Loos-en-Gohelle (France): From coal mining to renewable energy autonomy	16	Upper Nitra, Slovakia: Stakeholder engagement process
8	Scotland (United Kingdom): Oil & Gas Transition Training Fund	17	Ruhr valley (Germany): The IBA Emscher Park cooperative development programme
9	Midlands (Ireland): Re-skilling initiatives	18	Midlands (Ireland): Project selection for Just Transition
		19	Dundee (South Africa): Local Economic Development Council

## Strategies for regional industrial transition

Industrial transition is not a new phenomenon, but it has garnered increased attention due to the recognition that globalisation, technological advances (such as digitalisation and automation), and the demands of environmental and climate change policies are hastening pressures and processes of industrial transition. Coal regions now facing the challenge of energy transition, often feature structural characteristics that resemble those of ‘old’ industrial regions that have need to transition away from their traditional industrial base. These characteristics include, for example, industrial mono-culture (with one or only a handful of industries dominating the economic structure of the region), over specialisation in declining, capital-intensive industrial activities presided over by a few large (often multinational) companies, with local clusters of firms and supporting organisations that are strongly linked to, and reliant upon, the region’s core industrial base.<sup>8</sup>

This aim of this chapter is to outline different regional-level industrial transition trajectories and to present some key elements underpinning and enabling transition in industrial regions, with specific reference to coal regions in transition.

### Pathways to regional industrial transition

In the face of growing pressures for industrial transition, declining ‘old’ industrial regions face the risk of becoming value extracting (rather than value creating) peripheries to main centres of growth. To avoid this outcome, strategies to support transition must aim to enable regions to renew their economic base and set them on a new pathway for growth and development. In this context, in an examination of actions adopted to address industrial transition by regions and cities with old or declining industries, Huguenot-Noël *et al.* (2018)<sup>9</sup> characterise three regional pathways for transition:

- **Diffusion:** whereby transition results from a ‘natural tendency’ for technology, capital, and wealth to spread from one region to neighbouring regions. This can be illustrated, for example, by the transfer of technology and capital from Germany to Central and Eastern European countries fostered by their geographical proximity. However, as the positive benefits from efficiency gains and spill-over effects of such transfers tend themselves to depend on proximity (so-called ‘agglomeration effects’), such processes can drive a concentration of economic activity, investment, and innovation in geographical centres that are most successfully in attracting technology and capital transfers, while draining resources – people and capital – from the periphery to the centre.
- **Copycat:** whereby old industrial regions attempt to replicate policy measures and innovations that have worked in more dynamic locations elsewhere. The logic of this approach is that the transitioning region can make a jump into highly innovative, technologically advanced, knowledge intensive sectors. However, it presumes that the region possesses the necessary fundamentals – for example, in terms of an adequate skills base, global network connections, and physical and intellectual capacity – to transform their economy through technology-driven investments. If this is not the case, there is a risk of creating an emerging gap between transition expectations and reality, and a sub-optimal use of resources; for example, in the construction of high-tech industrial centres that do not match local business capacity or demand.
- **Managed transition:** whereby there is explicit acknowledgement of the need for a differentiated and tailored approach to transition that recognises the specificity of regional endowments of old industrial regions. Here, transition builds on the endogenous potential of existing human and physical capacity and assets in the region which, despite being less attractive than in more dynamic regions, can be adapted and integrated into high growth activities. Such transition may be promoted through enhanced inter-regional cooperation, improved connections to global value chains and, for example, the delivery of ancillary services to more dynamic neighbouring regions. This may infer a more gradual transition pathway that could be politically unappealing in the shorter-term but, if accompanied by appropriate medium to longer-term growth strategies and complementary policies, can offer positive perspectives for skills upgrading and promoting social mobility.

<sup>8</sup> Cambell and Coenen (2017) “Transitioning beyond coal: Lessons from the structural renewal of Europe’s old industrial regions”. CCEP Working Paper 1709. Crawford School of Public Policy, Australian National University. Retrieved from: [https://ccep.crawford.anu.edu.au/files/uploads/ccep\\_crawford\\_anu\\_edu\\_au/2017-11/campbell\\_coenen\\_transitioning\\_beyond\\_coal\\_-\\_lessons\\_from\\_the\\_structural\\_renewal\\_of\\_europes\\_old\\_industrial\\_regions\\_ccepwp\\_1709.pdf](https://ccep.crawford.anu.edu.au/files/uploads/ccep_crawford_anu_edu_au/2017-11/campbell_coenen_transitioning_beyond_coal_-_lessons_from_the_structural_renewal_of_europes_old_industrial_regions_ccepwp_1709.pdf)

<sup>9</sup> Huguenot-Noël, R., Hunter, A., Pilati, M., & Zuleeg, F. (2018). *How do industrial transitions succeed? Transatlantic considerations on drivers for economic development*. European Policy Centre. Retrieved at: [https://wms.flexious.be/editor/plugins/imagemanager/content/2140/PDF/181219\\_Industrialtransitionsucceed\\_SPIE.pdf](https://wms.flexious.be/editor/plugins/imagemanager/content/2140/PDF/181219_Industrialtransitionsucceed_SPIE.pdf)



**Figure 2: Regional place-based pathways to industrial transition**

	<b>Diffusion</b> <i>Efficiency automatically drives equity</i>	<b>Copycat</b> <i>Adoption of a similar 'recipe' which was successful elsewhere</i>	<b>Managed Transition</b> <i>Each place has its own successful recipe</i>
<b>Logic</b>	Automatic cascade of positive spill-over effects  Focus on people, not places	Innovation-driven growth for all  Focus on technology and knowledge diffusion	Tailored approach  Focus on endogenous potential
<b>Effects &amp; limitations</b>	Catch-up effect  Agglomeration dynamics  Distance decay	Technological clusters in mid-sized cities  Technology investment  High dependency on skilled human capital	Acknowledgement of territorial path dependency  Recognition of economic trade-offs
<b>Potential future impacts</b>	Winner takes all  Risks of political backlash  Uneven spread of benefits	Emergence of new, smart territories  Gap between expectations and reality  Risk of limited return on investment	Economic sustainability  Cooperation and integration in global value chains  Complementary policies
<b>Lessons learnt</b>	Negative externalities of knowledge diffusion and mobility	One size may not fit all  Long-term influence of domestic endowments	Incremental change more likely than radical one  Importance of political appetite

Source: adapted from Huguenot-Noël et al. (2018)

Grillitsch and Asheim (2018)<sup>10</sup> take a somewhat different perspective, looking at processes within industry – and by industrial companies – that drive transition. Their analysis leads them to identify three broad forms of new industrial path development:

- Upgrading, of established regional industries, which can take several forms:
  - Climbing global production networks (GPN) refers to enhancing the position of the regional industry towards higher value-added activities through upgraded skills and production capabilities.
  - Industry renewal, which refers to a major change of the existing industry due to the introduction of new technologies, change

of business models, or organizational innovations.

- Niche positioning, where industries enhance growth by moving into higher value-added niches based on symbolic knowledge (i.e. aesthetic dimension of products, the development of images and designs, and economic use of cultural objects); for instance, the generation of value through design and branding of traditional products, which makes it possible for high-income regions to compete in low-tech industries (e.g. design furniture from Denmark).
- Diversification refers to firm-level processes whereby knowledge and resources from existing industries provide the base for diversification into new industries. Two forms of diversification are commonly distinguished:

- Related diversification, which can

<sup>10</sup> Grillitsch, M. and B. Asheim (2018), "Place-based innovation policy for industrial diversification in regions", *European Planning Studies*, Vol. 26/8, pp. 1638-1662. Retrieved at: <https://doi.org/10.1080/09654313.2018.1484892>

be possible because the underlying knowledge base of the existing and new industry are similar (so-called 'related variety'), enabling firms to diversify into new but technologically related products; for example, the maritime industry may apply competencies originally used to install oil platforms to the installation of offshore wind parks, thereby moving into the renewable energy sector.

- Unrelated diversification occurs when entrepreneurs from existing industries combine their knowledge with dissimilar knowledge from other industries or knowledge providers. One example is the creation of fashionable, functional foods based on the combination of knowledge from the food industry (synthetic knowledge), biotechnology (analytical knowledge), and design (symbolic knowledge). In general, Key Enabling

Technologies (KET) can be an important unrelated knowledge source for this type of diversification.

- Emergence: whereby new industries emerge in a region without having a link to existing industries. The most radical form of new path development is the creation of completely new industries. Sources for path creation are new technologies, scientific breakthroughs, or radical innovations based on new business models, user-driven or social innovations. From a regional perspective, it is also possible that an industry emerges that is new to the region but not new to the world, which is labelled as importation of an industrial path. Path importation rests on the inflow of actors and resources from outside the region.

Figure 3 Regional industry-based pathways to industrial transition

Upgrading	Diversification	Emergence
<p><b>Climbing Global Production Networks</b></p> <p>Major change of a regional industrial path related to enhancement of position within global production networks; moving up the value chain based on upgrading of skills and production capabilities</p>	<p><b>Related</b></p> <p>Diversification into a new related industry for the region, building on competencies and knowledge of existing industries</p>	<p><b>Importation</b></p> <p>Setting up of an established industry that is new to the region (e.g. through non-local firms) and unrelated to exiting industries in the region.</p>
<p><b>Renewal</b></p> <p>Major change of an industrial path into a new direction based on new technologies or organizational innovations, or new business models</p>	<p><b>Unrelated</b></p> <p>Diversification into a new industry based on unrelated knowledge combinations</p>	<p><b>New creation</b></p> <p>Emergence and growth of entirely new industries based on radically new technologies and scientific discoveries or as an outcome of search processes for new business models, user driven innovation and social innovation</p>
<p><b>Niche</b></p> <p>Development of niches through the integration of symbolic knowledge</p>		

Source: Grillitsch and Asheim (2018)

The preceding discussion points to a variety of potential pathways for industrial transition to take place at a regional level. There is not a 'correct' or 'best' pathway that can be prescribed for any individual region. However, recognition that there is no one-size-fits-all solution for industrial transition and the importance, therefore, of developing strategies that are cognisant of the specific situation, context, and resources of a region and its industrial base. In this context, the notion that regions should adopt some form of managed transition occupies an important place in the OECD (2019)<sup>11</sup> report on regions in industrial transition. At the same time, the OECD emphasises the need for broadly determined innovation-led regional development policies that are adapted to regional characteristics and aimed at breaking regional lock-in to pre-existing innovation and technology trajectories. While this may involve a radical shift in the regional innovation and technology base, it can also come about through more tailored diversification into new areas that build on existing knowledge and technology capabilities that can be transferred towards new industries and economic activities.

The following sub-sections explore three aspects of strategies relevant in the context of coal regions in transition: the obstacles and approaches to innovation-led transition; the leveraging of legacy assets and experience; and the development of knowledge and skills.

## Innovation-led transition strategies

The OECD (2019) notes that successful industrial transition depends on a region's ability to foster "high-road competitiveness", combining innovation-led growth with widespread diffusion of the benefits from growth both spatially and, more generally, across the population. At the same time, diffusing innovation through to low-performing firms requires enhancing the ability of firms to identify, absorb and build on technologies over the long term. Achieving innovation-led growth at a regional or local level requires policy interventions that take a strong place-based approach, building on each region's existing capabilities and legacies. However, as Cambell and Coenen (2017) note, old and low-performing industrial regions typically face important challenges to innovation-led growth, including:

- Organisational thinness, characterised by low

clustering and limited innovation capacity, whether in firms, knowledge organisations (e.g. universities and research institutes), public administrations, or other organisations that with innovation interests and capabilities. Even where regions have developed and specialised knowledge-generation and diffusion systems, it is usually oriented towards traditional industries and technology fields. Consequently, these regions may face significant difficulties in attracting sufficient investment to encourage innovation, or commercial research structures and firms that could contribute to industrial modernisation for diversification and/or the emergence of new industries.

- Fragmentation, characterised by insufficient inter-organisation networks, for example in terms of integration of chains of production, knowledge sharing, or political relationships. Because of the dominance of large firms – with a heavy orientation to established and mature industrial and technological specialisation – innovation and entrepreneurial activity in smaller firms tends to be low. Thus, although regions in industrial transition may contain firms operating at or close to the frontier of technology in their field, there may be significant problems in innovation diffusion and take-up in firms further away from the technological frontier. These latter firms may account for a large part of employment and output and are less resilient to shocks from international competition and technological change.
- Lock in, characterised by rigidity in inter-organisation networks; for example: legal and administrative frameworks (regulative institutions); working and social behaviour and customs (normative institutions); social attitudes, values, and worldviews (cognitive institutions); or in political networks (political institutions).

Traditional or old industrial regions (OIRs) are typically characterised by over-specialisation in mature industries, often with mono-industrial structures. This specialisation can create rigidities, not only in terms of inter-firm linkages but also in knowledge infrastructure and in wider social and political attitudes and relationships. Ultimately, a region's economic development can be 'locked in' to the very socioeconomic conditions that enabled its past success.<sup>12</sup> One result of this tendency to lock-in in OIRs is that incremental and process innovation is far more likely to occur than radical, product innovation.

11 OECD (2019). *Regions in Industrial Transition: Policies for People and Places*. OECD Publishing, Paris. Retrieved at: <https://doi.org/10.1787/c76ec2a1-en>.

12 Tödtling, F., & Trippl M. (2005). "One Size Fits All? Towards a Differentiated Regional Innovation Policy Approach". *Research Policy* 34(8):1203-1219

According to OECD (2019), for successful industrial modernisation, it is essential that innovation-led regional development policies focus not only on cutting-edge frontier innovation but also on adopting processes or technologies that already exist elsewhere. Such a broader innovation policy should not be limited to the supply of research and development (R&D) or direct innovation support, but also strive to support education and capital investment that match the need of local industries, increasing their absorptive capacity and innovative capability. Public policy can

stimulate the effective transfer of knowledge through labour mobility and collaborative networks, fostering knowledge circulation and interactive learning. Policies in this context can be platforms for knowledge diffusion and support better linkages between universities and industry.

Moreover, breaking out from an ingrained industrial path and achieving radical innovation requires more than a push towards a new technological trajectory to break function lock-in, but also new knowledge-sharing and governance approaches that break cognitive and political lock-in.<sup>13</sup> This may imply that support – such as subsidies – for R&D activities may be ineffective unless accompanied by measures to break predetermined attitudes and to inform firms of the challenges, trends and opportunities for their industry, so that they can identify benefits of, and articulated needs for innovation support to enable them to break-out of ingrained industrial pathways.

## Ruhr Valley (Germany)<sup>1</sup>

A well cited case of a coal region that successfully transformed and diversified – based on related variety – into a low carbon development path can be found in the German Ruhr region. In 1984 the State of North-Rhine Westphalia adopted a pro-active industrial policy and developed a programme aimed at “sunrise technologies” with a focus on environmental and renewable energy technology. The region was able to unlock a regional knowledge base ‘hidden’ within the coal and steel industry, and to turn this towards developing the Ruhr into one of the key centres for environmental industry, technology, and research in Germany.

The example of the Ruhr illustrates that innovation-led regional restructuring through diversification is not a quick fix. Diversification of regional industry takes many years, if not decades. However, as the Ruhr shows, regional policy can have significant role in facilitating and steering this process. Particularly, policy support is needed to broker between the different organisations of the regional innovation system such that it brings about a formation of innovation networks and encourages the emergence of an institutional culture of interaction, collaboration, and dialogue.

<sup>13</sup> Cambell and Coenen (2017) “Transitioning beyond coal: Lessons from the structural renewal of Europe’s old industrial regions”. CCEP Working Paper 1709. Crawford School of Public Policy, Australian National University. Retrieved from: [https://ccep.crawford.anu.edu.au/files/uploads/ccep\\_crawford\\_anu\\_edu\\_au/2017-11/campbell\\_coenen\\_transitioning\\_beyond\\_coal\\_-\\_lessons\\_from\\_the\\_structural\\_renewal\\_of\\_europes\\_old\\_industrial\\_regions\\_ccepwp\\_1709.pdf](https://ccep.crawford.anu.edu.au/files/uploads/ccep_crawford_anu_edu_au/2017-11/campbell_coenen_transitioning_beyond_coal_-_lessons_from_the_structural_renewal_of_europes_old_industrial_regions_ccepwp_1709.pdf)

## Örnsköldsvik (Sweden)

The case study of Örnsköldsvik illustrates the importance of policies to address regional lock. While the key innovation aspect of this case study is the development of the biorefinery concept, which allowed the diversification of the traditional forestry industry, one of the key findings is the important role of a policy approach that primarily acts as a broker to facilitate a dialogue between firms, knowledge organisations and public sector organisations to articulate needs for innovation, as well as possible solutions. Once priorities were established through this dialogues, public funds could be mobilised and allocated for far more targeted and bespoke innovation support.

See: Good practice No 1

<sup>1</sup> Campbell, S., & Coenen L. (2017) *op. cit.*

## Leveraging legacy assets for industrial transition

Every coal region will have different resources that provide the basis for regional branching and related diversification. However, the experience and analysis of coal mine closures in European old industrial regions suggests that there is scope to build on legacy physical, cultural and knowledge assets of to support diversification of the regional economy. For instance, there are many examples of regions that have leveraged assets related to coal mining activities for **tourism, recreation and cultural purposes**, whether through utilisation of the physical space available after a rehabilitation of former mining areas, or through repurposing of physical infrastructure (e.g. adventure sports and other outdoor activities, hosts of arts festivals and performances in former industrial infrastructure, or museums).<sup>14</sup>

<sup>14</sup> For an extensive list of case studies of investments in culture as part of urban and regional development strategies, see: Eurocities (2016). "Successful investments in culture in European cities and regions: a catalogue of case studies". Retrieved from: [http://nws.eurocities.eu/MediaShell/media/Catalogue\\_09112016-2.pdf](http://nws.eurocities.eu/MediaShell/media/Catalogue_09112016-2.pdf)

## Genk / Limburg region (Belgium)<sup>1</sup>

In Genk and the surrounding region, discussion of a new potential use of the region's coal heritage and infrastructure came sometime after former mining sites had been closed down; for example, the Waterschei coal mine stopped operating in 1987, but the site was not bought by the city in 2006. Nevertheless, protection of coal mining heritage and infrastructure became one of the main guiding philosophies of the current and ongoing phase of transition, taking advantage of opportunities already present in the local area. Former mining spaces and infrastructure have been transformed into modern workplaces, including a state-of-the-art technology park, a business park for SMEs and local entrepreneurs, and a creative hub and cultural centre.

See: Good practice No 3

<sup>1</sup> See, for example, Frier, M. (2020). "Genk's transformation honors its heritage". *Revolve* No 36. Retrieved from: <https://revolve.media/genks-transformation-honors-its-heritage/>

## Steirische Eisenstrasse (Austria)<sup>1</sup>

Steirische Eisenstrasse is a typical peripheral, heavy industry region in Austria that has suffered extensive job losses in the last decades. The region has integrated its industrial heritage already for a long time in its development plans; former industrial sites have been protected, preserved, and partly converted into museums and other utilisations. In recent years regional actors have also embarked on tapping on the intangible resource of its industrial past, setting out to change the region's image, trying to stop the outmigration of the younger, skilled workforce or to attract new people, as visitors or residents from the nearest metropolis Graz.

Amongst many initiatives, one of the landmark events is the 'Rostfest', an annually creative, urban arts festival in the mining town of Eisenerz ([www.rostfest.at](http://www.rostfest.at)). In general, the Rostfest plays with the industrial past and puts these traditions into new contexts – incorporating inhabitants, as well as outsider in the spirit of a place set deep into industrial culture. Another is the annual Erzberg-Rodeo motocross event ([www.redbullerzbergrodeo.com](http://www.redbullerzbergrodeo.com)) that takes place in an active open cast iron ore mining site, and which is now the biggest of its kind in Europe and led to the encouragement of adventure sports in the region.

<sup>1</sup> Sources: Campbell, S., & Coenen L. (2017) *op. cit.*; Harfst, J., Pizzera J., & Simic D. (2016). "Industrial heritage, cultural resources of current industries and creative pioneers – utilizing Industrial Culture in Central Europe" *Revija za geografijo*, 11-2/2016, University of Maribor: Maribor

An alternative – but often complementary – direction is the repurposing and redeployment of infrastructure related to coalmining and power generation to a different industrial context. A clearly relevant opportunity is the **renewable energy sector**; for example, through development of biomass and geothermal capabilities in former open-cut coal mines, or investments in (photovoltaic) solar farms<sup>15</sup>, while power transmission and generation infrastructure used by coal-fired power stations can be relatively easily substituted by renewable energy sources.

<sup>15</sup> See, for example: Bódis, K.; Kougias, I.; Taylor, N.; Jäger-Waldau, A. *Solar Photovoltaic Electricity Generation: A Lifeline for the European Coal Regions in Transition*. *Sustainability* 2019, 11, 3703. Retrieved from: <https://www.mdpi.com/2071-1050/11/13/3703>. For examples of solar energy projects see: for example: Watson, J. "Solar Energy Potential in Coal Regions: Opportunities and challenges". Retrieved from: [https://ec.europa.eu/energy/sites/ener/files/documents/8-3\\_solarpower\\_europe\\_-\\_james\\_watson.pdf](https://ec.europa.eu/energy/sites/ener/files/documents/8-3_solarpower_europe_-_james_watson.pdf);

## Northern Netherlands (Netherlands)

As the traditional energy producers of the Netherlands and the hosts of the biggest gas field in Europe, the provinces of Groningen, Friesland, Drenthe have developed their economies around the production of natural gas. In 2019, faced by persistent earthquakes resulting from natural gas extraction and the challenges posed by climate change, the Dutch government decided to largely stop natural gas extraction in the Northern provinces by 2022. The provinces of Groningen and Drenthe joined forces and, in collaboration with over 30 companies, drew up an investment agenda for the development of a hydrogen system in Northern Netherlands with the ultimate aim of turning the region into Europe's Hydrogen Valley. Building on existing energy expertise and pipeline infrastructure, the aim is to achieve emission-free hydrogen at a commercial scale by 2030, while creating up to 6,500 new jobs.

See: Good practice No 5

## Lusatia region (Germany)<sup>1</sup>

The Lusatia region in eastern Germany has similarly filled former open-cast mines with water to create a "lakeland". As part of an extensive regeneration programme with a budget of over €10 billion, since the 1970s, old and abandoned pits have been flooded with water, resulting in Lusatia becoming Europe's largest artificial lake district, featuring over twenty interconnected lakes, beaches, forests, cycle paths and water sports facilities. Plants and wildlife are also returning to the historical mining area, contributing to further reductions in carbon emissions. Moreover, former industrial infrastructures (e.g. a conveyor bridge, wastewater treatment plant, and viewing tower) have all been preserved as monuments of the region's industrial heritage, and tours of the still operational open-cut mines are offered.

See: Good practice No 2

<sup>1</sup> Source: Harfst, J. (2015). "Utilizing the Past: Valorizing Post-Mining Potential in Central Europe." *Extractive Industries and Society* 2(2):217–24.



## Humberside region (United Kingdom)

Due to declining coal imports and a declining fishing industry, the Humberside region suffered from under-utilised or derelict port infrastructure and related land. However, this infrastructure and land were successfully repurposed by exploiting an external opportunity, in this case energy transition (especially offshore wind) and attracting related private sector investment. Numerous inward investments (e.g. Siemens' wind turbine blade facility) were attracted by local and national government utilising their planning, regulatory and funding powers in a strategic fashion. The region is now a UK centre for green energy and industry.

See: Good practice No 4

## Örnsköldsvik (Sweden)

Having undergone several rounds of structural transition, the latest transition of the forestry industry in Örnsköldsvik region was driven by a decline in demand for printed and increased prices for biomass feedstock. Businesses were faced by a need to diversify their product portfolios, resulting in the development of the biorefinery concept, whereby forest biomass is not only used for paper and pulp but (after applying biorefinery technologies for conversion) also for the production of a low-carbon fuel, green chemicals, and substances for use in construction and pharmaceutical, food and textile industries. A targeted initiative ('Biorefinery of the future') was implemented, with the aim of transforming the region into a world-leading research and innovation hub for developing solutions based on biorefineries and cutting-edge technologies.

See: Good practice No 1

## Zasavje region (Slovenia)<sup>1</sup>

The Zasavje region, which contains several previous coal mining towns, has focused on cultivating an image as a local tourist area. This included establishing festivals that use former industrial buildings as performance venues; encouraging mountain biking, rafting and hiking through improved tourist routes, visitor information and the use of remediated sites (such as the Europark, Zagorje recreational area); and integrating new tourist avenues with existing industries, such as enhancing tourist offerings at local glass manufacturing sites.

<sup>1</sup> Sources: Harfst, J. (2015). "Utilizing the Past: Valorizing Post-Mining Potential in Central Europe." *Extractive Industries and Society* 2(2):217–24. See also: Local Action Group (LAG) Steirische Eisenstrasse ([www.steirische-eisenstrasse.at](http://www.steirische-eisenstrasse.at))

## Visonta (Hungary)

Together with a move towards greater use of renewable sources in energy generation – utilisation of biomass produced on a decommissioned mine sites and deployment of photovoltaic panels – the Matra power plant developed an industrial business park to attract companies, with the aim of establishing a green industry cluster at the site of the power plant. The longer-term perspective is to reduce use and dependence on lignite while securing cost-effective heat and power supply, and employment opportunities.

See: Good practice No 6

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## Loos-en-Gohelle (France)

With the decline of coal mining activities, the town of Loos-en-Gohelle has pursued a road to renewable energy through active involvement of citizens, aimed at achieving 100% of electricity from renewable energy sources by 2020 and to rely 100% on renewables by 2050. The city has pursued a 'Solar Plan', incorporating installation of photovoltaic panels on communal buildings, co-construction and citizens participation in the project implementation and financing, and creation of a local company bringing together public-private financing. In the last 10 years around 350 direct and indirect jobs have been created in the field of eco-activities and renewable energies. Loos-en-Gohelle is now considered a "pilot city for sustainable development" in France and a textbook case for how a city can free itself from fossil fuel dependency.

See: Good practice No 7

## Skills and employment aspects of industrial transition

Rapidly evolving technologies mean that labour markets in European regions and other developed countries will face major transformations in the coming years. Those regions that have experienced industrial decline or still base their current economic activity on traditional manufacturing or extractive industries are in a vulnerable position.<sup>16</sup> Although, the capacities and accumulated knowledge in existing industries of companies in these regions may offer strong potential to capture the benefits of the future of work, there may be significant constraints on the adoption and successful integration of new technologies and the development of new business models. On the one hand, regions in industrial transition often face a drastic decline in established job profiles due to the phasing out of traditional industries. On the other, they may be confronted with skills gaps in local labour markets when it comes to job profiles related to future technologies and new growth sectors. Preparing for the future of work in regions in industrial transition requires a policy strategy that combines skills and employment policies with those that stimulate investment in new sources of employment and productivity growth.

For coal mining regions, potential for diversification may well exist through the application of existing knowledge, skills, and competencies – including manufacturing and engineering capabilities – to related and emerging activities, such as in the renewable energy sector, where workers' knowledge in installation, service, and maintenance activities could be redeployed.<sup>17</sup> In fact, much has been made of the opportunities for new green job creation, and some of the skills (e.g. maintenance and engineering skills) that once served old industries (such as coal extraction) will remain relevant to emerging 'green' industries and activity (e.g. wind and solar power), as well as some existing industries. Thus, the generation (and retention) of skill and skilled employment is an important aspect of transition strategies and creation of decent jobs, whether defined as 'green' or otherwise.<sup>18</sup>

Attraction of an alternative industry or firms with comparable labour requirements may address shorter term negative employment consequences of transition, a longer-term objective must be to develop the endogenous capacity of regions to renew themselves. This implies not only seeking to redeploy a region's existing skill base to new sectors but also requires

building-up a new regional skills base, including the attraction of new skills from outside the region. This is likely to require a concerted effort to build up new skill bases via technical colleges and universities, and to attract new skills, which will be critical for sustaining a successful transition.<sup>19</sup>

### Scottish Transition Training Fund (United Kingdom)

Following the closure of oil and gas facilities in Scotland between 2014 and 2017 and an accompanying sudden increase in unemployment rates, the Scottish government established a Transition Training Fund. The Fund offered grants to oil and gas workers who were either unemployed or under the threat of unemployment and assisted them in accessing skills retraining. The training fund offered two possibilities to the vulnerable workforce: workers could either follow the "individual route" where advisors provided tailored guidance to individuals and support in applying for jobs in their field of interest. Alternatively, workers could follow the "procured route" where trainings were provided in sectors with evident skills shortages and available job opportunities (e.g. railway engineering, specialist welding, wind turbine engineering).

See: Good practice No 8

<sup>16</sup> OECD (2019) *op. cit.*

<sup>17</sup> Campbell, S., & Coenen L. (2017) *op. cit.*

<sup>18</sup> Stroud, D., Fairbrother, P., Evans, C. & Blake, J. (2014). "Skill development in the transition to a 'green economy': A 'varieties of capitalism' analysis". *The Economic and Labour Relations Review*, Vol. 25(1) 10–27.

<sup>19</sup> Tötting and Trippel (2005) *op. cit.*

## Midlands (Ireland)

After announcing the end of peat harvesting for power generation in the Midlands region of Ireland, a range of upskilling initiatives have been announced in support of the structural transition of the region. These initiatives aim to diversify the local economy and ensure that the local workforce has the necessary skills and competences to meet future skills demand. Among the initiatives, the 'Jobs, Skills and Education Fair, organised by a dedicated Regional Transition Team, focuses on the construction, engineering and manufacturing sectors, since almost 250 workers at risk of being made redundant have skills sets which are suitable to these sectors.

See: Good practice No 9

## Latrobe Valley (Australia)

Following the closure of one of the biggest coal-fired power plants in the state of Victoria, the Latrobe Valley Authority (LVA) established a dedicated one-on-one service, called the Worker Transition Service. The Service assisted for workers to identify available employment and training services, personal financial advice, and longer-term support for retirement and social support. In addition, the government created a range of targeted schemes aimed at creating new jobs for affected workers, including a worker transfer scheme and a back to work scheme, providing subsidies for business providing job places and retraining. Finally, the Supply Chain Transition Program assisted companies affected by the closure of Hazelwood power plant to create and implement a business transition plan.

See: Good practice No 10

**Skills and employment aspects of industrial transition are addressed in the EU Coal Regions in Transition Initiative's "Sustainable employment and welfare support toolkit"<sup>1</sup>, which provides insights on accompanying labour market transition, focusing on short-term support for workers affected by labour market transition and on medium- and longer-term actions supporting employment and job-creation through regional diversification.**

**The START briefing papers on "Employment creation opportunities and future skills requirements in the Karlovy Vary region" [forthcoming] also assesses local employment creation opportunities and accompanying support mechanisms for displaced and other workers in the Karlovy Vary region.**

<sup>1</sup> Available at: [https://ec.europa.eu/energy/topics/oil-gas-and-coal/EU-coal-regions/resources/sustainable-employment-and-welfare-support-toolkit\\_en](https://ec.europa.eu/energy/topics/oil-gas-and-coal/EU-coal-regions/resources/sustainable-employment-and-welfare-support-toolkit_en)

## Processes for regional transition strategy development

The purpose of this chapter is to outline some key aspects of processes for transition strategy development, covering *inter alia* strategy formulation, stakeholder engagement, action plan formulation, and strategy implementation. It draws on the findings from a range of good practice examples, which cover a variety of local and regional approaches, methods and tools for transition strategy development processes.

Industrial transition is a lengthy process that can take several decades to achieve. Strategies and processes for the phasing-out of coal activities and transition needs to accommodate measures to address short-, medium- and long-term aspects of transition. Ideally, a comprehensive strategy and action plan for transition should be prepared, approved and embraced by all stakeholder before the closure of mines and power plants, and in advance of commencing actions for re-skilling of employees and restoration of mining sites. Particularly in economically and socially vulnerable mono-structured industrial regions, the timing of strategy formulation, planning and implementation of actions for industrial transition and diversification is crucial to mitigate the negative consequence of decline and closure. Equally, strategies should accommodate a holistic view of transition, which recognises that not only ‘front line’ industries are affected, but also an extensive network of sectors along the supply or value chain.

## Preparatory activities for strategy development

Preparatory activities include problem definition, agenda setting, information collection and identification of strategic options. The examples of Asturias and Latrobe Valley both feature comprehensive cross-sector regional assessments of transition challenges, with the latter directed towards a transition strategy based on “smart specialisation” principles and practices. The case of Western Macedonia illustrates the application of a specific analytical tool (scenario modelling) for estimating and evaluating the potential impacts of transition under different future development options.

### Western Macedonia (Greece)

WWF Greece and partner institutions developed a “Roadmap for the Transition of the Western Macedonia Region to a post-lignite era”, which aimed to outline and evaluate the cost of a transition to a post-lignite era. Scenario modelling was used to estimate and partly quantify the future economic and employment impacts of (six) contrasting regional development options.

See: Good practice No 13

The EU Coal Regions in Transition Initiative’s “Transition strategies toolkit”<sup>1</sup> provides guidance on key elements of strategy development, from problem analysis, to defining objectives and selecting actions, to evaluation and eventually policy adaptation.

The EU Coal Regions in Transition Initiative’s “Governance of transitions toolkit”<sup>2</sup> provides insights on the design of governance structures and stakeholder engagement processes, including social dialogue and the role of civil society.

<sup>1</sup> Available at: [https://ec.europa.eu/energy/topics/oil-gas-and-coal/EU-coal-regions/resources/transition-strategies-toolkit\\_en](https://ec.europa.eu/energy/topics/oil-gas-and-coal/EU-coal-regions/resources/transition-strategies-toolkit_en)

<sup>2</sup> Available at: [https://ec.europa.eu/energy/topics/oil-gas-and-coal/EU-coal-regions/resources/governance-transitions-toolkit\\_en](https://ec.europa.eu/energy/topics/oil-gas-and-coal/EU-coal-regions/resources/governance-transitions-toolkit_en)

## Latrobe Valley (Australia)

Following the closure of one of the biggest coal-fired power plants in the state of Victoria, the Latrobe Valley Authority (LVA) developed an evidence-based innovation strategy for transition, which highlighted the region's strengths and applied "smart specialisation" principles and practices. Strategy development was undertaken by a team of 40 well networked local experts, supported by the University of Melbourne and the Royal Melbourne Institute of Technology. The strategy development process incorporated sectoral analysis, an engagement process to understand the region's strengths, future opportunities and potential, and a collaborative design process to develop a shared vision for the future. The Gippsland's Smart Specialisation Strategy aims to build collaboration and cooperation between industry, higher education institutions, local government, and the community, to collectively initiate new development. It also places emphasis on ensuring that skills development meets industry needs, thereby supporting inclusive growth, knowledge building, and expansion of future-oriented jobs in the region. The bottom-up approach, utilising locally driven and place-based partnership has helped engendered a sense of trust in the agency (LVA) among the local community, thereby facilitating a just transition to clean energies.

See: Good practice No 12

## Asturias (Spain)

Asturias has employed a cross-sectoral strategy formulation approach aimed at achieving a balanced and comprehensive energy transition strategy. In 2019, a 'Multi-stakeholder Committee' was tasked with delivering a comprehensive assessment of the implications of the coal phase out on the region. The Committee included actors from the region's most important sectors (energy, industry, agro-forestry, environment, building, transport, trade, tourism). After completing extensive consultations, the Committee developed an analytical report containing a SWOT analysis of each sector and identifying possible challenges arising from energy-transition. The Committee also provided cross-cutting recommendations and brought forward proposals for strategies on transition, innovation, and development in Asturias.

See: Good practice No 11



## Engaging stakeholder to achieve consensus on strategic goals and build support for transition actions

A shared vision of transition is commonly presented as a key contributing factor to successful transition. Moreover, the importance of cross-sectorial and intra-governmental collaboration is evident in almost all the reviewed good practices. Achieving this outcome requires engagement that brings about the participation of actors from both the public and private sectors, and communities and citizens. It also implies that there should be alignment across different governance levels, so that national, regional and local actors can agree on a shared assessment of transition challenges, objectives, and priority actions. On the one hand, this points to the importance of reaching consensus on, and trust in, the underlying assessment and analysis on the specific regional transition context. On the other, it requires a mechanism to bring diverse stakeholders together, which may require leverage existing partnerships and/or creation of a platform that act to catalyse transition actions. Different approaches to securing cross-sectoral engagement and participation are illustrated by the examples from Canada (Task Force on Just Transition), North Rhine-Westphalia (Future Agency Rhenish Region), Midlands Region (Midlands Regional Transition Team).

Alongside engaging a wide range of stakeholders in strategy development, current experience indicates that open, transparent and participatory approaches to processes for transition strategy formulation contribute to successful adoption and implementation across economic, social, and environmental dimensions. Informing and engaging affected community and decision-makers during the strategy formulation process engenders increased public approval and 'buy-in' for the strategy and reduce resistance to the changes to come. It will also ensure that stakeholders set realistic and region-specific goals and design effective measures for the region and its citizens. Although transition may have important adverse effects on employment and economic stability, resistance to change can be reduced through engaging citizens, informing them of the need for and implications of industrial transition, and creating opportunities for them to contribute to shaping the transition process. Illustrations of different engagement processes emphasising open and transparent approaches can be found in the examples from Upper Nitra, Ruhr Valley region, and Loos-en-Gohelle.

Another lesson is to recognise the importance of integrating both a top-down approach – typically led by national or regional governments – with a bottom-up approach that allows local communities, civil society

groups and citizens to be involved in shaping transition strategies and planning. Importantly, it helps to build awareness, acceptance, and engagement of local communities and citizens in transition processes. A two-pronged (or multi-actor) approach is illustrated by the examples of the Ruhr Valley, Genk, and the Irish Midlands.

## Multiple Regions (Canada)

The Task Force on Just Transition for Canadian Coal and Power Workers and Communities was established in 2018 to try to limit the negative effects of energy transition in Canada. The Task Force engaged with all stakeholders affected by the transition to determine future challenges and to establish draft recommendations for a just transition strategy. The Task Force visited 15 communities and hosted 8 public engagement sessions for the general public, together with study tours to coal mines and power plants. The group exchanged with the local communities and stakeholders in all coal regions (families, employers and business representatives, labour union representatives, provinces and local authorities, non-governmental organisations, and others). This resulted in a report documenting challenges, economic opportunities, and policy and financial gaps, together with 10 main recommendations for a just transition. The outcomes reflected the needs of the local communities and gave workers a feeling of recognition and of being heard.

See: Good practice No 14

## North Rhine- Westphalia (Germany)

In 2014, the regional change agency (Future Agency Rhenish Region) was set up to manage transition. The Agency has accompanied the region to undertake territorial analysis and vision development and through to project development and implementation, and has brought together the core stakeholders in the area. The agency follows a tripartite approach, bring together public administrations of affected municipalities, with business associations (e.g. chambers of commerce) and the trade union (IGBCE) for the key industrial sectors of mining, chemicals industry, and energy. Alongside support for projects from ideas to implementation, the Agency has carries out a variety of supporting activities (vision and strategy development, action plan formulation, studies on transition prospects of industry, organisation of an idea contest, and networking events).

See: Good practice No 15

## Midlands region (Ireland)

Faced with the need to transition away from fossil fuels, especially peat harvesting and power generation, the Irish government set up the Midlands Regional Transition Team (MRTT), bringing together local authorities and other key regional stakeholders, with the objective to pursue funding opportunities and actions to mitigate the impact of the job losses on individuals and local communities affected by the acceleration of the national decarbonisation programme, as well as support the region in developing alternative forms of employment, and attracting investment. With the launch of the national Just Transition Fund (JTF) in June 2020, a two-step approach to project identification and selection has been adopted. In the first step project promoters were required to register their project ideas with the MRTT and only subsequently, in a second step, make an application to the JTF. This approach ensured a more strategic and localised approach to project identification and helped the MRTT and the Irish Government to get a feel for the overall portfolio of potential local projects and the level of demand and interest in the JTF. Moreover, for projects that do not receive funding from the Irish JTF, it allows for the MRTT to provide guidance in order help refine project concepts, to build partnerships, and the prepare them for potential future alternative funding opportunities. Additionally, this two-step approach helped to raise awareness of transition challenges and opportunities, while stimulating local interest in the Irish JTF and motivating project applicants to prepare for the JTF call for proposals.

See: Good practice No 18

## Ruhr region (Germany)

Development of the International Architecture Exhibition Emscher Park (IBA Emscher Park) was a 10-year programme from 1989 and 1999 that supported innovative transformation and economic diversification in the Ruhr coal region. The programme was driven by diverse stakeholders from the public sphere, businesses, associations, civil society, and citizens, which were formed into bottom-up, horizontally based teams (“regional development coalitions”). In combination with top-down oversight and quality control, these teams were invited to propose projects to address key restructuring themes (e.g. landscape renovation, ecological regeneration, new work locations, new housing forms and urban district, and new uses for industrial buildings and industrial monuments). Over a ten-year period, this bottom-up approach resulted into the implementation of over 120 cooperative projects varying from the setting up of technology centres, to innovative and green renovation of apartments, and the restoration of industrial monuments for touristic purposes, alongside conversion of the most polluted river in Germany into a recreational area.

See: Good practice No 17

## Upper Nitra (Slovakia)

Development of Upper Nitra's a regional coal transition strategy (Transformation Action Plan, 2018) was developed through strong bottom-up stakeholder engagement across various governance levels, involving the local level. Initiated by local public administrations, citizens were invited to participate in the development of the strategy, with sixty persons - including local civil servants, entrepreneurs, heads of schools or social institutions, and representatives of NGOs - volunteering to participate. Multiple engagement meetings were held, with local stakeholders deliberating and agreeing on priorities and pillars (economy, mobility, and social infrastructure) of the region's transformation. Support was provided by the Technical University in Bratislava and through the European Commission's Structural Reform Support Service while, to increase awareness and encourage participation, Friends of the Earth-CEPA created a web platform for communication and sharing of information.

See: Good practice No 16

## Genk / Limburg region (Belgium)

In Genk, former coal mining spaces and infrastructure have been transformed into a variety of modern workplaces, including a state-of-the-art technology park, a business park for SMEs and local entrepreneurs, and a creative hub and cultural centre. Each mining site was designated a leading theme (e.g. clean technology, cultural and leisure space, energy related activities, etc.) and, to foster transformative innovation, the City followed a binary approach for transition that accommodated small-scale initiatives started by citizens and NGOs (bottom-up), alongside more traditional top-down approaches for larger investment. This approach, enabling both bottom-up and top-down involvement in transition has resulted in high acceptance of the regeneration process and wide support for the resulting outcomes.

See: Good practice No 3

**Haf, S. and Robison, R., 2020. "How Local Authorities can encourage citizen participation in energy transitions". London: UK Energy Research Centre , provides recommendations for strengthening local authorities approaches to ensuring that more citizens and local communities are engaged and benefit from energy transition. The report highlights numerous examples of 'good practice' of citizens engagement.**

## The leadership role of local and regional governments in transition

Local and regional governments, which are closest to affected communities, should be actively engaged and take a guiding role in development of transition strategies. Many of the good practice examples illustrate the leading role taken by local political leadership and local public administrations in initiating and steering processes for the preparation of regional transition strategies (e.g. Loos-en-Gohelle, Upper Nitra, and Dundee) illustrate cases where local authorities have taken a leading role in the preparation of local transition strategies, and where they have acted as an enabler for citizen engagement in the preparation of strategies and action plans.

For local and regional governments to take an effective leading role in transition they need to have access to the necessary capabilities. This relates to the knowledge and skills to develop, plan, and implement transition strategy formulation and coordination processes. It also may require endowing them with the requisite planning and regulatory powers to expedite the process of transition (see, for example the case of Humberside). Furthermore, industrial transition is costly and local governments may not be equipped to bridge the financial and economic voids left behind by the closure of mines and power plants. Financial support from regional, national, and supranational levels as well as private investors is needed to support the transition strategy. Funds are also required to provide temporary income support and retraining schemes for displaced workers, which provide the necessary base for new economic opportunities and re-skilling. Alongside other funding mechanisms, several specific (short-term) schemes to support industrial transition are illustrated in presented examples; for example the Oil & Gas Transition Training Fund for the re-skilling of workers in Scotland; the Just Transition Fund set up in the Irish Midlands; or the Worker Transfer Scheme set up for redundant mine workers in Latrobe Valley.

### Dundee (South Africa)

In the late 1990s, Dundee faced a major economic shock caused by the closure of most of the mines surrounding the town. Lacking an immediate response from the central government, various local stakeholders took the initiative, with the municipality of Dundee establishing a Local Economic Development (LED) Council in 1995. With the support of local interest groups and financial support from the Kwazulu-Natal Economic Council, the LED Council was commissioned to identify viable development options for Dundee. Suitable development projects were identified and selected through multiple meetings and workshops, to which the public were invited to participate. Project selection criteria revolved around employment opportunities, sustainability, economic empowerment, and economic self-sufficiency. This process was supported through a resource audit and through the appointment of an independent consulting firm to assist the assessment and validation of project ideas and options.

See: Good practice No 19

# Good practices examples

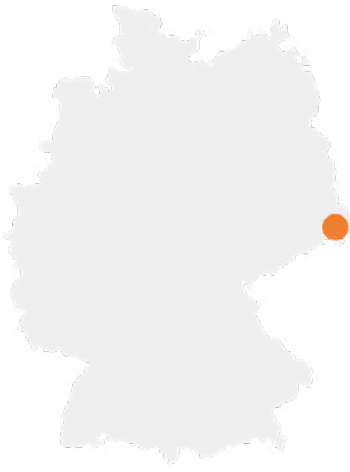
## Strategic transition pathways and themes

No 1	Örnsköldsvik (Sweden): Transition through regional innovation policy	
Country	Sweden	
(Sub)region	Örnsköldsvik (Västernorrlands län)	
Socio-economic indicators	Population (2015)	32.500
	Population density	982 inh./km <sup>2</sup>
	Size	33,09 km <sup>2</sup>
	Unemployment rate (2018)	n/a
	GDP per capita (2018)	n/a
Industry related indicators	Share of regional economy made up by forest industry	20-30%
	Share of regional production value made up by forest industry	50%
	People directly employed in forest industry	30%
Relevant actors	Commune of Örnsköldsvik, Swedish R&D Council, Umea University, Swedish Energy Agency, SMEs, Biorefineries, region of Västerbotten, region of Västernorrland	
Relevance of the example	<p><b>This example illustrated how regional innovation policy can contribute to successful ‘on the ground’ industrial transition towards a more diversified and technologically advanced economy.</b> Through innovation policy and a dedicated initiative, the Swedish region of Örnsköldsvik, the forest industry has diversified and has led to a more efficient and sustainable use of natural resources.</p>	
Problem/main challenges	<ul style="list-style-type: none"> <li>• Highly peripheral location suffering from de-population</li> <li>• Low regional employment, low gross added value of the local economy, and limited research and development expenditure</li> <li>• High vulnerability to job losses, due to overspecialisation in a declining forestry industry that represented about 25% of the regional economy and almost 30% of employment</li> </ul>	



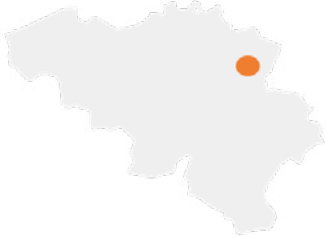


Good practice summary	<p>The Norther Swedish forest industry has undergone several rounds of structural transition. The latest transition in the Örnsköldsvik region was driven, on the one hand, by a gradual decrease in the demand for printed paper, the main output of the forest industry and, on the other, by increased prices for biomass feedstock which were pushed up as environmental and energy concerns increased demand. Consequently, businesses in in Örnsköldsvik region moved to diversify their product portfolios and achieve higher value in production. This resulted in the development of the biorefinery concept, whereby forest biomass is not only used for paper and pulp but (after applying biorefinery technologies for conversion) also for the production of a low-carbon fuel, green chemical and substance in construction and pharmaceutical, food and textile industries. However, to turn the concept into reality required large-scale investments into process technology and capacity building as well as research into the affected value-chains, stakeholders and network. It also needed support from the policy side, which was provided through the VINNVÄXT programme, specifically the BioF ('Biorefinery of the future') Initiative that targeted regions dominated by forest industry and provided a ten-year grant to the region of Örnsköldsvik. This initiative aimed to transform the region into a world-leading research and innovation hub for developing solutions based on biorefineries and cutting-edge technologies. The initiative enabled funding for approximately 100 projects, resulting in the development of ten new industrial processes and 30 new products and prototypes. In addition, interest in biorefinery technology grew sharply across a range of actors and led to new networks and cooperation beyond the Örnsköldsvik region.</p>
Lessons learned	<ul style="list-style-type: none"> <li>• Innovation policy (accompanied by dedicated initiatives) can give the necessary impetus for industrial transition and economic diversification and can spark ideas for alternative and more efficient extraction and use of natural resources and, hence, improved energy-efficiency and overall environmental performance</li> <li>• Policy support leads to a better understanding of key challenges among actors in the industry and to firms embracing the transition in a more collaborative way</li> </ul>
Further reading/References	<ul style="list-style-type: none"> <li>• Lars Coenen, Jerker Moodysson &amp; Hanna Martin (2015). Path Renewal in Old Industrial Regions: Possibilities and Limitations for Regional Innovation Policy, <i>Regional Studies</i>, 49:5. <a href="https://www.researchgate.net/publication/269317557_Path_Renewal_in_Old_Industrial_Regions_Possibilities_and_Limitations_for_Regional_Innovation_Policy">https://www.researchgate.net/publication/269317557_Path_Renewal_in_Old_Industrial_Regions_Possibilities_and_Limitations_for_Regional_Innovation_Policy</a></li> <li>• Vinnväxt (2016). A programme renewing and moving Sweden ahead. <a href="https://www.vinnova.se/globalassets/mikrosajter/vinnvaxt/dokument/vinnvaxt-a-programme-renewing.pdf">https://www.vinnova.se/globalassets/mikrosajter/vinnvaxt/dokument/vinnvaxt-a-programme-renewing.pdf</a></li> </ul>


No 2	Lausitz (Germany): Lusatian Lake district		
Country	Germany		
(Sub)region	Lausitz (Brandenburg and Saxony)		
Socio-economic indicators	Population (2015)	1.16 Mio	
	Population density	106 inh./km <sup>2</sup>	
	Size	11.682 km <sup>2</sup>	
	Unemployment rate (2019)	6%	
	GDP per capita (2018)	n/a	

Coal related indicators	National/regional coal phase out	2038	Relevant actors	<p><b>National level:</b> Federal Ministry for Economics and Energy, and other ministries; Commission for Growth, Structural Change and Employment</p> <p><b>Regional level:</b> Tourism association of Lusatian Lakes (Tourismusverband Lausitzer Seenland); Lausitz Energie Bergbau AG;</p>
	Status of transition	Developmental transition stage		
	Coal type	Lignite		
	Active sites	4 coal mines 3 coal-fired power plants		
	People directly employed in coal industry	8,000		
Relevance of the example	<p><b>This example illustrates the rehabilitation of former lignite mining areas for leisure and recreation activities.</b> Lignite mining activities in Lusatia left behind a geologically and environmentally heavily damaged landscape. Through extensive rehabilitation and reconversion, it has now become a lake district area that is popular for leisure activities.</p>			
Problem/main challenges	<ul style="list-style-type: none"> <li>• Open cast mining pits that were several hundred meters deep left behind massive physical scars on the landscape</li> <li>• Major destruction and remodelling of the pre-mining landscape, alongside contamination of groundwater and poor downstream water quality</li> <li>• Distorted and unattractive landscape with little potential for alternative use</li> </ul>			
Good practice summary	<p>While continuing to guard its international reputation as a digitalised and innovative industrial hub, through reclamation and rehabilitation activities Lusatia has also managed to become a tourism hotspot. As part of an extensive regeneration programme with a budget of over €10 billion, since the 1970s, old and abandoned pits have been flooded with water, resulting in Lusatia becoming Europe's largest artificial lake district, featuring over twenty interconnected lakes, beaches, forests, cycle paths and water sports facilities. Plants and wildlife are also returning to the historical mining area, contributing to further reductions in carbon emissions.</p> <p>The regeneration process included a multilevel and interdisciplinary planning process with participation of different public interest groups from the region (elected, nominated and volunteers, including labour unions, the public, local authorities, county commissioners, regional planning consortiums, etc.) Stakeholders in the area successfully found new uses for former mining sites and launched special land reclamation activities.</p>			
Lessons learned	<ul style="list-style-type: none"> <li>• Regeneration of even the most physically scared and environmentally damaged areas is possible through a strategic environmental rehabilitation programme</li> <li>• Old mining pits provided spaces that could be utilised for a variety of uses, such as leisure facilities, forest, agriculture, etc.</li> <li>• A multi-stakeholder planning process helped to generate public approval for regeneration activities.</li> </ul>			

Further reading/ References	<ul style="list-style-type: none"> <li>• (In German) Kommission “Wachstum, Strukturwandel und Beschäftigung“ (2019): Abschlussbericht. <a href="https://www.bmwi.de/Redaktion/DE/Downloads/A/abschlussbericht-kommission-wachstum-strukturwandel-und-beschaeftigung.pdf?__blob=publicationFile&amp;v=4">https://www.bmwi.de/Redaktion/DE/Downloads/A/abschlussbericht-kommission-wachstum-strukturwandel-und-beschaeftigung.pdf?__blob=publicationFile&amp;v=4</a></li> <li>• (In German) RWI (2018) Strukturdaten für die Kommission “Wachstum, Strukturwandel und Beschäftigung“ Endbericht. <a href="https://www.bmwi.de/Redaktion/DE/Publikationen/Studien/strukturdaten-der-kommission-wachstum-strukturwandel-und-beschaeftigung.pdf?__blob=publicationFile&amp;v=4">https://www.bmwi.de/Redaktion/DE/Publikationen/Studien/strukturdaten-der-kommission-wachstum-strukturwandel-und-beschaeftigung.pdf?__blob=publicationFile&amp;v=4</a></li> <li>• (In German) Lausitzer Seenland Website. <a href="https://www.lausitzerseenland.de/">https://www.lausitzerseenland.de/</a></li> <li>• H2020 TRACER project (2020). Report on the environmental impacts and sustainable reclamation solutions in nine coal regions. <a href="https://tracer-h2020.eu/wp-content/uploads/2020/03/Report_environmental_impacts_sustainable_reclamation_solutions.pdf">https://tracer-h2020.eu/wp-content/uploads/2020/03/Report_environmental_impacts_sustainable_reclamation_solutions.pdf</a></li> </ul>
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No 3		Genk (Belgium): Projects for economic diversification		
Country	Belgium			
(Sub)region	Genk, Limburg			
Socio-economic indicators	Population (2018)	66,000		
	Population density	751 inh./km <sup>2</sup>		
	Size	87.85 km <sup>2</sup>		
	Unemployment rate (2018)	11.3%		
	GDP per capita (2018)	Ca. €29,600 (Limburg)		
Coal related indicators	National/regional coal phase out	2016		Relevant actors  <b>Regional level:</b> Genk City Council, Government of Flanders, Province of Limburg, LRM Group (investment company), citizens, NGOs
	Status of transition	Mature transition stage		
	Coal type	Black Coal		
	Active sites	None (three former coal mines, one former coal power plant)		
	People directly employed in coal industry	none		
Relevance of the example	<p><b>This example illustrates a transition from coal mining to innovative manufacturing and a knowledge-based economy using repurposed legacy infrastructure.</b> In recent decades, the city of Genk has undergone a transition, first from mining to automotive manufacturing and, subsequently to innovative and the knowledge economy. Together with development of the surrounding region, it also highlights the creative redevelopment of industrial and mining infrastructure.</p>			

<p>Problem/main challenges</p>	<ul style="list-style-type: none"> <li>• Historically mono-industrial structure with strong focus on mining until late 1980s and subsequently on the automotive industry (i.e. Ford car plant)</li> <li>• Lack of consensus on the direction of transformation and when dealing with Genk's industrial heritage</li> <li>• Localised unemployment rates above the averages for Limburg region's and Belgium</li> </ul>
<p>Good practice summary</p>	<p>Genk has successfully diversified its industrial base, switched from mining and traditional industrial activities to be a location for innovative manufacturing and knowledge-based economy activities. Rather than dismantling abandoned and derelict coal mining facilities, the city of Genk made use of the region's coal heritage and infrastructure and transformed these spaces into modern workplaces. Today the area hosts three facilities:</p> <p>1) The Thor Park, situated in the former Waterschei coal mine, and now a hotspot for technology, clean energy, and innovation activities. Spanning 93-hectars, the state-of-the-art technology park hosts companies in the fields of research &amp; development, innovation, business, talent development and urbanisation.</p> <p>2) The mostly demolished Zwartberg mine has been converted into a business park hosting SMEs and local entrepreneurs, alongside a public garden, an art studio and a research park on biodiversity.</p> <p>3) The city of Genk hosts the so-called C-Mine, in the former Winterslag coal mine, which functions as a creative hub and cultural centre, with a focus on education, creative economy, recreation, and art.</p>
<p>Lessons learned</p>	<ul style="list-style-type: none"> <li>• Each coal mining site was designated a leading theme (e.g. clean technology, cultural and leisure space, energy related activities, etc.) that supported a broad diversification of the economy and avoided competition between the locations</li> <li>• To foster transformative innovation, the City followed a binary approach for transition with both small-scale initiatives started by citizens and NGOs (bottom-up) and more traditional top-down approaches for larger investment. This broad engagement has led to high acceptance of the regeneration process and the resulting outcomes.</li> </ul>
<p>Further reading/References</p>	<ul style="list-style-type: none"> <li>• Initiative for Coal Regions in Transition (2020). Case study: Genk's ongoing transition. <a href="https://ec.europa.eu/energy/sites/ener/files/documents/genks_ongoing_transition_-_platform_for_coal_regions_in_transition_.pdf">https://ec.europa.eu/energy/sites/ener/files/documents/genks_ongoing_transition_-_platform_for_coal_regions_in_transition_.pdf</a></li> </ul>

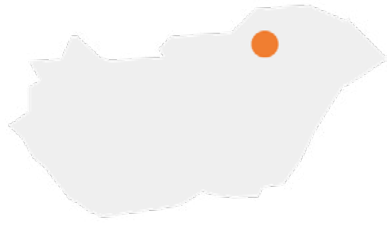
No 4		<b>Humberside (United Kingdom): Repurposing of legacy assets by harnessing the external stimulus of energy transition</b>		
Country	United Kingdom			
(Sub)region	Humberside			
Socio-economic indicators	Population (2011)	917,000		
	Population density	259 inh / km <sup>2</sup>		
	Size	3,588 km <sup>2</sup>		
	Unemployment rate (2018)	5.3%		
	GDP per capita (2017)	24,700 €		
Coal/ carbon related indicators	National/regional coal phase out	2024		<b>National level:</b> Department for Business, Energy and Industrial Strategy, Ministry of Housing, Communities and Local Government; UK Catapult innovation agency; The Treasury.  <b>Regional level:</b> Humber Local Enterprise Partnership; Associated British Ports; University of Hull; Green Port Hull; Hull and Humber Chamber of Commerce; Team Humber Marine Alliance  <b>Local level:</b> Hull City Council; North East Lincolnshire Council; East Lincolnshire Council; North Lincolnshire Council; East Riding of Yorkshire Council
	Status of transition	Mature transition stage		
	Coal type and imports	Hard coal		
		Over 16 million tonnes of imported coal via its ports in 2013, less than 4 million tonnes in 2017		
	Active sites	5 coal-fired power stations were operational either in the region or adjacent to the region five years ago (now only two are operational), and 2 oil refineries		
People directly employed in energy and carbon intensive related industries	10,000+		Relevant actors	
Relevance of the example	<p><b>This example illustrates how repurposing of infrastructure and land, combined with attraction of private investment, can transform a declining region by exploiting the opportunities of the transition to green energy.</b> The Humberside region is associated with the import and burning of coal and the utilisation of gas for power generation. Oil refining and carbon related industries are also located along the region's estuary (the region is branded the UK's "Energy Estuary"). The region was also associated with North Sea fishing. UK energy policy and the depletion of fish stocks caused a significant contraction in relation to both coal imports and fish landings, on which the region's ports were largely dependent. This led to much of the port infrastructure and related land becoming under-utilised or derelict. However, this infrastructure and land were successfully repurposed by exploiting an external opportunity, in this case energy transition (especially offshore wind) and attracting related private sector investment. Numerous inward investments (e.g. Siemens' wind turbine blade facility) were attracted by local and national government utilising their planning, regulatory and funding powers in a strategic fashion. The region is now a UK centre for green energy and industry.</p>			

Problem/main challenges	<ul style="list-style-type: none"> <li>• Numerous stranded assets and large brown field sites (productive assets had become liabilities)</li> <li>• High unemployment and social deprivation</li> <li>• Weak regional innovation system</li> </ul>
Good practice summary	<p>Local governments worked with the regional development agency and private sector to market the area's under-utilised and abandoned ports as investment locations for the UK's emergent offshore wind industry. By analysing the value and supply chains of the new industry, the public sector packaged and marketed these sites in accordance with the operational needs of the offshore wind industry (e.g. manufacturing, installation, and operations &amp; maintenance). The region differentiated itself from other regions on the east coast of England by making relatively small but significant investments in under-utilised port assets (e.g. upgrading lock facilities to make them suitable for offshore wind vessels), creating local public/private partnerships to offer a broad package of support to inward investors (including skills), and by local government using its planning and regeneration powers to expedite the planning applications and subsequent construction projects of investors. Many of the investors came to the area, not because of the grants or funding available, but because they were dealing with a public sector which understood their needs and put in place a package of measures that supported the rapid repurposing of old port and industrial infrastructure to meet their specific operational requirements.</p>
Lessons learned	<ul style="list-style-type: none"> <li>• Repurposing of abandoned industrial assets and brown field sites requires a joined-up, tailored and targeted approach by a region's public sector (in partnership with the local private sector and national government) that responds to the locational and infrastructural needs of the industries being targeted</li> <li>• The provision by the public sector of expedient, professional planning and regulatory solutions and support to investors can be as important, or even more important, than public funding</li> <li>• Targeted marketing and propositions to specific industries (in terms of land, labour, capital) is important and requires an in-depth knowledge of the structure, functions, and supply chains of the targeted industries.</li> </ul>
Further reading/ References	<ul style="list-style-type: none"> <li>• Carbon trust (2018). Study of the Humber Energy Intensive Industries Cluster. <a href="https://www.humberlep.org/wp-content/uploads/2019/08/Humber-EII-Cluster-Study-Final-Report.pdf">https://www.humberlep.org/wp-content/uploads/2019/08/Humber-EII-Cluster-Study-Final-Report.pdf</a></li> <li>• LSE (2019). Investing in a just transition in the UK: How investors can integrate social impact and place-based financing. <a href="https://www.lse.ac.uk/granthaminstitute/publication/investing-in-a-just-transition-in-the-uk/">https://www.lse.ac.uk/granthaminstitute/publication/investing-in-a-just-transition-in-the-uk/</a></li> <li>• Humber Local Enterprise Partnership (2018). Humber Clean Growth Local White Paper. <a href="https://www.humberlep.org/wp-content/uploads/2019/11/Humber-Clean-Growth-White-Paper.pdf">https://www.humberlep.org/wp-content/uploads/2019/11/Humber-Clean-Growth-White-Paper.pdf</a></li> </ul>

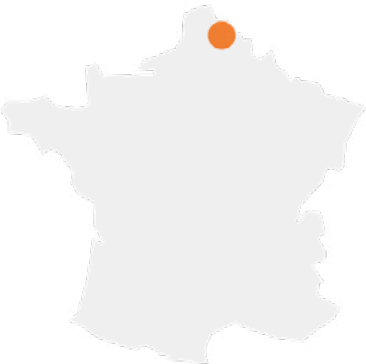


No 5		Northern Netherlands (Netherlands): From gas fields to hydrogen valley		
Country	Netherlands			
(Sub)region	Northern Netherlands (provinces of Groningen, Friesland and Drenthe)			
Socio-economic indicators	Population (2019)	1.72 million		
	Population density	194 inh / km <sup>2</sup>		
	Size	11,389 km <sup>2</sup>		
	Unemployment rate (2019)	3.9% (average of all three provinces)		
GDP per capita (2018 average of all three provinces)	19,963 € (average of all three provinces)			
Industry related indicators	Groningen gas field		Relevant actors  <b>National level:</b> Ministry of Economic Affairs and Climate  <b>Regional level:</b> Northern Netherlands Alliance (SNN), Northern Netherlands Innovation Board (NNI)  <b>Local level:</b> Cities Northern Alliance	
	Maximum permitted extraction (2019)	21.6 billion m <sup>3</sup>		
	Maximum permitted extraction (2020)	11.8 billion m <sup>3</sup>		
	Status of transition	Ongoing		
	Start of natural gas production	1963		
	Share of gas from the Groningen field supplied to various sectors (2019)	Urban heating (57.1%) Industry (29.6%) Agriculture (13.3%)		
	People employed in gas value chains across the country	21,055 people, of which 2,031 in upstream (exploration & production), 2,575 in midstream (storage, transport, trade) and 16,449 in downstream (energy services & end supply)		
Relevance of the example	<b>This example illustrates a successful cooperation between regional authorities and private companies in creating a long-term investment agenda to refocus an area associated with carbon-based energy production to one that is decarbonised.</b> The approach utilises and retains existing energy expertise and energy infrastructure. More generally, the example can serve as a reminder to coal regions that natural gas is only a transition fuel, rather than an end in itself.			
Problem/main challenges	<ul style="list-style-type: none"> <li>In 2019, the Dutch government announced a decision to largely stop the extraction of gas from the Groningen field, located in the region of the Northern Netherlands, by 2022</li> <li>The Groningen gas field is the biggest in Europe and has played a central role in the Dutch economy since the 1960s</li> <li>Gas extraction is associated with increased seismic activity (i.e. earthquakes) in the region</li> </ul>			


Good practice summary	<p>As the traditional energy producers of the Netherlands and the hosts of the biggest gas field in Europe, the provinces of Groningen, Friesland, Drenthe have developed their economies around the production of natural gas. The persistent earthquakes resulting from the natural gas extraction and the challenges posed by climate change were among the key reasons for the Dutch government to decide in 2019 to largely stop extracting natural gas in the Northern provinces by 2022. A considerable number of companies will have to switch to new business models and many employees will have to be retrained or look for another job.</p> <p>The provinces of Groningen and Drenthe joined forces and in collaboration with over 30 companies drew up an investment agenda for the development of a hydrogen system in Northern Netherlands. As part of the plan, companies and regional governments plan to invest EUR 2.8 billion in emission-free hydrogen over the next 11 years with the aim to have hydrogen production at a commercial scale by 2030. Plans include the development of an installation for the production of hydrogen that is expected to create up to 6,500 new jobs. Existing energy expertise and pipeline infrastructure is a key component in the vision for future hydrogen value chains. As a first priority, private companies have asked for public support from the federal and regional governments, as well as through EU-funded programmes, to fill a financing gap of EUR 100 million a year from between 2019 and 2024. The ultimate aim is to turn the Northern Netherlands into Europe's Hydrogen Valley.</p>
Lessons learned	<ul style="list-style-type: none"> <li>• Collaboration between regional authorities in affected regions and private companies is of key importance for the development of an actionable investment agenda</li> <li>• Cross-sectoral approach and support from public and private stakeholders are beneficial in drawing up transition plans</li> </ul>
Further reading/References	<ul style="list-style-type: none"> <li>• Joint Research Centre (2020). The socio-economic impacts of the closure of the Groningen gas field. <a href="https://ec.europa.eu/jrc/en/publication/socio-economic-impacts-closure-groningen-gas-field">https://ec.europa.eu/jrc/en/publication/socio-economic-impacts-closure-groningen-gas-field</a></li> <li>• TopDutch (2019). Hydrogen Investment Agenda. <a href="https://www.topdutch.com/downloads/hydrogen-investment-agenda">https://www.topdutch.com/downloads/hydrogen-investment-agenda</a></li> <li>• New Energy Coalition (2019). Hydrogen Valley. <a href="https://www.newenergycoalition.org/en/hydrogen-valley/">https://www.newenergycoalition.org/en/hydrogen-valley/</a></li> <li>• Northern Netherlands Innovation Board (2017). The Green Hydrogen Economy in the Northern Netherlands. <a href="https://www.ebnn-nieuw.nl/wp-content/uploads/2019/05/NIB-Hydrogen-Full_report.pdf">https://www.ebnn-nieuw.nl/wp-content/uploads/2019/05/NIB-Hydrogen-Full_report.pdf</a></li> <li>• (in Dutch) Drenthe Province (2020). Energy Transition Agenda 2020-2023. <a href="https://www.provincie.drenthe.nl/@135874/samen-doorpakken/">https://www.provincie.drenthe.nl/@135874/samen-doorpakken/</a></li> </ul>

<b>No 6</b>		<b>Visonta (Hungary): Renewable energy cluster</b>	
Country	Hungary		
(Sub)region	Visonta (Heves)		
Socio-economic indicators (Heves level)	Population (2018)	295,792	
	Population density	81 inh./km <sup>2</sup>	
	Size	3,637 km <sup>2</sup>	
	Unemployment rate (2018)	N/A	
	GDP per capita (2018, country level)	€13.521	

Coal related indicators	National/regional coal phase out	2030	Relevant actors	Matra power plant, Geosol Kft.
	Status of transition	Developmental transition stage		
	Coal type	Lignite		
	Active sites	2 mines 1 power plant		
	People directly employed in coal industry	2,287		
Relevance of the example	<p><b>This example illustrates how a (former) mining site can be developed into a centre for renewable energy</b>, thereby smoothing the transition away from coal by diversifying energy resources and retaining generating capacity, with the accompanying preservation of jobs in the region. This has been achieved by deploying renewable on former mining sites and developing infrastructure to support the emergence of a renewable energy industrial cluster.</p>			
Problem/main challenges	<ul style="list-style-type: none"> <li>• Rural and structurally weak region</li> <li>• Above national unemployment rate</li> <li>• Rising prices of EU ETS allowances make coal burning more unprofitable</li> </ul>			
Good practice summary	<p>As a first step towards the use of more renewable sources in power generation, the Matra Power Plant (PP) started utilising biomass in 2004. In parallel to diversifying its fuel sources, Matra PP created an industrial park targeted to attracting companies that could develop the site into a renewable energy cluster. The company also exploited the potential of decommissioned mine sites by using them for biomass production (i.e. a 16 ha energy forest) and the deployment of photovoltaic panels, with the installation of 16 MW photovoltaic capacity as part of the rehabilitation of an ash deposit heap within the former mining site. The project was financed by the Matra PP and supported through a national support scheme for renewables (feed-in tariff scheme and tax exemptions for PV). The project is set to have a highly positive impact on job creation in the region, as the PV plant is estimated to create 135-270 new workplaces. The industrial park is currently exploring new business opportunities to further diversify its portfolio, particularly with a long-term perspective of reducing lignite power production capacity.</p>			
Lessons learned	<ul style="list-style-type: none"> <li>• Industry clusters can be an important catalyst for a more 'just' transition that can retain some of the jobs in the coal industry</li> <li>• Former coal mines can be used strategically as future sights for the deployment of renewables</li> <li>• The use of renewable energy sources at old coal mining sites can smoothen the transition away from coal by maintaining the energy generation capacity and securing jobs</li> <li>• Biomass and solar offer solutions for low-cost mining area reclamation</li> </ul>			
Further reading/References	<ul style="list-style-type: none"> <li>• Initiative for Coal Regions in Transition (2019). Case Study. Transforming the lignite-fired Matra Power Plant into part of a renewable energy cluster. <a href="https://ec.europa.eu/energy/sites/ener/files/documents/transforming_the_lignite-fired_matra_power_-_platform_for_coal_regions_in_transition.pdf">https://ec.europa.eu/energy/sites/ener/files/documents/transforming_the_lignite-fired_matra_power_-_platform_for_coal_regions_in_transition.pdf</a></li> <li>• Initiative for Coal Regions in Transition (2018). Matra Power Plant: Possible pathways for low-carbon energy generation. <a href="https://ec.europa.eu/energy/sites/ener/files/documents/7-5_possible_pathways_for_low-carbon_energy_generation_hungary_zoltan_orosz.pdf">https://ec.europa.eu/energy/sites/ener/files/documents/7-5_possible_pathways_for_low-carbon_energy_generation_hungary_zoltan_orosz.pdf</a></li> </ul>			

<b>No 7</b>		<b>Loos-en-Gohelle (France): From coal mining to renewable energy autonomy</b>		
Country	France			
(Sub)region	Loos-en-Gohelle (Hauts-de-France)			
Socio-economic indicators (Hunedoara level)	Population (2017)	6750 <sup>1</sup>		
	Population density	532 inh./km <sup>2</sup>		
	Size	12.7 km <sup>2</sup>		
	Unemployment rate (2017)	15.4%		
	GDP per capita (2018)	€27.400		
Coal related indicators	National/regional coal phase out	2022		Relevant actors  <b>National level:</b> Agency for ecological transition  <b>Local level:</b> City of Loos-en-Gohelle and city mayor  <b>Others:</b> Associations and private companies, citizens
	Status of transition	Mature transition stage		
	Coal type	Hard coal		
	Active sites	none		
	People directly employed in coal industry	none		
Relevance of the example	<p><b>This example illustrates a successful transition from dependence on coal mining towards 100% community owned renewable energy supply and energy autonomy.</b> Loos-en-Gohelle is a town in the region of “Hauts de France” which, without neglecting its mining heritage, has transitioned from a coal mining dependant community towards renewable (mostly solar) energy. It is well on its way to achieving 100% community owned renewable energy supply and energy autonomy.</p>			
Problem/main challenges	<ul style="list-style-type: none"> <li>• Massive environmental damage left by coal mining activities</li> <li>• Deeply engrained identity with coal mining industry</li> <li>• Limited capacities to involving stakeholders in the transition process and to stimulate citizens into action</li> </ul>			

Good practice summary	<p>From the 1850s to the 1980s, the town of Loos-en-Gohelle was deeply affected by coal mining. As demand for coal for power generation has declined, successive mayors of the town have pursued a road to renewable energy through active involvement of citizens. Between 2014 and 2017, Loos-en-Gohelle carried out an energy planning study, which was co-financed by the Agency for Ecological Transition. Based on the outcomes of the study, the city launched a ‘Solar Plan’ with three main pillars:</p> <ul style="list-style-type: none"> <li>• Installation of photovoltaic panels on 8 communal buildings to produce and sell electricity</li> <li>• Co-construction and citizens participation in the project implementation and financing</li> <li>• Collective investment in the creation of a local company bringing together public-private financing.</li> </ul> <p>Initially, projects and initiatives were carried out “on an ad-hoc basis” but have subsequently coalesced into a coherent framework for transition. Alongside the ‘Solar Plan’, the mining site has become listed as a UNESCO World Heritage site with two buildings hosting a cultural and sustainable development centre. In 2015 it joined the network “100% Territoires à énergie positive” (100% Renewable Energy Sourced communities) aiming to have 100% of their electricity coming from renewable energy sources by 2020 and to rely 100% on renewables by 2050. In the last 10 years around 350 direct and indirect jobs have been created in the field of eco-activities and renewable energies. Furthermore, a group of committed citizens involved in the project has emerged and is continuously working to bring other citizens and partners on board (multiplier effect). Loos-en-Gohelle is now considered a “pilot city for sustainable development” in France and a textbook case for how a city can free itself from fossil fuel dependency.</p>
Lessons learned	<ul style="list-style-type: none"> <li>• Bottom up approaches and the active involvement of citizens in the energy transition leads to greater ownerships and responsibility among the local population</li> <li>• A mix of private and public project beneficiaries and collective funding sources supports a more diversified and sustainable strategy</li> </ul>
Further reading/References	<ul style="list-style-type: none"> <li>• Renewables Networking Platform (2019). Case study Loos en Gahelle. <a href="https://www.renewables-networking.eu/documents/CaseStudyLoos-en-Gohelle-FR.pdf">https://www.renewables-networking.eu/documents/CaseStudyLoos-en-Gohelle-FR.pdf</a></li> <li>• Positive Energy Territory , Interview with Mayor Jean-François Caron <a href="http://www.territoires-energie-positive.fr/bul/news/coal-to-renewable-loos-en-gohelle-join-the-100-renewable-energy-network">http://www.territoires-energie-positive.fr/bul/news/coal-to-renewable-loos-en-gohelle-join-the-100-renewable-energy-network</a></li> <li>• Positive Energy Territory, Loos-en-Gohelle: 20 years of sustainable development policy, heading towards transition!, <a href="http://www.territoires-energie-positive.fr/bul/news/coal-to-renewable-loos-en-gohelle-join-the-100-renewable-energy-network">http://www.territoires-energie-positive.fr/bul/news/coal-to-renewable-loos-en-gohelle-join-the-100-renewable-energy-network</a></li> </ul>

No 8		Scotland (United Kingdom): Oil & Gas Transition Training Fund		
Country	United Kingdom			
(Sub)region	Scotland			
Socio-economic indicators	Population (2019)	5,463,300		
	Population density	67.5 inh./km <sup>2</sup>		
	Size	77,933 km <sup>2</sup>		
	Unemployment rate (2019)	3.3 %		
	GDP per capita (2019)	€32.641		
Industry related indicators	Share of primary energy made up by oil and gas (2015)	90%		Relevant actors  <b>National level:</b> UK Department of Work and Pensions  <b>Regional level:</b> Scottish government, Skills Development Scotland (SDS, National skills agency), Oil and Gas Authority
	Share of Scottish GDP made up by oil and gas industry	5%		
	People directly and indirectly employed in oil and gas industry (2018)	100,000		
Relevance of the example	<p><b>This example illustrates the implementation of a training fund to successfully reskill workers to re-enter the workforce.</b> Following the closure of oil and gas facilities in Scotland between 2014 and 2017 and an accompanying sudden increase in unemployment rates, the Scottish government established a Transition Training Fund. The offered training scheme raised interest among most former oil and gas, the majority of whom were successfully re-skilled and subsequently able to find new employment.</p>			
Problem/main challenges	<ul style="list-style-type: none"> <li>• Lack of local experience of dealing with sudden increases and high rates of unemployment (150,000 jobs lost between 2014 and 2017) in regions that had previously benefitted substantially from the oil and gas industry</li> <li>• Lack of administrative capacities to deal with a sudden decrease in oil and gas wholesale prices, which led to the closure of facilities in the Scottish oil and gas sector</li> <li>• Unrealistic worker expectations regarding income levels in other sectors.</li> </ul>			

Good practice summary	<p>To re-skill the thousands of workers who had lost their job in the oil and gas sector, the Scottish Government formed the Oil &amp; Gas Task Force in 2015, which together with the national skills agency, Skills Development Scotland (SDS), set up a programme to re-employ the oil and gas sector's redundant workforce. To fund the programme, the Oil and Gas Transition Training Fund (TTF) worth £12 million (approximately €14 million) was established. The Fund offered grants to oil and gas workers who were either unemployed or under the threat of unemployment and assisted them in accessing skills retraining.</p> <p>The main objective of the programme was to re-employ at least a thousand redundant employees annually. The training fund offered two possibilities to the vulnerable workforce: workers could either follow the "individual route" where advisors provided tailored guidance to individuals and support in applying for jobs in their field of interest. Alternatively, workers could follow the "procured route" where trainings were provided in sectors with evident skills shortages and available job opportunities (e.g. railway engineering, specialist welding, wind turbine engineering). The programme was in high demand in the Scottish community, with over ten thousand applicants of which not all could receive support. Nevertheless, the programme has surpassed its goal and trained 4,200 people over the course of three years. This can be considered a great success, given that 89% of the participants found a job after completing the programme.</p>
Lessons learned	<ul style="list-style-type: none"> <li>• High investments needed to establish the Fund and the training scheme</li> <li>• Rapid action to smooth the economic shock prevented mass unemployment</li> <li>• Offering multiple routes for re-skilling increased the number of applications and levels of satisfaction with the training programme</li> <li>• Through support of the well-informed and experienced national skills agency, re-skilling was directed towards sectors which were identified in need of labour, resulting in higher rates of re-employment</li> </ul>
Further reading/References	<ul style="list-style-type: none"> <li>• Initiative for Coal Regions in Transition (2020). Case study: Oil &amp; Gas Transition Training Fund, Scotland. <a href="https://ec.europa.eu/energy/sites/ener/files/documents/oil_gas_transition_training_fund_scotland_-_platform_for_coal_regions_in_transition.pdf">https://ec.europa.eu/energy/sites/ener/files/documents/oil_gas_transition_training_fund_scotland_-_platform_for_coal_regions_in_transition.pdf</a></li> <li>• Scotland Transition Training Fund. <a href="https://transitiontrainingfund.co.uk/">https://transitiontrainingfund.co.uk/</a></li> <li>• Scottish Government: Oil and Gas policy (2020). <a href="https://www.gov.scot/policies/oil-and-gas/#:~:text=The%20oil%20and%20gas%20sector%20is%20vital%20to%20both%20the,5%25%20of%20total%20Scottish%20GDP.">https://www.gov.scot/policies/oil-and-gas/#:~:text=The%20oil%20and%20gas%20sector%20is%20vital%20to%20both%20the,5%25%20of%20total%20Scottish%20GDP.</a></li> </ul>


No 9	Midlands (Ireland): Re-skilling initiatives	
Country	Ireland	
(Sub)region	Midlands	
Socio-economic indicators	Population (2016) <sup>2</sup>	292,300
	Population density	46 inh./km <sup>2</sup>
	Size	6,524 km <sup>2</sup>
	Unemployment rate (2019)	4.5%
	GDP per capita (2017)	€23.002





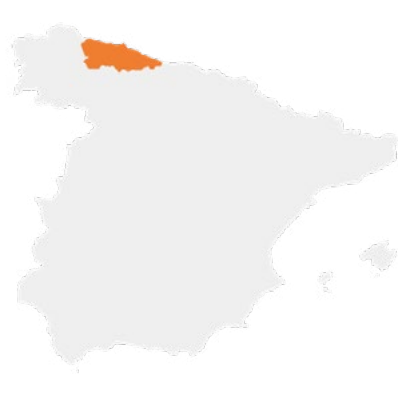
Industry related indicators	Share of peat in electricity generation	3.9%	Relevant actors	<p><b>National level:</b> Department of Communications, Climate Actions &amp; Environment, Department of Business, Enterprise and Innovation, Skills Planning and Enterprise Engagement (SPEE) Unit of the Department of Education and Skills</p> <p><b>Regional level:</b> Midlands Regional Transition Team, Offaly County Council, Office of the Midlands Regional Enterprise Plan</p>
	Status of transition	Developmental transition stage		
	Active sites	Peat harvest land (total of 77,000 ha) 3 peat-fired power plants		
	People directly employed in peat industry	1,050 in harvesting Approx. 120 in power plants		
Relevance of the example	<p><b>This example illustrates how a range of initiatives can be used to support reskilling and reemployment of displaced workers.</b> After announcing the end of peat harvesting for power generation in the Midlands region of Ireland, a range of upskilling initiatives have been announced in support of the structural transition of the region.</p>			
Problem/main challenges	<ul style="list-style-type: none"> <li>• Peat industry plays a considerable role in local employment</li> <li>• Over generations, the ready availability of employment opportunities in peat-related activities, has acted to reduce incentives for some workers to pursue re-skilling or up-skilling. Consequently, workers lack necessary skills for alternative employment opportunities.</li> <li>• Lack of public transport and subsequent overreliance on private transport</li> </ul>			
Good practice summary	<p>To support the transition away from industrial peat harvesting, a range of initiatives have been put in place that aim to diversify the local economy and ensure that the workforce has the necessary skills and competences to meet future skills demand. These include a Jobs, Skills and Education Fair, together with a variety of events organised across the region by the Department of Employment &amp; Social Affairs, the Regional Skills Forum, the Education and Training Boards, and Citizens Information Boards.</p> <p>The Jobs, Skills and Education Fair, organised by a dedicated Regional Transition Team, focuses on the construction, engineering and manufacturing sectors, since almost 250 workers at risk of being made redundant under the decarbonisation programme of Bord na Móna (the semi-state company that is the main harvester of peat) have skills sets which are most suitable to these sectors. The Fair incorporates an Idea Generation Bootcamp where successful entrepreneurs and businesses from the region are able to share their stories of how they developed their businesses in the Midlands region.</p> <p>Given the infrastructure challenge posed by the lack of public transport service in the rural areas of the region, plans are being developed to offer online distance learning up-skilling courses, or a mixture of distance and classroom learning, in a blended learning package.</p>			
Lessons learned	<ul style="list-style-type: none"> <li>• Active engagement through job fairs and other events has helped increase the awareness among affected communities of potential employment, re-skilling, and up-skilling opportunities</li> <li>• Offering online distance learning opportunities can be a way to overcome infrastructure challenges in rural regions, opening up training and employment services to a greater number of potential beneficiaries</li> </ul>			

Further reading/ References	<ul style="list-style-type: none"> <li>Government of Ireland (2019). Regional Enterprise Plan to 2020. Midlands. <a href="https://dbei.gov.ie/en/Publications/Publication-files/Midlands-Regional-Enterprise-Plan-to-2020.pdf">https://dbei.gov.ie/en/Publications/Publication-files/Midlands-Regional-Enterprise-Plan-to-2020.pdf</a></li> <li>Government of Ireland (2019). Climate Action Plan. <a href="https://www.dccae.gov.ie/en-ie/climate-action/publications/Documents/16/Climate_Action_Plan_2019.pdf">https://www.dccae.gov.ie/en-ie/climate-action/publications/Documents/16/Climate_Action_Plan_2019.pdf</a></li> <li>Midlands Regional Transition Team (2020). Future employment and skills in the Irish Midlands – Briefing paper. <a href="https://ec.europa.eu/energy/sites/ener/files/documents/future_employment_and_skills_in_the_irish_midlands.pdf">https://ec.europa.eu/energy/sites/ener/files/documents/future_employment_and_skills_in_the_irish_midlands.pdf</a></li> </ul>
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No 10		Latrobe Valley (Australia): Employment and training support service		
Country	Australia			
(Sub)region	Latrobe Valley			
Socio-economic indicators	Population (2018)	74,738		
	Population density	50.53 inh./km <sup>2</sup>		
	Size	1 479 km <sup>2</sup>		
	Unemployment rate (2018)	9.7 %		
	GDP per capita (2018)	AU\$ 76.631 (approx. €46.985)		
Coal related indicators	National/regional coal phase out	2032 – 2048 depending on the power plant		Relevant actors  <b>National level:</b> Department of Premier and Cabinet  <b>Regional level:</b> State Government of Victoria, Latrobe Valley Authority  <b>Others:</b> University of Melbourne, Royal Melbourne Institute of Technology
	Status of transition	Developmental transition stage		
	Coal type	Lignite		
	Active sites	2 coal mines		
		3 power plants		
People directly employed in coal industry	n/a			
Relevance of the example	<p><b>This example illustrates the successful implementation of an employment and training support service for former power plant employees.</b> After the closure of one of the biggest power plants of the country, the government established an intermediary agency called the Latrobe Valley Authority (LVA). The Authority established an employment and training support service for former employees of the plant, including contractors, as well as their families. Furthermore, several dedicated schemes have also been put in place aimed at replacing lost jobs and helping affected supply chain firms.</p>			
Problem/main challenges	<ul style="list-style-type: none"> <li>Unexpected closure of the Hazelwood power plant in 2017 leaving nearly 1000 workers unemployed</li> <li>High level of residual unemployment due to privatisation in 1994</li> </ul>			

Good practice summary	<p>To support workers from the Hazelwood power plant in their transition, the LVA has established a dedicated one-on-one service, called the Worker Transition Service. The Service offers:</p> <ul style="list-style-type: none"> <li>• Assistance for workers to identify available employment and training services, involving key service providers helping workers to determine their training needs and advising how to access training to suit their employment and career aspirations. Services include CV preparation, interview preparation and career advice</li> <li>• Financial advice to workers concerning their personal situation and advice and assistance for establishing a small business</li> <li>• Long-term engagement, which included support for taking early retirement, as well as providing access to mental health services for workers and their families</li> </ul> <p>In addition to the Worker in Transition Service, the government created a range of targeted schemes aimed at creating new jobs for affected workers. The Worker Transfer Scheme was set to facilitate the re-employment of 150 former workers from the Hazelwood power plant into job vacancies created by early retirement of workers at other power generators in Latrobe Valley region. The Back to Work Scheme provides up to AU\$ 9,000 (approx. €5,550) per worker to businesses that employ and train unemployed persons who live in the Latrobe Valley; by November 2019, the scheme had created more than 1 000 full time and over 200 part time roles. Finally, the Supply Chain Transition Program assisted companies affected by the closure of Hazelwood power plant to create and implement a business transition plan. The Program facilitated the completion of 57 plans. During the period November 2016 – November 2019, 52 companies were still executing their plan and 34 companies had fully completed their plan.</p>
Lessons learned	<ul style="list-style-type: none"> <li>• Plan early for closures. The unexpected closure of the Hazelwood power plant in 2017 did not leave time for the formulation of a transition plan and forced the government to intervene at the last-minute to help affected workers and communities</li> <li>• A dedicated one-to-one support service for affected workers and their families can make the transition more ‘just’</li> <li>• Programmes should target not only former workers, but also workers in companies with the supply chain, as well as those businesses with potential to re-employ workers who have lost their jobs</li> </ul>
Further reading/References	<ul style="list-style-type: none"> <li>• Initiative for Coal Regions in Transition (2019). Case study: Latrobe Valley Authority, Australia. <a href="https://ec.europa.eu/energy/sites/ener/files/documents/latrobe_valley_authority_australia-case_study.pdf">https://ec.europa.eu/energy/sites/ener/files/documents/latrobe_valley_authority_australia-case_study.pdf</a></li> <li>• Worker Transition Service: <a href="https://lva.vic.gov.au/workers/worker-support-services">https://lva.vic.gov.au/workers/worker-support-services</a></li> <li>• Latrobe Valley Community Report (2019): <a href="https://lva.vic.gov.au/news/community-report-released-today/12770-DJPR-RRV-LVA-community-report_v7a-web-ready.pdf">https://lva.vic.gov.au/news/community-report-released-today/12770-DJPR-RRV-LVA-community-report_v7a-web-ready.pdf</a></li> <li>• Harrahill, K. &amp; Douglas, O. (2019). Framework development for ‘just transition’ in coal producing jurisdictions. Energy Policy Journal Vol. 134. <a href="https://www.sciencedirect.com/science/article/abs/pii/S0301421519305774?via%3Dihub">https://www.sciencedirect.com/science/article/abs/pii/S0301421519305774?via%3Dihub</a></li> </ul>

## Strategy development processes and instruments


No 11		Asturias (Spain): Comprehensive sectoral assessment		
Country	Spain			
(Sub)region	Asturias			
Socio-economic indicators	Population (2018)	1,03 Mio.		
	Population density	96,6 inh./km2		
	Size	10,600 km2		
	Unemployment rate (2018)	13.6%		
	GDP per capita (2018)	€23,134		
Coal related indicators	National/regional coal phase out	2030		Relevant actors <b>National level:</b> Ecological Ministry of Spain; National Institute for Diversification and Energy Improvement; Institute for Just Transition  <b>Regional level:</b> Regional minister and Vice-minister, Asturian Energy Agency (FAEN); Multi-stakeholder Committee for the impact of Energy Transition in Asturias representing regional administration, employers, trade unions, and research centres
	Status of transition	Ongoing transition		
	Coal type	Hard coal		
	Active sites	1 coal mine 5 coal-fired power plants		
	People directly employed in coal industry	2,038		
Relevance of the example	<p><b>This example illustrates the use of a cross-sectoral strategy formulation approach aimed at achieving a balanced and comprehensive energy transition.</b> It highlights the use of a coordinated approach among stakeholders from different sectors, enabling a holistic assessment of transition challenges and opportunities, to achieve a comprehensive and just transition.</p>			
Problem/main challenges	<ul style="list-style-type: none"> <li>• The large weight of the energy sector in the economy of Asturias</li> <li>• The heavy reliance on coal for energy supply (nearly half of primary energy production)</li> <li>• The impact of coal phase out on the regional energy balance, shifting Asturias a regional net exporter to a net importer of electricity</li> <li>• The major socio-economic impacts in the region arising from energy transition</li> <li>• The potentially severe impacts of energy transition on other related industrial supply chain and service activities</li> </ul>			
Good practice summary	<p>In 2019, a Multi-stakeholder Committee was set up to deliver a comprehensive assessment of the implications of the coal phase out on the region of Asturias, The Committee included actors from the region's most important sectors: energy, industry, agro-forestry, environment, building, transport, trade, tourism. After numerous consultations (five sector roundtables and over 30 meetings), the Committee jointly developed an analytical report containing a SWOT analysis of each sector, which identified possible challenges arising from to energy-transition. The Committee also provided cross-cutting recommendations and brought forward proposals for strategies on transition, innovation, and development in Asturias.</p>			

Lessons learned	<ul style="list-style-type: none"> <li>• A cross-sectoral approach enables the development of a comprehensive assessment of energy transition</li> <li>• A coordinated approach to decision-making and actions, supported by all regional actors, ensures that ideas and plans are communicated towards higher levels (Spain and EU) in a coherent and collective fashion.</li> <li>• An inclusive and cross-sectoral approach improves understanding of issues and opportunities (such as financing of energy transition or the planning of investments with national and EU resources) and increases the likelihood of finding solutions to transition challenges</li> </ul>
Further reading/ References	<ul style="list-style-type: none"> <li>• Energy Roundtable &amp; Possible Scenarios (2020). The Joint Commission for the Analysis of the Impact of the Energy Transition in Asturias</li> <li>• Initiative for Coal Regions in Transition (2020). Regional Profile of Asturias. <a href="https://ec.europa.eu/energy/sites/ener/files/documents/asturias_regional_profile_-_start_technical_assistance.pdf">https://ec.europa.eu/energy/sites/ener/files/documents/asturias_regional_profile_-_start_technical_assistance.pdf</a></li> </ul>

No 12		Latrobe Valley (Australia): Gippsland's Smart Specialisation Strategy		
Country	Australia			
(Sub)region	Latrobe Valley			
Socio-economic indicators	Population (2017)	74,738		
	Population density	50.53 inh./km <sup>2</sup>		
	Size	1,479 km <sup>2</sup>		
	Unemployment rate (2016)	9.7 %		
	GDP per capita (2017) – Municipality of Latrobe	AU\$ 76.631 (approx. €46.985)		
Coal related indicators	National/regional coal phase out	None. However, the three mines located in the Latrobe Valley have a planned date for cessation of mining <sup>3</sup>		Relevant actors  <b>National level:</b> Department of Premier and Cabinet  <b>Regional level:</b> State Government of Victoria, Latrobe Valley Authority, University of Melbourne, Royal Melbourne Institute of Technology
	Status of transition	Developmental transition stage		
	Coal type	Lignite		
	Active sites	2 coal mines		
	People directly employed in coal industry	n/a		


Relevance of the example	<p><b>This example illustrates how “smart specialisation” principles and practices can be applied to strategy formulation.</b> In 2017, following the closure of one of the biggest coal-fired power plants in the state of Victoria, the Australian government established an intermediary agency called the Latrobe Valley Authority (LVA). The LVA developed an evidence-based innovation strategy for transition, which highlighted the region’s strengths and applied “smart specialisation” principles and practices.</p>
Problem/main challenges	<ul style="list-style-type: none"> <li>• The unexpected closure of the Hazelwood power plant</li> <li>• The need to revitalise and reorientate the region’s economy</li> <li>• Overcoming the region’s adverse economic reputation</li> </ul>
Good practice summary	<p>The aim of the Gippsland’s Smart Specialisation Strategy was to build collaboration and cooperation between industry, higher education institutions, local government, and the community, to collectively initiate new development. The Strategy put emphasis on ensuring that skill development met industry needs, thereby supporting inclusive growth, knowledge building, and expansion of future-oriented jobs in the region. Strategy development was undertaken by a team of 40 local experts with experience in the public sector and strong connection to local networks in the region, with additional support from University of Melbourne and the Royal Melbourne Institute of Technology to facilitate implementation. This approach engendered a sense of trust in the agency (LVA) among the local community, thereby facilitating a just transition to clean energies. The strategy was designed following 5 key steps:</p> <ol style="list-style-type: none"> <li>1. Analysis of how the sectors in Gippsland currently function</li> <li>2. An engagement process to better understand the region’s strengths, and future opportunities and potential</li> <li>3. A collaborative design process to develop a shared vision for the future (the Smart Specialisation Strategy)</li> <li>4. Prioritising projects and activities to begin implementing the strategy</li> <li>5. Monitoring and evaluation of programs</li> </ol> <p>Flexible funding mechanisms applied in the process gave the LVA autonomy and allowed a more efficient allocation of government funds. Furthermore, the process was accompanied by a set of indicators to measure the systemic change in the community. Together with targets set for the region by the state government, the indicators act as a framework for the strategy’s monitoring and evaluation.</p>
Lessons learned	<ul style="list-style-type: none"> <li>• Bottom-up approach, with locally-driven and place-based partnership</li> <li>• Engagement of a variety of local experts facilitates connection with local communities</li> <li>• Flexible funding opportunities lead to a more efficient use of financial governmental support</li> </ul>

Further reading/ References	<ul style="list-style-type: none"> <li>Latrobe Valley Authority, Australia (2019). Case study. <a href="https://ec.europa.eu/energy/sites/ener/files/documents/latrobe_valley_authority_australia-case_study.pdf">https://ec.europa.eu/energy/sites/ener/files/documents/latrobe_valley_authority_australia-case_study.pdf</a></li> <li>Latrobe Valley Authority, Australia (n.d.). Gippsland's Smart Specialisation Strategy. <a href="https://lva.vic.gov.au/business/gippslands-smart-specialisation-strategy">https://lva.vic.gov.au/business/gippslands-smart-specialisation-strategy</a></li> <li>Ward, C. Shortis, E. Goedegeburre, L. &amp; Wilson, B. (2020). Working hard to get energy-transition policy right: learning from Gippsland's Latrobe Valley efforts. The Mandarin. <a href="https://www.themandarin.com.au/135810-working-hard-to-get-energy-transition-policy-right-learning-from-gippslands-latrobe-valleys-efforts/">https://www.themandarin.com.au/135810-working-hard-to-get-energy-transition-policy-right-learning-from-gippslands-latrobe-valleys-efforts/</a></li> <li>Mine Land Rehabilitation Authority (2020). Factsheets: <a href="https://www.mineland.vic.gov.au/news/publications/">https://www.mineland.vic.gov.au/news/publications/</a></li> </ul>
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No 13		Western Macedonia (Greece): Scenario techniques		
Country	Greece			
(Sub)region	Western Macedonia			
Socio-economic indicators	Population (2018)	269,222		
	Population density	29.1 inh./km <sup>2</sup>		
	Size	9,451 km <sup>2</sup>		
	Unemployment rate (2018)	24.6 %		
	GDP per capita (2018)	€ 14,800		
Coal related indicators	National/regional coal phase out	2028		Relevant actors  <b>National level:</b> Ministry of Environment and Energy, Centre of Research and Technology Hellas, Technical Chamber of Greece, Panteion University of Athens, Institute of Urban Environment and Human Resources, WWF Greece  <b>Regional level:</b> Regional Operational Program of Western Macedonia Management Unit, Regional Development Agency of Western Macedonia, Regional Union of Municipalities in Western Macedonia, University of Western Macedonia  <b>Local level:</b> cities of Kozani, Eordaia, Amyntaio, Florina
	Status of transition	Developmental transition stage		
	Coal type	Lignite		
	Active sites	4 lignite fired power plants		
		People directly employed in coal industry	22,500 of direct, indirect or inductive jobs	
Relevance of the example	<b>This example illustrates the use of scenario modelling to support the strategy formulation process and the identification of development options and objectives.</b> Scenario modelling was used to estimate and partly quantify future economic (and employment impacts) of various regional development options.			




Problem/main challenges	<ul style="list-style-type: none"> <li>• Reliance on lignite production and use since the 1960s, which shaped economic development of the region and a one-dimensional labour force</li> <li>• High unemployment rate (one of the highest at EU level among young people)</li> <li>• High levels of energy poverty</li> </ul>
Good practice summary	In 2016, WWF Greece and partner institutions developed the “Roadmap for the Transition of the Western Macedonia Region to a post-lignite era”. The objective of the report is to outline and evaluate the cost of a transition to a post-lignite era. It is based on a historical overview of the role of lignite in the region and an outline the region’s current economic development profile. Guidance documents are included as well as activities which can be developed. Furthermore, six scenarios of economic development were elaborated and modelled: inaction scenario, two scenarios considering the construction of a new coal power plant of the same unsustainable nature, and three scenarios assuming a mild, medium and strong development of the region’s primary, secondary and tertiary economic sectors not involving lignite mining. These are presented individually and are then comparatively assessed.
Lessons learned	<ul style="list-style-type: none"> <li>• Scenario modelling techniques can be a useful tool to examine and evaluate alternative regional development/transition options</li> <li>• Use of such scenario tools requires support/partnership with specialist experts (e.g. research institutes) as the necessary knowledge is not typically available to local public administrations</li> </ul>
Further reading/ References	<ul style="list-style-type: none"> <li>• A. Rovolis and P. Kalimeris (2016). Roadmap for the Transition of the Western Macedonia Region to a post-lignite era. <a href="https://regionsbeyondcoal.eu/wp-content/uploads/2019/02/Roadmap_PostLignite_EN_FINAL-1.pdf">https://regionsbeyondcoal.eu/wp-content/uploads/2019/02/Roadmap_PostLignite_EN_FINAL-1.pdf</a></li> <li>• Initiative for Coal Regions in Transition (2020). Transition strategies toolkit. <a href="https://ec.europa.eu/energy/sites/ener/files/documents/transition_strategies_toolkit_-_platform_for_coal_regions_in_transition.pdf">https://ec.europa.eu/energy/sites/ener/files/documents/transition_strategies_toolkit_-_platform_for_coal_regions_in_transition.pdf</a></li> <li>• Coal Regions in Transition Platform Working Group Meetings and High-Level Dialogue on Financing and Investments (2018). Regional Strategy towards to the transition process of Western Macedonia <a href="https://ec.europa.eu/energy/sites/ener/files/documents/1_strategies_2_el.pdf">https://ec.europa.eu/energy/sites/ener/files/documents/1_strategies_2_el.pdf</a></li> </ul>

<b>No 14</b>		<b>Canada: Task Force on Just Transition</b>	
Country	Canada		
(Sub)regions	Alberta, Nova Scotia, New Brunswick, Saskatchewan		
Socio-economic indicators (for Canada)	Population (2019)	37.5 million	
	Population density	4 inh./km <sup>2</sup>	
	Size	9,093,510 km <sup>2</sup>	
	Unemployment rate (2019)	5.67%	
	GDP per capita (2018)	€38,800	


Coal related indicators	National/regional coal phase out	2030	Relevant actors	<p><b>National level:</b> Canadian Ministry of Environment and Climate Change, Coal Association of Canada,</p> <p><b>Regional level:</b> Provinces of Alberta, Nova Scotia, New Brunswick, Saskatchewan; <b>Local level:</b> local authorities worker representatives, experts</p>
	Status of transition	Developmental transition stage		
	Coal type	Hard coal and lignite		
	Active sites	19 coal mines 14 coal-fired power plants		
	People directly employed in coal industry	3,900 (excl. those who work on coal extraction for export and metallurgical industries)		
Relevance of the example	<p><b>This example illustrates the use of effective stakeholder engagement to identify challenges and propose recommendations for a transition strategy.</b> The Task Force on Just Transition for Canadian Coal and Power Workers and Communities was established in 2018 to try to limit the negative effects of energy transition in Canada. The Task Force engaged with all stakeholders affected by the transition to determine future challenges and to establish draft recommendations for a just transition strategy.</p>			
Problem/main challenges	<ul style="list-style-type: none"> <li>Nearly 50 communities depending on coal mining or coal-based generating stations</li> <li>High levels of coal exports</li> <li>Limited funding available to implement a Just Transition strategy up to and beyond 2030, with a need for greater political support</li> <li>Negative demographic developments combined with difficulties in retraining and reemployment programmes</li> </ul>			
Good practice summary	<p>The Task Force on Just Transition was established by the national government in 2018. During nine months of intense work, the Task Force visited 15 communities and hosted 8 public engagement sessions for the general public, together with study tours to coal mines and power plants. The group exchanged with the local communities and stakeholders in all coal regions (families, employers and business representatives, labour union representatives, provinces and local authorities, non-governmental organisations, and others). This resulted in a report documenting challenges, economic opportunities, and policy and financial gaps, together with 10 main recommendations for a just transition. The outcomes reflected the needs of the local communities and gave workers a feeling of recognition and of being heard. The Task Force's recommendations regarding additional investments were directly implemented through the establishment of local transition centres.</p>			
Lessons learned	<ul style="list-style-type: none"> <li>The comprehensive engagement process, including with regional authorities, increased the legitimacy within Canadian society of the national Task Force's analysis and recommendations</li> <li>Establishing the Task Force demonstrated the national government's serious commitment to supporting communities dealing with coal phase-out but, also, set expectations that the commitment to support a just transition for Canadian coal power workers and communities would be fulfilled</li> </ul>			

Further reading/ References	<ul style="list-style-type: none"> <li>Initiative for Coal Regions in Transition (2019). Case study: Task force on Just Transition for Canadian Coal Power Workers and Communities. <a href="https://ec.europa.eu/energy/sites/ener/files/documents/task_force_on_just_transition_for_canadian_coal_power_workers_and_communities_-_platform_for_coal_regions_in_transition.pdf">https://ec.europa.eu/energy/sites/ener/files/documents/task_force_on_just_transition_for_canadian_coal_power_workers_and_communities_-_platform_for_coal_regions_in_transition.pdf</a></li> <li>Coal Association of Canada Homepage: <a href="https://www.coal.ca/coal-resources/about-the-coal-industry/">https://www.coal.ca/coal-resources/about-the-coal-industry/</a></li> <li>Task Force on Just Transition for Canadian Coal and Power Workers and Communities (2018). Final report. <a href="https://www.canada.ca/en/environment-climate-change/services/climate-change/task-force-just-transition/final-report.html">https://www.canada.ca/en/environment-climate-change/services/climate-change/task-force-just-transition/final-report.html</a></li> </ul>
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<b>No 15</b>		<b>North Rhine-Westphalia (Germany): Historical tripartite engagement</b>		
Country	Germany			
(Sub)region	North Rhine-Westphalia			
Socio-economic indicators	Population (2019)	17,93 Mio.		
	Population density	526.1 inh./km <sup>2</sup>		
	Size	34,098 km <sup>2</sup>		
	Unemployment rate (2018)	6.7 %		
GDP per capita (2018)	€36,600			
Coal related indicators	National/regional coal phase out	2038		Relevant actors  <b>Regional level:</b> Ministry of Urban Development, Housing and Transport for the State of North Rhine-Westphalia, Future agency Rhenish Region, representatives of countries ('Landkreise')  <b>Local level:</b> 17 local authorities in the Ruhr valley, Chamber of industry and commerce Aachen  <b>Others:</b> Companies, unions (trade union for the industrial sectors mining, chemical industry and energy), association, citizens, Coal Region Conference
	Status of transition	Developmental transition stage		
	Coal type	Hard coal		
	Active sites	3 coal mines 11 coal-fired power plants		
People directly employed in coal industry	9,000			
Relevance of the example	<p><b>This example illustrates the application of a tripartite stakeholder engagement approach to achieve fair and inclusive just transition processes.</b> The German region already followed a Corporatist approach to policy making in the 1960s-80s when policy was formulated based on inputs from both employees and employers (and increasingly state input). Many years later this approach is still being followed as another institution, the regional change agency (Future Agency Rhenish region), was set up in 2014 to effectively manage transition. Since then the agency has accompanied the region from territorial analysis and vision development through to project development and implementation and has brought together the core stakeholders in the area.</p>			


Problem/main challenges	<ul style="list-style-type: none"> <li>• Historical coal mining region (named “the land of coal and steel”) with declining yet relevant dependency on coal extraction (electricity and employment)</li> <li>• The large number and variety of stakeholder groups involved</li> </ul>
Good practice summary	<p>In the 1960s-80s North Rhine Westphalia, a corporatist approach to transition meant that supervisory boards of large coal and steel companies with over 1000 employees had to comprise 50% employer and 50% employee delegates. With voice given to both workers and industrialists, early consensus on transition aims and approach assisted the near elimination of hard coal mining activities without leading to significant social and political upheaval. Consequently, policymakers were more easily able to overcome the difficulties arising from the loss of traditional industrial activities in the region. The transition process in North Rhine-Westphalia engaged public administrations across different levels, with central, regional and local governments all supporting the key transition law of the region, namely the Hard Coal Financing Act of 2007.</p> <p>Many years later, the Future Agency Rhenish region (“Rheinisches Zukunftsrevier”) was set up in 2014 to perpetuate this tripartite approach. Though situated at a smaller scale and covering only a part of the North Rhine-Westphalie, the agency represented affected municipalities, business associations and the trade union for the industrial sectors of mining, chemicals industry, and energy (IGBCE) and has guided the region through its transition. It carried out a variety of activities (vision and strategy development, study on the prospect of transition on industry, organisation of an idea contest and networking events) and is now supporting the development and implementation of de-carbonisation and reskilling projects in the region, from planning of project calls to coordinating the selection process and monitoring their technical implementation. The agency is determined to remain the main driver for coal phase out in North Rhine Westphalia until 2038 and will continue to manage the transformation process.</p> <p>The approach of North Rhine Westphalia, based on unified support for transition and coordination between all governmental bodies and stakeholder representatives, illustrates the potential importance of multi-level governance and cooperation for achieving successful economic diversification of a coal-reliant region.</p>
Lessons learned	<ul style="list-style-type: none"> <li>• Both examples show that strong social dialogue, including trade union consultation and participation, ensure smooth transition</li> <li>• A dedicated fund, implemented through North Rhine-Westphalia’s State Development Corporation, ensured the financing of perpetual mine management</li> <li>• Consistent support of stakeholders for the regional change agency (Future Agency Rhenish region) together with reliable funding, provided for successful management of structural change in the region and enabled the agency to plan short to long term pathways for transition</li> <li>• Integrating all actions under the roof of the Future Agency Rhenish region, allowed for a regional strategy based on its specific strengths and challenges</li> </ul>

Further reading/ References	<ul style="list-style-type: none"> <li>• Harrahill, K. &amp; Douglas, O. (2019). Framework development for ‘just transition’ in coal producing jurisdictions. Energy Policy Journal Vol. 134. <a href="https://www.sciencedirect.com/science/article/abs/pii/S0301421519305774?via%3Dihub">https://www.sciencedirect.com/science/article/abs/pii/S0301421519305774?via%3Dihub</a></li> <li>• Oei et al. (2019). Lessons from Germany’s hard coal mining phase-out: policies and transition from 1950 to 2018. Climate policy Vol. 20 (8). <a href="https://www.tandfonline.com/doi/epub/10.1080/14693062.2019.1688636?needAccess=true">https://www.tandfonline.com/doi/epub/10.1080/14693062.2019.1688636?needAccess=true</a></li> <li>• European Council for Energy Efficient Economy (2019), Germany urgent to stand firm on a coal phase-out <a href="https://www.eceee.org/all-news/news/germany-urged-to-stand-firm-on-coal-phase-out/">https://www.eceee.org/all-news/news/germany-urged-to-stand-firm-on-coal-phase-out/</a></li> <li>• Initiative for Coal Regions in Transition (2020). Governance of transitions Toolkit, <a href="https://ec.europa.eu/energy/sites/ener/files/documents/governance_of_transitions_toolkit_-_platform_for_coal_regions_in_transition.pdf">https://ec.europa.eu/energy/sites/ener/files/documents/governance_of_transitions_toolkit_-_platform_for_coal_regions_in_transition.pdf</a></li> <li>• Initiative for Coal Regions in Transition (forthcoming). Regional Development Agency Rhenish Lignite Mining Area</li> <li>• Zukunftsagentur Rheinisches Revier – Website (in German) <a href="https://www.rheinisches-revier.de/">https://www.rheinisches-revier.de/</a></li> <li>• ZRR (2019). Economic and Structural Programme 1.0 (in German: Wirtschafts- und Strukturprogramm für das rheinische Zukunftsrevier 1.0). <a href="https://www.rheinisches-revier.de/media/wsp_1-0_web.pdf">https://www.rheinisches-revier.de/media/wsp_1-0_web.pdf</a></li> </ul>
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No 16		Upper Nitra (Slovakia): Transformation Action Plan		
Country	Slovakia			
(Sub)region	Upper Nitra (Trenčín Region)			
Socio-economic indicators	Population (2018)	184,000		
	Population density	145 inh./km <sup>2</sup>		
	Size	1,261 km <sup>2</sup>		
	Unemployment rate (2019)	4.5 %		
	GDP per capita (2018)	€12,803		
Coal related indicators	National/regional coal phase out	2023		<b>Relevant actors</b>  <b>National level:</b> Government of the Slovak Republic, Deputy Prime Minister’s office (UPVII)  <b>Regional level:</b> Mayor of Prievidza, Local Associations of towns and villages of Upper Nitra, Hornonitrianske bane Prievidza (private coal mining company),  <b>Others:</b> Technical University in Bratislava, European Commission’s Structural Reform Support Service’s (SRSS), Price Waterhouse Coopers
	Status of transition	Developmental transition stage		
	Coal type	Lignite		
	Active sites	3 coal mines 5 coal-fired power plants		
	People directly employed in coal industry	4,100		

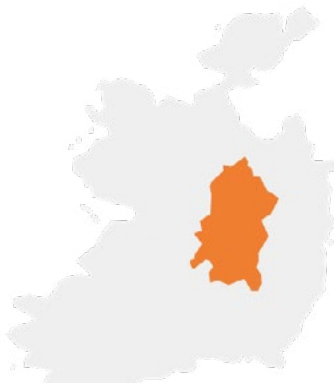
Relevance of the example	<p><b>This example illustrates the use of strong bottom-up stakeholder engagement in developing a transition strategy.</b> Upper Nitra's Transformation Action Plan from 2018 is a regional coal transition strategy that was developed through strong bottom-up stakeholder engagement across various governance levels, in particular the local level.</p>
Problem/main challenges	<ul style="list-style-type: none"> <li>• Strong tradition and identification with the coal industry that implied great sensitivity to transition among the local population</li> <li>• Political insecurities of decision-makers due to potential loss of votes and chances of discreditation and image harm for local politicians among mining lobby and population</li> </ul>
Good practice summary	<p>In January 2018, the Mayor of Prievidza in cooperation with other local authorities in the region, one of the region's mining centres, announced the intention to develop the Upper Nitra region. The announcement called on all citizens to contribute to development of the action plan. Citizens were informed through local media about the steps they needed to take to engage in the process; citizens were able to register via email, with no limiting criteria on the number or competencies of participants. Sixty persons volunteered to participate, including local civil servants, entrepreneurs, heads of schools or social institutions, and representatives of NGOs.</p> <p>Between March and September 2018, fifteen engagement meetings were held. Local stakeholders deliberated and agreed upon the priorities and pillars of the transformation of the region, namely: economy, mobility, and social infrastructure. Working groups were formed around these transformation pillars and were headed by regional experts. Support was provided by the Technical University in Bratislava and through the European Commission's Structural Reform Support Service, which engaged consultants from Price Waterhouse Coopers (PWC) in a pilot project under the Initiative for Coal Regions in Transition. Moreover, to increase awareness and encourage participation of a wider audience, Friends of the Earth-CEPA created a web platform for communication and sharing of information related to the action plan and the stakeholder engagement process.</p> <p>The results of the consultation were handed to the national government in September 2018, and were later validated via public hearings with local communities. The costs of these activities were covered by the local authorities, NGOs, and through technical assistance funds. Despite challenges, such as the initial absence from the consultation process of the region's main mining company and an initial lack of alignment across different governance levels, the final Action Plan for the Upper Nitra region was approved by the Slovak government in mid-2019.</p>
Lessons learned	<ul style="list-style-type: none"> <li>• Support from the national government – which one year after the Action plan was launched, announced a date for the phase out of coal – became a catalyst for the development, public deliberation, and eventual approval of the Action plan</li> <li>• The participatory approach, with the engagement of local communities, became a driving force for development of the action plan and raising public approval for transition</li> <li>• Support from the European Commission's Structural Reform Support Service (SRSS) gave the Action Plan additional validation</li> </ul>

Further reading/ References	<ul style="list-style-type: none"> <li>Initiative for Coal Regions in Transition (2020). Governance of Transitions Toolkit. <a href="https://ec.europa.eu/energy/sites/ener/files/documents/governance_of_transitions_toolkit_-_platform_for_coal_regions_in_transition.pdf">https://ec.europa.eu/energy/sites/ener/files/documents/governance_of_transitions_toolkit_-_platform_for_coal_regions_in_transition.pdf</a></li> <li>Bankwatch (2019). Local community participation in the Transformation Action Plan for the Slovakia's Upper Nitra Coal Region. <a href="https://bankwatch.org/wp-content/uploads/2019/09/Transformation-Action-Plan-Upper-Nitra.pdf">https://bankwatch.org/wp-content/uploads/2019/09/Transformation-Action-Plan-Upper-Nitra.pdf</a></li> <li>Joint Research Centre (2018). Socio-economic transformation in coal transition regions: analysis and proposed approach. <a href="https://ec.europa.eu/jrc/sites/jrcsh/files/coal_regions_report_jrc_pilot-slovakia.pdf">https://ec.europa.eu/jrc/sites/jrcsh/files/coal_regions_report_jrc_pilot-slovakia.pdf</a></li> <li>Coal regions in transition initiative (n.d.) Transformation of the upper Nitra region: Action plan: <a href="https://ceec.sk/ppt/Lamackova.pdf">https://ceec.sk/ppt/Lamackova.pdf</a></li> </ul>
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No 17		Ruhr valley (Germany): The IBA Emscher Park cooperative development programme		
Country	Germany			
(Sub)region	Ruhr Valley (North Rhine-Westphalia)			
Socio-economic indicators	Population (2018)	5.111.530		
	Population density	1,152 inh./km <sup>2</sup>		
	Size	4.435 km <sup>2</sup>		
	Unemployment rate (2017)	10.4 %		
	GDP per capita (2018)	€36,600		
Industry related indicators	National/regional coal phase out	2030		<b>Relevant actors</b>  <b>Regional level:</b> Ministry of Urban Development, Housing and Transport for the State of North Rhine-Westphalia, 17 local authorities in the Ruhr valley, companies, association, citizens
	Status of transition	Mature transition stage		
	Coal type	Lignite		
	Active sites	3 coal mines 11 coal-fired power plants		
	People directly employed in coal industry	9,000		
Relevance of the example	<b>This example illustrates a successful implementation of an innovative transformation and regional diversification strategy.</b> The International Architecture Exhibition Emscher Park (IBA Emscher Park), a 10-year programme between 1989 and 1999, supported an innovative transformation and economic diversification of the Ruhr coal region in North Rhine-Westphalia.			
Problem/main challenges	<ul style="list-style-type: none"> <li>Widespread economic, social, and ecological problems of the Emscher sub-region as a result of industrial decay</li> <li>High unemployment rates and growing number of industrial wastelands</li> <li>Mono-structured economy with a lack of innovation potential</li> </ul>			

Good practice summary	<p>Launched in 1989 by the Federal State of North Rhine-Westphalia, the programme sought proposals of ideas for the redevelopment of the Emscher region, which had undergone heavy structural decline. The programme was driven by a variety of stakeholders from the public sphere (local and regional authorities), companies, associations, civil society and citizens, which formed “regional development coalitions”. These bottom-up, horizontally based teams were invited to propose projects that addressed one of the five themes for restructuring the area: the renovation of the Emscher landscape into parkland, ecological regeneration of the Emscher River system, development of new work locations in derelict industrial sites, development of new housing forms and urban district, and new uses for industrial buildings and industrial monuments.</p> <p>The bottom-up approach used to implement the IBA Emscher Park programme helped to design, implement and test innovative projects of both technological and institutional nature. After ten years and €2.5 billion of public and private investments, more than 120 cooperative projects were implemented, varying from the setting up of technology centres to innovative and green renovation of apartments, and the restoration of industrial monuments for touristic purposes. It also led to the reconversion of the most polluted river in Germany into a recreational area.</p>
Lessons learned	<ul style="list-style-type: none"> <li>• The use of a local and inclusive participatory framework (combined with top-down quality control) proved a successful alternative to previously more centralized policy and governance</li> <li>• Through strong leadership of key stakeholders including the director of IBA Emscher Park and the combination of various stakeholders in the “regional development coalitions” resulted in a diverse set of project proposals contributing subsequently to a diversification of the economic landscape</li> <li>• Planning the project over a time horizon of 10 years gave stakeholders the time to plan ahead and commit to a long-term process</li> </ul>
Further reading/References	<ul style="list-style-type: none"> <li>• Campbell, S. &amp; Coenen, L. (2017). Transitioning beyond coal: Lessons from the structural renewal of Europe’s old industrial regions. Crawford School of Public Policy, Centre for Climate Economics and Policy, CCEP Working Paper 1709 <a href="https://ccep.crawford.anu.edu.au/files/uploads/ccep_crawford_anu_edu_au/2017-11/campbell_coenen_transitioning_beyond_coal_-_lessons_from_the_structural_renewal_of_europes_old_industrial_regions_ccepwp_1709.pdf">https://ccep.crawford.anu.edu.au/files/uploads/ccep_crawford_anu_edu_au/2017-11/campbell_coenen_transitioning_beyond_coal_-_lessons_from_the_structural_renewal_of_europes_old_industrial_regions_ccepwp_1709.pdf</a></li> <li>• TU Dortmund Project IBA revisited (n.d). <a href="http://www.iba-forschung.de/?page_id=17">http://www.iba-forschung.de/?page_id=17</a></li> <li>• Internationale Bauausstellungen (n.d.). IBA Emscher Park – Future for an Industrial Region: <a href="https://www.internationale-bauausstellungen.de/en/history/1989-1999-iba-emscher-park-a-future-for-an-industrial-region/">https://www.internationale-bauausstellungen.de/en/history/1989-1999-iba-emscher-park-a-future-for-an-industrial-region/</a></li> </ul>



No 18		Midlands (Ireland): Project selection for the Just Transition Fund			
Country	Ireland				
(Sub)region	(Wider) Midlands				
Socio-economic indicators	Population (2016 <sup>4</sup> )	292,300			
	Population density (2017)	46 inh./km <sup>2</sup>			
	Size	6.524 km <sup>2</sup>			
	Unemployment rate (2019)	4.5%			
	GDP per capita (2017)	€ 23,002			
Industry related indicators	Share of peat in electricity generation	3.9%		<b>National level:</b> Irish Government Department of Communications, Climate Action and Environment  <b>Regional level:</b> Just Transition Commissioner, Midlands Regional Transition Team (MRTT)  <b>Local level:</b> Counties of East Galway, Kildare, Laois, Longford, North Tipperary, Offaly, Roscommon and Westmeath  <b>Others:</b> IDA, Enterprise Ireland, Educational Training Boards (ETBs) and Regional Skills Fora.	
	Status of transition	Developmental transition stage			
	Active sites	Peat harvest land (total of 77,000 ha)	3 peat-fired power plants		
		People directly employed in peat industry	1,050 in harvesting Approx. 120 in power plants		
Relevance of the example	<b>This example illustrates the use of a two-step process to achieve a strategic and localised approach to transition project identification and follow-up support.</b> The Midlands region adopted an effective two-step approach to project selection approach towards the distribution of Irish Just Transition Fund (JTF) to areas affected by the transition from fossil fuel/peat industry. Supported by the Midlands Regional Transition Team and the European Commission's START technical assistance, a more strategic and localised approach to project identification was achieved.				
Problem/main challenges	<ul style="list-style-type: none"> <li>• First region in Ireland to experience a concentrated transition away from carbon intensive industries, particularly peat extraction</li> <li>• The peat industry and power generation play an important role in sustaining local employment</li> </ul>				

<p>Good practice summary</p>	<p>The MRTT (Midlands Regional Transition Team) brings together local authorities and other key regional stakeholders affected by the phasing out of industrial peat harvesting and power generation. Supported by the European Commission’s START (Secretariat Technical Assistance to Regions in Transition) assistance provided through the Commission’s Coal Regions in Transition Initiative, MRTT is tasked with developing a transition plan (‘pathway’) for the Wider Midlands.</p> <p>To address the adverse consequences of the transition away from fossil fuels, particularly peat, the Irish government set up the national Just Transition Fund (JTF) worth €11 million. In June 2020 a call for applications was launched, with an objective to fund innovative projects with employment and enterprise potential that would contribute to the economic, social and environmental sustainability of the Wider Midlands region. Project proposals needed to be aligned with one of the following funding priorities: Employment and Enterprise Supports, Training Support, and Community Transitioning Supports. To be eligible to apply to the JTF, projects proposers needed to first register their project ideas with the MRTT-START process, running in parallel to national level efforts. Registration prior to the JTF call enabled the MRTT to develop a comprehensive project inventory for the region. Key projects to facilitate change could be identified, alongside the involved project proposers and partners (private, public, community and voluntary organisations). This approach ensured a more strategic and localised approach to project identification and also helped the MRTT and Irish Government to get a feel for the overall portfolio of potential local projects and the level of demand and interest in the JTF. It also enables the MRTT to provide guidance to projects that do receive funding from the Irish JTF to allow them to develop project concepts, to build partnerships and the prepare them for potential future alternative funding opportunities.</p> <p>Over 150 projects have been registered through the MRTT-START process, with more than 100 applications subsequently made to the Irish JTF, demonstrating the considerable local interest and capacity to come forward with projects to support a smooth and just industrial and energy transition of the Midlands.</p>
<p>Lessons learned</p>	<ul style="list-style-type: none"> <li>• The MRTT-START process helped raise awareness of transition challenges and opportunities and stimulate interest and the Irish JTF, while motivating project applicants to prepare for the JTF call for proposals</li> <li>• Projects that did not submit applications to the Irish JTF, or whose application was unsuccessful, could be identified by the MRTT, allowing for follow-up guidance and assistance to further develop their project ideas and prepare them for future funding calls</li> <li>• The two-step approach has led to a more selective, efficient, and localized project selection process and potentially to a more effective and just transition of the Wider Midlands region</li> </ul>
<p>Further reading/References</p>	<ul style="list-style-type: none"> <li>• European Commission (2020). START Midlands Regional profile. <a href="https://ec.europa.eu/energy/sites/ener/files/documents/midlands_regional_profile_-_start.pdf">https://ec.europa.eu/energy/sites/ener/files/documents/midlands_regional_profile_-_start.pdf</a></li> <li>• Midlands Regional Transition Team (2020). Midlands Engagement Process. <a href="https://ec.europa.eu/energy/sites/ener/files/documents/midlands_engagement_process_document_-_start.pdf">https://ec.europa.eu/energy/sites/ener/files/documents/midlands_engagement_process_document_-_start.pdf</a></li> <li>• Government of Ireland (2020). Just Transition Fund (JTF) Information Booklet: <a href="https://www.gov.ie/en/publication/ed10d-just-transition-fund/">https://www.gov.ie/en/publication/ed10d-just-transition-fund/</a></li> <li>• Midlands Regional Transition Team (forthcoming). Pathway to transition.</li> </ul>

No 19	Dundee (South Africa): Local Economic Development Council		
Country	South Africa		
(Sub)region	Dundee (Northern KwaZulu-Natal)		
Socio-economic indicators	Population (2011)	34,924	
	Population density	720 inh./km2	
	Size	48.60 km2	
	Unemployment rate (municipality of Endumeni, 2011)	26.4 %	
	GDP per capita (2018)	n/a	
Coal related indicators	National/regional coal phase out	No official date for coal phase-out decided	Relevant actors  <b>National level:</b> Government of South Africa  <b>Regional level:</b> Kwazulu-Natal Economic Council (KZNEC), Provincial Department of Agriculture  <b>Local level:</b> Municipality of Dundee
	Status of transition	Mature transition stage	
	Coal type	Bituminous coal	
	Active sites	19 coal mines 18 coal-fired power plants	
	People directly employed in coal industry (2015)	78,000	
Relevance of the example	<p><b>This example illustrates how transition can become a catalyst for local economic development and devolution of decision-making to the local level.</b> Despite the severe socio-economic impacts of coal transition in South Africa, the town of Dundee serves as a good example for how transition can be a catalyst for local economic development and devolution of decision-making to the local level, even in developing countries facing poverty and larger economic challenges.</p>		
Problem/main challenges	<ul style="list-style-type: none"> <li>• One of the country's most coal-dependent areas</li> <li>• Frail manufacturing base and limited economic capacity</li> <li>• Loss of 30,000 jobs in the province of KwaZulu-Natal and 3,000 jobs in Dundee in late 20th century</li> <li>• GDP fell by half after mine closure</li> </ul>		
Good practice summary	<p>In the late 1990s, the closure of most mines (30 out of 32) in the surrounding area came as severe economic shock to the town of Dundee, once known as 'Coalopolis'. Due to the lack of immediate response from the central government, various local stakeholders took the initiative and attempt to counteract the undesirable effects of the mine closures. More specifically, in 1995 the municipality of Dundee established a Local Economic Development (LED) Council, which was supported by local interest groups and aimed to address issues of poverty and unemployment. With financial support from the Kwazulu-Natal Economic Council, the LED Council composed of various stakeholders was commissioned to identify viable development options for Dundee. The LED Council identified and selected suitable projects through multiple meetings and workshops, to which the public were invited to participate and which provided transparency on the transition process and actions. Project selection criteria revolved around employment opportunities, sustainability, economic empowerment, and economic self-sufficiency. Finally, a resource audit and appointment of an independent consulting firm supported the assessment and validation of the most viable project ideas and options.</p>		

Lessons learned	<ul style="list-style-type: none"> <li>• The LED Council provided a positive impetus to the local communities and resulted in implementation of projects that promoted economic diversification, particularly towards agriculture and tourism</li> <li>• The LED Council experience has become a motivation for further local development initiatives and bottom-up approaches</li> </ul>
Further reading/ References	<ul style="list-style-type: none"> <li>• Etienne L Nel, Trevor R Hill , Kate C Aitchison &amp; Simphiwe Buthelezi (2003). The closure of coal mines and local development responses in Coal-Rim Cluster, northern KwaZulu-Natal, South Africa, <i>Development Southern Africa</i>, 20:3, 369-385</li> <li>• Marais, L. et al (2017). Responses to mine downscaling: Evidence from secondary cities in the South African Coalfields. <i>The Extractive Industries and Society</i> 4. 163-171.</li> <li>• Burton, J. et al. (2018). Coal transition in South Africa - Understanding the implications of a 2°C-compatible coal phase-out for South Africa. <i>IDDRI &amp; Climate Strategies</i>. <a href="https://www.iddri.org/sites/default/files/PDF/Publications/Catalogue%20iddri/Rapport/20180609_ReportCoal_SouthAfrica.pdf">https://www.iddri.org/sites/default/files/PDF/Publications/Catalogue%20iddri/Rapport/20180609_ReportCoal_SouthAfrica.pdf</a></li> </ul>

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### Other references used in addition to “References for further reading” in Good practice fiches

- EBRD (2020). Insights from historical cases of transition: Background paper for the EBRD just transition initiative. <https://www.ebrd.com/documents/policy/insights-from-historical-cases-of-transition.pdf?blobnocache=true>
- European Commission (2020). Proposal for a European Climate Law. <https://eur-lex.europa.eu/legal-content/EN/>