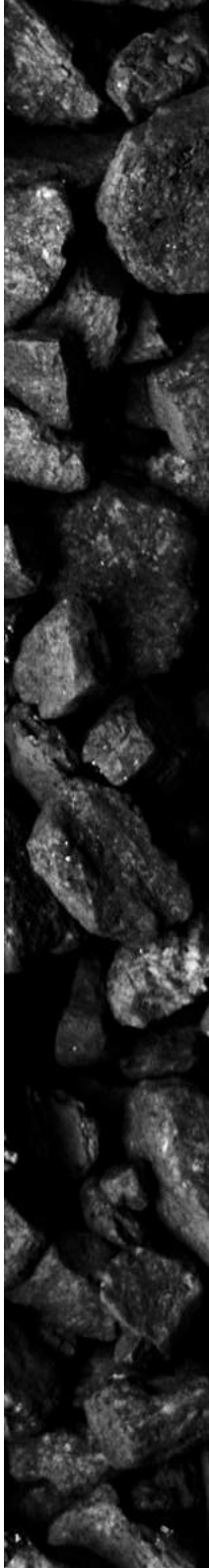


WINTER 2018

THE REGIONAL DIMENSION OF CLIMATE CHANGE

MAKING THE CASE FOR A JUST AND
INNOVATIVE TRANSITION

DISCUSSION PAPER



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TABLE OF CONTENTS

INTRODUCTION	5
FOREWORD	6
PART 1 - REGIONAL TRANSFORMATION: ENSURING A JUST TRANSITION	10
Ensuring a 'Just Transition': the European Commission's support to coal regions in transition	11
The Silesia region steers away from coal but will leave no one behind	15
The Greek road to just transition – the Western Macedonian perspective	19
Make our coal regions great again – with wind energy	23
Climate protection needs to be reconciled with economic growth, structural change and employment	27
PART 2 - REGIONAL DISRUPTIVE LEADERSHIP: TRANSFORMATION THROUGH INNOVATIONS	30
System innovation is needed if we want to help regions shift to a low-carbon economy	31
Cities are partners for effective climate policy	35
Achieving the clean energy of tomorrow starts today: European gas industry contributes with quick wins and innovation	39
Emilia-Romagna: a region at the forefront of environmental legislation and action	43
Tackling climate change through sustainable landscapes: the case of Alto Mayo	46
RECOMMENDATIONS	50



INTRODUCTION

This publication is part of Friends of Europe's Climate and Energy programme. It aims to increase awareness of the importance of Europe's carbon intensive regions in tackling climate change and transforming through disruptive social, economic and innovative leadership. With the right support, it is evident from this discussion paper that carbon intensive regions can successfully transition to a low carbon future, lead the way in showcasing the art of the possible by ensuring workers have the opportunities and skills required to take on new jobs, and innovate to drive sustainable and economic growth for their own future.

The first part of this publication highlights how a just transition on energy is possible by asserting the value of a multi-sector approach. Through its provision of examples ranging from the European Commission, an historic coal dependent region, a global non-governmental organisation, a private sector company and an EU member state, this section emphasises the importance of taking a holistic approach when it comes to addressing not only energy and climate action, but also the social and economic implications of transition. Furthermore, in its

recognition of the fact that there is not a one-size-fits-all solution, the publication takes employee competencies and the fluctuating levels of community engagement of the various regions in question into consideration.

The second half of the publication focuses on how innovation coupled with leadership can accelerate change, in addition to providing pathways of implementation for regions and countries. There are examples which show how systemic innovation can stimulate growth through inward investment in spite of the threats of economic collapse; how a city can provide an impetus for more widespread action throughout a region, and an example which looks at the potential ways in which to counteract the damage caused by the harmful behaviours of the EU on regions highly dependent on natural resources. Finally, the section underscores the importance of a whole society approach to transition which requires the engagement and motivation from businesses, municipalities and communities, while taking into account the cultural context of a region in order to guarantee sustained progress and a sense of purpose among all stakeholders.

FOREWORD

Coal has been at the heart of Europe's economy for over 100 years. It has introduced considerable economic and social prosperity to communities and has enabled the continent to flourish. Today, the picture is different: there are only 41 regions in 12 member states wherein coal mining remains an integral part of the economic and social fabric.

This publication showcases a number of carbon intensive regions that have proven successful or are currently undergoing transition. It devotes special attention to regions that go through transformation while simultaneously ensuring a just transition, in addition to those regions that demonstrate disruptive leadership and mutate through social, economic and environmental forms of innovation.

These regions are responsible for the direct provision of almost 230,000 jobs and roughly 240,000 jobs created through indirect means. Overall, roughly half a million people across the EU are, in some capacity, still reliant on coal production to support their daily lives.

Recently, the production and subsequent consumption of coal has been in steady decline, partly due to high extraction costs when compared to the plunging prices of renewables, making it less competitive while also demonstrating that energy transformation is within reach. In Europe, electricity production based on coal no longer supports long-term economic viability.

Accounting for around 15% of EU power generation, coal is one of the leading generators of CO₂, being responsible for

around 18% of emissions in the EU alone. In addition to this, coal combustion represents as a major threat to public health globally and is responsible for approximately 23,000 premature deaths in the EU every year.

Whether it be the urgency of the objectives set by the Paris Agreement to limit warming to well below 2°C, the latest IPCC special report, the release of the EU 2050 long-term strategy for decarbonisation or the COP24 event in Katowice, the consensus is clear: coal must be phased out entirely if we are to achieve net-zero emissions by 2050.

As coal fire plants in the EU approach the end of their lifespan, with an average age of 41 years old, it is now time for Europe to demonstrate leadership in the transition to a coal-free future, as well as developing the right technologies to ensure that existing facilities emit as few emissions as possible.

Within the EU, one of the main objectives of the Energy Union is to create a single market which is not only secure and competitive, but also sustainable and inclusive. As Europe moves forward in its energy transition with cleaner, more energy efficient and carbon reducing solutions, dependency on coal is becoming a thing of the past.

A growing number of western countries are aiming to complete the energy transition by 2030 at the latest, including Austria, Denmark, Finland, France, Italy, the Netherlands, Portugal and the United Kingdom. Even Germany and Hungary are expected to propose a cut-off date for coal usage by the end of this year,

as it is only through the strict abidance of these deadlines that the EU will be able succeed in its energy transition. This starts with carbon intensive regions.

The energy transition has profound implications for the entire economic and social model. For this reason, the European Commission supports a just transition for coal intensive regions by committing to an all-inclusive shift towards a modern, decarbonised economy that leaves no one behind. As some regions remain heavily dependent on coal, it is clear that the process of energy transformation will be more difficult for some than for others. Many will have to reinvent their economic and social models so that the prospect of a more sustainable future becomes a reality.

Given that a number of regions have already demonstrated how feasible it is to follow the Paris Agreement without inflicting damage to peoples' livelihoods, this publication builds on previous successes and demonstrates that it is indeed possible to develop conducive strategies for transitioning to a low-carbon economy. Such a future also promises opportunities to engage in a clean energy future that offers sustainable job creation and growth. To make this vision a reality, efforts to support the social and economic aftermath of coal decline in energy systems must become a priority.

The EU must stimulate strategic project design opportunities and funding to direct and support an integrated social and energy transition. This should provide opportunities for new economic models which are competitive, sustainable and respond efficiently to environmental and social challenges.

As emphasised in this discussion paper, transitioning from coal dependency and countering the negative consequences wrought by the adjustment is an achievable goal. This paper illustrates that the responsibility of ensuring a just transition lies not only with the front-runners, but with all players. The energy transition, as a proven opportunity for cooperation and development, is one that must be seized by all if the objectives of the Paris Agreement are to be achieved, especially in the context of COP24.

As the Vice-President for the Energy Union, Maroš Šefčovič, stated: “Climate action starts with our regions”. Regions are not to be underestimated in Europe’s transition; they are the engines of the clean energy transition.

Raphaël Danglade

Programme Executive for Climate and Energy

Friends of Europe



PART 1

REGIONAL TRANSFORMATION: ENSURING A JUST TRANSITION

Ensuring a 'Just Transition': the European Commission's support to coal regions in transition	11
The Silesia region steers away from coal but will leave no one behind	15
The Greek road to just transition – the Western Macedonian perspective	19
Make our coal regions great again – with wind energy	23
Climate protection needs to be reconciled with economic growth, structural change and employment	27

Ensuring a **‘Just Transition’** : the European Commission’s support to coal regions in transition

The EU has a role to play towards ensuring a ‘just transition’, in which no region and no EU citizen is left behind

Anna Colucci, Head of Unit for Retail Markets at the European Commission
Directorate General for Energy

In an effort to harness its role as a global leader on climate action, the European Union has set ambitious climate and energy goals following the adoption of the 2015 Paris Agreement. By 2030, the EU has committed to cut emissions by at least 40% and to produce 32% of its energy from renewable sources. By 2050, we aim at reducing emissions even more substantially – by 80-95% compared to 1990 levels – thus paving the way towards carbon neutrality.

This will require a deep transformation of our economy and society. The transition towards a sustainable, future-proof economic model will bring many opportunities – but also many challenges, against which some EU countries, regions and citizens are not adequately

prepared to combat. If nothing is done, some regions will naturally reap the benefits of the energy transition in terms of growth and new jobs – because of their skilled workforce, high degree of innovation or connection to the global economy – while others will see their industries and jobs disappear. This is particularly the case for regions with a high dependency on coal-related activities, usually referred to as ‘coal regions’.

We believe that this scenario can be avoided, given that the EU has a role to play towards ensuring a ‘just transition’, in which no region and no EU citizen is left behind. It is a priority of European integration to ensure balanced economic development in all EU regions. It is also a matter of European solidarity

towards citizens living in coal regions, who are particularly vulnerable to the transition.

Given that coal was one of the main drivers of the industrial revolution, coal regions experienced an extended period of economic prosperity during the 19th and 20th centuries. Coal-related activities created plenty of well-paid jobs, as well as social structures upon which vibrant local communities with a strong sense of identity and solidarity thrive.

However, the progressive decline of coal in Europe has been putting local economies and communities under strain for years. Coal regions are, for the most part, mono-industrial: the predominance of coal-related activities (coal mining, coal-fired energy production, heavy industrial processes such as steel works, and so on), all clustered in a limited perimeter, is a real impediment to economic diversification, thus creating a high risk of deindustrialisation. The coal sector still employs around 235,000 people in the EU, with the vast majority of jobs – 185,000 – still in coal mining. More than half of these jobs are likely to disappear over the coming decade, which could generate mass unemployment in areas where there is no real alternative for workers. In the long-term, the lack of opportunities is likely to result in social exclusion and the depopulation of former coal regions, a trend that is already becoming evident today.

We know all too well how, in the past, brutal and unplanned transitions left European coal regions deeply affected for decades. We also know that coal regions have the potential

to drive the next industrial revolution by embracing clean energy technologies. The rebirth of former coal regions in Wales and Scotland, areas which were devastated by mine closures in the late 1970s and early 1980s but stand at the forefront of generating energy from renewable sources in the United Kingdom, is particularly telling. It is up to us to make sure that current coal regions do not go through the same painful process.

In light of the specific challenges faced by coal regions in transition, the European Commission has launched a dedicated Initiative for Coal Regions in Transition in 2016, as part of the Clean Energy for all Europeans Package. The Platform for Coal Regions in Transition has been officially operational since December 2017, creating an open forum to discuss issues related to the transition. It covers 41 regions in 12 member states – most importantly Poland, Germany, the Czech Republic, Romania, Bulgaria, Spain, Greece and Slovakia.

The Platform, with its annual four meetings, centres around the objective to share experiences and good practices, in addition to showcasing technological solutions and other projects that promise to ensure a ‘just transition’. Activities are therefore not limited solely to the field of energy transition and climate action; they also take into account socio-economic aspects, such as the need to diversify the economy, create jobs and avoid negative social consequences of the transition. In this context, the Commission chose to create an inclusive, transparent process, to which all relevant stakeholders can take part.

This includes, of course, national, regional and local authorities. It also brings in the experience of the industry, trade unions and the expertise of academia. Finally, the involvement of civil society is key to ensuring a truly inclusive, socially acceptable transition, hence the strong participation of NGOs and citizen groups in the Platform.

In addition to the open forum provided by the Platform, the Commission started to work bilaterally with pilot regions in most affected member states in order to kick-start actions on the ground.

The type of assistance provided by the Commission under this activity very much depends on the level of preparation in each region. In Western Macedonia (Greece) and in Trenčín (Slovakia), the Commission provides technical assistance for the development of inclusive transition strategies and roadmaps, in collaboration with national and regional authorities as well as local stakeholders. In Silesia (Poland), Karlovy Vary and Moravia-Silesia (Czech Republic), the Commission works with public authorities – both national and regional – to identify projects susceptible to bring positive, tangible change to citizens on the ground and match them with existing funding opportunities, mainly under structural funds but also other instruments such as LIFE or Horizon 2020. For instance, €120 million have been reprogrammed and ring-fenced to support transition-related projects in Silesia.

In coming years, the nature of our support to coal regions will depend on the outcome of

current negotiations on the next EU budget. But whether we continue relying on an array of funding instruments or benefit from a stand-alone fund for a just transition, coal regions can count on firm, continued support from the Commission to ensure a successful, just transition. Past experiences have taught us that such a transition might take years, maybe decades, but urgent efforts are needed to kick-start the move towards a decarbonised economy and deliver tangible results for citizens on the ground. We will also need to look beyond coal regions by extend our support to regions with a strong dependence on carbon-intensive activities once our initiative is mature enough. The EU was built on coal and steel – it is our shared responsibility to ensure that we work together to face the challenges of the 21st century and continue providing our citizens with opportunities for prosperous, fulfilling lives in a decarbonised economy.



The **Silesia region** steers away from coal but will leave no one behind

The Silesia region is committed to accomplishing the European Commission's initiative to support Europe's mining regions

Michał Gramatyka, former Vice-President of the Silesia Region

One of the biggest challenges facing the Silesia region in Central Europe is the need to restructure the region's approach to coal and its use. This requires not only changing the profile of the voivodeship, the administrative area in question, but also the gradual replacement of traditional economic sectors with more innovative ones. To increase competitiveness, the voivodeship needs to be able to undertake a long-term modernisation plan. Without governmental support, this will not be possible, as the process requires consistent and continuous work on economic and social issues.

The current binding governmental document on this area of work is 'Programme for Bituminous Coal Mining Sector in Poland', approved by the Council of Ministers in January 2018. The programme features an outline for creating conditions that will support transforming the bituminous coal mining sector and make it profitable, efficient and modern. Successfully executing the programme will have an impact on the people in the region, the employees of the coal mining companies and, in particular, their families.

To minimise the potential negative impacts of the restructuring, specific actions need to be undertaken to analyse and develop the employee competencies in the mining industry. Plans for establishing an employee competence database have already been set in motion and the possibility of financing instruments of employment activation and a programme tailored to professional adaptation has been discussed.

But restructuring the traditional sectors of the region is not enough. We also need to facilitate and support the development of new economic activities, level the negative impacts of mining, develop human and social capital and increase the overall quality of life in the region. Moreover, we need to support cooperation between the scientific institutions and companies focused on research and development, find ways to stop 'brain drain' of young people to metropolitan areas and improve the quality of public spaces.

Financing this type of regional modernisation requires legal changes at national level. Private resources should be mobilised and combined effectively with public sources of funding at regional, national and EU level. Combining regulatory changes with the appropriate public sector financial support will guarantee that the Silesia region can achieve a permanent increase when it comes to the competitiveness of its economy and the improvement of quality of life while limiting the social costs inevitably associated with this type of change and restructuring.

In recent years, the Management Board of the Silesia region has consistently worked towards the social and economic transformation of the region. Managing the largest Regional Operational Programme within the European Union, with a total value of €3.5bn, the Board's activities are discernibly comprehensive in nature. In the framework of this regional programme, over €830m – almost 25% of the resources – was devoted to the support of low-carbon economy, renewable energy sources and energy efficiency. Almost €1.5bn was earmarked for the support of innovation, entrepreneurship, education, social rejuvenation, infrastructural revitalisation and developing the labour market.

In March 2018, the catalogue of regional smart specialisations was expanded so that they might be better suited to fulfilling their function as a flywheel for our economy. Aside from medicine, energetics, IT and communication technologies, new areas of development include green economy, mobility as well as creative and emerging industries.

The Board also supports the professional activation of the unemployed and professionally passive and works on mitigating the effects of company restructuring. Given the ongoing economic transformations borne from the rise of globalisation and technological development, it is important that employees are fully equipped with the tools needed for re-skilling themselves. This is why actions aimed at improving the situation of employees and jobseekers through support, vocational

education and opportunities for professional qualifications have been carried out.

The Silesia region is committed to accomplishing the European Commission's initiative to support Europe' mining regions. Since its inauguration last year, the voivodeship's local government has actively taken part in actions related to this initiative.

The process of transforming a region is a complex, two-pronged and costly task. To speed up this process, it is necessary to coordinate action at EU, national and regional levels. Formalised legal action in the form of public assistance, regulating property rights in post-mining areas, facilitating investment processes and establishing flexible revitalisation tools will allow us to turn words into reality. To this end, we hope to receive the appropriate support from the government and the European Commission and be optimistic in the outcomes of the new EU budget. We trust that the challenges confronting mining regions will also be acknowledged in the attribution of EU funds.



The Greek **road to just transition** – the Western Macedonian perspective

Rejuvenating the regional economy in Western Macedonia is possible as long as funds are directed towards sustainable economic activities and not wasted in quick-fixes

Stavros Mavrogenis, WWF Greece's Climate and Energy Policy Officer

Out of the many positive steps taken by the European Union to develop its climate, environmental and energy policies, its commitment to the 2015 Paris Agreement, its reform of the EU Emissions Trading System and its implementation of stricter emission quotas for large combustion plants represent a significant few.

All of these steps ensure that the phase-out of coal is turning into reality. However, as a result, a tremendous amount of pressure is being placed on the economies of the regions that rely on coal mining and lignite for the sustenance of their communities. In Greece, Western Macedonia represents one such

region. To balance the situation, the gradual phase-out of coal must be accompanied by a comprehensive transition strategy that aims to minimise hardships for local societies and employees in coal industries and others by providing active political and financial support and by shifting the focus of local economies to activities that are more economically sustainable.

Western Macedonia is the centre of lignite mining for power generation. The region's heavy dependence on lignite, however, was not enough to prevent it from becoming one of the worst hit areas in the EU with regard to unemployment figures. As a result of the

combined impact of the Industrial Emissions and the Emissions Trading Directives, lignite capacity worth 913 megawatts has been retired since 2010 and lignite's overall share in power generation has dropped by 50% over the period of 2009-2016. This has resulted in very high unemployment rates in Western Macedonia, where 90% of Greece's lignite activity is concentrated. Given the prediction that a further 3,000 megawatts is to be reduced, the unemployment situation is expected to worsen over the next decade.

In 2016, WWF Greece and the Panteion University in Athens developed a 'Roadmap for the Transition of the Western Macedonia Region to a post-lignite era'. By using an input-output model simulating the local economy, while estimating the number of additional jobs and regional GDP expected to be lost due to the scheduled retirement of lignite plants, it was proven that inaction is simply not an option for Western Macedonia. Relying on new lignite plants will not solve the problem either since the two new plants being planned for the region by Public Power Company will substitute only for 30% of the lost jobs and GDP while costing €2.5bn. The region has no other choice than to focus on developing alternative economic activities to avoid an economic collapse. The roadmap consists of 12 alternative economic activities and three scenarios based on the proposed activities were subsequently developed. The results clearly show that if €2.3bn – which is less than the funds required to construct the planned two new lignite plants – are invested in Western Macedonia, the blows

to employment numbers and GDP may be countered.

The main conclusion of the study was that rejuvenating the regional economy in Western Macedonia is possible as long as funds are directed towards sustainable economic activities and not wasted in quick-fixes, such as "clean" coal technologies and lignite subsidies.

WWF Greece, together with three other WWF offices in Germany, Poland and Bulgaria, also takes part in a project entitled 'Just Transition in Southeastern Europe' – supported by the European Climate Initiative of the German Ministry of Environment – with a focus on Bulgaria, Greece and Poland. The main goal of the project is to develop tailor-made economic transition strategies for specific regions in Bulgaria (Southwest Bulgaria), Greece (Western Macedonia) and Poland (Silesia), to help them transition from coal to more sustainable options. Another key goal of the project is to establish a European network of local municipalities from the coal regions. The first but very important step took place in 2018 in Kozani, the capital city of Western Macedonia, where a new discussion platform, the Forum of Mayors, was initiated. Western Macedonia is also one of the pilot regions that participates in the 'Coal Regions in Transition Platform', the main aim of which is to provide technical assistance to the EU's 41 coal regions.

The establishment of a National Just Transition Fund in the framework of the Emissions

Trade Scheme has also been a positive step forward. Thanks to the Fund, worth €20m for over a period of three years, six priority areas can be funded: renewables, energy efficiency, key sectors (e.g. growing of saffron and other aromatic plants), circular economy, industrial heritage and re-skilling of workers. However, the total budget of the Fund will not be enough to ensure the implementation of a concrete, just transition strategy.

Just transition to a post-coal era is not a straightforward process and is generally faced with a multitude of challenges:

First, at European level, the new Multiannual Financial Framework of the EU should feature just transition as one of the priorities of Cohesion Policy. As a result, financing from the new Operation Programmes should be secured. Countries in Southeastern Europe, in particular, rely on restricted budgets due to the economic crisis. To counter these restrictions, the EU should step in to cover the extra funding for early retirement schemes and regional development.

Second, more stakeholder engagement is needed at local level. All stakeholders should be part of the process because just transition does not concern workers and trade unions exclusively.

Third, coal phase-out is not only about energy transition. Long-term planning is needed to ensure the sustainable development of coal regions. Focus on renewable energy sources, alternative economic activities, research,

innovation and sustainable agriculture should be prioritised.

There is no “one-size-fits-all” strategy for just transition. Every country and region is unique and they grapple with different challenges. However, they all seek sustainable and equitable growth. To achieve this, a carbon-dependent economy is not the answer.



Make our coal regions great again – with wind energy

Renewable energy has the potential to become this story: one that provides jobs and opportunities and does not leave people behind

Malgosia Bartosik, Deputy CEO at Wind Europe

Earlier this year, the United Nations warned that the international community has just 12 years to keep global warming to a maximum of 1.5°C. Should we fail, the world will face the very worst effects of climate change.

When it comes to pollution, coal is one of the worst perpetrators: it accounted for 18% of the European Union's total carbon emissions in 2015. It makes us sick, it is expensive and a good proportion of it needs to be imported from countries like Russia and Colombia.

However, while climate change and its impacts are being palpably felt, Europe's 41 coal regions located in 12 countries continue

to exist. There are 185,000 people working in coal across the EU and while that might not sound like much, the individuals that comprise this number matter. They are not responsible for creating a system established in the wake of the industrial revolution – we all took advantage of it. If we are to move away from coal – and we should – we just need to ensure that we do so in the right way.

Poland, for example, is heavily dependent on coal and currently stands as Europe's second biggest coal mining country. The main issue in transitioning away from coal is not that people love coal per se, nor that they absolutely love working in coal mines. In coal regions, from

the very early days of industrial capitalism, coal has profoundly shaped communities and local life has reorganised itself around it. Coal has penetrated all aspects of local trade, transport infrastructure and community life and has created a system fit for its own survival. Closing down a mine affects a region well beyond the lives of its direct employees – it is like removing the post office from the village square. These regions need help in exiting the vicious circle of coal dependency but to do so, we need to ensure that the solutions we provide will fill the socio-economic gaps once inhabited by coal.

Renewable energy – and wind in particular – can help fill these gaps. Wind energy has already had a positive impact on regions all across Europe and citizens are benefitting from the shared ownership of wind farms. Wind farms are also contributing to local economies through the taxes they pay to local governments, covering up to 20% of municipal revenues in some cases.

Wind is also a motor for job creation: there are already 263,000 people working in the European wind industry. The work involved is not confined exclusively to people who work in the operation and maintenance of wind farms, it also encapsulates those responsible for building wind turbines and other technologically-advanced components. If there were more ambition on renewable energy, this number could be much higher.

Not all coal jobs can or will be replaced by wind jobs but there are already some success

stories where the wind industry has brought jobs and investment to regions that were once dependent on a single industry. The German turbine manufacturer, Senvion, now has blade factories in Silesia, a major coal region in the southwest of Poland.

There are other examples too: the Basque Country in Spain made a conscious decision to invest in wind energy and now has one of the largest wind industry supply chains of any region globally, along with the accompanying economic benefits. In this regard, wind has truly filled the gaps left by the industries of the past. Hull, once the foremost port on the east coast of England, profited enormously from the various marine-based industries for centuries before suffering an economic decline after World War II. The project ‘Green Port Hull’ has now established the city as a world-class centre for renewable energy with the wind energy company, Siemens Gamesa, building a major wind turbine factory on the famous Alexandra dock. Well beyond providing numerous direct and indirect jobs, Green Port Hull has helped revitalise the city, turning it into a hub for offshore wind and providing learning and training opportunities for the region’s youth.

These examples tell the story of regions that have bounced back from industrial decline but decline is not a foregone conclusion if a just and successful transition is possible. For that to happen, businesses need a bit of support from local and national governments – and that is where politics comes into play. Investors and companies can only develop

projects if authorities give a clear signal that this is what they want. The EU has given a signal that 32% of our energy should come from renewables by 2030 but businesses need to see the same kind of ambition at national and regional level to meet this target. We also need to make sure people are equipped with the right skills to work in industries such as wind and boost vocational training in identified, relevant fields.

We should not forget that coal is at the centre of a psychologically powerful story. Coal was there when the first trade unions were formed; coal was there when six European countries set up the European Coal and Steel Community, which would later evolve into the EU; coal is the symbol of industrial capitalism and the modern society. Phasing out coal will thus require establishing a new story to fill this 'narrative' gap. Renewable energy has the potential to become this story: one that provides jobs and opportunities and does not leave people behind. Energy for the people, in the true sense of the word.



Climate protection needs to be reconciled with economic growth, structural change and employment

The overarching challenge is to create the right incentives so that the regions in question can attract new industries and job opportunities

Barbara Praetorius, Co-Chairperson of the “Growth, Structural Change and Employment” Commission of the German Government and Professor for Sustainability Economics at HTW Berlin

Germany has set itself ambitious targets when it comes to climate protection; compared to the levels of 1990, as declared in 2010, a 40%-reduction in carbon emissions is to be achieved by 2020. Moreover, the country's Climate Protection Plan 2050, which launched in 2016, states that emissions in the energy sector are set to undergo a decrease of 61-62% by 2030. The country has also put 13% of its lignite power stations in standby mode until 2023.

To this end, Germany has been promoting renewable energy and energy efficiency with

considerable success. Yet, paradoxically, the country is now both a largely coal-based economy and a pioneer in renewable energy deployment. One third of total electricity generation stems from wind, solar, water and biomass while lignite and hard coal still account for 37%. It is evident that without a substantial reduction of lignite and hard coal generation, Germany will almost certainly miss its 2020 target and risks missing its 2030 one.

Lignite is more CO₂ intensive than any other fuel used for electricity generation. Its open

cast mining changes the landscape and creates dust and emissions but it also creates jobs and welfare. In Germany, the world's largest lignite producer, lignite mining and lignite power stations are mainly concentrated in two regions: Lusatia and the North Rhine area. These regions traditionally host energy-intensive production such as steel, aluminum and chemical industries. Some 20,000 employees in mining fear for their jobs due to a potential economic breakdown. Additionally, energy-intensive industries and business in general are afraid of rising electricity prices and a reduced security of supply.

Consequently, the potential social and economic impacts of changing the status of mining in mining-dependent regions are of major concern in the current energy transition debates in Germany. In 2018, the Federal Government set up a stakeholder Commission to provide a venue for negotiating the key issues of a coal phase-out. The idea is also to help prevent another fundamental energy policy conflict from becoming entrenched for decades. The Commission on 'Growth, Structural Change and Employment' was launched in June 2018. Consisting of 28 members, including co-chairpersons, it represents unions, environmental organisations, business associations, energy industry, science, regions and civil society representatives. Representatives from the German Bundestag, federal ministries as well as state governments from coal mining regions across Germany are observing the process.

The final report of the Commission will be issued by the end of 2018 and will elaborate on the energy sector contributions necessary for the fulfilment of Germany's 2020 climate targets in addition to outlining measures to reduce emissions from coal burning by two thirds until 2030. The Commission report will also include a masterplan with a final date for the stepwise reduction of coal-based power while ensuring a secure electricity supply and affordable energy for industry and consumers.

First and foremost, however, the Commission will outline sustainable perspectives for new employment in regions and industries affected by a coal phase-out and suggest a tool box of instruments to reconcile climate mitigation with growth, structural changes, social issues and cohesion. It will also propose a financial framework and an institutional structure suited for buffering and orchestrating structural change in affected regions. No employees should be dismissed for operational reasons and a number of programmes and incentives are to be implemented to trigger economic change and growth in the affected regions and industry.

The current age structure of employees suggests that a gradual phasing-out of coal-fired power could be managed with little or no redundancies. But this is not sufficient. The overarching challenge is to create the right incentives so that the regions in question can attract new industries and job opportunities. This could also help counter the trend of younger generations moving to bigger cities, away from lignite mining regions. For a just

transition to take place, it is obvious that the lignite regions will need not only money and job guarantees, but also sustainable infrastructure, continuous support and new financial incentives such as funds which would allow for more investments, thus leading to more innovation, economic growth and employment.

In October 2018, the Commission unanimously adopted the first interim report with a focus on managing structural change in key lignite mining regions. The German government has already promised to provide €1.5bn to these regions for the current legislative period. While this is a good starting point, there is a need for long-term support. Federal and State Governments should also fund new regional research institutions which have the potential to serve as a nucleus for industrial innovation and production. The affected regions also require the best available digital infrastructure as well as solid transportation networks.

The second interim report, together with the final report, will articulate the level of ambition when it comes to climate protection. These reports will be balanced with concrete measures related to energy security, energy supply and energy prices as well as appropriate compensation for an earlier shut down of coal plants. From the perspective of security of supply – and taking into account the overcapacities of the German electricity market – short-term shutdowns are possible, thus nullifying the need for new investments in power sources until the mid-2020s. The debate on pricing is also a pertinent one:

some analyses demonstrate that coal power will be almost completely phased out by the onset of the new renewable generation with prices decreasing from their current level, while others show that the energy transition will require infrastructure investments across the country, thus increasing prices for consumers.

Decarbonisation is an intensive societal process and the concerns of all involved stakeholders need to be heard and considered, but with the right setting, climate protection and a just transition can support, not hinder, one another.



PART 2 - REGIONAL DISRUPTIVE LEADERSHIP: TRANSFORMATION THROUGH INNOVATIONS

System innovation is needed if we want to help regions shift to a low-carbon economy	31
Cities are partners for effective climate policy	35
Achieving the clean energy of tomorrow starts today: European gas industry contributes with quick wins and innovation	39
Emilia-Romagna: a region at the forefront of environmental legislation and action	43
Tackling climate change through sustainable landscapes: the case of Alto Mayo	46

System innovation is needed if we want to **help regions shift to a low-carbon economy**

Develop solutions that unlock the potential of the industrial regions in their capacity to design and implement their low-carbon transition innovatively, inclusively and sustainably

Ada Marmion, Re-Industrialise Flagship Manager at Climate-KIC

Cristian Matti, Transitions Hub Lead at Climate-KIC

Julia Panny, Regional Innovation Scheme Manager at Climate-KIC

Innovation is essential for finding solutions to societal challenges like global warming or unsustainable energy use. To enable transition processes that involve multiple sectors, actors and geographies, we need to implement a system innovation approach. Innovation platforms like the knowledge triangle integration (KTI) are mechanisms that can be used to mobilise resources and foster emerging communities of practice.

EIT Climate-KIC (Knowledge and Innovation Community) is the European Union's largest public-private partnership that addresses

climate change through innovation. This community consists of over 300 leading partners from business, academia, the public sector and NGOs and its purpose is to help create a prosperous, inclusive, climate resilient society founded on a circular, zero-carbon economy.

With a focus on levers of systemic change, EIT Climate-KIC evaluates where innovation is most needed to accelerate deep decarbonisation – the elimination of fossil fuels and negative carbon – and effective adaptation. EIT Climate-KIC is predominantly

grant funded by the European Institute for Innovation and Technology, an EU body, and it acts as a platform across boundaries and sectors. It also fosters innovation as a catalyst for transformation. Since its creation, EIT Climate-KIC's structure has been characterised by a regional, place-based approach to innovation in addition to its academic and corporate components. Cities and regions occupy a central component of the organisation, emphasising the role of place in addressing the complex challenges of climate change, such as economic attractiveness and competitiveness, social justice, air quality and pollution.

EIT Climate-KIC has implemented two programmes to develop new practices while exploring fresh market opportunities.

The Re-Industrialise Programme, launched in 2018, aims to accelerate the transition of greenhouse gas reliant industrial regions to low-carbon innovation hotspots, while also ensuring inclusive and prosperous environmental progress. The objective of the programme is to develop place-based solutions that unlock the potential of the industrial regions in their capacity to design and implement their low-carbon transition innovatively, inclusively and sustainably. The programme focuses on systemic and sustainable medium- to long-term impacts by tackling the complexity of the transition processes in an innovative way.

The programme's approach is designed to break silos, convene local actors from

different sectors, learn from experimentation and pitfalls, embrace tough questions and customise generic tools to de-risk bold ideas. As an innovation platform, EIT Climate-KIC engages multiple stakeholders in the process of co-designing re-industrialisation solutions, stimulating peer-to-peer learning within and between regions and experimenting with solutions that address bottlenecks in the system.

In its initial stage, Re-Industrialise addresses the transition challenges of five European regions with in-depth activities in North Rhine-Westphalia and Silesia – two of Europe's most prominent coal-based economies. The programme's portfolio, which includes early-stage innovation projects, touches upon a variety of sectors, such as coal mining, steel production and technologies like hydrogen. It also field tests smart specialisation and diversification tools, pilots innovative platforms to engage local communities in the transition process and builds practical methods to de-risk low-carbon investments. The diversity of this portfolio, and its several iterations, can trigger rapid results and de-risk replication. By sharing the findings and lessons learned, EIT Climate-KIC helps regional actors to move forward from experimentation to scale-up of their low-carbon pathways.

The Urban Challenge Programme works with cities and regional actors to catalyse systemic innovation by helping cities and municipalities to define the challenges they face and by enabling entrepreneurs and innovators to respond to these challenges.

Bulgaria's capital city, Sofia, was one of the first central/eastern European cities to test and implement this programme in 2017 and 2018. Countries in this region are particularly affected by the issue given their reliance on coal and wood for domestic heating as well as the heavy use of private cars due to ineffective public transport solutions. The focus of the programme in Sofia was on motivating behavioural change, so that people use their cars less frequently, in addition to encouraging people to shift from one energy source to another. The city was also seeking ideas to explore retrofit solutions for buildings and cars that would help capture some of the pollutants before they are released into the atmosphere. Including Sofia in the Urban Challenge Programme not only provided an opportunity to work closely with the municipality throughout the process but also helped raise public awareness on the work being carried out by Bulgaria's capital towards resolving its air pollution issues.

These aforementioned programmes seek to catalyse systemic innovation; they tackle complex societal challenges to deliver effective and efficient solutions with a long-term perspective. The findings and results of the programmes demonstrate that investments in low-carbon businesses and technologies will not even scratch the surface of the issue if they are executed in isolation, without considering the local economic, social, cultural and environmental realities. We need bold ideas, long-term commitment, risky investments and a great deal of hard work to make change happen.



Cities are partners for effective climate policy

There is much that can be done at local level but local and regional administrations also need a greater say in national climate plans

Anna Lisa Boni, Secretary General of EUROCITIES

Cities are essential partners when it comes to helping the European Union meet its commitment to the Paris Agreement. Getting things right at local level, where the vast majority of environmental legislation is implemented, is vital to securing a successful energy transformation. Cities across Europe are committed to the transition to a greener, more sustainable and inclusive future by working with citizens and collaborating in partnerships.

In tandem with regional initiatives, cities are leading the way on efficient emissions reduction as exemplified by the key roles they play in areas such as land-use planning, new developments, building energy renovation, transport and circular economy. As the architects of COP24 discussions and the

European Commission's 2050 Energy Strategy are surely aware, the time for action is now.

Involving all partners is also key to guaranteeing shared ownership of outcomes. Cities work at local level with a network of different actors, from private to public, with citizens and across our greater metropolitan areas and regions.

Essen's transformation from a city of coal and steel to the greenest city in North Rhine-Westphalia, Germany, is a good example of an industrial hub that has become a beacon within its region. Its receipt of the European Green Capital Award last year represented a formal recognition of these efforts. Located at the centre of the Ruhr Metropolis, the third largest conurbation in Europe after London

and Paris, Essen's success has been shared throughout this region.

Regional governance partnerships have been active in the Ruhr Area over many decades through the shared management of sewage and water supply systems. Essen's commitment to move away from coal has led to the emergence of new regional partnerships over time to support a sustainable transition to clean energy.

The Ruhr region now employs over 45,000 people in green energy jobs, with others having moved into the tourism industry and other areas. A museum and gallery located at a former coal mine complex near Essen welcomes over 250,000 visitors a year. The Ruhr has also become increasingly attractive for businesses to invest in. It is fair to say that Essen now sits alongside cities like Copenhagen, Stockholm and Ghent as a leader in the green energy transition.

Cities offer the know-how to drive results while working with citizens, often involving them in designing and developing solutions together. In Amsterdam, for example, a 'social return' clause creates jobs for young unemployed people to learn sustainable and environmental business practices within companies that have won public contracts. Such programmes build a shared sense of ownership and responsibility of outcomes in the green energy transformation.

Urban areas are also demonstrating more ambitious goals than their national and EU level counterparts on climate change. Networks like EUROCITIES, which brings together the major

European cities, allow cities to share success stories with other cities and regions for even greater impact.

Through the Covenant of Mayors, over 6,000 local climate and energy action plans have been adopted across Europe, with an average CO₂ reduction of around 27% expected by 2020.

There is much that can be done at local level but local and regional administrations also need a greater say in national climate plans, especially in how they are implemented and how practical goals are set. Earlier this year, a key victory for the recognition of cities at EU level was achieved: from now on, member states will have to include local authorities in their climate and energy plans. This ensures greater impact when local and national plans are integrated.

As local administrations, we want to contribute to a strong EU that lives up to its Paris Agreement commitments. In our view, it is a great shame that the COP24 negotiations have not striven for greater involvement from cities and regions, given the central role of subnational governments to reach the 1.5-degree target as well as the targets for CO₂ reductions.

The COP24 climate negotiations should take inspiration from the partnership approach of the Urban Agenda for the EU. Currently, 12 thematic partnerships are bringing together representatives from cities, national governments and the European Commission with the aim of achieving better regulation, better funding and better knowledge sharing. The partnerships focus on issues like the

energy transition, climate adaptation, circular economy, urban mobility and innovative procurement, so the ground is already set for further development and the exploration of new collaborations in multilevel governance to tackle climate challenges.

The Intergovernmental Panel on Climate Change recently warned of dire outcomes if the planet does not commit to minimising the temperature rise set out in the Paris Agreement. The difference between a 1.5 and 2.0-degree rise has much worse consequences than previously understood.

Cities like Essen have shown that green transformation is possible. EUROCITIES provides a good model for sharing such examples of best practice amongst cities and for translating these into action for other levels of government. Cities are often leaders within their region but given their knowledge and experience, they can also contribute much more at national and European levels.

Experts are telling us with increasing urgency that we need a complete transformation of both economies and societies. With cities leading the way, we can get there but we desperately need more action across different levels of government, sectors and actors. If we fail in this, we will need to brace for the impact which, for the next generation, looms ominously on the horizon.

The scale and urgency of the challenge should not be underestimated. The time to act is already upon us.



Achieving the clean energy of tomorrow starts today:

European gas industry contributes with quick wins and innovation

Gas is a part of the solution to rapidly and cost effectively address the risks of climate change and other pressing global challenges in various regions in Europe

Marco Alverà, President of GasNaturally and CEO of Snam

The COP21 Paris Climate Agreement created a global framework which aims to reduce emissions and pave the way for a cleaner future. Three years have gone by since world countries came together to sign this ambitious climate deal and yet we are still lagging far behind on reaching its goals. When we look at current emissions trends, it becomes clear that meeting the long-term mitigation goals of the Paris Agreement will require urgent climate action.

The 2018 IPCC Special Report underlined that limiting global warming to 1.5°C or 2°C without overshooting the corresponding carbon budget will require rapid changes in

electricity generation, transport, construction, agriculture and industry. The COP24 in Katowice is crucial to ensuring the full implementation of the Paris Agreement. Hopefully, a way forward will be found.

GasNaturally, a partnership of six associations representing the whole gas value chain, fully supports the goals set out by the Paris Agreement. Our members – Eurogas, European Gas Research Group (GERG), Gas Infrastructure Europe (GIE), International Association of Oil and Gas Producers (IOGP), Marcogaz and NGVA Europe (Natural & Bio Gas Vehicles Association) – believe that gas can help the European Union reach its

climate objectives and keep global warming well below 2°C.

The gas industry is rapidly adjusting to make itself relevant in a lower carbon future. Gas is a part of the solution to rapidly and cost effectively address the risks of climate change and other pressing global challenges in various regions in Europe, but also around the world.

Moreover, gas is gradually turning itself into a renewable source of energy, thanks to the new technologies that can reduce emissions, cut down particulate matter and 'green' the gas grid. These include biomethane, power-to-gas and hydrogen, all of which can contribute strongly to Europe's decarbonisation strategy.

Any effort to reduce emissions and mitigate climate change cannot be achieved without including the energy sector. A simple shift to gas as part of a progressive phase-out of carbon-intensive fuels, of which coal is a particularly notable example, could help the EU beat its 2030 greenhouse gas emissions reduction target by 5%. Abandoning coal as a fuel and replacing it with gas would also allow for a 50-60% reduction in CO₂ emissions per unit of power generated. As coal currently accounts for 76% of CO₂ emissions produced as part of the EU's power generation, a complete switch to gas would reduce emissions from that sector by around 40%.

Switching from coal to gas is a quick win for both the climate as a whole and the specific

regions that struggle with poor air quality, as natural gas power generation emits 80% less NOx and 99.9% less particulate matters than coal.

In different EU regions, a number of citizens still use coal or wood to heat their homes. This has serious health and environmental impacts, which can be reduced by switching to gas-based heating systems. In Poland, where 80% of private households still use coal for heating, the gas industry has launched a 'Switch to Gas' programme offering co-financing of the installation of gas boilers to improve indoor and outdoor air quality and combat smog.

Affordability and innovation need to be at the centre of any emissions reduction strategy. This will allow the EU to maintain popular support for significant emissions cuts, allow citizens to take active ownership of the transition and inspire other countries to follow the EU's leadership.

A shift towards innovative but affordable gas technologies can make a real difference in achieving global climate goals while improving air quality and enhancing economic development and energy security amid growing energy demand.

The gas industry is already investing significantly in developing innovative solutions aimed at lowering CO₂ emissions. To give one example of an up-and-coming renewable gas technology, cutting-edge power-to-gas technology can now convert excess electricity

into gas. CCS, a technology that allows the capture and storage of CO₂, also has great potential to reduce emissions in the power and industrial sectors.

In Europe, the most recent examples of the gas industry's determination to reduce emissions include the world's first demonstration plant for storing wind energy in the natural gas grid at WindGas Falkenhagen, trial injections of hydrogen into the natural gas distribution grid in Dunkirk and a large-scale CCS project connected to a waste-to-energy plant in Oslo.

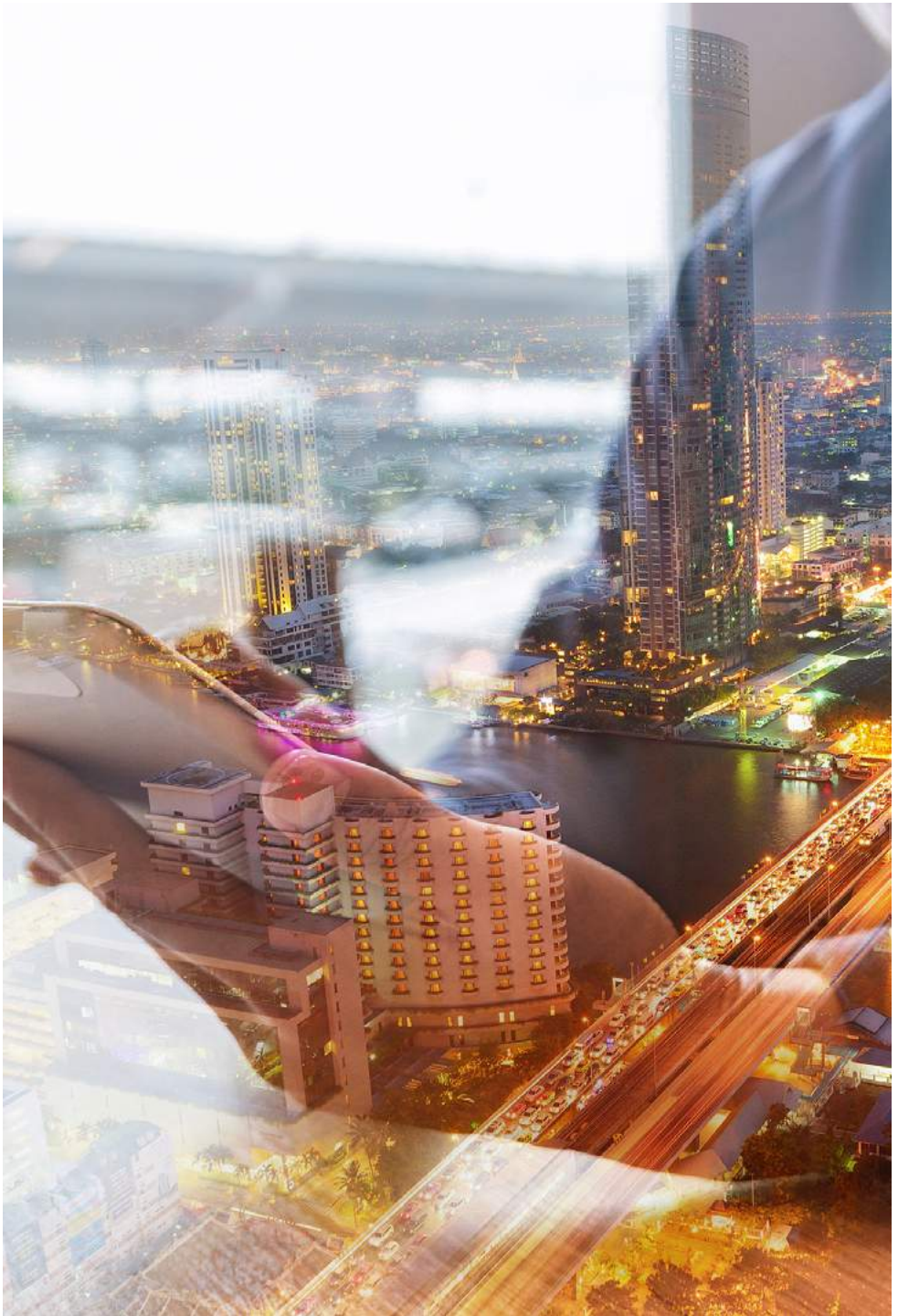
At Snam, facilitating decarbonisation and better energy use has been placed at the core of the company strategy. We are investing in biomethane and energy efficiency, developing small-scale liquefaction plants and exploring the vast potential of hydrogen as a sustainable technology. Renewable and low-carbon gases have considerable potential for growth. Biomethane from waste or biomass, synthetic methane and hydrogen can all be used in stand-alone equipment or blended with natural gas in the existing infrastructure. Facilitating the process of having more renewable and low-carbon gases in the regions relying on coal should be at the heart of the Commission's policies.

In the next phase of cutting emissions, the best way to foster a cost-effective approach to cleaner and more innovative energy is to end subsidies for mature, proven and commercialised technologies and redirect those resources into research and development of new, non-mature

technologies. This should be done in a non-discriminatory way to support research, development and innovation for non-mature technologies which hold future promise for decarbonisation.

Within the gas industry, we are also looking at new areas, such as transport. Gas – in the form of compressed natural gas (CNG) and liquefied natural gas (LNG) – is well suited for transport, as large emissions reductions could be achieved in utility and heavy goods vehicles. LNG can also help reduce CO₂ emissions and air pollutants in barges and sea-going ships.

As the world's largest and growing economies seek to reduce their emissions, gas is becoming the cleaner fuel of choice in many of them. The gas industry is committed to doing all it can to help in the transition, whether it is a case of developing or delivering solutions to address climate change and make our clean future a reality across Europe and in particular, in the regions that heavily rely on coal. To achieve this goal, however, the work must begin today.



Emilia-Romagna: a region at the forefront of environmental legislation and action

The region of Emilia-Romagna in Northeast Italy has been involved in the fight against climate change for several years, both through mitigation and adaptation policies with specific sectorial action plans, laws and projects

Stefano Bonaccini, President of Emilia-Romagna and Vice-President of the Council of European Municipalities and Regions (CEMR)

The goal of the European Union's new Energy Roadmap 2050 is to reduce greenhouse gas emissions by 80%, when compared to 1990 levels, by 2050. While 2050 may seem reassuringly far away to both policymakers and citizens, the understanding that the babies born today will be only young adults at the beginning of their professional careers by that date puts this timescale into perspective.

The urgency of the situation makes it all the more important that local and regional levels receive national and EU support. The infrastructural changes and resources upon which success in the energy transition depends cannot be met exclusively with municipal

budgets, as the European Commission has already estimated that €100bn need to be invested per year to improve the energy efficiency of buildings and industries. Equally important are the legislative changes which allow for subnational governments to take more far-reaching actions on energy while simultaneously encouraging other policy fields to include specific climate and energy clauses on, but not limited to, public procurement, energy taxation and state support.

The region of Emilia-Romagna in Northeast Italy has been involved in the fight against climate change for several years, both through mitigation and adaptation policies

with specific sectorial action plans, laws and projects.

We recently developed and adopted a Strategy for Mitigation and Adaptation which takes into account the vulnerability of economic sectors as well as physical and biological sectors. Given that this strategy evolved out of the work carried out at regional level, the document features different, local-level climate change scenarios as forecasted by the Regional Agency for Prevention, Environment and Energy (ARPAE). These include environmental impact assessments of regional areas (urban, coastal, flat land, mountainous) and economic sectors (agriculture, transport, industrial activities) in the case of extreme weather events.

In Emilia-Romagna, risks for drought and desertification are monitored online through a water scarcity and availability measuring system. Moreover, vulnerability maps have been developed to forecast extreme weather events. These maps allow the region to classify its risk levels as requested by the European Flooding Directive.

The Regional Management Plan for Flood Risks, approved in 2016 and now undergoing its first update, contains measures for preventing damage and conducting risk management of extreme weather events associated with climate change. The measures also include plans for prevention, protection and return to 'business as usual' which have been put in place according to the competency of the national and regional Civil Protection System.

Another important piece of environmental legislation in Emilia-Romagna is the new urban planning law which aims to reduce the amount of space typically allocated to urban sprawl. Planning tools have been developed to cut urban sprawl by 60% from 250 km² to 70 km², thus ensuring that land use in each municipality does not exceed 3% of urbanised soil – today it is 11% – and is only allowed for projects aimed at supporting the sustainability and attractiveness of the territory, such as providing new spaces of production. This limitation does not include new residential settlements linked to urban regeneration projects in territories that are already urbanised or in cases of social housing construction.

Specific regulations have also been adopted to protect and enhance agricultural areas. New buildings can be built provided that they are needed for farm work or they are included in rural activity modernisation plans. Incentives for the destruction of abandoned buildings must therefore be anticipated and planned for accordingly. Contributions have also been made to public bodies, with tax allowances being granted to citizens and businesses for the purposes of urban regeneration, seismic upgrading and improving the energy efficiency of buildings.

These policies have been promoted by the Emilia-Romagna region through its leading role in the national Italian network of 'Green Cities', a programme that aims to share good practices of locally implemented environmental and social sustainability measures.

This engagement is a key component of the region's 'green strategy' which aims to improve the urban quality of life through the creation of sustainable urban areas, through the regeneration and rehabilitation projects based on innovation, through a conscious and efficient use of resources and efficiency of services and through the enhancement of natural capital.

The Emilia-Romagna region also took part in the 2018 Global Climate Action Summit where it had a very strategic challenge in mind: the transition to zero emission transportation. Shifting to zero emission vehicles (ZEV) will improve the quality of life in our communities while contributing towards the fight against climate change. ZEVs reduce greenhouse gas emissions and produce no tailpipe pollution, which contributes to cleaner air and better health. ZEVs are also an integral part of the emerging industries that will be engines of growth for our economies. The region has made a commitment to take the necessary actions to reach 100% zero emission passenger vehicle purchases before 2050. This will happen by redirecting all transportation public procurement towards zero emission vehicles by 2030, providing businesses and consumers with the incentives to purchase ZEVs and rolling out ZEV charging and fuelling stations.

Given the central role of subnational governments in paving the way towards cleaner air, the Emilia Romagna region joined "Under2Coalition" when it was launched in 2015 by the State of California and Baden-

Württemberg Region. This is an agreement of 220 states and regional governments who are committed to meeting the goals of the Paris agreement in addition to keeping the rise in global temperature below 2°C, with or without the support of their national governments.

Such commitments are needed if we want to have a fighting chance against climate change and its implications.



Tackling climate change through sustainable landscapes: the case of Alto Mayo

Protecting, restoring and expanding key ecosystems such as forests and mangroves can indeed deliver over 30% of the greenhouse gas emission reductions required by 2030

Claudio Schneider, Senior Technical Director of Conservation International Peru

Herbert Lust, Managing Director of Conservation International Europe

The climate is changing at an alarming pace, despite historic efforts to prevent the Earth from turning into a “hothouse”. Fortunately, we have a cost-efficient and readily available ally on our side: Nature.

Protecting, restoring and expanding key ecosystems such as forests and mangroves can indeed deliver over 30% of the greenhouse gas emission reductions required by 2030 to keep global warming below 2°C. Nature also plays a significant role in terms of adapting to changing climate conditions, reducing people’s vulnerability to the range of dangers associated with climate change and providing significant co-benefits, such as clean air and water.

To effectively address climate change, it is imperative that we hold the drivers of global deforestation and ecosystem degradation accountable. Consumption patterns in the European Union and in other major economies, such as India and China, have a significant impact on agriculture and related ecosystems, which in turn affects the adequacy of efforts set in place to meet the goals of the Paris Agreement.

At least 27% of global forest loss can be attributed to deforestation due to the use of land for commodity production. According to a 2013 report produced by the European Commission, between 1990 and 2008, EU

imports plunged an area the size of Portugal into deforestation. However, the fact that the EU is one of the biggest importers of forest-risk commodities (e.g. palm oil, soy, cocoa and coffee) opens up opportunities to drive transformation in those countries that remain primarily responsible for producing these commodities.

Organisations like Conservation International (CI) aim to integrate ecosystems into large-scale land use strategies through a sustainable landscape approach in regions with high conservation value areas that produce agricultural commodities. Implemented through partnerships with a wide range of stakeholders, the objective of this approach is two-fold: address the drivers of deforestation through the promotion of sustainable production and good governance and improve the livelihoods of local communities.

In Northeast Peru, CI and its partners have been working for more than ten years to reduce deforestation in the Alto Mayo basin. The landscape is composed of the basin, the home of fourteen Awajun indigenous communities, and a protected forest twice the size of New York City which provides the necessary ecosystem services, such as carbon sequestration and fresh water, for more than 250,000 people in the region.

The sustainable landscape approach in the Alto Mayo basin consists of various initiatives, including a project with the Norwegian Agency for Development Cooperation (NORAD), REDD+ activities financed by private and

public donors, conservation agreements and cooperation with the Peruvian government. Holistic efforts focusing in and around the Alto Mayo Protected Forest aim at demonstrating that conservation of high biodiversity areas is compatible with small-scale crop production. Despite its protected status, the Alto Mayo forest had some of the country's highest deforestation rates and remained trapped within a vicious circle: deforestation led to depleted soil fertility, so farmers cleared trees to maintain production levels, which led to more deforestation, and so on.

To halt the loss of forests, CI and partners broker “conservation agreements” with local communities: farmers pledge not to clear trees in prioritised areas of the Alto Mayo basin and in return, they receive agricultural training to improve their productivity and the quality of their crops. The key for success lies in the combination of securing preferential markets that pay top dollar for very high-quality coffee – thus doubling the farmers’ income – and the utilisation of conservation agreements, thanks to which the local communities are not only trusted partners for conservation but also leaders that spread the word on the benefits of the process. In the basin, two Awajun communities signed conservation agreements and 200 agreements have been signed with coffee and cocoa producers. Furthermore, over one thousand agreements were signed in the protected area’s buffer zone.

In partnership with Disney, BHP and other companies, REDD+ activities have also

been implemented in the protected forest of the Alto Mayo. As an example, park rangers and local communities have been trained to use drones as a forest monitoring tool. As a result, rangers are spared from long-distance hikes and from travelling to potentially dangerous areas. As a result, the Alto Mayo REDD+ activities have generated over 6.2 million tons of emission reductions since 2008 – the equivalent of taking annually nearly 150,000 cars off the road – and have reduced deforestation at the site by 75% from baseline levels.

The Alto Mayo example demonstrates how multi-sector partnerships can benefit environmental conservation while improving the livelihoods of local communities. However, to unlock their full potential and effectively contribute to climate action, designing sustainable landscapes requires well-designed policies at local, national and global levels.

The key countries in question should be supported to employ and integrate sustainable landscape approaches into their Nationally Determined Contributions under the Paris Agreement. Developing and securing preferential markets for sustainable commodities is also critical to make sure these approaches work on the long-term.

Consuming markets like the EU should promote sustainable landscapes through adequate finance and enabling policies. The first step would be for the EU to develop an ambitious strategy against

imported deforestation and ecosystem degradation, building on corporate actors' zero-deforestation commitments and actions already taken by some European states. As a global leader on climate change, the EU has a responsibility to tackle this issue and to spur other stakeholders to action.

RECOMMENDATIONS

ORCHESTRATING STRUCTURAL CHANGE

Issue: Orchestrating structural change for coal regions to transition requires meticulous long-term planning. Phasing out coal and replacing traditional economic sectors with innovative ones is a true challenge that cannot be solved without undergoing significant change throughout various levels of administration. Moreover, ensuring that the competitiveness of these regions is maintained also entails strong multi-stakeholder support as well as the channelling of public and private finance. As every country and region is unique, no two challenges are the same. Long-term planning is thus required to ensure the sustainable development and transformation of coal regions, especially given the understanding that there is no one-size-fits-all strategy for achieving a just and innovative transition.

Action: Orchestrating structural change requires the proposal of an extensive financial foundation and a robust institutional framework for buffering changes in the affected regions. Strong governmental support within member states is a prerequisite for this operation, as the transition process calls for the continuous address of administrative and financial challenges. For this to happen, specific actions must be undertaken and, most importantly, the implementation of

an alignment between local and national authorities in partnership with the right EU bodies like the Directorate-Generals for Regional and Urban Policy and for Energy and Climate Action. A potential starting point could be to establish a first review of the Coal Regions in Transition Platform initiative which provides an early evaluation of progress along with an assessment of whether the proposed efforts are leading to structural change. Changes at national level may be required for development to take place at regional level, and guidance from EU institutions will be needed at national and subnational levels. This should ideally lead to the development of a 'strategic toolbox' that can be used to reconcile climate mitigation with growth, structural changes, social issues and cohesion.

Opportunity: Modernising a region requires persistent effort when it comes to limiting economic and social issues, and it is necessary to respond to these issues with the utmost attention to avoid mass unemployment and the collapse of the regional economy. Regions need not only money and job guarantees, but also sustainable infrastructure, continuous support and new financial incentives. The opportunity to diversify the economy and create jobs to avoid the negative social consequences of the transition is thus worth

keeping in mind. Taking a collaborative and multi-stakeholder approach can ensure a buy-in to the development and the sustainability of new economic activities. To prevent the transition from being limited to the fields of energy and climate alone, it will be crucial to take the various socio-economic aspects into account. If well-orchestrated, climate protection and a just transition can support one another. Most importantly, if the EU puts all of these elements into practice, it can position itself as an international hub of expertise for regional transition.

CONNECTING NETWORKS

Issue: Ensuring balanced economic development in all EU regions is a true challenge. The successful transition of a region requires the involvement of all actors and stakeholders. Coordinating actions at EU, national and regional levels is key, and it is therefore of utmost importance that more stakeholder engagement takes place at local level. Providing active political and financial support at all levels is a precondition for ensuring that all stakeholders are part of the transition process. A just transition does not concern workers and trade unions exclusively – it concerns everyone.

Action: To ensure the provision of adequate solutions and to make sure that the socio-economic gaps once inhabited by coal are filled, developing a tailor-made economic and social transition that helps regions move away from coal to more sustainable options will be key. Roadmaps and collaboration

strategies, working alongside national and regional authorities and local stakeholders, must therefore be developed. In this regard, EU bodies for regional cohesion policy, municipalities and businesses must step in to foresee the options for regional cross-fertilisation. A key action will be to establish a forum or a network of coal municipalities that would encompass regions that are succeeding in the transition in addition to those that are on the pathway of transition but require greater support. This initiative should be led by the Directorate-General for Regional and Urban Policy, networks of regions and cities such as the Council of European Regions and Municipalities, EUROCITIES, Committee of Regions and Mayors' networks, all working in collaboration with businesses, in particular, energy companies, that have demonstrated leadership in the transition. It will also be crucial to support cooperation between research institutions and companies focused on economic development so as to encourage the sharing of the best practices, know-how and methodologies for change.

Opportunity: The EU must do its part to ensure a just transition in a way that leaves neither regions nor EU citizens behind. In a time where nationalism and populism are on the rise, the transition represents a fundamental matter of European integration. It is essential to create an inclusive, transparent process in which all relevant stakeholders can take part. Authorities at national, regional and local levels must all be involved, and the experiences of industries, trade unions, academia, civil society, NGOs and citizen

groups must be heard. Having all of these stakeholders around the table will ensure that the transition is inclusive and socially acceptable. Nations and regions must also fund new regional research institutions which have the potential to serve as a nucleus for industrial innovation and production.

GETTING THE PEOPLE ISSUE RIGHT

Issue: Phasing out coal must be accompanied by a comprehensive transition strategy aimed at minimising hardships for local societies and employees. The EU Joint Research Centre has estimated that at the current rate, around 77,000 direct jobs will be lost by 2025 and 160,000 by 2030. It is thus important to develop alternatives for employees to avoid mass unemployment. Equally important is the provision of opportunities to avoid social exclusion and the 'brain drain' of former coal regions. A coherent strategy should outline sustainable perspectives for employment in regions and industries affected by a coal phase-out. It is therefore imperative that programmes for re-skilling are deployed early on, and that they are accompanied by public-private partnerships that incentivise economic change and growth.

Action: To minimise the negative impacts of restructuring, specific actions should be undertaken by regional authorities with the support of national governments and EU-dedicated bodies such as the Directorate-Generals for Regional and Urban Policy, and Employment, along with the Commission's SRSS (Structural Reform Support Service)

and JASPERS (Joint Assistance to Support Projects in European Regions). A key starting point should be identifying actions which aim to develop employee competencies in the mining industry while simultaneously reducing climate change vulnerability. At regional and national levels, governments should work in partnership with private sector and educational establishments to develop a programme for an employee competency database, a programme for professional adaptation and programmes with a focus on re-skilling and up-skilling. Furthermore, the creation of social centres for youth and the elderly would develop human and social capital in these regions by increasing the overall quality of life. This should be supported by EU funding targeted at employment skills-training and job growth. The EU bodies noted above can play a crucial role in facilitating this initiative.

Opportunity: Supporting regions to achieve a holistic and just transition is an area in which the EU can demonstrate its value. Adopting the aforementioned measures can lead to inclusive growth model wherein the European Commission can demonstrate its leverage, commitment and capacity to be flexible and responsive. Developing early retirement schemes, encouraging environmental restoration work and developing re- and up-skilling schemes for cutting-edge green industries are representative of just some of the options to be considered. Implementing proper social strategies will enable the EU to demonstrate its relevance and its connection to citizens on the ground.

SMART FINANCING FOR CHANGE

Issue: Smart financing for change involves the modification of current spending habits so that they are more focused and objective-driven and, as a result, better prepared to address the needs of a region on its way to a just transition. It also involves calibrating planned funding and budgets so that they better suited to focusing on the identified core areas, such as employment opportunities tailored to the needs of the coal regions in transition. Facilitating investment processes in carbon intensive regions is a dual challenge which requires devoting funds to not only support the low-carbon economy, renewable energy sources and energy efficiency, but also to support innovation, entrepreneurship, education, social rejuvenation and infrastructural revitalisation. All of this will enable both the labour market and the economy to grow. Investors and companies can only develop relevant projects if given the green light by authorities. For this reason, the challenges confronting mining regions must be acknowledged in the attribution of EU funds. It is also important to highlight the reality that investments in low-carbon businesses and technologies will not even scratch the surface of the issue if they are executed in isolation, without consideration of the local economic, social, cultural and environmental realities.

Action: A key action should be to ensure that the European Structural and Investment Funds, including the European Regional Development Fund (ERDF); European Social

Fund (ESF); and Cohesion Fund (CF), have a coordinated approach to coal regions in transition. Moreover, establishing a Just Transition Fund in the framework of the EU Emissions Trading System should be considered, and the new EU Multi Financial Framework feature, 'Just Transition', should be included as one of the priorities of Cohesion policy. The next EU budget should offer strong support to coal regions in transition. Continued reliance on an array of funding instruments is not the best option as there is a need for more dedicated efforts which could benefit from a strategic financing model. The new European Commission should prioritise this issue and give it the urgent attention it deserves.

Opportunity: For coal regions in transition, there is no choice but to develop alternative economic activities to avoid economic collapse, and this starts with the right investments. Therefore, developing financing instruments that facilitate and support the development of new economic activities is paramount. Private resources should be mobilised and combined effectively with public sources of funding at regional, national and EU levels. Rejuvenating a regional economy is only possible as long as funds are directed towards sustainable economic activities and not wasted on quick fixes, such as coal subsidies. The overarching challenges and opportunities lie in creating the right incentives so that the regions in question can attract new industries and job opportunities. The opportunity herein is for the EU, regional bodies and governments to work together to

demonstrate a collaborative, coherent multi-stakeholder approach that places citizens at the heart of action.

INTEGRATING TECHNOLOGY AND INNOVATION

Issue: For regions to transition and adapt to the economic decline of coal, they should harness transformation strategies and employ solutions to rapidly and cost-effectively counteract the risks of climate change. Facilitating the process of having more renewable and low-carbon energy sources in regions relying on coal should be at the heart of the European Commission's policies. Deploying technologies and investing in innovation is key to finding solutions to societal challenges. It will be important to prevent a situation in which some regions would reap the benefits of the energy transition in terms of growth and new jobs, while others would see their industries and jobs disappear.

Action: Any efforts to reduce emissions and mitigate climate change cannot be achieved without including the energy and research sectors. Building on the Smart Specialisation programme led by the Joint Research Centre, a structured and targeted approach led by the JRC, could enable coal regions to maximise their existing assets to create interregional partnerships for innovative projects. This targeted activity led by the JRC should link up with the European Observatory for Clusters and Industrial Change to support coal regions to develop strategies to kick-start the process

of diversification and transition. It is thus important to showcase how technological solutions have the true potential to ensure a just and innovative transition. Abandoning coal as a fuel and replacing it with low-carbon energy sources would allow for drastic cuts in emissions in addition to having a positive impact on air quality. It is only through the sharing of experiences and good practices that one can ensure that coal regions today may reap the benefits offered by technology and innovation.

Opportunity: Renewable energy, in particular wind, can fill the socio-economic gaps once inhabited by coal. Wind has already had a positive impact on regions all across Europe, with citizens benefitting considerably from the shared ownership of wind farms. Renewable energy is a motor of job creation and has shown positive results by filling the gap left by the industries of the past. Affected regions need the best available digital infrastructure as well as solid transportation networks. To this end, coal regions have the potential to drive the next industrial revolution and embrace clean energy technologies. With modern and clean technologies, coal regions can become catalysts for change, securing a smarter, healthier and greener future. Given the central role of regional authorities in attracting industries and deploying green technologies, it is clear that they deserve greater involvement at national level to achieve the targets of the Paris Agreement. It is thus time for coal regions to lead the way and demonstrate their leadership on the transition to a decarbonised future.

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