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# Exploring the Socio-economic Impact of the Transition to a Climate Neutral Economy: A Foresight Approach

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## Abstract

The EU transition to a climate neutral economy requires nothing short of a clean industrial revolution. This report explores the potential implications of such fundamental socio-economic change on different EU regions and population subgroups while following a foresight approach. A scenario-focused engagement with stakeholders and experts was conducted to understand emerging economic and social inequalities at the EU and regional level. The research findings are presented together with policy pointers towards developing measures for achieving a just transition that 'leaves no one behind' in future decision-making.

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# Executive summary

## Introduction

The European Union's (EU) transition to a climate neutral economy requires nothing short of a clean industrial revolution. This report explores the potential implications of such fundamental socio-economic change on different EU regions and population subgroups while following a foresight approach. The research findings are presented together with policy pointers towards developing measures aimed at achieving a just transition that 'leaves no one behind'.

## Policy context

With its adoption of the European Climate Law (June 2021), the EU is committed to achieving climate neutrality by 2050. It has set itself a binding target of reducing GHG emissions by at least 55% by 2030, compared with 1990 levels. To reach these targets, a fundamental transformation of energy, transport and production systems will be necessary. This will impact on economies, societies, territories, and people's lives. Simultaneously, a recalibration of industrial relations and wider socio-economic policies will be required to deliver fair results for citizens across EU Member States and ensure public support for the transition.

The European Commission's Just Transition Mechanism (JTM) was introduced in recognition of the fundamental socio-economic change required by the European Green Deal. It aims to promote EU cohesion and maintain social fairness and inclusiveness, key objectives of the European Pillar of Social Rights (EPSR). The JTM together with the 'Fit for 55' package - crucially the Social Climate Fund - provides support for those regions, industries, and workers who face the greatest transition hurdles. This report explores whether additional policy measures may be required to ensure fair outcomes for regions and population subgroups and secure European cohesion on that basis.

## Key findings

- **Securing livelihoods, welfare, and fairness:** Beyond job losses, a failure to address the ensuing social challenges, such as job polarisation and securing adequate welfare, is a key risk. Without a constant focus on the distributional effects of climate change mitigation measures and possibly a consideration of entirely new welfare models, there is a risk of existing inequities being reinforced. Beyond this, there are more fundamental challenges to the way the just transition is currently approached in the EU policy context. In this view, shifts towards a stronger focus on the sufficiency principle to tackle climate change and more localised economic models (notably through Circular Economy approaches) are identified as ways to ensure fairness and welfare.
- **Refocusing economic development:** The industrial restructuring required for the transition depends on successfully leveraging mission-driven innovation (i.e. innovation deployed in pursuit of sustainability objectives) to secure the economic competitiveness of European regions. A new more localised economy adopting Circular Economy principles can draw on regional assets to secure benefits e.g. to ecosystems and for safer products. This must happen in conjunction with providing adequate scope for social innovation. As well as

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delivering economic diversification to ensure that opportunities are created for socio-economic groups in different circumstances and with different assets.

- **Infrastructure renewal:** Improving infrastructures emerges as a key lever to deliver just outcomes for different socio-economic groups from the transition. Citizen engagement is key to achieving the potential benefits of the infrastructure renewal processes, including improved public health and well-being.
- **Enabling systemic change in European regions:** Effective multi-level governance requires investment in capacity development down to the regional and local level. Alongside this, an integrated evidence base drawing on social, economic and environmental data can help facilitate long-term systemic change through a reconfiguration of wider production and consumption systems. Strengthening mechanisms for continuous social dialogue and institutionalising broad civil society engagement will be crucial in navigating potential conflict. As will challenging institutionalised power relationships between the state, the corporate sector, trade unions and citizens that may obstruct a just transition. At the same time, the specifics of regional socio-economic systems and specific patterns of disadvantage between different socio-economic groups need to be considered.

## Policy pointers

Drawing on the future-focused scenario discussions, three main levers for the institutional change required to deliver a just transition can be identified:

- Both the negative effects of climate change on different socio-economic groups and the benefits of the transition should receive more attention in the policy debate. This can strengthen the case for change and create the governance capacity and political room for manoeuvre to deliver a just transition.
- To provide strategic coherence to the transition across EU regions and economic sectors strategic cooperation between public authorities, social partners and civil society will need to be levered. This should also include engagement with changes in lifestyles and patterns of consumption, while factoring in the different starting points for different socio-economic groups.
- To ensure fair outcomes for different socio-economic groups and European regions, public policy needs to play a greater role in securing and fairly distributing resources in a climate neutral world. While at the same time relying less on market-based allocation mechanisms.

Specific policy pointers for different population groups include:

- **Securing livelihoods, welfare and fairness:** Strong need to factor in differences in personal circumstances beyond individuals' current employment status when delivering reskilling and job transition support and welfare. While also being alert to the emergence of new patterns or reinforcement of existing job polarisation.
- **Refocusing economic development:** Make new economic opportunities from the transition accessible to all by strengthening collective worker representation, including for new settings and forms of work. While also actively shaping consumption choices to align with new economic models.

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- **Infrastructure renewal:** Ensure socially fair and just access to infrastructure for basic needs, (e.g., housing, transport, and digital connectivity) as a key prerequisite for the realisation of wider transition opportunities.
  - **Enabling systemic change in European regions:** Embed diverse perspectives and integrated data collection and analysis capabilities in regions to avoid relying on a ‘business as usual’ assumption, while leveraging education to get populations behind the transition.

Specific policy pointers for different European regions include:

- **Securing livelihoods, welfare and fairness:** Factor regional capacities and assets into tailored transition paths for different regions, including the strength and make-up of the industrial base, the nature and resilience of public services and welfare systems as well as mechanisms of social dialogue.
- **Refocusing economic development:** Nurture trust-based relationships between populations, governance organisations and the private sector to mobilise all available regional assets and lever the regional innovation system to deliver economic diversification.
- **Infrastructure renewal:** Ensure necessary investment and governance capacity to enable all EU regions to deliver appropriate infrastructure solutions to their citizens. While also leveraging innovation, and community wealth building solutions to garner support.
- **Enabling systemic change in European regions:** Equip regions to embed transparency and participation in political processes and to tackle vested interests to nurture trust and enable new forms of socio-economic cooperation.

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## Introduction

The EU has set itself ambitious targets for achieving climate neutrality by 2050, as outlined in its 2020 Green Deal. The precise trajectory that this transition will take is highly uncertain. What is needed to make this a reality is nothing short of a clean industrial revolution. Socio-economic policies will be required to deliver fair results for citizens across European countries and regions and ensure public support for the transition. Additionally, social dialogue and collective bargaining on just transition dimensions can greatly contribute towards achieving outcomes beneficial to both workers and companies.

In exploring the wider repercussions of the transition, this report identifies potential socio-economic impacts for different EU population subgroups and regions until 2050. The results presented contribute to the debate about how additional policy levers can be deployed to ensure maximum effectiveness of the three pillars of the JTM while minimising adverse social and distributional effects of the transition to climate neutrality in the EU. It aims to assist policy makers and other stakeholders with insights and policy pointers towards developing measures aimed at achieving a just transition.

*A just transition to a climate-neutral economy provides and guarantees better and decent jobs, social protection, more training opportunities and greater job security for all workers affected by global warming and climate change policies. (Eurofound, 2022a)*

To arrive at these insights in this highly complex setting, a foresight approach was adopted. The central method being the use of (qualitative) scenarios to consider alternative plausible, imaginable, or possible futures. The scenario-based approach helps to explore how different trends and drivers might affect different regions and socio-economic groups to understand emerging economic and social inequalities. Eurofound publishes this Foresight exercise alongside a study that investigates the recent past, with a backward study on the socio-economic impact of the transition to a climate neutral economy (Eurofound, 2023a forthcoming). These studies build on the conceptual framework on the impact of climate change and policies in the context of the green transition (Eurofound, 2023b forthcoming).

With its adoption of the European Climate Law (June 2021), the EU is committed to achieving climate neutrality by 2050 and has set itself a binding target of reducing GHG emissions by at least 55% by 2030, compared with 1990 levels. The JTM was introduced in recognition of the fundamental socio-economic change required by the European Green Deal. It aims to promote EU cohesion and maintain social fairness and inclusiveness, key objectives of the European Pillar of Social Rights (EPSR). It is made up of three pillars, namely grants through the Just Transition Fund (JTF), investment through InvestEU to lever in additional private investment, and public sector loans to enable public sector agencies to invest in vital infrastructure and support systems. The JTM's explicit goal is to 'leave no one behind' in this process (EC, 2019). The JTM together with the 'Fit for 55' package – crucially the Social Climate Fund – provides support for those regions, industries, and workers who face the greatest transition hurdles. This report explores whether additional policy measures may be required to ensure fair outcomes for regions and population subgroups and secure European cohesion on that basis.

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## What is a just transition?

The term ‘just transition’ is believed to have been coined by North American trade unions to provide a framework for discussions on the kinds of social and economic interventions necessary to secure workers’ livelihoods in the shift from high-carbon to low-carbon, climate-resilient economies (Popp et al, 2018, p. 7). From those early origins, it has become widely embedded in policy-making as part of the pursuit of the Sustainable Development Goals (SDGs). This is illustrated, for instance, by the following reference in the Paris Agreement:

*Taking into account the imperatives of a just transition of the workforce and the creation of decent work and quality jobs in accordance with nationally defined development priorities. (UN, 2015, p. 2)*

European Commission policy documents use a loose definition of the term just transition. The Council recommendation regarding the fair transition refers to the fact that ‘Fairness and solidarity are defining principles of the European Green Deal’ (EC, 2021a, p. 1). The JTM itself is introduced on the basis of ensuring that ‘the transition towards a climate-neutral economy happens in a fair way, leaving no one behind’ (EC, undated-a).

## 1 – Foresight approach

This report aims to inform further research and policy development with a view to maximise opportunities and alleviate negative impacts of the transition to climate neutrality for EU regions and population subgroups. The three key research questions are:

1. What are potential socio-economic implications of the transition to climate neutrality, for EU regions and populations subgroups, until 2050?
2. What further inequalities may emerge among social groups and how can they be addressed?
3. What initiatives and policy choices can help prevent economic and social divergence among geographical areas?

A foresight methodology was followed in answering these questions. According to the European Commission these are defined as a ‘discipline of exploring, anticipating and shaping the future to help build and use collective intelligence in a structured, systematic and systemic way, so as to anticipate developments’ (EC, 2020a). Foresight aims to shed light on possible actions that can be undertaken today to shape the future. Scenarios are the central foresight approach used in this report to explore alternative futures and implications with different EU and regional stakeholders. Scenarios enable the exploration of a much wider range of potential developments and actions than a purely data-driven analysis in the form of forecasts and econometric methods can deliver. They allow stakeholders to qualitatively explore what may happen rather than attempting to predict what will happen. This makes them a particularly useful tool to consider highly complex issues in changing and unstable environments. With the aim of identifying emerging issues where proactive actions could positively shape future outcomes.



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**Desk research:** The scenarios were developed on the back of a literature review. The latter helped identify key themes and tensions with regard to socio-economic outcomes that may arise from the transition trajectory envisaged by EU policies. Insights were gathered from relevant literature on challenges and opportunities for a just transition which then fed into the development of three scenarios via a key factor-based scenario methodology. In this approach different projections for key factors, the drivers identified as playing a role in shaping different possible futures, are tested for plausible combinations that create distinctive scenarios. This allows for a systematic, transparent, and modular development of scenarios, which can be updated smoothly at any time, including in further work beyond this research. An impact-uncertainty analysis was then undertaken to determine how the key factors would feature in the scenario construction, with those high in impact and uncertainty commanding a central role.

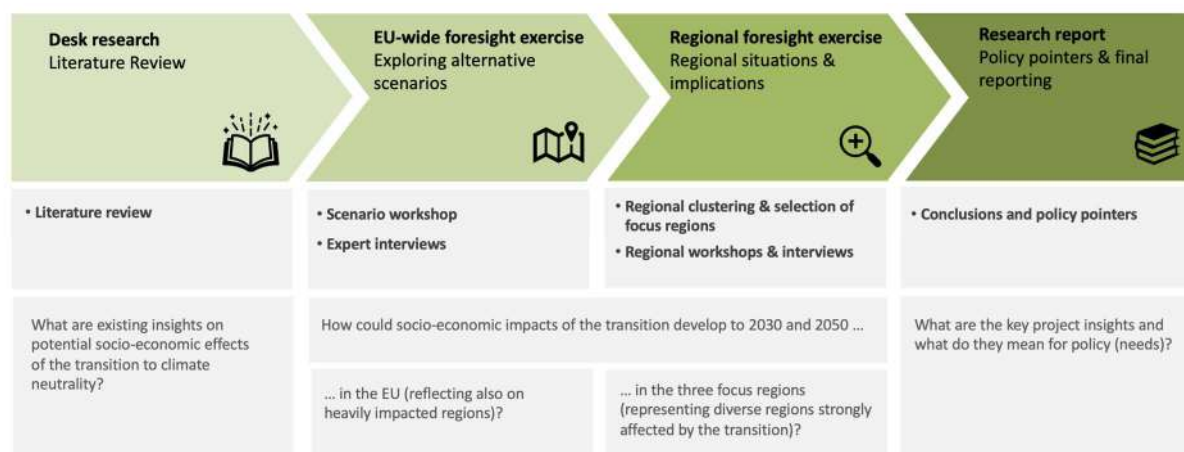
**EU Foresight:** The resulting three plausible, alternative EU transition trajectories (summarised in table 1) offered a framework for discussions with stakeholders on socio-economic implications and key policy levers to alleviate resulting inequalities. The choice to use a limited number of scenarios was made, as this is favourable for topics that are as broad, complex, and affect a variety of policy fields like the just transition. With such complexity, limiting the work to three scenarios allowed for greater depth in considering implications and helped ensure clear communication and high usability of the results.

Using the scenarios to stimulate forward-looking discussions, an online EU-level expert workshop was held to discuss the role that key policy levers and institutional change might play in shaping possible just transition futures. Participants were asked to consider likely impacts of the scenarios on different socio-economic population subgroups and regions within the EU until 2050. The involvement of a variety of stakeholders from different perspectives and backgrounds played a key role in strengthening the scenarios. It helped to identify potential blind spots that may have been overlooked in the original scenario development and provided a sounding board for the preliminary results derived. The scenarios were then further refined and built upon as a result of the insights gathered.

**Regional foresight:** Three online regional workshops were held to discuss potential implications for individual regions from the transition to climate neutrality. Participants included regional and local stakeholders representing government, employers, employees, NGOs, and research organisations. The expertise of regional research partners was sought to identify and engage local stakeholders and embed local knowledge within the discussions and findings. The scenarios were again used to stimulate discussions about key challenges and opportunities from the transition for the respective region and to assess potential socio-economic impacts at a regional level. To ensure all key stakeholder perspectives were reflected in each region, follow-up interviews were undertaken where workshop attendance did not provide this (the list of contributing stakeholders is included in the Annex).

The evidence gathered during the desk research, EU-foresight exercise and regional foresight exercise has been consolidated into this final research report (Figure 1).

Figure 1: Key research stages



**Limitations:** This report contributes to the discussion of policy choices with regard to the just transition. Decision-makers should be aware that the scope and scale of the work undertaken does not provide the basis for a comprehensive analysis of the situation throughout EU regions or completeness regarding possible policy levers. The methodological approach was chosen to ensure that outputs could be generated within the research scope and timeline. This needs to be kept in mind when using the results.

## Scenarios for the workshops

Scenarios were developed to initiate discussions at the workshops. The scenarios are not predictions, but offer a way to consider alternative plausible, imaginable, or possible futures of potential pathways towards a just transition in the EU.

The three scenarios draw on the specific insights gained from the literature review, alongside the experts' perspectives collected at the workshops and interviews. Insights on challenges and opportunities for a just transition in the EU until 2050 formed the basis of scenario narratives. With further detail on possible plausible developments and events integrated into the storylines. The scenarios focus on the EU but also consider global developments where they play a part in influencing wider socio-economic developments in Europe.

An overview of the three scenarios is provided in table 1 below, while a summary of each scenario describing what Europe might look like in 2030+ under each pathway follows.

Table 1: Overview of the scenarios of the transition by 2030

| All Aboard the Well-being Transition   | A Piecemeal Transition  | A Struggling Transition  |
|--|---|--|
| <ul style="list-style-type: none"> <li>• Transition to climate neutrality ahead of schedule, pushed by geopolitical events</li> <li>• Electricity generation fully renewable, transport sector greening rapidly</li> <li>• International democratic renaissance, strong EU role in (fair) global transition</li> <li>• New EU tax system &amp; rights for individuals (housing, etc.)</li> <li>• Smart cities (first) drive transition in regions, local actors play a large role</li> <li>• New broad cross-generational environmentalism movement, qualitative growth paradigms, strong progress towards a circular economy, short regional supply chains</li> </ul> | <ul style="list-style-type: none"> <li>• Transition to climate neutrality progresses as planned</li> <li>• Renewables growth mainly for electricity generation, fuels remain largely fossil</li> <li>• Ongoing global crises affecting the EU (including new migration crisis)</li> <li>• In the EU, costs &amp; delays are a constant issue as well as infighting between Member States</li> <li>• Patchwork of winners and losers / innovation hubs vs. rust belt</li> <li>• Some reshoring, but at a cost (i.e. reduced industry competitiveness)</li> </ul> | <ul style="list-style-type: none"> <li>• Transition to climate neutrality falters</li> <li>• Relatively cheap oil/gas dominates; transfer from fossil &amp; carbon intensive industries slowed due to protests</li> <li>• Ongoing series of heavy-impact global crises (geopolitical &amp; climate change-caused): Short-termism rules</li> <li>• EU cohesion suffers, lack of shared will or agreement &amp; decision-making</li> <li>• New luddite movement against sustainability: Convenience is king</li> <li>• EU economy suffers in trade wars, lack of innovation</li> </ul> |

**All Aboard the Well-being Transition:** Triggered by geopolitical events, but based on a fundamental shift in political consciousness, the EU moved rapidly towards climate neutrality. By 2030, power generation has become fully renewable, and the transport sector is rapidly shifting towards non-fossil fuels. Progress was often accomplished through bottom-up processes and grassroots movements: local actors played a large role in the placing of reshored industries, cities took the lead in circular economy schemes, and the focus on qualitative growth paradigms was supported by a broad, cross-generational coalition of public stakeholders. Globally, a democratic renaissance revived supranational organisations and united a now much less volatile world, the climate neutral movement is becoming universal.

**A Piecemeal Transition:** Under the paradigm of energy autonomy, the transition to climate neutrality is progressing as planned. By 2030, a clear majority of electricity generation has almost completely switched to renewables, while in the transport sector, fuels are only slowly beginning to shift to non-fossil alternatives. Internal debates on metrics and costs have dampened ambitions, while ongoing global crises impact Europe in the form of new waves of migration. To secure supply chains, some industries have been reshored, but this has come at the expense of industry competitiveness. In the process, disparities between regions and population subgroups have increased, leading to clear winners and losers.

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**A Struggling Transition:** After a successful start to the transition, Europe failed to make progress beyond initial gains. Convenience rather than carbon neutrality became the guiding principle: when prices for fossil fuels fell public debate emphasised the temporary drawbacks of turning away from fossil sources. Targets were first softened and then abandoned. By the second half of the 2020s, a series of geopolitical crises meant that short-term solutions became all that mattered. With the EU suffering from political gridlock, Member States began to follow national policies. Today, tensions within and between populations are high, in a stuttering economy with millions lacking the skills to find work, environmental considerations are now seen only as a luxury.

## The three focus regions

The three focus regions of South Aegean, Wielkopolska and Provence-Alpes-Côte d’Azur (PACA) were identified on the basis of a data-led clustering exercise combined with consideration of additional criteria such as representativeness and accessibility. The aim was to select regions affected by the transition to climate neutrality, but with different starting points and experiences of the transition, to illustrate potential pathways as well as how impacts might differ between EU regions.

As a starting point for the clustering exercise, regions were selected among those identified by the JTM and JTF as likely to be strongly affected by the transition to climate neutrality (EC, undated-b). These are regions either heavily reliant on fossil-fuel-based industries (e.g., coal/lignite extraction, oil and gas extraction, peat, shale oil, petroleum refineries and fossil fuel-based energy production and coking plants), other carbon-intensive manufacturing industries (metals, chemicals, cement, fertilisers, and others), or both (Happaerts, 2021, p. 10). These regions will thus face a significant need to restructure their industries and economic systems (Happaerts, 2021). Selecting focus regions for this research from those regions already identified in the context of the JTM and JTF offered a way of building on existing research while aligning with EU policy processes. It helps connect the work to existing initiatives and respective stakeholders (AARC, undated; Happaerts, 2021).

For the clustering exercise, data on the level of NUTS2 regions was chosen. NUTS2 is the standard level of reference for Cohesion policy analysis and support (EC, 2022b; Eurostat, 2022). Data availability is also much better for NUTS2 compared to, for example, NUTS3 level. The NUTS2-Level of analysis was also confirmed and recommended via the peer review process.

Existing research on relevant indicators concerning social effects of environmental policy was then used to identify a concrete set of potentially relevant and suitable indicators at the regional level (Oeko, 2021). The indicators also needed to consider completeness of recent data and avoid data gaps. For these purposes, 2019 data was the most complete reference year across EU regions. The final set of indicators was then determined via a mapping exercise of available NUTS2-level regional data. The final indicators spanned four indicator domains, with an indicator each per domain:

- Health and demographics: Life expectancy at birth.
- Poverty and social exclusion / (Un-)employment: Unemployment rate (unemployed persons as a percentage of the economically active population).
- Education / working conditions and skills development: Tertiary education attainment level, share in the population 25 to 64 years.
- Income and income distribution / economic development: GDP PPPs per habitant.

The overall process led to the identification of three final clusters of regions which were broadly differentiated by the characteristics listed in table 2.

Table 2: Characteristics of the three final clusters of EU regions

| Cluster | Characteristics   |
|---------|---|
|         | (Note: Rankings describing ranges of absolute values for each indicator as 'highest', 'intermediate' and 'lowest' were used to facilitate the clustering process).  |
| 1       | <ul style="list-style-type: none"> <li>- intermediate unemployment rates</li> <li>- intermediate life expectancy</li> <li>- highest GDP per capita</li> <li>- highest tertiary education attainment levels</li> </ul> |
| 2       | <ul style="list-style-type: none"> <li>- lowest unemployment rates</li> <li>- lowest life expectancy</li> <li>- lowest GDP per capita</li> <li>- lowest tertiary education levels</li> </ul>                          |
| 3       | <ul style="list-style-type: none"> <li>- highest unemployment rates</li> <li>- highest life expectancy</li> <li>- intermediate GDP per capita</li> <li>- intermediate tertiary education attainment levels</li> </ul> |

In selecting the focus regions from the clusters, access to regional stakeholders and existing processes was a further key criterion (e.g. the viability of securing regional partner support within the scope and timing of the research). Overall, the following criteria were therefore used in identifying the three focus regions:

- Regions which are typical of the cluster they represent with respect to the indicator data.
- Geographic diversity in terms of Member States and European sub-regions.
- Accessibility of local partners to connect the research into local transition and regional development processes and ensure stakeholder reach (i.e. drawing on existing network relationships).

The following fiches provide a summary profile of each of the selected focus regions.

### South Aegean, Greece

Composed of 79 islands, the South Aegean region covers a large area of just over 5,000 km<sup>2</sup>, but has a mere 340,000 inhabitants (OECD, 2020). Economically, the region depends on tourism (which is the source of 95% of all local GDP) (Siskos et al, 2019). This is not expected to change. Even though the blue economy (economic activities related to oceans, seas, and coasts covering a wide range of interlinked established and emerging sectors, EC, 2022a) has been identified as a potential development area, the economic development focus in recent years has remained on further strengthening the region as a tourism destination. Currently, the unemployment rate (averaged over the seasons) is 19%, long term unemployment stands at 4.4%, and the employment rate at 53.6% (2021 figures: IZ, 2022a). The region lacks significant value chains and lags behind in innovative activities, ranking a poor 11<sup>th</sup> among (13) Greek regions in the European Regional Innovation

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Scoreboard with R&D expenditure per capita of just 17% of the national average (and expenditure by firms of almost 0%) (OECD, 2020).

### **Wielkopolska, Poland**

Wielkopolska covers just under 30,000 km<sup>2</sup> and has a population numbering some 3.5 million inhabitants. The region has a strong industrial base, with significant automotive activities, clusters of more traditional industries, as well as a growing service sector. Wielkopolska is one of the fastest growing regions in Poland, but its innovation performance is below the European average (Dabrowski, 2019). Currently, the unemployment rate is 3.7% and the employment rate stands at 56.4% (2020 figures: EURES, 2021). There is significant lignite mining, but decarbonisation has already begun, with ambitious decarbonisation projects in the pipeline (CEEnergy News, 2021). Overall, however, renewables are only expanding slowly, and locally, communities are struggling with declining income from taxes and fees (ibid.).

### **Provence-Alpes-Côte d'Azur (PACA), France**

PACA is considerably more diverse than the other two regions. This is true both with regard to its topography and its industrial base. The former ranges from the Mediterranean coast to the mountain range of the Alps. The latter includes a significant petrochemical and fossil fuel industry sector, which is particularly vulnerable to the transition. Tourism also plays a strong role (JTP, 2021). With a total surface area of almost 32,000 km<sup>2</sup> and a population of some 5 million, PACA was ranked 3<sup>rd</sup> in France for overall GDP, and 3<sup>rd</sup> for GDP per capita in 2020 (Statista, 2022). It is considered a 'Strong Innovator' with above-average public investment (RIS, 2021). Currently, the unemployment rate is 8.2%, long term unemployment stands at 2.5%, and the employment rate at 65.7% (2021 figures: IZ, 2022b).

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## 3 – Potential socio-economic implications of the transition to climate neutrality

This chapter presents the combined results from the literature review, the EU-wide and regional workshop discussions, and interviews. Four main themes that emerged from the synthesis of the consulted literature provide the structure for this discussion. These are:

- Theme 1: Securing livelihoods, welfare, and fairness
- Theme 2: Refocusing economic development
- Theme 3: Infrastructure renewal
- Theme 4: Enabling systemic change in European regions

### Theme 1: Securing livelihoods, welfare, and fairness

#### **Key insights**

##### **The literature highlights that:**

- While net employment gains are expected in the EU, labour demand and supply may not be matched in individual regions and for particular (groups of) workers. (Re)skilling and bespoke support for job transitions with a prominent role for the state and social partners will be required for (groups of) workers and wider populations affected by the transition.
- Beyond job losses, a failure to address ensuing social challenges, such as addressing job polarisation and securing adequate welfare for regions and population subgroups who stand to lose out, is a risk.
- Without a constant focus on the distributional effects of climate change mitigation measures and possibly a consideration of entirely new welfare models, there is a risk of existing inequities being reinforced.
- Beyond this, there are more fundamental challenges to the way the just transition is currently approached in the EU policy context. In this view, shifts towards a stronger focus on the sufficiency principle to tackle climate change and more localised economic models (notably through Circular Economy approaches) are identified as ways to ensure fairness and welfare.
- With carefully integrated policy mixes, greater fairness can be delivered through the transition. Adopting sufficiency lifestyles has the potential to change the very way in which social inclusion is achieved.

##### **Stakeholders involved in the workshops suggested that:**

- The negative impacts of climate change itself and potential benefits of the transition should receive more attention in the policy debate to make a stronger case for change.
- Differences in personal circumstances beyond individuals' current employment status need to be considered in delivering reskilling, job transition support and welfare.
- There should be less reliance on market-based mechanisms to address issues arising from climate change and in the transition towards climate neutrality.
- Regional capacities and assets as well as potential migration effects need to be factored into tailored transition paths for different regions. This includes the strength and make-up of the

industrial base, the nature and resilience of public services and welfare systems as well as mechanisms of social dialogue.

- Upfront investment and buy-in from regional populations is needed to restructure regional economies on the basis of sufficiency principles and a circular economy.

## Insights from the literature review

Table 3 provides an overview of key issues regarding theme 1 that emerged from the literature review before considering those in more detail in the main body of this subsection.

**Table 3: Overview of identified socio-economic impacts on regions and population subgroups under theme 1**

| Challenge   | Region(s)   | Group(s)  |
|---|---|---|
| <b>Job losses</b>   | <ul style="list-style-type: none"> <li>• Coal-intensive regions (Irimie et al, 2020, p. 8)</li> <li>• Regions with strong automotive industry (Eurofound, 2021, p. 41)</li> <li>• Regions with carbon-intensive manufacturing (EC, 2021b, p. 8)</li> </ul>                          | <ul style="list-style-type: none"> <li>• Workers in coal industry and related sectors (Irimie et al, 2020, p. 7; WWF, 2020, p. 60)</li> <li>• Workers in the automotive industry (Eurofound, 2021, p. 41)</li> <li>• Workers in high-emission industries such as chemicals, steel, and cement (EC, 2021c, p. 8)</li> </ul>                                    |
| <b>Reskilling and transitioning into new sectors and occupations</b>        | <ul style="list-style-type: none"> <li>• Regions with strong fossil fuel activities (Oeko, 2020, p. 13)</li> <li>• Regions with insufficient focus on lifelong learning (Irimie et al, 2020, p. 5; Norden, 2021, pp. 60-61)</li> </ul>  | <ul style="list-style-type: none"> <li>• Employees with cultural identities linked to ‘brown’ industries (Irimie et al, 2020, p. 8)</li> <li>• Older and less educated workers (Oeko, 2020, p. 15)</li> </ul>   |
| <b>Job polarisation</b>   | <ul style="list-style-type: none"> <li>• Regions with carbon-intensive industries (EC, 2021b, p. 11)</li> <li>• Rural regions in the circular economy (Oeko, 2020, p. 20)</li> <li>• Regions suffering from negative demographic trends (Pilati and Hunter, 2020, p. 36)</li> </ul> | <ul style="list-style-type: none"> <li>• Those with low skills levels/ potentially poor labour conditions in new sectors (Oeko, 2020, pp. 13 &amp; 16)</li> <li>• Women taking up precarious and low-paid jobs in the service sector (Walk et al, 2021, p. 24)</li> <li>• Groups not well integrated in labour market (IRENA and ILO, 2021, p. 14)</li> </ul> |
| <b>Maintaining welfare during the transition process</b>                    | <ul style="list-style-type: none"> <li>• Regions experiencing degenerative processes, e.g. long-term structural unemployment, depopulation, poverty, ageing (Irimie et al, 2020, p. 7)</li> </ul>   | <ul style="list-style-type: none"> <li>• Potential to affect outlook for generations (Irimie et al, 2020, p. 7)</li> <li>• Groups affected by regressive effects of carbon pricing (Oczkowska and Pellerin-Carlin, 2019, p. 3)</li> </ul>   |
| <b>Existing inequities may be aggravated by climate mitigation measures</b> | <ul style="list-style-type: none"> <li>• Regions with low development levels, e.g. industrial structure, innovation capacity, social welfare provision (WWF, 2020a, p. 43)</li> <li>• Rural and peri-urban areas with low-income levels (Eurofound, 2021, p. 16)</li> </ul>         | <ul style="list-style-type: none"> <li>• Households affected by regressive distributional impacts (EC, 2021b, p. 8; BusinessEurope, 2021, p. 15)</li> <li>• Groups in vulnerable situations most affected by climate change (Sovacool, 2021, p. 3)</li> </ul>   |



|                           |  |   |
|---------------------------|--|---|
| <p><b>Opportunity</b></p> | <ul style="list-style-type: none"> <li>• ‘Double dividend’ for regions of lower emissions and net increase in employment’ (EC, 2021b, p. 15)</li> <li>• Opportunity for more fundamental critique of socio-economic systems at regional level (Kreinin, 2020, p. 2)</li> <li>• Employment gains from shift to renewable energy, energy efficiency and circular economy sectors (Oeko, 2020, pp. 19-20; (Oeko, 2020, pp. 19-20; Rasmussen et al, 2021, p. 8)</li> </ul> | <ul style="list-style-type: none"> <li>• Decrease in household energy bills (EEA and Eurofound, 2021, p. 6)</li> <li>• Co-benefits (Rasmussen et al, 2021, p. 3)</li> <li>• Less risk from environmental hazards/ better access to ecosystem services. (Oeko, 2020, p. 12)</li> </ul> |
|---------------------------|--|---|

### Job losses

The literature review clearly identifies job losses as a result of carbon-intensive industries being phased out as one of the key challenges for a just transition (Eurofound, 2021, p. 41; EC, 2021c, p. 8; IRENA and ILO, 2021, p. 32). A number of specific estimates can be found in the literature regarding potential effects on different sectors and industries, from fossil fuel extraction and processing to the automotive industry and manufacturing more generally. Specific examples include unemployment levels of up to 62% among young people already being recorded in some regions as a result of the transition (WWF, 2020, p. 60). An estimated 237,000 direct jobs in coal-intensive regions in the EU will be lost by 2030 (Irimie et al, 2020, p. 7), but the overall workforce in Germany, for instance, is expected to be 1.2% larger by 2070 (Philip et al, 2021, p. 29).

### Reskilling

The literature suggests that net job gains are expected from the transition to climate neutrality, as renewable energy and other green technologies e.g. in the circular economy, create new employment opportunities (IRENA and ILO, 2021, p. 72; Oeko, 2020, pp. 14 & 16). In case of mismatches in the labour market, i.e. where the respective demand for workers cannot be met regionally, this implies an increased need for work migration and attracting workers from outside the region if skilling, reskilling, and upskilling do not meet respective needs. The papers reviewed also highlight, however, that proactive interventions for reskilling and job search will be needed to help affected workers into new industries and jobs. Older workers and those with low skills or cultural identities closely bound up with a particular industry are expected to find it the hardest. The literature calls for a holistic approach with close coordination among industry, government and educational and training institutions and attention paid to individuals’ unique characteristics (for more information, see FES and HBS, 2020, p. 22; Irimie et al, 2020, p. 8; Norden, 2021, pp. 60-61; Oeko, 2020, p. 15).

### Job polarisation

Also highlighted are changes in employment patterns, for instance job polarisation. Structural unemployment in carbon-intensive regions, a rural/urban divide potentially emerging from new industries in the circular economy, wider demographic trends, low unionisation rates and pressure on labour conditions for lower skilled workers are all seen to create a formidable challenge for a just

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transition (for more information, see IRENA and ILO, 2021, p. 14 & 65; Oeko, 2020, pp. 13 & 15-16; EC, 2021c, p. 11; Pilati and Hunter, 2020, p. 36; Rasmussen et al, 2021, p. 6; Walk et al, 2021, p. 24).

### **Maintaining welfare during the transition process**

Beyond creating new employment opportunities, maintaining welfare during the transition emerges as a major challenge from the literature (Defard and Thalberg, 2022, p. 3; BusinessEurope, 2021, p. 15). The social and spatial effects of changing patterns of unemployment, different needs regarding reskilling, and the broader distributional impacts of the transition to climate neutrality (e.g. through a rising cost of living) are all identified as a core area for attention in seeking a just transition (EC, 2021c, pp. 2 & 5; Irimie et al, 2020, p. 7).

### **Existing inequities may be aggravated by climate mitigation measures**

The literature focuses particular attention on the challenge of ensuring that climate mitigation measures deliver social fairness. The regressive effect of many current climate policies is highlighted in the literature (BusinessEurope, 2021, p. 15; EC, 2021c, pp. 8 & 14; Gough, 2021, p. 14). Many papers stress the need to carefully consider the distributional effects of such policies to secure acceptance for the transition (Eurofound, 2021, p. 1; EEA and Eurofound, 2021, p. 6; Oeko, 2020, p. 13). This includes, for instance, references to the need for upfront investments for consumers to take advantage of new climate friendly technologies (e.g. renewable energy technologies) (Oeko, 2020, p. 13). As well as calls to factor that detrimental effects of climate change tend to be experienced more acutely by social groups in vulnerable situations (Sovacool, 2021, p. 3). Different regional starting points are also identified as shaping socio-economic outcomes for people in different regions (Eurofound, 2021, p. 16; Oeko, 2020, p. 16).

The literature review further revealed a school of thought that offers a more fundamental challenge to the commonly used understanding of the just transition. Such sources suggest that achieving fair outcomes in the transition will need to look beyond purely replacing carbon-intensive jobs (Rasmussen et al, 2021, p. 8). Instead, they focus on sufficiency as a core principle and call for a shift in the economic paradigm, including through the adoption of circular economy models. This would entail greater attention for sectors that provide the infrastructure of everyday life (e.g. the utilities, infrastructure, public services, distribution systems, retail banking etc.), which are estimated to already provide 40% of all jobs (Gough, 2021, p. 8) and the careful management of resources including waste streams.

### **Opportunities**

The literature sees a key opportunity to deliver greater social fairness through the transition to climate neutrality, where economic restructuring, specific climate change mitigation measures and fiscal tools are integrated carefully, with sensitivity to the particular challenges identified above (EC, 2021c, p. 15; EEA and Eurofound, 2021, p. 6; Rasmussen et al, 2021, p. 3). Reducing the impact of environmental hazards on groups in vulnerable situations and providing better access to ecosystem services are singled out as co-benefits with the potential to improve individuals' health and well-being and deliver greater social fairness as a result of the transition (EC, 2021c, p. 15; Oeko, 2020, p. 12).

While some uncertainty remains regarding the precise patterns of jobs being lost and new jobs being created, net job gains and more diverse employment opportunities are expected to arise from

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growth in economic sectors that are conducive to the transition to a climate neutral economy, i.e. renewable energy, energy efficiency and the circular economy (IRENA and ILO, 2021, p. 72; Oeko, 2020, pp. 19-20; Rasmussen et al, 2021, p. 8).

Picking up on the sufficiency strand of thinking highlighted above, more far-reaching opportunities to achieve greater social fairness are identified through a fundamental challenge to the current production and consumption system as part of a broader Social Ecological Transformation. This is based on critiquing ‘the logic of the treadmill of production, productivism, and the work relation itself’ and ‘demanding a move towards prioritising care work and societally reproductive labour, including re-commoning’ (Kreinin, 2020, p. 2). Here sufficiency is seen as providing an opportunity to weaken the link between employment and meeting basic needs, as well as consumption as a way of social inclusion. This is because a ‘need-based economy’ would require the welfare state to have ‘much broader competencies and powers’ while social status would be secured through different means (Gough, 2021, p. 9).

### **Possible policy interventions**

Considering actual or possible policy interventions to address job losses from the transition in a socially fair and just way revealed a strong focus in the literature on the nature, quality, and source of reskilling interventions. The important role of the social partners within this was also emphasised (EC, 2021c, p. 26). Examples found in the literature also stressed the key role of the state, e.g. in facilitating strategic skills planning approaches, as information provider and broker for reskilling and job transfer supports, but also different degrees of state involvement in regulating, shaping, or even delivering the actual skills provision and combining it with welfare support (IRENA and ILO, 2021, pp. 77, 79 & 83; Irimie et al, 2020; Oeko, 2020, pp. 19 & 32-33).

Examples of measures to address pre-existing inequities ranged from generic legislation such as equal pay or special provisions for carers in the workplace, to interventions designed to build a more diverse workforce. Calls were also made for compensation programmes that look beyond workers in the sectors that are most immediately affected by the transition, including looking beyond accessible reskilling programmes themselves by also addressing underlying social fairness concerns and allocating resources according to need (IRENA and ILO, 2021, p. 19; Walk et al, 2021, p. 26).

Finally, under an approach that has become known as Universal Basic Services (UBS), meeting basic needs would be decoupled to a very large extent from an individual’s labour market position by extending the notion of universal services to housing, transport, healthcare, childcare etc. It amounts to ‘a proposal to safeguard and develop existing public services and to extend this model of provision into new areas’ (Gough, 2020, p. 6; for more information, also on overall issues with access to public services see Coote, 2021, p. 35; Eurofound, 2020; Eurofound, 2022b; Gould and Moore, 2021, p. 3). Indeed, UBS advocates see it as ‘more egalitarian and sustainable than Universal Basic Income (UBI)’ with ‘stronger redistributive performance and impact on income inequalities’ (Gough, 2021).

### **European-level perspectives of the scenario dynamics**

The European experts thought that the deteriorating impacts of climate change itself needed to be front and centre of welfare considerations and policy attention towards 2050. Socio-economic groups and regions in more vulnerable situations are likely to be most affected by these. The negative effects on different socio-economic groups of climate change itself should receive more

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attention in the policy debate to highlight that policy responses are needed to ensure protection from such hazards.

As a general principle, reducing the reliance on market-based allocation mechanisms in responding to climate change was singled out as having a crucial impact on the outcomes for different socio-economic groups in the future (e.g. use of solidarity principle or private profit motives in allocation of risks and rewards through insurance systems).

Considering where job losses might occur, the participating European experts stressed that all sectors will be affected by the transition one way or another. Reskilling and welfare policy interventions need to reach beyond immediately affected sectors, acknowledging the broader disruption of work biographies and essential need for a strong generic safety net. Similarly, contributors identified the extent to which responsibility for reskilling is shared between governments, workers, and employers as a key determinant of the socially fair and just outcomes by 2050.

Regarding changes in jobs and employment patterns, contributors highlighted that underlying labour market mechanisms would play an important role in shaping outcomes for different groups. Further outsourcing and deregulation, for instance, could lead to deskilling, precarious work with an erosion of working conditions, disruptions to working lives, and migration patterns away from poorer regions. These were all seen as a potential threat to the welfare and quality of life of socio-economic groups at the lower end of the social hierarchy.

Skills and employment outcomes were also seen to depend on the specific direction of the industrial restructuring process. Growth of the circular and sharing economy, for instance, was seen to create more diverse job roles with skill requirements at different levels. Further digitalisation by contrast was expected to exert pressure particularly on jobs at a medium skill level. Only where reskilling initiatives are strategically integrated with industrial policies and investment decisions, did contributors see socially fair and just outcomes as likely.

Greater state responsibility for citizens' welfare combined with a more decentralised economy and the sufficiency principle shaping consumption patterns (e.g. through 'sharing economy' models and increased reuse), were seen to potentially facilitate a better quality of life for many by 2050.

Contributors to the research identified the pivotal role of mobility and housing as two areas of basic human need with a considerable direct impact on climate change itself and the social fairness that can be achieved in the transition. They called for commensurate public investment and adequate provision of public transport to achieve a just transition by 2050. Transport and housing also provided examples of the distributional effects of different climate change mitigation policies. Leaving housing and transport provision, for instance, purely to demand and supply interactions was seen to exacerbate challenges for both urban and rural areas, central and remote regions alike.

More generally speaking, ensuring that social fairness is a guiding principle for the design of all fiscal tools deployed in the context of the transition was seen as important. The distributional and wider social effects of any measures to support the move to carbon neutrality would always need to be actively considered in all policy design to ensure that basic needs can be met in an affordable way. Carefully calibrated state intervention, e.g. through subsidies and regulation, was seen to be most

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likely to reap potential synergies between climate change mitigation and health and well-being gains.

How lifestyles and consumption patterns evolve by 2050 was identified as having a major impact on welfare and fairness too. High energy use, for instance, would exacerbate the regressive effects of associated green policies (e.g. carbon and energy taxes resulting in higher energy prices). Participants also saw social inclusion as currently often being facilitated on the basis of consumption choices (e.g., travelling, symbolic consumption). Without an integrated socio-environmental perspective, taking account of and seeking to shape lifestyles and consumption choices, less affluent households would be likely to forgo quality of life. Concerns were also raised, however, that a sufficiency route would require a degree of demand management with the risk of a potential political backlash to the transition to climate neutrality.

## Regional perspectives of key challenges and opportunities

The regional workshops complemented this generic perspective with insights into how the socio-economic impacts of the transition are likely to play out in different places.

### **Job losses and reskilling**

Wielkopolska contributors had a strong focus on the question of how to navigate job losses and reskilling in coal production, a key sector in the region that is affected very immediately by the shift away from fossil fuels. Contributors expressed doubts whether the scale of job losses and reskilling needs can be addressed at all, particularly considering that many indirect jobs linked to the mining / lignite industry would be affected too. Workshop participants thought that there may be 'employment for a small group of specialists, but this will not compensate for unavoidable lay-offs'. Achieving the energy transition and the reskilling effort equally successfully and simultaneously would be the greatest difficulty for the region's future prosperity. Any delays could trigger a downward spiral with people leaving the region rather than waiting until prospects improved. Contributors therefore saw a real risk that without strong tripartite agreements that can provide certainty for affected workers, opposition to the transition might arise locally.

In both Wielkopolska and the South Aegean, the state's capacity to deliver reskilling was queried. Contributors from the South Aegean spoke of the importance of local education providers and infrastructures. In addition to upskilling and a wider range of vocational training opportunities, they stressed the importance of ensuring that continuous reskilling and lifelong learning programs with a focus on locally relevant transition skills were made available in the region. For the costly process of reducing the environmental impacts of closing and flooding open mines in Wielkopolska to be delivered successfully, for instance, reskilling would need to respond to highly specific localised issues and needs. Across all three focus regions contributors thought that where the provision of education and training was managed well, this would create opportunities, particularly for young people to prosper in new sectors and activities.

In Wielkopolska, managing cultural legacies from carbon-intensive activities was identified as a challenge. People's investment in a particular way of life in mining areas means that, beyond pure reskilling, 'social and professional activation, change of mentality, and inclusion in society' would need to be supported. Provision would need to look beyond workers themselves and offer support

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for miners' families, adding to the overall cost of reskilling, supporting people into new sectors and occupations, and offering social protection for affected workers and their families in the interim. Going beyond current European Social Fund (ESF) arrangements, account would need to be taken of individual circumstances, e.g. by offering tailored bridging mechanisms into retirement for older workers. Appropriate levels of subsidy would need to be available to provide strong incentives and allow sufficient time for people to reskill and move into new jobs.

For reskilling efforts to support a shift towards sufficiency lifestyles as anticipated in the 'All Aboard the Well-being Transition' scenario was generally considered positive but would require upfront investment and buy-in from the population at large. Contributors in the PACA suggested that reskilling for new activities and sectors would create opportunities for diverse population subgroups. In order to deliver on innovative ways of meeting human needs under a sufficiency paradigm, from agriculture to reprocessing and technology R&D, new skills would be required across the board. Promoting the 'maker movement' together with a focus on repair and maintenance in particular was said to create opportunities for relatively low skilled jobs.

### **Job polarisation**

Wielkopolska stakeholders expressed concerns that workers in the coal industry might have unrealistic expectations regarding severance payments, while public investment in the creation of like-for-like jobs was expected to be prohibitive in terms of cost per job. New jobs would therefore need to be created through entrepreneurship, which may not come at similar pay and conditions as in the coal mining industry.

Contributors from the South Aegean were concerned that green jobs might not be accessible to unskilled workers, that employers might generate the funds necessary for the transition by lowering wages and livelihoods, and that the livelihoods particularly of elderly workers might be affected by their inability to invest (e.g. in new fishing boats) to keep up with transition developments.

With relatively high levels of existing inequality, in the PACA region, job shortages and increased job competition was expected to affect low-skilled and migrant workers in particular. And yet, more migrants, particularly climate migrants, might arrive in the region in the years up to 2030 and 2050. Contributors therefore called for strong support for workers in securing appropriate working conditions (including protections from the effects of climate change and navigating new working practices) and fair pay, combined with job and competency planning at a regional level (including provision for people in vulnerable situations to acquire the skills required to play an active role in the transition).

For remote working, PACA stakeholders thought that the potential to create new opportunities for graduate and skilled workers needed to be seen in conjunction with a risk of deteriorating working conditions (e.g. increasing workloads with associated psychological and social risks). Health at work, including mental health, would need to be an important focus to secure socially fair and just outcomes from the transition to climate neutrality.

### **Maintaining welfare and social fairness**

Across the three focus regions, securing individual welfare emerged as a central plank of any just transition effort. In the South Aegean, pre-existing issues such as limited transport opportunities

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particularly for groups in vulnerable situations with the resulting isolation of many islands; highly seasonal and often precarious jobs with poor conditions, particularly for the young and migrant workers; and deficiencies in healthcare structures were all feared to come under further pressure were energy costs to rise. At the same time, investing in key services themselves, from health to education and utilities, was seen as a way for new kinds of professions to emerge, offering ‘year-round green jobs for young people and, ultimately, a less lopsided age structure’.

Strong welfare provision would be important to avoid a ‘vicious downwards cycle’ of environmental degradation and economic decline combined with limited access to new green technologies for an ageing population and deteriorating public services eroding opportunities and residents’ welfare. Accelerated by the pandemic, young people had already started to leave, leading to rapid ageing on the South Aegean islands, and a significant psychological toll on those who remained.

Wielkopolska contributors echoed concerns about a downward spiral if a perception of the region as ‘an area where something is coming to an end’ takes hold. Hopes for opportunities to earn ‘decent wages in forward-looking industries’ in Wielkopolska were tainted by caution about the complexity of the transition process and a strong risk of people falling through the net: ‘During the transition everyone is vulnerable’. Older workers might lose out on pension rights, youth unemployment might be exacerbated, and inhabitants of more peripheral and post-mining areas might find themselves excluded from the labour market in other parts of the region.

South Aegean contributors thought quality of life could not be maintained by relying purely on market-based mechanisms of demand and supply, calling for greater state responsibility for citizens’ welfare. Subsidies and regulation would be needed to deliver, e.g. sustainable transport and housing solutions, ensure adequate medical care and educational provision. Without public intervention new opportunities would be privatised and benefit a small group only.

Participants at the Wielkopolska workshop were concerned that a shrinking tax base through the industrial restructuring process might prevent the required overhaul of the entire public services and welfare system and the required future-proofing of tax incomes (e.g. addressing the loss of mining concessions and taxes).

Contributors across the three regions identified a better quality of life through less pollution, a healthier population, and an overall shift towards a focus on well-being as a potential opportunity from the transition. In Wielkopolska, flooding disused coal pits to create lakes, for instance, could improve the local environment, delivering benefits for the local population, attracting new residents, and strengthening the touristic qualities of the area. Contributors in PACA, on the other hand, emphasised that groups in vulnerable situations would need protection from the effects of climate change itself.

The risk of heightened inequities through the transition was prominent in PACA. New agricultural practices, for instance, would also need to improve regional food resilience and access to healthy food for all. The risk of energy poverty and higher mobility costs for those on low incomes who, crowded out of the housing market in more central locations, have to travel to work, was also prominent. For Marseille, for instance, with some of the highest poverty rates in Europe, this prompted the question of how these groups can be included in the ecological transition when their

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basic needs are not met. A squeeze on purchasing power was seen as a potential flashpoint that may cause social unrest, which would ultimately endanger the transition as a whole. Avoiding an erosion of purchasing power and a strong emphasis on social inclusion were seen as essential. Other examples included e.g. owner-occupiers unable to retrofit their homes with energy efficiency measures or suffering catastrophic loss of value in properties affected by flooding or erosion that could explode personal finances including retirement arrangements.

Regional planning was seen as a key lever to address some of those issues. Beyond direct transition support for the employment, mobility, housing, and health needs of people in vulnerable situations, participants in PACA thought that more socially fair credible alternatives to current models of provision in these areas should also be promoted, e.g. alternatives to detached, single-family housing or active travel modes.

## Theme 2: Refocusing economic development

### **Key insights**

#### **The literature highlights that:**

- The industrial restructuring required for the transition depends on successfully leveraging mission-driven innovation (i.e. innovation deployed in pursuit of sustainability objectives) to secure the economic competitiveness of European regions. This is challenging in regions with relatively weak innovation systems.
- In regions with limited capacity to engage with complex financial instruments, a new more localised economy adopting circular economy principles can draw on regional assets to secure benefits to e.g. ecosystems and for safer products.
- This must happen in conjunction with providing adequate scope for social innovation. As well as delivering economic diversification to ensure that opportunities are created for socio-economic groups in different circumstances and with different assets.

#### **Stakeholders involved in the workshops suggested that:**

- A continued focus on reshaping financial markets and holding private investment to account from a public good perspective is essential in directing finance towards sustainable investment.
- Overall strategic coherence of transition management throughout the EU will be needed to avoid 'the slow death of old industries' and a race to the bottom for European regions.
- When refocusing economic development, there is a clear need to look beyond immediately affected sectors and ideally fundamentally change the industrial production system by leveraging entrepreneurship, sharing data and social innovation on the consumption (e.g. a change in diets) and production side (e.g. new multi-stakeholder business models, new concepts of economic value generation).
- New economic opportunities from the transition need to be made accessible to all. This can be achieved by strengthening consistent collective worker representation, including for new settings and forms of work, and actively shaping consumption choices to align with new economic models.



- Trust-based relationships between populations, governance organisations and the private sector will need to be nurtured to mobilise all available regional assets and lever the regional innovation system to deliver economic diversification.

## Insights from the literature review

Table 4 provides an overview of key issues regarding theme 2 that emerged from the literature review before considering them in more detail.

**Table 4: Overview of identified socio-economic impacts on regions and population subgroups under theme 2**

| Challenge                              | Region(s)  | Group(s)   |
|--|--|--|
| <b>Levering innovation</b>             | <ul style="list-style-type: none"> <li>• ‘Lagging’ regions in Cohesion policy context (EC, 2020b, p. 39)</li> <li>• Regions which lack diversification and limited capacity for innovation (Oeko, 2021, p. 7)</li> <li>• Regions most affected by phasing out of carbon-intensive activities (Irimie et al, 2020, p. 8)</li> </ul>                   | <ul style="list-style-type: none"> <li>• Those with limited financial capacity, and therefore unable to influence investment decisions and innovation trajectories (Walk et al, 2021, p. 3)</li> <li>• Those affected by trade-offs in relation to behavioural change required, e.g. for greater energy sufficiency (Ludden et al, 2021, p. 11)</li> </ul> |
| <b>Investment</b>                      | <ul style="list-style-type: none"> <li>• Regions with low productivity, limited export, sectors losing competitiveness, and/ or investment capacity gaps (BusinessEurope, 2021, p. 25; Irimie et al, 2020, p. 8; Pilati and Hunter, 2020, pp. 35, 46 &amp; 60)</li> <li>• Regions with difficult industrial legacy (WWF, 2020, pp. 44-45)</li> </ul> | <ul style="list-style-type: none"> <li>• SMEs and start-ups lacking access to private capital (Norden, 2021, pp. 60 - 61)</li> </ul>   |
| <b>Digital convergence</b>             | <ul style="list-style-type: none"> <li>• Regions with poor digital infrastructure (Pilati and Hunter, 2020, pp. 60-61)</li> <li>• Regions with weak innovation systems (Norden, 2021, p. 60)</li> </ul>  | <ul style="list-style-type: none"> <li>• Individuals with lack of digital skills (educational gap) (Oeko, 2020, p. 20)</li> <li>• Ageing workforce - may be disadvantaged by demand for digital skills (Oeko, 2020, p. 20)</li> </ul>  |
| <b>Adopting a systemic perspective</b> | <ul style="list-style-type: none"> <li>• Regions adopting short-termism (Hafner et al, 2020, pp. 35-36)</li> <li>• Regions affected by higher production costs (Oeko, 2020, p. 22)</li> <li>• Regions with sectors receiving insufficient attention in transition (Oeko, 2021, pp. 39-40)</li> </ul>   | <ul style="list-style-type: none"> <li>• Low-income groups affected by reduced purchasing power (Oeko, 2021, p. 10)</li> <li>• Groups affected by less social inclusion (e.g. via lower affordability of resource-intensive goods such as travelling and symbolic consumption) (Oeko 2021, p. 10)</li> </ul>   |
| <b>Opportunities</b>                   | <ul style="list-style-type: none"> <li>• Regions exporting green technologies (BusinessEurope, 2021, p. 4)</li> <li>• Regions taking advantage of localised supply chains/ circular economy</li> </ul>   | <ul style="list-style-type: none"> <li>• More groups in vulnerable situations less exposed to environmental hazards &amp; having more equal access to ecosystem services (Oeko, 2020, p. 9)</li> </ul>   |

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| (IRENA and ILO, 2021, p. 27; Ludden et al, 2021, p. 8; Oeko, 2021, p. 7) |
|--|

Industrial restructuring that achieves or retains economic competitiveness in a climate neutral world emerges from the literature review as a key challenge at the heart of the transition to climate neutrality. This translates into the challenge for regions to orchestrate coherent investment in new economic activities, in skills and talents, and in research and innovation (Irimie et al, 2020, p. 7).

### **Levering innovation**

The literature attributes particular importance to the role of innovation in achieving a just transition. Innovation capacity as a means to secure greater diversification is identified as a key requisite for a successful transition at the regional level. Several papers point out that this poses a particular challenge to regions with relatively weak innovation systems (which is often the case in carbon-intensive regions) (Irimie et al, 2020, p. 8; EC, 2020b, p. 49; Oeko, 2021, p. 7; Pilati and Hunter, 2020, pp. 35 & 67).

Levering mission-driven innovation is a key tool in the transition towards climate neutrality (Norden, 2021, p. 99). While securing competitiveness through the commercialisation and deployment of new technologies and delivering socially fair and just outcomes is a formidable challenge for regions (BusinessEurope, 2021, p. 4; EC, 2020b, p. 39). Providing the scope for experimentation with technological and social innovations with the potential to trigger alternative ways of thinking and living, while managing the associated trade-offs and conflicts, is seen in the literature as essential to the process of a successful transition (EC, 2020b, p. 39; EEA and Eurofound, 2021, pp. 10 & 13; Ludden et al, 2021, p. 11; Walk et al, 2021, p. 3). Social innovation has also been identified as a potential lever in this context, with benefits especially for citizens who gain more power and influence through such processes (Filho et al, 2021, p. 10). However, a number of barriers prevent an increasing roll-out of social innovation in the sustainability context, such as ‘the lack of funding resources and related instruments, the large administrative and bureaucratic requirements, a lack of strong political support, and the absence of an overarching definition regarding social innovation’ (Filho et al, 2021, p. 10).

### **Investment**

Securing the investment necessary for extensive economic restructuring is another main challenge identified. Not least as a result of policy uncertainty, the financial system is described as still adhering to short-termism (Hafner et al, 2020, p. 41; Norden, 2021, pp. 60-61). And yet, access to private capital is seen to underpin the very innovation dynamics required to successfully navigate the transition. The existing industrial and productivity profile of regions, their integration into national and international value chains, and any difficult legacy elements from previous industrial activities all impact their ability to attract private investment (for more information, see BusinessEurope, 2021, p. 25; Philip et al, 2021, p. 6; Pilati and Hunter, 2020, pp. 35 & 46; WWF, 2020, pp. 44-45).

Maintaining adequate public investment in infrastructures and services for citizens where economic restructuring as a result of the move away from carbon-intensive activities may put pressure on public finances further challenges the flow of investments required to secure a just transition (Irimie et al, 2020, p. 8; Oeko, 2020, p. 13). The need to engage with complex financial instruments linked to

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national and European support programmes where capacity is lacking, and specifically a reliance on incentivising private investment that is built into the Just Transition Framework is seen to have the potential to further aggravate the resulting inequities between regions (Euractiv, 2021, p. 5; Pilati and Hunter, 2020, p. 60).

### **Digital convergence**

Many question marks remain over the role of digital convergence in achieving a just transition (for more information, see EC, 2019, p. 46; EEA, 2020a, p. 12). To begin with, providing the necessary infrastructure and training and achieving a fair allocation of the associated infrastructure costs will be difficult (Pilati and Hunter, 2020, pp. 60-61). The main challenge, however, relates to developing the kind of digital business models that can help reframe work and entrepreneurship. Lagging regions are described as facing an uphill struggle in overcoming existing disparities to achieve this (Norden, 2021, p. 60; Oeko, 2020, p. 20).

### **Adopting a systemic perspective**

Economic development policies at the regional level require a carefully managed and transparent process of transition in order to avoid becoming locked into a policy direction that might prevent taking advantage of new technologies and sectors (WWF, 2020, pp. 44-45). Adopting a systemic perspective is also necessary in order to anticipate and accommodate the longer-term effects of climate change on productivity, output, and economic growth (Philip et al, 2021, p. 14). The literature highlights the need for a significant and multidimensional change programme encompassing legal and technical developments, employment, infrastructure, capacity, skills, and expertise as well as culture (for further information, see BusinessEurope, 2021, p. 9; Hickel and Kallis, 2019, p. 15; IRENA and ILO, 2021, p. 9; Oeko, 2020, p. 22; Pilati and Hunter, 2020, p. 59).

Several papers highlight that alongside deploying conventional economic instruments, more systemic change is needed. This will depend on the effective use of a broader policy mix to enable the kind of innovation and experimentation that can produce beneficial and fair outcomes from deeper change in current production and consumption systems. With sustainability as the guiding principle, the literature calls for measures that look beyond headline climate and energy issues and their immediate effects on fossil fuel and manufacturing industries, to factor in other areas such as agriculture and fishery too (for further information, see EEA and Eurofound, 2021, p. 13; Irimie et al, 2020, p. 17; Oeko, 2021, pp. 39-40). The link to changing lifestyles is also highlighted under the heading of a Social Ecological Transformation (Kreinin, 2020, p. 2 – see theme 1 above).

### **Opportunities**

The literature review suggests that the manifold challenges identified in relation to economic restructuring can potentially be turned into an opportunity. New sectors and markets are expected to work in favour of EU exports, e.g. of green technologies (BusinessEurope, 2021, p. 4). Similarly the localisation of supply chains is seen to offer opportunities, for instance for infrastructure services, but also for entirely new business models servicing the circular economy (IRENA and ILO, 2021, p. 27). If identified and seized effectively, it is suggested that all regions, including those that might have a difficult legacy from carbon-intensive industries, stand to benefit from such new opportunities (Oeko, 2021, p. 7; Oeko, 2020, p. 20). Taken together such a transformation is seen as having the potential to generate tangible benefits through less environmental degradation and

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pollution, a reduction of inequalities in the distribution of environmental hazards, better access to intact ecosystems and their services (food, clean air, water, climate stability etc.), and safer products, as a result (Oeko, 2020, p. 12).

### **Possible policy interventions**

In terms of policy interventions deployed so far, the literature review identified a strong focus on stimulating, encouraging, and enabling economic diversification. Public authorities leveraging proactive industrial policies to embed future-proof economic activities in the region is particularly prominent in the literature. The tools used have included subsidies and the fostering of local supply chains, e.g. through the use of procurement legislation and an innovation systems approach to create a comprehensive offer that would deliver competitive advantage, and a parallel reskilling drive to be able to service new economic activities and sectors. Specific mechanisms discussed in the literature also included examples of renewable energy companies committing to community investments to stimulate, for instance, sustainable tourism activities (for further information, see IRENA and ILO, 2021, p. 47 & 51; Irimie et al, 2020, p. 19; Norden, 2021, p. 88; Oeko, 2020, p. 30; Rasmussen et al, 2021, p. 11).

Targeted strategies to maximise the value of existing industrial assets, e.g. establishing science and technology parks in heavy industry sites, are also identified in the literature. Going one step further, there are examples of partnerships working between anchor companies, private investors, and trade unions to capitalise on policies promoting renewable energy generation to proactively convert outdated economic activities into activities that draw on similar resources, e.g. a pulp and paper plant being converted into a biogas refinery. The Eden Project in Cornwall and the cultural rebranding of the Ruhr Region in Germany are prominent examples of a strong tourism focus under the same heading of maximising the value of outdated industrial assets (Irimie et al, 2020, pp. 18-20; Oeko, 2020, pp. 31 & 33-35).

Looking ahead to potential additional policy interventions, the literature included suggestions to put a much stronger emphasis on reskilling and educational opportunities that integrate digital and green skills (Dwivedi et al, 2022, p. 34; Norden, 2021, pp. 60-61). More radically, there were also calls for a more active EU involvement in mitigating transition discrepancies between Member States to address a perceived over reliance on private investment, and for an alignment of trade and foreign policy with climate diplomacy to secure a transition reach beyond the EU itself (Philip et al, 2021, p. 7).

### **European-level perspectives of the scenario dynamics**

The European experts considered the dynamics encapsulated in the scenarios and provided the following insights with regard to anticipated effects and key levers to shape socio-economic outcomes.

Investment flows were seen as key in ultimately determining outcomes from industrial restructuring for different regions and their populations. A systemic lens would therefore in particular need to be adopted for the assessment of returns on any investments, e.g. considering not purely financial returns but social and environmental ones too. The contributing experts thought it paramount for policy interventions to continue to focus on reshaping financial markets, e.g. further refining and reinforcing the European taxonomy for sustainable activities (an EU Commission classification

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system designed to direct investments towards sustainable projects and activities, for more information, see EC, undated-c) to direct finance towards sustainable investment.

Ownership patterns of natural assets and the relative emphasis on productivity gains in the short- to medium-term were seen as key determinants of private investment flows. Influencing both of these would therefore need to be an important policy focus. Similarly, the extent to which industrial policy adopted a forward-looking perspective extending to sectors that will only indirectly be affected by the transition was seen as crucially important.

The discussions highlighted that, if innovation was to remain largely market-mediated in 2050, commercial value would continue to be prioritised over delivering solutions for societal needs. This would require substantial ongoing public investment in research while more diverse opportunities to generate value, leveraging technologies, and social innovation to address key threats from climate change, were likely to be foregone. Changing the dynamics driving innovation policy and practice would therefore be paramount.

Regarding potential policy initiatives to shape the fortunes and location of different sectors as a result of the transition, it was suggested that developing a much more detailed understanding of the dynamics driving such processes would be required. Specific elements that were discussed in this respect included the nature and availability of raw materials, potential threats from cheap imports, effects of different types of subsidies in shaping industrial change, the competitive dynamics between different regions, and migration flows triggered through the phasing out of carbon-intensive industrial activities. The call to action in this respect included a focus on the need to query underlying assumptions.

An integrated European perspective that considers uncertainties, synergies, and trade-offs across European regions, was seen by the EU-level workshop participants to have an important role in shaping the overall strategic coherence of transition management by 2050, e.g. avoiding ‘the slow death of old industries’ and capitalising on reshoring key industries. Supporting an increasing localisation of supply chains by strengthening regional production systems including a focus on the circular economy was equally seen as an important lever. The European experts involved stressed that the extensive multi-level negotiations across regions and Member States required for such strategic coherence would be very resource-intensive, placing a considerable burden on regional governance systems. Without them, however, contributors feared that the transition would potentially lead to a ‘race to the bottom’ for EU regions.

## Regional perspectives of key challenges and opportunities

### **Industrial restructuring & economic renewal**

The South Aegean and Wielkopolska provide powerful examples of how a ‘business as usual attitude’ can hold back the industrial restructuring required for a successful regional transition. In the South Aegean, tourism as a profitable monolithic industry contributing 95% of GDP in the region and with an important role for the Greek economy as a whole, was the main focus of attention. The ‘blue economy’ on the other hand, identified as a potential area for development for the islands, was not mentioned by workshop participants.

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In Wielkopolska, an early mover in phasing out coal, the policy and investment focus on the coal area of the region was seen as insufficient. Other industries - equally affected by the transition to climate neutrality - might be ignored and lag behind. This was seen as a 'mentality problem' blinding people to the role of new, more modern, sustainable (SME) ventures which might merely need a bit of support to grow. Doubts were expressed whether the current business community - largely focused on serving the needs of mining operators - would be able to pull their weight in renewable energy-led economic renewal, e.g. a hydrogen industry identified to have potential for the region.

In PACA the sheer scale of change needed, particularly in the petrochemical industry was acknowledged. SMEs in particular would struggle to adapt, because they lacked the means to invest, developing renewable energy would be challenging (solar, wind, biomass, geothermal, etc.) and changing tourism practices (as part of climate change adaptation) would require attention. Discussions here, however, focused primarily on the need to fundamentally 'change the industrial production system', e.g. boosting carbon sequestration in soils and biomass with appropriate attention paid to different parts of the region: major cities, rural and alpine territories with difficult access, and a strongly dependent Corsica.

### **Innovation & entrepreneurship**

For Wielkopolska the low level of entrepreneurship - individuals establishing a business and existing businesses' propensity to invest - was identified as an obstacle to a circular economy with its need for new materials and design methods. Insufficient R&D capacity was identified as a key stumbling block for economic renewal and the development of new industries for a zero-carbon resource-efficient economy (e.g. logistics, energy, agriculture and healthy food, tourism, and leisure industry). A focus on small-scale renewable energy investments was seen as a way to promote local entrepreneurship and wealth creation and stimulate investment in 'more innovation activity, more research, more interesting jobs'. To enable this, e.g. for hydrogen technologies as an existing early transition investment in the region, investment along the whole R&D and innovation pipeline and supply chain development support would need to be secured, to demonstrate locally that this is a viable option for the energy transition.

Contributors in Wielkopolska called for an approach that looks beyond 'business as usual', i.e. beyond individual industries and focuses on wholesale economic renewal instead, moving away from traditional economic policy approaches and towards more systemic perspectives. This should include accessible business support to navigate the transition, promoting and enabling innovation and entrepreneurship, reskilling to encompass the encouragement of a culture of entrepreneurship (incl. through subsidies), support for diverse population subgroups with the aim of creating new enterprises, as well as increasing and upskilling governance capacities.

Blockages in the sharing of data (e.g. regarding the energy profile of different islands and associated viability of different renewable energy sources) were highlighted by a contributor from the South Aegean as hampering investment. This illustrates the need for a shared public and private sector commitment to directional innovation. Workshop participants thought that carefully integrating market forces, targeted public interventions and appropriate regulation would be key in exploiting key natural assets to develop new sources of income. This would need to go hand in hand with a social innovation perspective, i.e. ways of delivering the necessary behaviour change. Showcasing

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potential benefits to local people by enabling innovative pilot projects (e.g. mobile marinas also supplying electricity for local residents) would be key in achieving carbon neutral ways of living and economic renewal. In selecting and designing such pilot projects, the ‘focus should rest on longer-term profits for the community rather than private and/ or short-term benefits’.

Social innovation (rather than business-led technological innovation, which might be taken as a given in a highly diversified industrial region) took centre stage in PACA. Innovation in industries interacting directly with ecosystem services - food, agriculture, and land management - were to the fore here. Workshop participants, for instance, acknowledged the need to change diets in order to steer agricultural practices in a new direction and reduce the impact of agricultural land use. New agricultural models should look beyond agricultural yield to consider a wider range of outputs. Reintroducing local production networks with short supply chains and greater food autonomy were seen as key in equipping the region for a just transition.

### **Investment**

Across the three regions, access to investment to underpin the transition in different industries was a key concern. PACA contributors thought that investments by the regional authorities would be needed to drive an innovation dynamic for a just transition. This would need to go hand in hand with nurturing a new risk culture in businesses, one that adequately considers the risks from climate change itself - to their activities and to citizens - and gives SMEs in particular agency to make appropriate choices.

In Wielkopolska European funding through the JTF was identified as an opportunity to invest in ‘the new economy’. ‘If used appropriately’ participants thought that it could ‘kick-start the circular economy’ and diversify the regional economy to make it more robust. Backing a hydrogen hub on the former site of the lignite mine in Konin, for instance, was seen as a key step. All public economic development funding - European, national, regional, and local - would need to be geared towards ‘stimulating a whole innovation ecosystem to foster new opportunities’.

South Aegean workshop participants highlighted that much needed private investment would need to be facilitated (e.g. providing information on ‘green opportunities’ such as the energy profile data of all islands) while being held to account for public benefit (e.g. foreign investments contributing to improve sustainable infrastructure; protecting workers’ rights through collective labour agreements).

In Wielkopolska, workshop participants expressed their suspicion regarding corporate motives and decisions - Would they simply ‘take the money and run?’; ‘Are power companies really prepared to keep investing in the region, or will they pocket the money for the closures and move elsewhere?’; and will they see this as ‘an opportunity to introduce automation and job losses?’. This echoed the problematization of groups with ‘vested interests’ in the South Aegean, which were regarded as too influential in transition planning as they advocate for specific business or sector interests. New modes and skills in governance entities for dealing with such groups will be needed, including wider participation approaches in transition planning.

### **Adopting a systemic perspective**

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Adopting the systemic perspective required to make strategic investments in economic renewal was seen to be beset by a number of issues. To begin with, Wielkopolska contributors thought that, where established jobs fell away during the transition, citizens would have less disposable income with repercussions for local businesses and the potential to create a cycle of decline. Suggesting that the current use of coal as a stop gap for gas (with coal production currently increasing in Poland) was sending conflicting signals provided an example where short-termist considerations too often outweighed long-term investment choices (in this case energy independence potentially preventing the closure of coal mines) jeopardising a systemic approach.

‘A fundamental rethink of life on the islands’, generating co-benefits to stimulate fundamental change was called for in the South Aegean, ‘moving away from seeing nature as a commodity and instead enabling equitable access to nature, for both budget tourists and all citizens’. In PACA, a fundamental shift in the underlying economic models was seen as a key opportunity for the region. Contributors suggested that a new economic development policy prioritising the use of locally recycled and locally sourced bio-materials (as anticipated in circular economy models) together with food autonomy bringing security to inhabitants, could lead to sufficiency emerging as the new trend in the region. This would create an opportunity for existing manufacturing industries to transform, and new sectors to emerge. Adopting a mantra of constantly innovating by applying ‘no regret’ solutions while using integrated accounting and impact assessments to understand what was being achieved was seen as key to making the most of this opportunity.

A move towards sufficiency mindsets with low-tech and nature-based solutions replacing high-tech approaches was also seen to improve the affordability of the transition, enabling people in precarious situations to partake on a more equal footing. The important role of lifestyles and cultures and the challenge to the role of employment as the only route to secure livelihoods as embedded in the scenario analyses are implicit in these considerations.

## Theme 3: Infrastructure renewal

### **Key insights**

#### **The literature highlights that:**

- Improving infrastructures emerges as a key lever to deliver just outcomes for different socio-economic groups from the transition.
- Citizen engagement is key to achieving the potential benefits of the infrastructure renewal process, including improved public health and well-being.
- Infrastructure renewal holds the promise of job creation and new types of infrastructures can contribute to social inclusion. But declining tax revenues pose particular challenges for infrastructure renewal in regions affected by the phasing out of carbon intensive industries.
- New ways of delivering infrastructure-based services include approaches informed by Universal Basic Services thinking or prosumer models.

#### **Stakeholders involved in the workshops suggested that:**

- Infrastructure renewal is a foundation of industrial restructuring, but it must be responsive to specific regional circumstances and may have to overcome local opposition.



- Ensuring socially fair and just access to infrastructure for basic needs (e.g., housing, transport, and digital connectivity) is a key prerequisite for the realisation of wider transition opportunities.
- Necessary investment and governance capacity needs to be nurtured to enable all EU regions to deliver appropriate infrastructure solutions to their citizens. Including leveraging community wealth building solutions to garner support.

## Insights from the literature review

Table 5 provides an overview of key issues regarding theme 3 that emerged from the literature review before considering those in more detail in the main body of this subsection.

**Table 5: Overview of identified socio-economic impacts on regions and population subgroups under theme 3**

| Challenge  | Region(s)   | Group(s)  |
|--|---|---|
| <b>Adapting, replacing, and developing new infrastructures</b> | <ul style="list-style-type: none"> <li>• Regions unable to raise capital (Hafner et al, 2020, p. 27)</li> <li>• Regions affected by declining tax revenues (Oeko, 2020, p. 15)</li> <li>• Regions with limited planning and implementation capacity (Luderer et al, 2021, p. 14)</li> </ul>         | <ul style="list-style-type: none"> <li>• Lower income residents being pushed out of city centres by renovations (Rasmussen et al, 2021, p. 6)</li> <li>• Low-income groups lack the opportunity to become energy prosumers (i.e. without spare resources for energy investments) (EEA, 2022a, p. 22)</li> </ul> |
| <b>Opportunity</b>   | <ul style="list-style-type: none"> <li>• Potential job creation via investments in infrastructure updates (Oeko, 2021, p. 8)</li> <li>• Improved social inclusion for citizens via more access to green spaces and better access to public services such as transport (Oeko, 2021, p. 9)</li> </ul> | <ul style="list-style-type: none"> <li>• Improved public health and well-being (Rasmussen et al, 2021, pp. 18-19)</li> <li>• Stronger social inclusion and health benefits (Oeko, 2020, pp. 12 &amp; 25)</li> </ul>   |

The literature discusses the built environment as an example of the potential for detrimental socially fair and just outcomes from the infrastructure renewal required for the transition to carbon neutrality, e.g. through gentrification introduced on the back of energy renovations and changing property values in city centres in response to the desirability of low-carbon lifestyles (Rasmussen et al, 2021, pp. 3, 6 & 12). At the same time, the risk is identified that decreasing tax receipts through economic restructuring may affect existing public infrastructures in transport, education, and leisure (Pilati and Hunter, 2020, p. 46; Oeko, 2020, p. 15).

From an economic development perspective, lagging regions may not be equipped to deliver the required rapid planning and implementation of infrastructure renewal. Investment is again seen as a particular bottleneck for renewable energy infrastructure. This has the potential to open up a divide between richer Western European countries and their neighbours in Central and Eastern Europe with a remaining strong dependence on coal (Euractiv, 2021, p. 4; Hafner et al, 2020, p. 27; Luderer et al, 2021, p. 14)

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Improved public health and well-being is identified as an opportunity from successfully navigating infrastructure renewal, e.g. more energy efficient housing, creating urban green spaces, reclaimed land from carbon-intensive activities facilitating social interaction and leisure, and ultimately contributing to social inclusion, and wider ecosystem health which would reduce detrimental effects, e.g. from pesticides (Ludden et al, 2021, p. 106; Oeko, 2020, pp. 12 & 25; Rasmussen et al, 2021, pp. 18-19). Investments in infrastructure and skills can also prevent accelerated rural-urban migration and boost food security by furthering opportunities for agriculture (FES and HBS, 2020, p. 23).

### **Possible policy interventions**

Examples of policy interventions in relation to infrastructure renewal found in the literature review related to a continuum of measures, starting with ensuring that social fairness is considered in planning and delivering infrastructure renewal, but also covering stronger measures to ensure that vulnerable social groups do indeed stand to benefit from investment in infrastructure projects (EEA, 2022b; EEA, 2020b). The former involved both legislation and direct citizen involvement in an inclusive design process while the latter related, for instance, to innovative programmes of combining funding for energy efficiency measures with extensive targeted outreach programmes to reach groups in the most vulnerable situations (Defard and Thalberg, 2022, p. 3; IRENA and ILO, 2021, pp. 48 & 50; Oeko, 2020, p. 37; Rasmussen et al, 2021, pp. 4 & 19). In addition, effects of an increase of low-paid work and problematic conditions for migrant workers emerging from a growth in the construction sector will need to be considered and incentives increased to ensure good working conditions (Rasmussen et al, 2021, p. 37). There is also a call for migration policy to be linked with transition planning to address expected growth in work migration (Eurofound, 2021, p. 48).

The UBS approach identified in relation to welfare also extends to infrastructure renewal with calls in the literature to deliver infrastructure services as public goods, e.g. free public transport, and investment in active travel (e.g. public transport improvements, walking and cycling routes). In relation to housing in particular, examples discussed in the literature also included a community wealth building element, e.g. backing Community Land Trusts to develop (partially) community-owned green affordable housing and preserve community land ownership, or prosumer models whereby individuals or groups of consumers generate their own renewable energy ((EEA and Eurofound, 2021, p. 8; Rasmussen et al, 2021, p. 17; EEA, 2022a, p.13).

### **European-level perspectives of the scenario dynamics**

European experts at the workshop and in interviews did not put a strong emphasis on the implications of the three scenarios for infrastructure renewal.

Against a backdrop of digitalisation being seen as an essential ingredient of the transition towards climate neutrality, however, Internet connectivity and digital skills were seen as the ‘other side of the coin’ of mobility, with a key role to play in equalising opportunities between regions and populations.

### **Regional perspectives of key challenges and opportunities**

The prominent role that infrastructure played in discussions with South Aegean contributors illustrate how important infrastructure renewal is for the process of industrial restructuring and economic renewal. Workshop participants pointed out how rising costs of fossil fuels have the

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potential to undermine the current economic model, which relies heavily on the viability of existing connections for tourism and the provisioning of island residents. And yet, the very nature of the landscape poses technical challenges and requires substantial investment in new infrastructures, e.g. for renewable energy. This is likely to be replicated in other remote areas with similar geographical peculiarities. Against this backdrop, EU support for the development of decentralised energy infrastructures as well as digital infrastructures (e.g. broadband coverage) throughout its territory, was identified as important by workshop participants in the South Aegean.

A NIMBY (Not In My Back Yard) effect was seen as creating further obstacles to the creation of the infrastructure required for the South Aegean not to be left behind (e.g. charging points for electric yachts to avoid sustainably-minded tourists being drawn to France or Italy instead). Participants saw this as the result of a lack of public debate about the essential need to embark on the transition to renewable energy. And yet, participants saw an opportunity to ‘leapfrog’ straight to new forms of decentralised utility provision (electricity, water, health, transport). Smaller scale solutions, adapted to ‘the unique characteristics of each island’, could take advantage of state-of-the-art technologies.

Pointing to the complexities involved in developing new energy infrastructures (e.g. replicating the current integration of electricity, heat, and gas with residual heat from power generation used for district heating), contributors in Wielkopolska pointed to potential risks regarding the accessibility and affordability of renewable energy. A lack of knowledge of alternative energy technologies (e.g. hydrogen) and disposable income for the upfront investment in new equipment needed, might be an obstacle for people adopting new technologies. Combined with energy generator priorities around profitability, this might lead to inflated energy costs for consumers. Active energy sector integration was therefore called for, e.g. establishing a collaboration platform for cross-sectoral discussions on price setting or appropriate volumes for energy crop farming.

In Wielkopolska getting decentralised renewable energy infrastructures right was also seen as having a potential knock-on effect on people’s attitudes. Achieving a degree of self-sufficiency in this way, and actively contributing to the transition to climate neutrality, would generate a sense of being ‘a link in the chain’ and therefore more positive perceptions of the transition to climate neutrality.

In PACA, contributors focused primarily on the role of infrastructure in delivering welfare and social fairness. A current lack of public transport, and digital connectivity, for people outside of the main urban centres, was seen as a key issue in achieving a just transition. Contributors thought that decision-making had not caught up with the need to reconcile social inclusion with environmental concerns. One participant pointed to the construction of a bypass around Arles as an example where ‘rather than rethinking intra-regional transport, more natural spaces are being destroyed’.

## Theme 4: Enabling systemic change in European regions

### **Key insights**

#### **The literature highlights that:**

- Effective compensation mechanisms between EU regions may be needed in the short-term but integrated territorial strategies for a broader sustainability transition must be the long-term goal.

- Effective multi-level governance requires investment in capacity development down to the regional level and local communities.
- An integrated evidence base drawing on social, economic, and environmental data can help facilitate long-term systemic change through a reconfiguration of wider production and consumption systems.
- Strengthening mechanisms for continuous social dialogue and institutionalising broad civil society engagement will be crucial in navigating conflict. As will challenging institutionalised power relationships between the state, the corporate sector, trade unions and citizens that may obstruct a just transition.
- The specifics of regional socio-economic systems and specific patterns of disadvantage between different socio-economic groups need to be considered.

**Stakeholders involved in the workshops suggested that:**

- Equip regions to embed transparency and participation in political processes and to tackle vested interests to nurture trust and enable new forms of socio-economic cooperation.
- Regions suffering from a lack of social cohesion and/ or a lack of trust in governments and/ or with a weak national government commitment to the transition face particular challenges.
- Without investing in governance capacity to i.e. encourage citizen engagement and empowerment, acceptance of the EU as an effective mechanism to deliver convergence is at stake.
- Strengthening collective worker representation, including for new settings and forms of work, as well as investing in innovation in new multi-stakeholder models, will be key in overcoming political short-termism and establishing regenerative economy models (e.g. bio-economy drawing on local ecosystem services, circular economy).
- Integrated data collection and analysis capabilities need to be embedded in regions to avoid detrimental effects on regional populations resulting from relying on a ‘business as usual’ assumption.

## Insights from the literature review

Table 6 provides an overview of key issues regarding theme 4 that emerged from the literature review before considering those in more detail in the main body of this subsection.

**Table 6: Overview of identified socio-economic impacts on regions and population subgroups under theme 4**

| Challenge   | Region(s)   | Group(s)  |
|---|---|---|
| <b>Engaging stakeholders at different governance levels</b> | <ul style="list-style-type: none"> <li>• Regions in Member States that have not fully committed to phasing out coal (Pilati and Hunter, 2020, p. 59; Kreinin, 2020, p. 6)</li> <li>• Regions suffering from a lack of social cohesion (Irimie et al, 2020, p. 9)</li> </ul> | <ul style="list-style-type: none"> <li>• Institutionalising civil society involvement (WWF, 2020, p. 20)</li> </ul>               |
| <b>Power relationships, reconciling</b>                     | <ul style="list-style-type: none"> <li>• Regions affected by political lock-in (Normann and Tellmann, 2021, p. 422)</li> </ul>  | <ul style="list-style-type: none"> <li>• Trade unions (and their social partners) (Normann and Tellmann, 2021, p. 422)</li> </ul> |

|   |  |   |
|---|--|---|
| <b>different interests and institutional change</b>           | <ul style="list-style-type: none"> <li>• Regions with lack of cohesion/ trust in governments (FES and HBS, 2020, p. 24; Irimie et al, 2020, p. 8)</li> <li>• Regions with governance constraints (Pilati and Hunter, 2020, pp. 59-60)</li> <li>• Remote/ rural regions attracting new investors (WWF, 2020a, p. 20)</li> </ul> | <ul style="list-style-type: none"> <li>• Social groups challenging the EU Just Transition concept and approach (Wilgosh et al, 2022, p. 23)</li> <li>• Social groups affected by deunionisation/ fragmentation (Kreinin, 2020, p. 8; Walk et al, 2021, p. 17)</li> </ul>    |
| <b>Measuring/ understanding effects of individual changes</b> | <ul style="list-style-type: none"> <li>• Regions with sectoral strengths in areas with a close link to wider sustainability (e.g. agriculture and fishery) but limited direct climate and energy strengths (Oeko, 2021, p. 41)</li> </ul>  | <ul style="list-style-type: none"> <li>• Groups affected by issues around access to and affordability of energy, mobility, and food (including RE 'prosuming'), the fairness of green taxes and net employment effects of the transition (Oeko, 2021, pp. 34-35)</li> </ul> |
| <b>Opportunity</b>  | <ul style="list-style-type: none"> <li>• Strengthening regional resilience through mobilising all stakeholders in engaging with regional systemic perspective</li> </ul>   | <ul style="list-style-type: none"> <li>• Adopting an inclusive approach to transition management to avoid communities feeling abandoned (EEAC and NESC, 2020, p. 12)</li> </ul>   |

### Engaging stakeholders at different governance levels

Regarding European governance arrangements, the literature suggests that a careful balance needs to be found between empowering the local level and effective cooperation between the EU, national, and the regional/ local level. Effective compensation mechanisms for regions that stand to lose out economically from the transition are seen as an essential part of the agenda but devising integrated territorial strategies for a broader sustainability transition are seen as the ultimate goal. Potential governance and capacity constraints that may often result in a lack of trust in governments in lagging regions are seen as an issue that needs to be addressed for this process to be feasible (for more information, see Defard and Thalberg, 2022, p. 2; EC, 2021b, p. 16; Pilati and Hunter, 2020, pp. 36 & 59-60).

The literature review delivered clear evidence of the essential need to integrate different perspectives in achieving the systemic change required for a just transition (Ciplet and Harrison, 2019, p. 1). At the regional level in particular, involving a diversity of stakeholders in charting a path forward was seen as paramount. The evidence reviewed suggests that beyond stakeholders at different governance levels and policy spheres, wider society needs to be engaged. Innovative processes of goal-oriented multi-stakeholder engagement with the scope to consider wider production and consumption systems are called for in the literature. This is seen to be particularly challenging in regions that already suffer from a lack of social cohesion where navigating the socio-economic effects of the transition may lead to further fragmentation, e.g. deunionisation, further outsourcing and societal polarisation (for more information, see EEA and Eurofound, 2021, p. 12; EEA, 2020a, p. 37; Hafner et al, 2020, p. 41; Irimie et al, 2020, p. 9; Walk et al, 2021, p. 17).

### Power relationships, reconciling different interests and institutional change

Several sources highlight that finding integrated regional solutions will entail conflict as power relationships, institutional context, different cultural identities, and political persuasions with regard

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to the nature and process of a just transition will need to be navigated (Ludden et al, 2021, p. 11; Sovacool, 2021, p. 13). Trade Unions are identified as potentially having a key role to play in reconciling different positions by adopting a longer-term perspective and accounting for different ways in which workers might be affected by the transition. However, just like state and industry actors, their counterparts in social dialogue, trade unions too may have to address what is described as a ‘political lock-in’ arising from mutual dependence between these three groups of actors in fossil fuel economies (for more information, see NESO, 2020, p. 18; Normann and Tellmann, 2021, pp. 422-424).

The risk of powerful actors such as the fossil fuel industry shaping the European just transition concept is highlighted in the literature. Such interventions may lock out more fundamental criticisms of European socio-economic policies, which would lead to the just transition becoming institutionalised to preserve the status quo (for more information, see FES and HBS, 2020, p. 24; Kreinin, 2020, p. 6; Irimie et al, 2020, p. 8; Wilgosh et al, 2022, p. 23).

Crucially, the literature suggests that the effort of mobilising the whole range of stakeholders in adopting a systemic perspective for the transition to climate neutrality at the regional level is seen as part of the answer. It is also identified in the literature as holding the promise of strengthening regional resilience (the ability to accommodate changes in the socio-economic environment while ensuring the continuous welfare of people living in the region) (EC, 2020c, p. 2). Institutionalising civil society engagement, supporting organisational actors in looking beyond narrow agendas, and creating the space to engage in discussions about fundamental change is seen to offer the potential to arrive at transformative visions or at least negotiate compromise and navigate conflicts (for more information, see EEAC and NESO, 2020, p. 12; Euractiv, 2021, p. 12; Wilgosh et al, 2022, p. 22; WWF, 2020, p. 20).

### **Measuring and understanding effects of individual changes**

Finally, the literature identifies a key challenge in being able to map systemic interdependencies in the transition towards climate neutrality in sufficient detail on the basis of clear indicators and drawing on sound data to support decision-making. The lack of an integrated data set regarding social fairness in the built environment is offered in the literature as an example of how such deficiencies in data availability act as an obstacle for actors in different sectors to develop a shared conceptual framework or language. Crucially, this also creates an obstacle to identifying and maximising possible ‘co-benefits’ of the transition (Euractiv, 2021, p. 5; Oeko, 2021, pp. 34-35 & 41; Rasmussen et al, 2021, p. 4).

The lack of a social dimension in data supporting economic policy development for the transition is singled out for attention in the literature. However, the evidence suggests that even data on the economic outcomes of different aspects of an industrial transition is lacking. Monitoring of the achievement of the SDGs and the EPSR, for instance, is described as not effectively integrated across governance levels and policy spheres. Limited regional data collection and analysis capacities are described as an obstacle to drawing down EU support on the basis of clear transition plans (for more information, see IASS, 2019, pp. 3 & 5; Oeko, 2021, p. 41; Pilati and Hunter, 2020, p. 55).

### **Possible policy interventions**

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The need for transparency for all affected stakeholders was highlighted in the literature, e.g. ensuring clear information on and access to all documentation related to the phasing out of coal in the EU (WWF, 2020, pp. 5 & 46).

Further, a strong focus on more proactive measures to ensure appropriate representation of, and just outcomes for, different views and perspectives involved in managing the transition at different governance levels was recommended. Pointing to initial examples of new ways of working, examples in the literature notably extended to the forging of broad alliances not only between social partners, but also involving NGOs, research entities and communities themselves to negotiate compromises and garner political support. A particular emphasis rested on ensuring the inclusivity of such alliances, acknowledging issues of structural power relationships, and creating enabling conditions for excluded groups to engage (for more information, see BusinessEurope, 2021, p. 16; Defard and Thalberg, 2022, p. 4; Eurofound, 2021, p. 27; EEA and Eurofound, 2021, p. 13; Irimie et al, 2020, p. 17; Oeko, 2020, p. 29; Walk et al, 2021, pp. 21, 22, 24 & 26; WWF, 2020, p. 20).

Finally, the literature review highlighted the need to build governance capacity to enable actors at all governance levels to pull their weight in developing and implementing integrated policy solutions. Calls for more horizontal support measures were coupled with examples of moves to coordinate policy-making across public policy areas. Ensuring appropriate data collection to guide systemic decision-making was mentioned, e.g. through approaches such as backcasting (i.e. defining a desirable future and then working backwards to identify required policies and programs to secure this future). As well as the development of whole systems strategies and action plans (for more information, see Eurofound, 2021, p. 2; EEA and Eurofound, 2021, p. 12; Oeko, 2020, p. 32; Pilati and Hunter, 2020, pp. 59-60; Wälitalo et al, 2020, pp. 1-2).

### European-level perspectives of the scenario dynamics

Experts at the European workshop stressed that for the regional level to truly engage with multi-level governance additional structures and resources were urgently needed. Support for the EU as an effective mechanism to deliver convergence was seen to be at stake by 2050, if top-down decision-making prevails. The use of EU Climate Social Fund resources was quoted as an example where groups in vulnerable situations had not been able to feed into decision-making. A move away from overly technocratic processes and a much stronger involvement of civil society actors, including more extensive use of participatory democracy mechanisms, were seen as part of the answer.

Workshop participants agreed that protecting and extending the political room for manoeuvre for a just transition through a more inclusive political process was a prerequisite for a just transition. Without it, populations at large were seen to be at risk of becoming more susceptible to populism and/ or political apathy. This would undermine any consensus-based decision-making for the kind of distributional measures required to achieve a just transition. They also highlighted, however, that engagement with a devolved decision-making process would be highly resource-intensive for individuals and would require considerable investment of public resources and personal time in educating citizens regarding the issues at stake in the transition.

The extent to which it will be possible to demonstrate the benefits from the transition for all over the years to 2050 was seen to set the tone for the political sphere and delimit the choices available for political decision-makers. Clearly evidencing and communicating the socio-economic benefits of climate policies, forming alliances with clear responsibilities, and safeguarding fundamental human,

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social and political rights were seen as paramount to achieve greater political engagement. At the same time, the expectation was that any political process suited to navigate conflict and achieving compromise will continually need to be adapted to ongoing migration from outside Europe. The discussion on migration also echoed insights from the literature review on expectations of increasing work migration to the EU, particularly due to growth in the construction sector with its high share of migrant workers, and with stronger incentives needed to ensure good working conditions (Rasmussen et al, 2021, p. 37).

## Regional perspectives of key challenges and opportunities

### Citizen engagement

Contributors across all three focus regions were clear that without empowering local populations, it would not be possible to adopt a long-term strategic perspective. A lack of ecological awareness in the general population, often combined with precarious lives, prompted fears in Wielkopolska that ‘if people are forced to choose between their livelihoods and the environment, they may opt for the former’ jeopardising the transition to climate neutrality altogether. PACA suggested to offer training leading up to something like a ‘2050 passport’ or a role for citizens as ‘transition ambassadors’.

Any educational effort would need to be inclusive. South Aegean contributors thought it important to reach population subgroups in vulnerable situations with awareness raising and education around energy efficiency and green technologies, for instance. While in Wielkopolska the need to alleviate structural inequalities was highlighted, e.g. ‘securing equitable access to nature, opportunities, mobility - boosting local ecosystems stewardship and access’. PACA participants thought that any campaign should highlight the role of solidarity in achieving the best possible outcome for all.

The importance of changing the narrative through bottom-up initiatives was highlighted in Wielkopolska, ‘envisioning positive futures for the region’ and equipping local people to lead the change and overcome persistent local opposition. Capacity-building for political engagement and investment in transparent, inclusive decision-making processes to nurture trust in institutions could usefully draw on the positive aspects of the deeply embedded culture of the coal mining community.

A word of caution came from the PACA region, where contributors thought that it was important to recognise that ‘action is needed now to address immediate needs but seeing change may take time’. Embedding new ways of citizen participation and representation would not be easy. As part of a process of democratic renewal stakeholders here advocated ‘developing the commons’ to strengthen social interactions. Examples included creating co-working spaces; ensuring access to shared economic, social, and environmental data; and leveraging planning to create spaces for social diversity.

### Reconciling different interests and institutional change

Participants in the South Aegean suggested that business choices were still very much framed in terms of the existing economic model - the returns it promises, the incentives it creates and the patterns of interaction it is based on. Concerns expressed included ‘vested interests such as shipping companies actively resist[ing] the shift away from fossil fuels’ or ‘locals starting forest fires to free up plots of land’. Such opportunistic behaviour was seen as the result of limited governance capacity (e.g. deficiencies in the planning system, the fragmentation of the island economy).



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Against the backdrop of a more diverse and resilient regional economy, and referring to a number of existing models in France, contributions from PACA saw in-depth collaborations between businesses, organisations focused on delivering social objectives and local stakeholders as a key way to reconcile different interests (e.g. forming cooperatives, sharing skills and investment). Seeing businesses as key players for the transition, they should be equipped to play a constructive part, e.g. through targeted information and support in adopting regenerative business strategies. This would be key in nurturing a ‘regenerative economy’, in which returns for economic actors would be linked to the positive results their activities produced, from carbon sequestration and regenerative hydrology to improving human health, and the preservation of intangible cultural heritage. Innovation would need to extend to the very way businesses are governed, with contributors calling for ‘social dialogue - within companies and economic actors more widely’ to determine company strategy.

### **Governance capacity**

In workshop discussions in the South Aegean the need was identified to be responsive to particular conditions, needs and opportunities at sub-regional level (e.g. abundant supply of wind in some islands) while devising horizontal measures to apply to the whole region (e.g. transparency and open data) as a key issue, which is likely to be replicated in other regions with limited governance capacity too.

A sense of neglect compared to populous metropolitan areas, described as a ‘not Athens, not Attica’ phenomenon, participants agreed that an effective multi-level governance process with improved coordination across all levels would be needed to make islanders’ voices heard. Decentralised allocation of funds, but also a focus on making better use of public funding, with clear benchmarks for success, appropriate monitoring and tackling corruption, should be part of this.

PACA contributors highlighted a lack of political commitment to focus on root causes. The electoral cycle and the current split of competencies between different levels was seen to create formidable issues for long-term policy-making. In response, as stated by a workshop participant ‘the region has to be able to think about and for itself, the different regional stakeholders have to be able to collaborate and agree on common aims and indicators and experience self-efficacy’.

Wielkopolska contributors identified governance needs at different levels: a secure planning horizon for businesses; enhanced local authority capacity, e.g. to secure funding; the capacity to steer the transition to reliably produce public benefits at national level; and European level capacity to keep pace with what’s required for effective delivery on the ground (e.g. planning and technical legislation, State Aid arrangements). Without such enhanced capacity and full commitment to facilitate the transition, contributors saw a risk that market actors might prevail, prioritising short-term profits over long-term benefits from the transition.

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## 4 – Discussion and Policy Pointers

The research undertaken in the foresight exercises echoes many of the themes of the overarching European Commission policy guidance for a fair and inclusive transition towards climate neutrality (EC, 2021d). However, it also highlights particular areas for attention that emerge as key concerns when a long-term perspective concerning impacts for different population subgroups and regions is adopted. These are the areas that may not yet be sufficiently addressed by related policy initiatives.

Looking across the findings, three cross-cutting conclusions can be identified, especially from the literature review and the scenario-based engagement with European experts. Here, a focus on key levers for institutional change emerged as being needed for ensuring a just transition:

### **Creating governance capacity and space for a just transition to climate neutrality**

- Both the negative effects of climate change on different socio-economic groups and the potential benefits of the transition (i.e. to health and well-being) should receive more attention in the policy debate.
- The capacity and resources required to enable effective multi-level governance interactions are currently not in place and need reinforcing.
- Civil society engagement has a key role to play in creating the political room for manoeuvre required to deliver a just transition. Citizens need to be equipped with the information and knowledge to effectively engage with democratic decision-making processes, including through formal education settings.

### **Providing strategic direction in the development of a climate neutral economy**

- Recognising that all economic sectors will be affected by the transition one way or another, Just Transition interventions need to reach beyond immediately affected sectors and work towards reconfiguring entire production and consumption systems.
- Achieving European strategic coherence in managing the transition will be of the utmost importance in seeking to influence the direction of economic restructuring, including the location of new wealth creation activities and associated supply chains.
- Lifestyle and consumption patterns play an important role in shaping economic activities and livelihoods as well as the social fairness of consumption. Just Transition policies need to engage with changes in lifestyles and consumption choices, both in taking direction from changes on the ground and leveraging public policy tools to influence respective choices.
- Strong strategic cooperation between public authorities, social partners and civil society will be required to keep any unintended consequences from the transition to a minimum. Continually refreshing the understanding of the effects of policy decisions on regions and populations will be essential in making any necessary adjustments.

### **Securing and fairly distributing returns from economic activity and resources in a climate neutral world**

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- To secure socially fair and just outcomes, public policy needs to play a greater role in securing and fairly distributing resources in a climate neutral world. To achieve this, appropriate policy signals need to help direct investment and the reliance on market-based allocation mechanisms needs to be reduced. The distributional effects of policy measures designed to facilitate the transition needs to be a key consideration within this.
  - The well-being benefits from a just transition, themselves a return from new forms of economic activity, need to be evidenced and clearly demonstrated to secure continuity of the necessary political support.
  - In view of the fact that unintended consequences are likely to result from the systemic change required to deliver the transition, the state needs to assume greater responsibility for a strong generic safety net. This will need to include attention to the precise welfare outcomes from the way in which public services are delivered.

## Policy pointers

Beyond these broader insights derived from adopting a forward-looking ‘futures’ perspective in considering how to achieve a just transition, perspectives from across the different foresight exercises highlight the importance of taking different starting points and capacities into account. Structured by the themes of the previous chapter and differentiating between potential impacts for different population subgroups and regions, an analysis of the findings provides the following policy pointers:

### Securing livelihoods, welfare and fairness

#### **Policy pointers for different population subgroups:**

- Discontinuities in working lives (e.g. gaps in retirement contributions; upskilling needs to embark on a new career) and socio-cultural aspects (e.g. individuals’ identities being linked to a particular way of life such as long-term employment in sectors with large monolithic employers or precarious and seasonal employment patterns) need to be considered in delivering more flexible and targeted job transition and welfare models.
- Potential conflict in existing and emerging patterns of job polarisation and associated fairness outcomes (e.g. support and compensation for those losing secure livelihoods vs. inclusion of those already disadvantaged in the labour market) need to be factored into transition arrangements by making targeted support available to protect workers’ terms and conditions.
- The extent and precise ways in which a shift in production and consumption systems towards sufficiency models can potentially reshape how populations secure their livelihoods (e.g. balance of skills provision for employment and/ or meeting basic needs; the need to enable individual entrepreneurship and the adoption of new business models i.e. in the circular economy) will need to be considered in reskilling provision.
- The creation of co-benefits from the transition need to be maximised in regional responses to the transition (e.g. opportunities to enhance local quality of life through environmental reclamation and access to nature; the creation of social spaces through regional planning).

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- The effects of possible migration patterns resulting from economic restructuring brought about by the transition need to be considered when identifying the welfare support required for regional populations (e.g. support for the elderly in situations of strong out-migration; social cohesion support for populations in regions experiencing strong in-migration).

**Policy pointers for different regions:**

- Devising responses to the nature and scale of anticipated job losses at the regional level will need to take account of scale effects (i.e. where a key sector or individual employer is affected), scope effects (i.e. where effects are more diverse and distributed) and timing effects (i.e. where the impact of the transition on jobs and livelihoods in the region is likely to be more indirect and therefore time-delayed).
- Mechanisms to negotiate employment terms and conditions at the regional level may be considerably weakened by the anticipated wholesale industrial restructuring (e.g. the degree of institutionalisation of social partner interactions, the extent to which workers in different sectors are represented in such negotiations). It will be important to strengthen consistent collective worker representation, including for new settings and forms of work that reach beyond established industrial patterns. Furthermore, engaging more and new types of employers, and embedding the solidarity principle between individuals that are affected by the transition (including individuals in non-standard employment) will be key.
- Transfers between regions may be required to account for differences in the extent to which existing assets (i.e. natural, human, and capital) are likely to create opportunities to establish new climate neutral industries that would enable a direct transfer of jobs (e.g. from fossil fuel industries to renewable energy).
- Existing national models for the redistribution and welfare provision and their capacity to adapt to the change brought about by the transition at the regional level need to be factored into regional responses (e.g. the extent to which tax incomes are future-proofed and can adapt to changes in the regional business landscape; the strength of the hard and soft public service infrastructure and its capacity to explore entirely new models of welfare provision such as UBS / UBI).

## Refocusing economic development

**Policy pointers for different population subgroups:**

- Enabling support delivered on an outreach basis will be required to help different socio-economic groups to find their niche in a new industrial landscape, e.g. to engage with new sectors and industries or to facilitate entrepreneurship in response to new economic opportunities.
- The change in industrial consumption and production systems as part of economic restructuring efforts, including a shift towards circular economy models, will require individuals to shape and adapt to new ways of meeting basic needs and making wider consumption choices. This requires support for behaviour change, e.g. nurturing the skills and motivations required for citizens to adopt sufficiency lifestyles. As well as ensuring food security and meeting basic needs more generally. While also engaging with regional businesses to support new business models.

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- The anticipated fundamental industrial change will depend on attracting investment while equipping populations to make the necessary change in their own lives. This requires trust-based relationships with governance organisations and the private sector. Holding private investors to account for public benefit is therefore a basic requirement for successful economic restructuring.

**Policy pointers for different regions:**

- The strength of regional innovation systems will be a key determinant of their capacity to attract, create and embed new economic activities in the region, incl. models that are based on reconfigured production and consumption systems such as circular economy activities. In regions where the ability to integrate public, private and third sector resources to lever social innovation is underdeveloped, this will need to be strengthened. For example by supporting strategic capacity to anticipate change; investing in small scale pilot and demonstration projects; and strengthening communication and transparency regarding enterprise opportunities through data sharing. Regions with limited diversification, low skill levels and /or experiencing out-migration are likely to be particularly affected.
- Different regions' assets and potential to contribute to strategically integrated economic restructuring throughout the EU needs to be identified and capitalised upon, e.g. opportunities for regions with limited technological development to leapfrog to new sustainable technologies and business models; opportunities to capitalise on regional ecosystem services to enable change in industrial production systems such as securing regional food resilience or new agricultural models or prioritising carbon sequestration in soils and biomass; support for new solidarity economy business models.
- Where the national commitment to the transition to climate neutrality is limited, regions need to be enabled to access EU support and investment in economic restructuring (e.g. devolved decision-making regarding the use of EU funding; support in attracting private investment; provision of holistic business support at the regional level targeting businesses throughout regional supply chains).

## Infrastructure renewal

**Policy pointers for different population subgroups:**

- Lower income groups in particular will be affected by higher costs of energy and housing. They will likely face challenges to access affordable, 'climate-proof' housing, leading to increased risk of spatial and quality of life segregation. Policy needs to ensure accessibility and affordability of decent housing, e.g. avoiding gentrification from increases in property values and housing costs in city centres.
- Low-carbon transport and digital infrastructures are essential ingredients of the transition to climate neutrality. Ensuring that these are widely available (particularly in rural and remote regions) and affordable, is a prerequisite for ensuring social inclusion and access to work for different groups, especially given the expected speed of change in labour markets in the transition. Infrastructure renewal will need to ensure socially fair and just access to such services and enhanced social inclusion, e.g. by leveraging legislating, adopting inclusive design

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processes with citizen involvement or equipping populations with the requisite skills to make effective use of new digital infrastructures.

- A wider supply of public services will be necessary to ensure social inclusion and fairness. Younger generations in particular would benefit from improved prospects in this regard, with UBS and so-called ‘prosumer’ models being most prominently discussed as possible solutions. Policy will need to consider and investigate where and how far such solutions could be applied. Examples of which include subsidised public transport, a greater state responsibility to meet basic needs, or community wealth building approaches to give communities a greater stake in the delivery of infrastructure-based services.

#### **Policy pointers for different regions:**

- The time pressure and scale of change will be a challenge especially for regions starting from earlier stages of development and/ or facing declining tax revenues from the phasing out of carbon-intensive sectors. Here, two critical bottlenecks will need to be addressed by policy to enable these regions to deliver the infrastructure renewal required to underpin the transition process: Improved access to funds and improvements in governance capacity, e.g. through skills transfers or support for additional personnel.
- For regions with unique natural environments that limit the roll-out of large-scale solutions, opportunities to leapfrog to innovative approaches need to be explored e.g. decentralised energy and water infrastructures or novel health infrastructures. Support for local governance structures in accessing funding, as well as tailored solutions for developing long-term plans and visions with civil society will be required.
- Processes for developing long-term visions and plans have been identified as critical to increase local support from the population as well as for mobilising cooperation between different stakeholders. This is especially important in regions that face rising unemployment due to a decline in carbon-intensive sectors, e.g. in the face of immediate short-term negative effects such as job losses. As well as in regions starting from earlier stages of development. Examples include enabling citizens to gain access to renewable and decentralised electricity in their homes, or for community buildings.
- Improved public health and well-being is identified as a key opportunity emerging from large-scale infrastructure renewal projects. Policy will need to consider direct and indirect co-benefits for social inclusion in the design and impact evaluation of any infrastructure renewal projects.

### **Enabling systemic change in European regions**

#### **Policy pointers for different population subgroups:**

- Raising awareness and facilitating learning about the transition particularly for groups with limited ecological awareness was identified as essential in laying the foundations for the kind of systemic change required to deliver a just transition. This should include ensuring that institutional education and training infrastructures deliver appropriate skilling and reskilling. This would need to cover both the generic skills and knowledge regarding the challenges and opportunities of the transition and specific aspects of the transition trajectory at the regional level.

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- Without a voice in making investment decisions regarding transition measures, affected groups are unlikely to identify potential benefits from the transition and may therefore oppose necessary interventions. Ensuring adequate mechanisms to enable groups in more vulnerable situations to feed into decision-making, e.g. for mechanisms such as the EU Climate Social Fund and supporting bottom-up initiatives involving diverse population groups, are key first steps in changing the narrative and overcoming local opposition to the transition. Thereby creating an enabling setting for systemic change.
  - Social groups who challenge the current Just Transition concept and approach often have limited input into charting a path towards a carbon neutral region. And yet, they may have an important contribution to make towards a more integrated perspective. It will be important to strengthen social interactions to allow a cross-fertilisation between different attitudes and perspectives and catalyse democratic renewal. Approaches that may be suited to this include what was described as ‘developing the commons’, e.g. co-working spaces; ensuring access to shared economic, social, and environmental data; and leveraging planning to create spaces for social diversity.
  - More detailed monitoring of systemic effects from the transition on different population subgroups is necessary, especially where a lack of available data currently poses a major barrier. This could e.g. relate to integration and more real-time sharing and accessibility of data covering an integrated view of environmental, economic as well as social indicators. Policy measures could support more detailed and integrated data collection and analysis at the regional level to ensure respective data accessibility for use in EU policy-making.

**Policy pointers for different regions:**

- Regions with limited governance capacity will often be characterised by a lack of trust in government, increased pressure from stakeholder groups advocating strongly for ‘vested interests’ within the context of transition planning (e.g. for specific interests of their business or sector) and a prevalence of opportunistic behaviour. This acts as a formidable obstacle to social justice outcomes and, as a result, any buy-in into systemic change. Introducing greater transparency in political processes, including demonstrably making effective use of public money, while holding private investors to account will go a long way in getting populations on board in such circumstances.
- ‘Business as usual’ mindsets combined with limited flexibility in the institutional fabric involved in negotiating solutions and outcomes for different population subgroups in the region brings a risk of political lock-in. The transition may also lead to further fragmentation, e.g. deunionisation, further outsourcing and societal polarisation. Promoting and supporting new types of multi-stakeholder collaboration involving public authorities, social partners and wider civil society are advocated as a way to develop more integrated longer-term visions for the transition to climate neutrality at the regional level. They are seen to offer a way to reconcile different interests and facilitate institutional change, particularly where these span both collaborations in the economic (focused on new types of economic activity) and political sphere (focused on negotiating uncertainties, synergies, and trade-offs).

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- A long-term vision, co-created with civil society and stakeholders in the regions, can be a tool for the mobilisation of support and for enabling a systemic perspective. Especially in regions in Member States that have not yet fully committed to the phasing out of coal or other carbon-intensive sectors. Empowering the local level while strengthening regions' access to multi-level governance mechanisms up to the European level can help mobilise populations in support of a transition that is demonstrably suited to delivering just outcomes. New approaches and skill sets will be necessary to engage stakeholders at different governance levels, and support is needed for regional governance to rapidly develop these capacities.
  - Acknowledging that for many regions, the transition is likely to initially reduce tax revenues, a staged and well communicated approach is essential. In such an approach, long-term goals serve as signposts for the desired direction of development. While in the short-term capacity to be responsive to changes in the environment and continuous learning drawing on real-time data and insights will need to be integrated into the respective policy processes. National and EU-level support would be necessary in supplying insights on best practices as well as in ensuring respective governance capacity and funds are available in the regions.

## Outlook for follow-up research

While the research has developed a variety of insights on possible socio-economic impacts of the transition to climate neutrality, it also points to needs for further research. The multi-layered foresight approach applied here in engaging a broad variety of stakeholders, could also be similarly adopted for application at e.g., other regional levels or for zooming into more detail on specific topics. A more in-depth and detailed stakeholder engagement including citizens could be beneficial to map possible desirable pathways. A vision-led backcasting approach could also identify further detail on potential bottlenecks and barriers as well as around unintended consequences of pathways towards reaching existing climate neutrality targets (from a perspective of socio-economic impacts). Furthermore, secondary, or tertiary effects of economic restructuring in regions heavily affected by the transition and their neighbouring regions might be of interest for further research. While the qualitative foresight approach followed in this research enabled coverage of a wide range of topics and involvement of a diverse group of stakeholders, a quantitative foresight approach could provide more details around potential long-term impacts in different trajectories. Thus, a more quantitative or combined qualitative-quantitative approach to integrating key indicators on socio-economic as well as environmental conditions in different regions and for different population subgroups under different assumptions could be worthwhile to pursue in follow-up research.



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## Annex

### Annex 1: List and definitions of key factors

The key factors listed in table 7 were identified from the literature review as major drivers of future developments or as being highly influential to respective future developments. While they may vary in their specific link to the transition to climate neutrality, their potential relevance concerning socio-economic impacts is what was focused on in their selection. Using a key factor-based methodology, projections (i.e. alternative pathways of potential future developments) were developed for each key factor based on the initial conditions and drivers. These were then mapped against a number of dimensions (e.g. high vs. low penetration, improving vs. deteriorating conditions). Plausible combinations of different projections were then identified via a qualitative consistency analysis and combined to form the basis of the raw scenarios.

Table 7: Key factors and definitions

| STEEP-L category <sup>1</sup> | Name  | Definition  |
|-------------------------------|---|---|
| <b>Society</b>                | Value changes   | Core values changes including attitudes to gender, consumption, ownership of material goods, work, etc. as well as to society in general.   |
| <b>Society</b>                | Development of regional social and economic disparities | Social and economic disparities at the regional level within the EU, expressed in relative differences with regard to e.g. employment and income, personal wealth levels, and public infrastructures.                                 |
| <b>Technology</b>             | Digitalisation (and other technologies)                 | The leveraging of digital technology and digitised data as well as the transformation of industries as a result of new digitally-enabled business models (e.g. platform economy) or new forms of work (e.g. remote work).             |
| <b>Economy</b>                | Economic greening                                       | New business models and production processes with greater focus on environmental values to reduce (primary) resource inputs, including increased resource efficiency, use of secondary resources / recycling, and reduction of waste. |
| <b>Economy</b>                | Regionalisation   | Shortening (or non-shortening) of supply chains to reduce vulnerability or complexity in production and logistics, and lower environmental footprints.  |
| <b>Environment</b>            | Climate change impacts                                  | As average temperatures increase, hazards such as heat waves and floods become more frequent and severe, while drought and rising sea levels will intensify. As impacts vary regionally, so do adaptation measures.                   |

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<sup>1</sup> The terms *Society*, *Technology*, *Economy*, *Environment*, *Politics*, and *Legal* are used to denote the various macro-environmental areas.

|                    |   |   |
|--------------------|---|---|
| <b>Environment</b> | Environmental and biodiversity degradation                | Deterioration of the quality of air, soil, water and other resources and a corresponding loss or threat to ecosystems, habitats, and biodiversity.  |
| <b>Environment</b> | Uncertainty and frequency of global catastrophes / crises | Globalisation has vastly increased the length of supply chains and degree of division of labour. As a result, regional economic and natural catastrophes and crises may now affect other world regions or be felt world-wide.   |
| <b>Politics</b>    | Economic (and societal welfare) policy                    | Use of financial incentives and subsidies as well as education and skills policies to actively shape the economy and societal welfare towards desirable outcomes (excluding regulatory measures), which go beyond efficiency and stability.   |
| <b>Politics</b>    | Geopolitical landscape and power shifts                   | The global geopolitical landscape is subject to shifts which see the relative rise and fall of different nations, changes in alliances and collaborations, and a switching between economic protectionism and collaboration.  |
| <b>Legal</b>       | Use of regulation   | Regulatory measures, excluding financial incentives and subsidies, to ensure that the political aims of the EU are realised. Including measures taken by EU Member States to meet targets set by the EU, and regulation which has effects outside the EU (e.g. legislation to reduce carbon leakage). |

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## Annex 2: Detailed descriptions of the scenarios

### All Aboard the Well-being Transition

There was no lack of sceptics when the EU unveiled its climate neutrality targets, and truth is, people could be forgiven for remaining sceptical – in the past, ambitious climate targets had too often been watered down or rendered meaningless by legal loopholes. And who knows how things might have turned out, had geopolitical events not forced Europe's hand in the early 2020s. All of a sudden, Member States were aware of just how susceptible to economic blackmail their dependency on fossil fuels made them, and how unscrupulous petrostates were in using the leverage they had. Europe had woken up to a new reality.

The EU moved fast, united by the common purpose of energy autonomy. While the primary target was to end fossil fuel use for electricity generation, other measures to reduce Europe's carbon footprint were not pushed back, neglected or at risk of falling off the radar, but at most a little delayed for the time being. During the first half of the decade, on- and offshore wind parks multiplied, photovoltaics were installed on every suitable roof (and as some critics say, also on a fair number of less-than-ideal ones), and large-scale battery parks brought an end to base-load power plants. All that remains is for the transport sector to be fully greened – with HGV switching more and more to green hydrogen and a massively expanded e-mobility infrastructure, it shouldn't take that much longer.

These successes birthed an infectious sense of possibility. Once inertia has been overcome, keeping a body in motion becomes easier and easier, and now that people have realised that putting the environment first doesn't mean that what matters to them is ignored, everyone has become aware of how attractive and beneficial the idea of living in harmony, maybe even synergy, with nature is. This new environmentalism wasn't limited to boosting renewables and making sure that ambitious EU legislation to protect soil and biodiversity wouldn't fall victim to lobbying. Demand for ethical food products is much greater than before, in addition, large parts of the population have adapted their diets in an effort to reduce personal carbon footprints. Hence, land use has changed significantly, including a massive expansion of the EU's natural carbon sinks, the 2035 targets for the LULUCF<sup>2</sup> sector have almost been met. The sharing economy grew rapidly, helped by targeted EU legislation such as the right to repair or the sustainable goods regulation. Manufacturing is becoming more and more dematerialised, with fewer inputs needed. In addition, this general willingness to change, and to adapt and re-invent all kinds of rules of the game also played a crucial role in the (re)skilling revolution. People were willing to expand into new areas, acquire abilities rather than possessions - the reskilling piece of the puzzle of the Just Transition fell on fertile ground. And companies were competing around the most innovative and climate-positive solutions in all sectors of the strongly reshuffled markets.

However, digitalisation originally progressed a little slower than hoped for, held back by security concerns and the lack of a comprehensive European IT manufacturing base. But once the latter had returned to Europe together with other industries in the reshoring movement of the mid-2020s – driven as much by the wish to shorten supply chains and reduce vulnerability as by protectionism and trade wars elsewhere – the continent pushed ahead, in particular with regard to green low-energy and low-input IT. Now the digital revolution could really begin: cities (actually) turned smart

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<sup>2</sup> Land use, land use change and forestry (LULUCF).

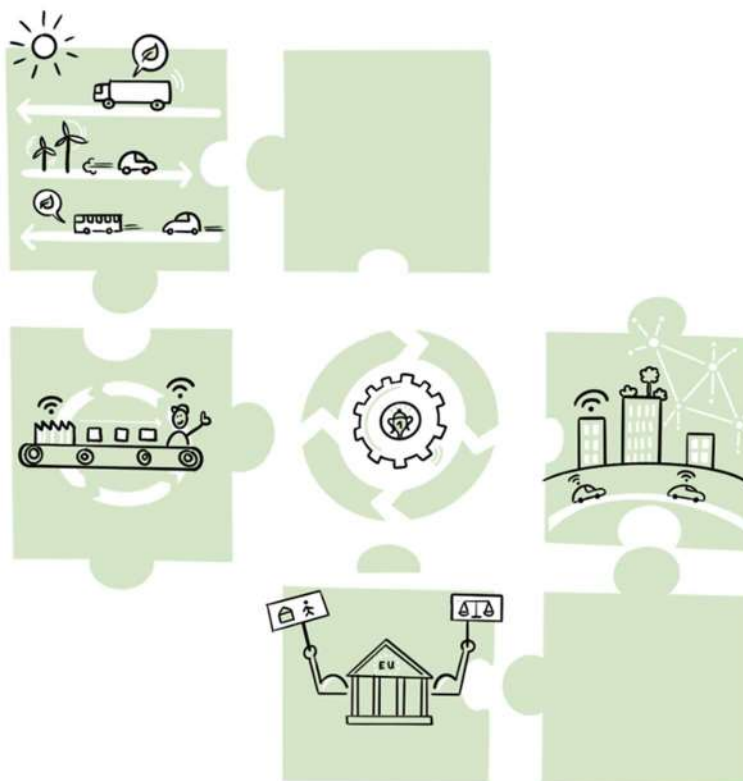
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and took the lead in changing the economic paradigm; it was here that the first loops were closed, and the circular economy was born. The ubiquity of remote work made it possible for people to move away from metropolitan areas to smaller towns, reducing disparities between regions. Reshored industries and innovative SMEs often settled in the old husks of obsolete power stations and lignite processing plants, ensuring that no job lost remained unreplaced and empowering local stakeholders to play key roles in the transition.

Europe's economy used its early mover advantage well. Green energy, increased recycling and reduced inputs ensured it against global market volatility, and leadership in green technologies brought new customers, as Europe has begun to export know-how and technology to developing nations as part of its 'hydrogen diplomacy'. The 'Brussels effect' also worked in its favour: Europe's attractiveness as a market meant (and still means) that many nations simply adopted EU standards sooner or later, making exports easier for European producers.

Today, the EU remains as united in purpose as it was during the heydays of the climate neutral transition. With its efforts to realise decarbonisation, dematerialization, and renaturalisation simultaneously, it has begun to enter the 'magic triangle' of sustainability: efficiency, sufficiency, and consistency. And with a budget financed by EU-wide taxes rather than member state contributions, its legislative bodies feel free to enact legislation which tackles key issues directly: Making life better for everyone, rather than having to wait for individual governments to spend political capital they may just not be willing to part with. Climate change impacts may not have lessened, but adaptation has improved along with mitigation. This new, inclusive EU has become a role model to the world and a leader in the global climate neutral movement – hard to believe that only a little over a decade ago, it had been considered a spent force.

Figure 2: Visualisation of the scenario 'All Aboard the Well-being Transition'



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## A Piecemeal Transition

In the early 2020s, the political will was there, and when the geopolitical situation called for a rapid transfer to renewables, that's exactly what the EU achieved. With its political independence threatened, and a solid majority of the population clamouring for action against climate change and environmental degradation, the union closed ranks and began a strong, hard push and concerted turnaround effort towards carbon neutral electricity generation. Would it have been possible to use the momentum and achieve more? Possibly, but a good horse only jumps as high as it has to. Or as it thinks it has to.

In retrospect, it may have been 'the vaccine miracle' which gave Europe a sense of optimism – and the widespread conviction that given enough incentives, the market would do the rest. In addition, Europe's newly found unity had its limits, the shared political will didn't extend much beyond energy independence. Hence, the growth in the use of renewables was primarily driven by subsidies and focused on electricity generation, and in this respect, it was remarkably successful. The EU's renewable capacity grew by leaps and bounds, and by the end of the decade, utilities had long stopped to advertise their energy as 'green' – all electricity was.

For the consumers, however, convenience was still king. They cared about the loss in comfort the change to renewables brought in some areas: range anxiety stopped many from switching to electric vehicles, plus there was always a relatively cheap supply of fossil fuels from exporting states eager to create revenues by expanding production, in particular when it came to fuel for road transport. However, recycling and use of secondary resources have increased significantly, and in a few sectors, some Member States – or at least some regions within some Member States – have come considerably closer to achieving a circular economy. Some progress has been made regarding the decarbonisation of agricultural production, but consumer demand for low food prices means that the carbon neutrality intended for 2035 will likely not be realised.

Not only with regard to fuel, but also with respect to digitalisation the EU continues to depend on imports. Europe's homegrown IT capacity has increased significantly during the past decade, but still lacks the local champions to match the Sino-US behemoths. However, as one of the world's largest marketplaces, the EU has used its power well to set standards for the rest of the planet. Not only privacy laws, but also standards for AI, IT energy and resource consumption often come from Brussels, even if the European industry remains unable to catch up with the tech leaders. The great digital reskilling initiative, while not falling flat, was thus never able to achieve its full potential, primarily because in many regions, the jobs which would have incentivised people never materialised.

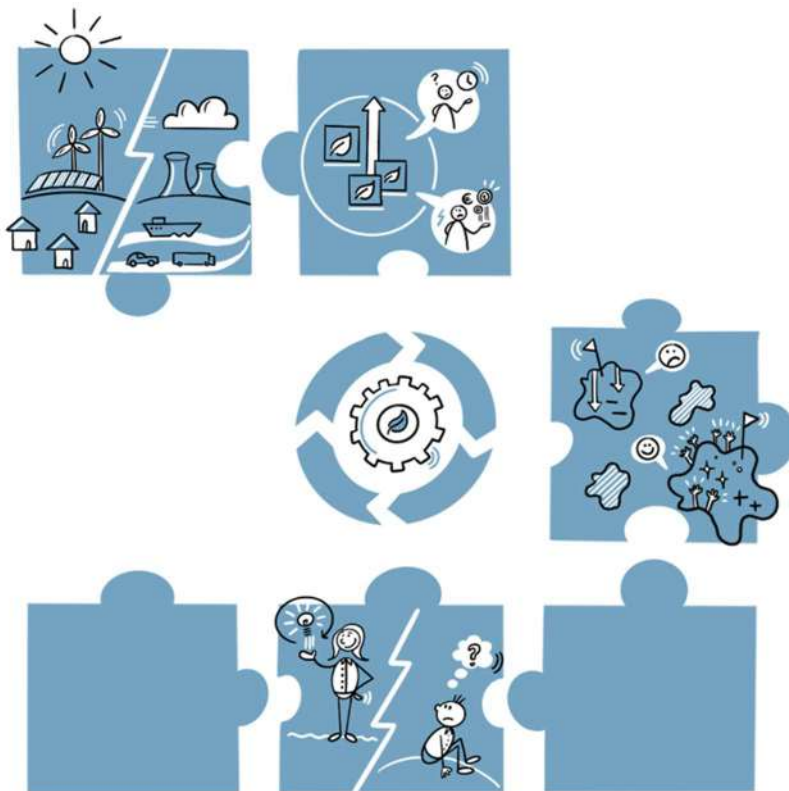
One of the reasons for this was the fierce competition for reshored industries, which meant that these usually went to the innovative and economically powerful regions. It was only too rarely that disadvantaged areas were really enabled to develop their strengths with innovative, bottom-up decision-making, and sufficient support. Rather, many say, funds were squandered on 'white elephants' - vanity projects which lacked a supporting infrastructure: the remains of old industries expensively revamped to attract tourists which never came, or innovation incubation hubs in regions which couldn't draw the talent necessary to make them a success, or reshored industries which required a constant flow of subsidies to keep going in regions unable to support them, and which never became fully competitive. Overall, however, Europe's economy is still going strong and globally remains very much a force to reckon with, but its economic landscape is extremely uneven.

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As an average, living standards have improved, but in the ‘rust spots’ of obsolete industries, some population subgroups remain left behind.

As a political force, the EU has to build coalitions to pursue its interests – both internally and externally. Member States are usually able to ‘patch things up’ if enough is at stake, but constant infighting saps a lot of its strength. The world in general is also often at odds, and Europe feels every crisis. There may be no large-scale conflicts (presently), but the challenges of climate change still haven’t been comprehensively tackled. Most of the global mitigation measures and redistribution measures which would have allowed smaller and less prosperous nations to deal with the impacts of global warming were never enacted, leading to a constant stream of climate refugees, many of which head for Europe where populists use them for political gain. Looking back, it is clear that the EU definitely hasn’t wasted the past decade, but it also never fully realised its potential in terms of the transition to climate neutrality - which is, most say, piecemeal at best.

Figure 3: Visualisation of the scenario ‘A Piecemeal Transition’



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## A Struggling Transition

It could be that the targets set had been unachievable and unrealistic, or that Europe simply lacked the tools which would have been essential to make significant progress towards climate neutrality. Looking back, does it matter all that much? For ten years now, the EU has remained more or less rooted in place with regard to climate action and appears to even have been pushed back in other areas. At any rate, the challenge which seemed to have been clear in everyone's mind in the early 2020s was never fully met, the professed political will evaporated like Europe's waterways do now in the inevitably hot summers.

The almost simultaneous eruption of two volcanoes: that's what it felt like to people during the early 2020s when, immediately after the long COVID-19 pandemic had left everyone longing for more tranquil times, the geopolitical situation exploded. Russia's attack on Ukraine brought an end to what had appeared to be a period of stability, even if in retrospect the signs of the coming explosion had long been evident. All of a sudden, the energy issue appeared in a harsh new light – political autonomy was at stake. And the EU, with ambitious climate targets having been unveiled earlier, threw itself into the race towards climate neutrality like a sprinter competing in a marathon. Vast projects were kickstarted, however often not delivering on even a minimum of local stakeholder involvement, while Member States unwilling to engage in long-term trust, haggled over budgets and focused more on selling their actions to domestic electorates than on the actual progress. Mired in controversies, the transition process became bogged down.

If anything was to blame, it was short-termism: the feeling that there was always one more crisis that had to be dealt with first, and fast. Dysfunctional supranational organisations meant that Europe shouldered more responsibility, in particular with regard to climate migration crises which became almost seasonal: with no support forthcoming from the affluent nations, people in developing nations saw little hope in the future and pinned everything on emigration. And within Europe, the sunk cost fallacy meant that stop gap measures, such as LNG terminals, were often made permanent, and oil and gas always seemed to drop in price just when major decisions to reduce consumption were due. Lobbying meant that counterproductive, harmful subsidies were never abolished, and again and again 'socio-economic costs' for the less well-off were used as an argument to stop key measures, and mass protests instigated to push issues back. Crucial legislation died in committees or was watered down to the point where it offered little progress, if any. Environmental taxes never made the focus shift from revenue generation to achieving environment and climate objectives – targets remained unchanged, and revenue fell, and that was that. A mood of defeat descended over Europe. By the second half of the decade, several Member States decided to go it alone and achieved remarkable successes in reducing their carbon footprints, but nowhere near what could have been possible for a united Europe.

As a result, Europe's economy is now on a downward trend. On the one hand, the reskilling offensive never really got off the ground, depriving businesses in the mid-term of the talent they so desperately needed. On the other hand, the dependency on outside inputs makes the continent subject to geopolitical volatility - and of that, we saw a lot. On top of these two major issues, the envisaged European IT base never really materialised; international tech giants continue to play off Member States against each other. However, while many are worried about just how bad the long-term implications of the lack of a real and far-reaching transition to climate neutrality will be in the next decade (let alone a Just Transition for all), many also believe that this is all that is possible. In any case, the situation isn't any better outside Europe. Facing an incredibly complex world and

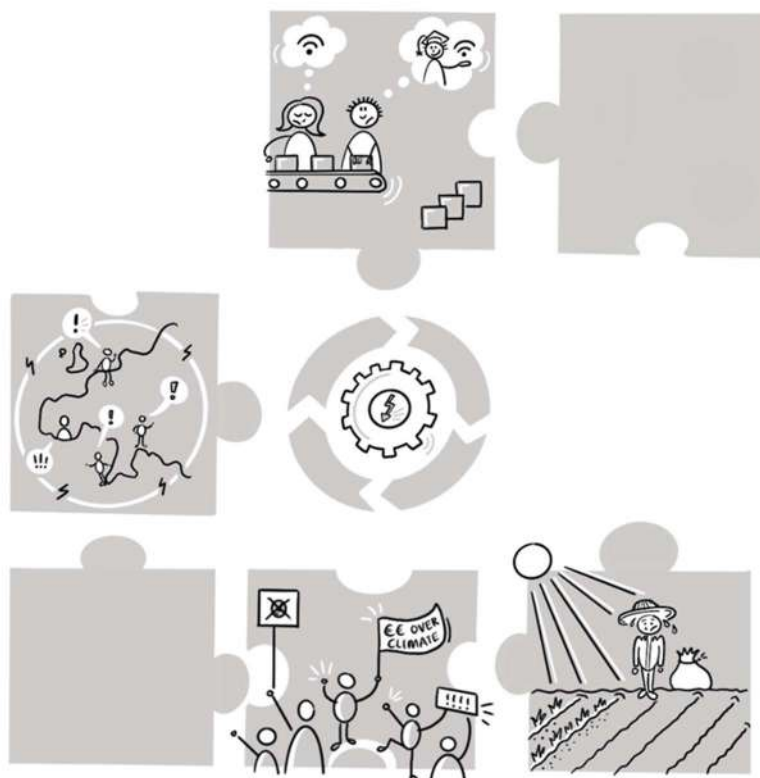
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personal hardship, people yearn for simple, immediate solutions. Political leaders who now triumph at the ballot box have little patience for crafting and adhering to multinational agreements, and this makes it much harder for the EU to exert influence abroad.

As a result of the lack of progress in Europe (and beyond), regional disparity in the EU is in fact worse than it was before the kick-off to the climate neutral transition. Poorer regions argue they have, in spite of theoretical support, basically been left to fend for themselves, and with some hit particularly hard not only by sectoral recession, but also by climate change impacts, migration towards regional hubs is unabated. 'Would the last one to leave please turn off the lights?' can be found sprayed on the remains of homes and businesses which have long stood empty.

The more fortunate have, for the most part, little interest in 'cutting back' for the environment. A new Biedermeier: people want to be comfortable, disappear into virtual worlds, and not be confronted with the unsustainability of their own lifestyles. And those who consume less out of necessity, because they lack the funds, are unable to access the training they would require for more highly skilled and better paid work. And when it comes to employment and the impact of climate change, 'beggars can't be choosers': The growing number of illicit workers lack even the most basic legal protection, and job-related heat deaths in the summer have become commonplace. Social mobility continues to decline while conflicts erupt more aggressively than ever along generational fault lines – younger cohorts find their hopes blocked by older generations who hold better jobs and only care for their own offspring. The much-vaunted transition of the early 2020s was to have secured their future, but by 2030, the only net-zero the continent has achieved, it seems, is net-zero hope.

Figure 4: Visualisation of the scenario 'A Struggling Transition'





## Annex 3: Stakeholders who contributed via workshops or interviews

| Exercise                       | Type of contribution            | Stakeholder's organisation<br>In some cases, more than one stakeholder contributed from the same organisation   |
|--------------------------------|---------------------------------|---|
| EU scenario exercise           | Workshop                        | <ul style="list-style-type: none"> <li>● ETUI (Workers' organisation)</li> <li>● Trinity College Dublin (Research organisation)</li> <li>● (Business Europe (Employers' organisation)</li> <li>● Europe Environment Agency (Research organisation)</li> <li>● Volkswagen (Business)</li> <li>● Eurelectric (Workers' organisation)</li> <li>● Wuppertal Institut (Research organisation)</li> <li>● ILO (International agency)</li> <li>● Bertelsmann Foundation (Research organisation)</li> <li>● Laudes Foundation (NGO)</li> <li>● University of Greenwich (Research organisation)</li> </ul> |
|                                | Post-workshop input / Interview | <ul style="list-style-type: none"> <li>● EC DG REGIO (European Commission)</li> <li>● EC DG Employment (European Commission)</li> </ul>   |
| South Aegean regional workshop | Workshop                        | <ul style="list-style-type: none"> <li>● Oxygen Yachting (Business)</li> <li>● University of the Aegean (Research organisation)</li> <li>● Development Agency of South Aegean Region (Regional development agency)</li> <li>● Association of PV Energy Producers in East Aegean (Employers' organisation and Local NGO)</li> </ul>  |
|                                | Post-workshop input / Interview | <ul style="list-style-type: none"> <li>● Mediterranean Restaurant at Kos Island (Employee)</li> <li>● Thalassa Foundation (Local NGO)</li> <li>● University of Athens (Research organisation)</li> <li>● Hellenic Yacht Crew Organisation (Employee)</li> </ul>   |
| Wielkopolska regional workshop | Workshop                        | <ul style="list-style-type: none"> <li>● Centrum Zaawansowanych Technologii UAM (Research organisation)</li> <li>● Wielkopolskie Regionalne Obserwatorium Terytorialne (Local authority)</li> <li>● C-KIC (Local NGO)</li> <li>● NSZZ Pracowników Ruchu Ciągłego Veolia Energia Poznań (Workers' organisation)</li> <li>● Rozwój TAK – Odkrywki NIE (Local NGO)</li> <li>● ARR Transformacja Sp. z o.o. (Regional development agency)</li> </ul>  |
|                                | Post-workshop input / Interview | <ul style="list-style-type: none"> <li>● Veolia Energia Polska (Business)</li> <li>● UM Poznań Wydział Rozwoju Miasta i Współpracy Międzynarodowej (Local authority)</li> <li>● Stowarzyszenie Młodzi Lokalsi / Młodzieżowy Strajk Klimatyczny (Local NGO)</li> <li>● UM Poznań Wydział Rozwoju Miasta i Współpracy Międzynarodowej (Local authority)</li> <li>● Ministerstwo Funduszy i Polityki Regionalnej (National authority)</li> <li>● ZE PAK S.A. (Employee)</li> </ul>   |
| PACA regional workshop         | Workshop                        | <ul style="list-style-type: none"> <li>● ADEME in PACA (Regional development agency / National authority)</li> <li>● DREETS PACA (Local authority)</li> <li>● Agence d'urbanisme de l'AUPA (Local authority)</li> </ul>   |

|  |                                 |  |
|--|---------------------------------|--|
|  |                                 | <ul style="list-style-type: none"> <li>● PETR du Pays d'Arles (Local authority)</li> <li>● Tout Petit Monde; Réseau Entreprendre Cote d'Azur (Business)</li> <li>● GeographR (Business)</li> <li>● immaTerra (Business)</li> <li>● Mandataire FO (Workers' organisation)</li> <li>● CARSAT Sud-Est (Local authority)</li> <li>● EC DG REGIO (European Commission)</li> <li>● Marseille City (Local authority)</li> <li>● Department of Alpes-Maritimes (Local authority)</li> <li>● Airbus (Employers' organisation)</li> <li>● Mandataire CFE-CGC (Workers' organisation)</li> <li>● MESOPOLHIS (Sciences Po Aix); Plan Bleu (Research organisation)</li> <li>● University of Montpellier (Research organisation)</li> <li>● Independent consultancy (Research organisation)</li> <li>● EC DG Employment (European Commission)</li> </ul> |
|  | Post-workshop input / Interview | <ul style="list-style-type: none"> <li>● CPME (Employers' organisation)</li> <li>● Région Sud/PACA (National authority)</li> </ul>   |

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## Annex 4: Contributing peer reviewers

| <b>Name</b>                   | <b>Organisation</b>                                   |
|-------------------------------|---|
| <b>Nadja Doerflinger</b>      | KU Leuven   |
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| <b>Uwe Fritsche</b>           | IINAS   |
| <b>Karlo Hainsch</b>          | TU Berlin   |
| <b>Eva Hideg</b>              | Corvinus University of Budapest                       |
| <b>Eloi Laurent</b>           | Sciences Po   |
| <b>Pasquale Marcello</b>      | University of Naples 'Parthenope'                     |
| <b>Sinead Mercier</b>         | University College Dublin                             |
| <b>Adeline Otto</b>           | KU Leuven   |
| <b>Erik Pruyt</b>             | Center for Policy Exploration Analysis and Simulation |
| <b>Karl-Henrik Robèrt</b>     | Blekinge Institute of Technology                      |
| <b>Tadeusz Skoczowski</b>     | Warsaw University of Technology                       |
| <b>Roxana Voicu-Dorobantu</b> | Bucharest University of Economic Studies              |

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