FINAL REPORT

Testing impacts of existing/upcoming policy decisions and external shocks on interregional relations

IRiE – Interregional Relations in Europe

Annex 24 // May 2022
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Coordination:
Nicolas Rossignol, Head of Unit for Evidence and Outreach (ESPON EGTC); Marta Roca, Financial Expert (ESPON EGTC), Xabier Velasco Echeverría (NASUVINSA)

Communication:
Nikos Lampropoulos, Project Expert - Press and Media Activities (ESPON EGTC); Sheila Izquieta Rojano, NASUVINSA (Spain)

Authors
Konrad Czapiewski, Institute of Geography and Spatial Organization, Polish Academy of Sciences (IGSO PAS); Tomasz Komornicki, Institute of Geography and Spatial Organization - Polish Academy of Sciences (Poland); Julia Wójcik, Institute of Geography and Spatial Organization - Polish Academy of Sciences (Poland); Denis Cerić, Institute of Geography and Spatial Organization, Polish Academy of Sciences (IGSO PAS); Eugenia Maruniak, Institute of Geography and Spatial Organization, Polish Academy of Sciences (IGSO PAS); Xabier Velasco Echeverría, NASUVINSA (Spain); Sheila Izquieta Rojano, NASUVINSA (Spain); Carlos Llano Verduras, Center for Economic Prediction - CEPREDE (Spain); Julian Moral Carcedo, Center for Economic Prediction - CEPREDE (Spain); Julián Pérez García, Center for Economic Prediction - CEPREDE (Spain); Miguel Ángel Almazán, Center for Economic Prediction - CEPREDE (Spain); Santiago Pérez-Balsalobre, Center for Economic Prediction - CEPREDE (Spain); Juan Pardo Fernández, Center for Economic Prediction - CEPREDE (Spain); Nuria Gallego López, Center for Economic Prediction - CEPREDE (Spain); Dimitris Kallioras, University of Thessaly (Greece); Maria Tsiapa, University of Thessaly (Greece); Rodrigo Viseu Cardoso, Delft University of Technology (Netherlands); Constance Uyttebrouck, Delft University of Technology (Netherlands); Marcin Dabrowski, Delft University of Technology (Netherlands); Daniel Rauhut, University of Eastern Finland (Finland); Juha Halme, University of Eastern Finland (Finland).

Advisory group
Marie Lorraine Dangeard, National Agency for Territorial Cohesion, France; Margarita Golovko, Regional Development Department, Ministry of Finance, Estonia; Ivan Lajtman, Directorate for Regional Development, Ministry of Regional Development and EU Funds, Croatia.

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Contact: info@espon.eu
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Abbreviations

CGE  Computable general equilibrium
CoR  European Committee of the Regions
EBOPS Extended Balance of Payments Services classification
EAEC European Atomic Energy Community
EC  European Commission
ECB European Central Bank
ECSC European Coal and Steel Community
EEC European Economic Community
EEA European Economic Area
EFTA European Free Trade Association
EGD European Green Deal
EGTC European Grouping on Territorial Cooperation
ERTE Temporary Employment Regulation Files
ESPON European Territorial Observatory Network
EU European Union
EU ETS European Union Emissions Trading System
EU27 The 27 European Union countries after the UK left the EU
E&M Eastern and Midland Region
FDI Foreign direct investment
FTA Free Trade Agreement
GDP Gross domestic product
GVC Global Value Chains
HS Harmonised System
ICT Information and communications technology
IE Republic of Ireland
IMF International Monetary Fund
IO Input-output circuit
IRiE Interregional relations in Europe
JRC Joint Research Centre
JTF Just Transition Fund
OECD Organisation for Economic Co-operation and Development
NACE Nomenclature of economic activities
NAFTA North American Free Trade Agreement
NextGenerationEU / NGEU European Union Recovery Instrument
NTBs non-Tariff Barriers
NTMs non-Tariff Measures
NUTS Nomenclature of Territorial Units for Statistics
RERI Regional Economic Resilience Indicator
ROO Rules of Origin
RRF Recovery and Resilience Facility
RTAs Regional Trade Agreements
RIVM National Institute for Public Health and the Environment
R&D Research and development
SH South Holland
TCA Trade and Cooperation Agreement
TPP Trans Pacific Partnership
UK United Kingdom
US United States of America
USMCA Agreement between the United States of America, the United Mexican States, and Canada
VA Value Added
WHO World Health Organisation
WTO World Trade Organisation
Abstract

In the current space of flows, a region’s position is determined by its relations with the environment, i.e. the system of economic and social interactions. To properly assess this position, it is necessary to know not only the volume and structure of flows, but also the vulnerability of the system to changes caused by external factors. This makes it possible to gauge the region’s resilience and its exposure to unexpected shocks (black swans) or changes in applied policies. This in turn makes it possible to predict the scale of such events’ territorial impact. The study of many types of flows undertaken in the ESPON IRiE project shows the situation in the period 2010-2018. Thus, the vulnerability assessment has required us to take a scenario approach and use a combination of quantitative (simulation of changes) and qualitative (stakeholders’ perceptions) methods.

The ESPON IRiE project aims to measure the impacts of large-scale external shocks on interregional relations and explore what policy options may best mitigate them. Five existing and/or upcoming events were selected to explore future scenarios. All are assumed to have significant effects on the intensity, variety, and distribution of flows between European regions, which must be analysed both quantitatively and qualitatively. The scenarios in question are based on: Brexit, Covid-19 Recovery, New Globalization, the European Green Deal and Aggression in Ukraine.

Prospective scenario building is at once a means of exploring the future, a field of application for knowledge gained at earlier stages of research, and a tool for supporting strategic decisions by laying out possibilities and their potential consequences. The quantitative and qualitative research carried out within the framework of Task 3 of the IRiE project provides only a fragmentary picture of the response of the European space of flows to external shocks. It cannot be treated as a full, multidimensional picture. Nevertheless, it has enabled us to "open several windows" to show regularities in the territorial distribution of our selected scenarios’ effects. These "windows" are thematic (selection of scenarios), sectoral (quantitative analysis), territorial (selection of case studies), and institutional-expert (selection of stakeholders participating in qualitative research).

The study confirms that different factors, different levels of policies, and specific stakeholders determine the level of exposure to shocks as well as the ways to counteract them. The influence of the European Union is indirect and reflected in, inter alia, cohesion policy, which can increase the resilience of regions. Region size has proven to be important, as well as the scope of competences located at different levels of territorial governance.

The studies conducted on our selected scenarios have confirmed the importance of learning about the vulnerability to external shocks of both individual regions and the entire European system. We have demonstrated both the importance of strong interregional ties and their impact on the economic and, in part, social situation of territorial units. However, the scale of the ESPON IRiE project is insufficient for us to provide a comprehensive understanding of the vulnerability of all regions to various potential external influences. The problem certainly requires further research.

Keywords

Scenario, shocks, Brexit, Covid-19, protectionist, European Green Deal, Ukraine, mixed methods, Europe
Highlights

Methodology & Data

- This study takes as its baseline a range of detailed information describing the matrix of flows in terms of 11 variables between all NUTS 2 regions in 31 European countries (EU + EFTA + UK) over a 9-year period (2010-2018).

- We have attempted to assess the impact of the adopted scenarios on the diagnosed situation of flows in two dimensions. The first — mainly quantitative — refers to the change in the structure of input-output and interregional flows (IO Analysis) due to changes resulting from assumptions in the given scenario. The second — mainly qualitative — relates to the testing of scenario assumptions in four regions, characterised by different specificity of flows, relevance of individual scenarios, and location.

- The final analysed shocks either emerged during the project (Covid-19 Recovery, Aggression in Ukraine), took their final shape from general initial assumptions (European Green Deal, Brexit), or took on a different meaning and dimension (New Globalization).

Scenario description

- Brexit, the withdrawal of the United Kingdom from the European Union, which might be triggering a major shift in economic and non-economic flows between UK and EU regions as well as a reshuffling of those flows between EU regions.

- Covid-19 Recovery, the situation with the ongoing global pandemic, which has put tremendous pressure on all kinds of goods, trade, and people flows worldwide, destabilizing national and regional economies and preparing the world for a post-Covid economy.

- New Globalisation, the presumed changes to global economic flows triggered by rise of contested multilateralism, recurring financial crises, new barriers to free trade, and the emergence of new players in global geopolitics.

- European Green Deal, the new development strategy of the European Union, based on commitments to achieve climate neutrality by 2050, which will require alignment from all sectoral strategies and policies and EU legislation.

- Aggression on Ukraine - on February 24, 2022, declaring a “special military operation”, Russia launched a war around the perimeter of the common border. In the global and European dimensions, the war in Ukraine has significant consequences in terms of restructuring trade ties and energy strategies as well as in the flows of refugees.

Results

- The general conclusion from the workshops is that the scenarios overlap. Because of their strong interconnections, moreover, it is difficult to establish a hierarchy between them. The workshop’s participants have argued that all scenarios will be important to all regions and interact in different ways depending on regional location and economy. For them, New Globalization is the scenario, the rest being shocks within the context of the scenario. All other scenarios, then, rely in some way on New Globalization’s rules.

- The impact of shocks associated with the realisation of individual scenarios is strongly differentiated by territory. This depends both on the economic structure of individual units and on their position in the flows system. The nature of an external shock determines the scale of its impact on individual regions.
Quantitative analysis confirms also that a region’s vulnerability to economic shocks is also determined by its sectoral specialisation, its inclusion in the group of ‘cohesion countries’, and the duration of its EU membership.

A comparison of the results of the scenario analysis with those of T2 indicates that factors determining a region’s exposure to external shocks may also include its geographical and sectoral concentration and, in some circumstances, its geographical distance from the source of the shock. However, the impact of both factors is not unambiguous.

Qualitative studies have shown that the shocks analysed can change the internal structure of a region’s economy. This is particularly the case with small regions. A region’s size too is important, in terms of its ability to create its own policies on economic and social flows (migration). For this reason, among others, the distribution of flows should be considered in the context of territorial inequalities and the cohesion policy aimed at reducing them.

Our research has confirmed that the analyses most relevant to a region’s vulnerability to external shocks examine:

- (i) The region’s dependence on countries outside ESPON space, especially in Eastern Europe (vulnerability to war in this part of the continent).
- (ii) The consequences of shortening a region’s supply chains and shifting it towards a circular economy, so as to gauge the readiness of local economies for such stimulation by European and national policies.

**Policy implications**

- The impact of external shocks on a region’s flows and situation may be direct (e.g. reduction in goods flows in a specific sector) or indirect (reduction of input-output linkages). In some cases there is a clear spillover effect. Also of some importance is the preparation of regions for change, which is influenced by the quality of regional and local institutions. Large economic programmes implemented at the European level (such as the Green Deal) should take greater account of the interaction of regions, including the potential for spillover effects. Regions that may be negatively affected by policies could be identified objectively through flow analysis.

- Our study confirms that different levels of initial resilience, different levels of policy, and the specificity of stakeholder competencies at different levels of government will determine a region’s exposure to shocks and the ways it can counteract them. The influence of the European Union is indirect and reflected in, inter alia, cohesion policy, which can increase a region’s resilience. Region size has proven to be important, as well as the scope of competencies at different levels of territorial governance.

- Our analysis of the impact of external shocks provides a reason to extend the scope of long-postulated analyses of the Territorial Impact Assessment (TIA) type. Such analyses should cover the impact of certain decisions not only in the region, but also in neighbouring regions and cooperating regions farther away. It seems worthwhile to propose a document under the working title Flows-Oriented TIA.

- It is not only the policy option of the European Union, but also the adoption of a new doctrine of socio-economic development combined with spatial development in Ukraine that will redefine the future of mutual relations and determine the shape of flows of goods, people and capital.
1 Introduction

1.1 Background

ESPON IRiE (Interregional Relations in Europe) is an ESPON research project and responds to need for a new understanding of the interrelations between Europe’s regional economies. The research uses innovative methods to overcome data limitations on interregional linkages and flows of people, goods, capital, knowledge, and services. Our analysis of the relationships between regions has determined the extent to which the existence and intensity of interregional flows are drivers for and/or barriers to the development of regional competitiveness and cohesion (see Annexes 1-14).

As part of the project, the team looked toward the future using scenario planning. This prospective approach imagines several plausible futures that challenge current assumptions about the matrix of flows in Europe.

1.2 Research need

In the current space of flows (Castells, 1996), a region’s position is determined by its relations with the environment, i.e. the system of economic and social interactions. To properly assess this position, it is necessary to know not only the volume and structure of flows, but also the vulnerability of the system to changes caused by external factors. This makes it possible to gauge the region’s resilience and its exposure to unexpected shocks (black swans) or changes in applied policies. This in turn makes it possible to predict the scale of such events’ territorial impact. The study of many types of flows undertaken in the ESPON IRiE project shows the situation in the period 2010-2018. This was a period of stable growth in the intensity of most of the studied flows (see Annexes 1-14). Thus, the vulnerability assessment has required us to take a scenario approach and use a combination of quantitative (simulation of changes) and qualitative (stakeholders’ perceptions) methods.

The period over which the study was carried out (2020-2022) further reinforces the need to analyse scenarios with changes to the flow systems. Already during the project there were two unexpected potential disruptions the existing system of linkages: the Covid-19 pandemic and the Russian invasion of Ukraine. This demonstrates the importance of analysing overlapping scenarios in parallel. Knowledge of the level of exposure and resilience of spatial units is, in this case, crucial for effective regional and sectoral policies. It is of particular importance for large economic programmes on the scale of the European Union (such as the Green Deal). Their effects cannot be simulated without knowledge of their impact on the system of flows.

It is also useful to test quantitative methods, including input-output analysis, for their ability to forecast future territorial risks. This may allow indicators to be proposed for the future monitoring of flow patterns in Europe.

1.3 Objective

The main aim of Task 3 in the project is to:

- test the impacts of policy shocks on interregional relationships;
- define regional exposure and resilience by the intensity of these linkages and their territorial characteristics;
• determine the extent to which previously identified settings of interregional flows in Europe (Task 1 Matrices and flow analyses and Task 2 Pan-European systemic analysis) can change in response to policies and external shocks.

In other words, the ESPON IRiE project aims to test the impacts of large-scale external shocks on interregional relations and explore policy options to mitigate those impacts. We have selected five existing and/or upcoming events to explore future scenarios. All are assumed to have significant effects on the intensity, variety, and distribution of flows between European regions, which must be analysed both quantitatively and qualitatively. The scenarios in question are:

1. **Brexit**, the withdrawal of the United Kingdom from the European Union, which might be triggering a major shift in economic and non-economic flows between UK and EU regions as well as a reshuffling of those flows between EU regions;

2. **Covid-19 Recovery**, the situation with the ongoing global pandemic, which has put tremendous pressure on all kinds of goods, trade, and people flows worldwide, destabilizing national and regional economies and preparing the world for a post-Covid economy;

3. **New Globalisation**, the presumed changes to global economic flows triggered by rise of contested multilateralism, recurring financial crises, new barriers to free trade, and the emergence of new players in global geopolitics;

4. **European Green Deal**, the new development strategy of the European Union, based on commitments to achieve climate neutrality by 2050, which will require alignment from all sectoral strategies and policies and EU legislation.

5. **Aggression in Ukraine**, on February 24, 2022, declaring a “special military operation”, Russia launched a war around the perimeter of the common border. In the global and European dimensions, the war in Ukraine has significant consequences in terms of restructuring trade ties and energy strategies as well as in the flows of refugees.

*Figure 1.1* shows a scheme of the research procedure associated with Task 3 and indicates the complementary character of the applied quantitative and qualitative methods.
2 Methodology & Data

2.1 General overview

Prospective scenario building is at once a means of exploring the future, a field of application for knowledge gained in earlier stages of research, and a tool for supporting strategic decisions by laying out possibilities and their potential consequences. The term scenario in the context of foresight studies was introduced by H. Kahn in the 1950s in relation to the public policy and the foreign and defence aspects of its military and strategic research. This method involves describing events and indicating their logical and coherent sequence in order to determine, step by step, how and why a system — e.g. a society, economy, or region — could develop. The starting point could be the current state. The method lays emphasis on events that serve as critical junctures for alternative sequences of events. The result is a set of possible images of the future, usually 3 to 5 base scenarios. A scenario is therefore an arrangement of events linked in a logical, chronological sequence. We consider possible events that are relevant to the selected object, within a time horizon, and are variously interrelated such that an approximation of the entire system of events can be derived from hypotheses about the relations. Scenarios can be drawn from discussions in expert panels, the results of Delphi studies, bibliographic and patent analyses, or the knowledge of selected experts as presented in thematic papers.

This study takes as its baseline a range of detailed information describing the matrix of flows in terms of 11 variables between all NUTS 2 regions in 31 European countries (EU + EFTA + UK) over a 9-year period (2010-2018). The research team consulted with the ESPON EGTC and the Strategic Advisory Group to develop eight scenarios: potential external shocks that could fundamentally (rather than evolutionarily) affect the analysed flows. This was narrowed to four scenarios, as summarised in the previous section. Importantly, the final analysed shocks either emerged during the project (Covid-19 Recovery), took their final shape from general initial assumptions (European Green Deal, Brexit), or took on a completely different meaning and dimension (New Globalization). The extraordinary situation related to the Russian aggression against Ukraine on February 24, 2022 made necessary a very quick reaction by the project team to include it as a fifth scenario.

For the analyses carried out in Task 3, we attempted to assess the impact of the adopted scenarios on the diagnosed situation of flows in two dimensions. The first — mainly quantitative — refers to the change in the structure of input-output and interregional flows (IO Analysis) due to changes resulting from some of a given scenario’s assumptions. The second — mainly qualitative — relates to the testing of scenario assumptions in four selected regions, characterised by different specificity of flows, relevance of individual scenarios, and location. A number of documents and analyses related to the impact of the situation in Ukraine on the European flow network were also examined. A workshop in Lublin on 13 April 2022 dedicated to the presentation of the results of the ESPON IRiE project to stakeholders from Eastern Poland’s regions was used for this purpose.

In summary, the project focused on exploring events and actions deemed possible on the basis of current social, economic, and political drivers. Rather than predict the future, we focus on perceiving long-term futures from the present. Finally, we rely on real and foreseen external causes, rather than theoretical hypotheses. Nevertheless, it has been possible to explore only a few possible consequences of the assumed scenarios only for a various flows and selected placed-based regional policies.
2.2 Quantitative analysis

All five scenarios were first subject to quantitative analysis. In one case this was based on a gravity model (Brexit), in four others on input-output tables. In this part of the analysis, each scenario was examined separately — with the caveat that, as previously stated, only a selected section of each scenario could be operationalised in terms of indicators and vectors of change.

The Brexit scenario uses a counterfactual methodology based on panel data and on a structural gravity model using the Poisson Pseudo-Maximum Likelihood (PPML) estimator. The counterfactual analysis includes two approaches: the first uses changes in European trade agreements, the second changes in non-tariff barriers. The methodology is applied in different categories of sectors (goods-services, low-high productivity). The analysis explores the export activity of all NUTS2 regions in the EU27+EFTA+UK area for the period 2010-2026 (actual data 2010-2018 and forecast data 2019-2026). It uses export and production data for goods and services as well as for two categories each, representing lower-productivity and higher-productivity sectors.

Our analyses of the three remaining scenarios have a quantitative dimension, based on the extension of EUREGION input-output tables fed with data on estimated changes to existing flows across 64 sectors, and a qualitative dimension, for which the insights gathered in a selection of representative regions are invaluable. Each scenario made certain hypothetical assumptions related to reductions or changes within one or more NACE sectors.

In the Covid-19 Recovery scenario we produced a quantitative analysis related to the economic impact of the Covid-19 pandemic at the regional and sectoral level throughout the EU27+EFTA+UK area, with a focus on two aspects: (i) the negative impact on each region and sector in 2020 and (ii) the potential impact of the maximum funds attributed to each member country in the NGEU.

In the New Globalization scenario we used a partial equilibrium model (SMART) to estimate the impact of new tariffs on the metals sector (iron, steel, and aluminium), on products listed as being affected by the Boeing-Airbus trade dispute within the WTO, and, potentially, on the automotive sector. Then, by means of the new EUREGIO-2017 input-output tables (just developed in the context of the ESPON-IRIE project in collaboration with the JRC), we computed the total, direct, and indirect effects that the reduction of EU exports to the US in these three cases will generate in each of the 296 ESPON regions, considering the inter-sectoral linkages of the 64 sectors.

For the European Green Deal we looked at two cases, both considering the substitution of intermediate inputs provided by the coal and lignite mining sector to produce electric power in the EU27. Additionally the second one also included the substitution of mining (B) to the heating of households. The substitution of this input was obtained by raising the production of the alternative sources in each country and the neighbouring ones.

In Aggression in Ukraine scenario, the price shock effect is computed based on the observed raise in the prices of the main commodities affected by the war: oil, gas, electricity, coal, aluminium, nickel, copper, wheat, maize. As well the two cases of that scenario were built regarding the time evolution of the shocks in the following 12 months are rooted in the evolution of prices in the two previous oil-shocks (2008 and 2011) as well as on the recovery of trade after the Yugoslavian-Croatia war in the 90’.

Detailed methodological assumptions with appropriate statistical formulas are included in the four scenario reports (see Annexes 25-28).
2.3 Qualitative analysis

2.3.1 Workshops

The stakeholder workshops were the primary source of information for the qualitative part of the research. In total, six meetings were organised: one pan-European meeting to discuss the proposed draft scenarios, four in selected regions (more on their specifics in the next section) and one additional devoted to the exceptional situation in Ukraine (it was combined with a seminar presenting the results of the project in Lublin). Three workshops were held remotely and three on-site.

The purpose of the regional workshops was twofold: (i) collect feedback from key stakeholders in the investigated regions on the first results of the ESPON IRIE project, and (ii) understand their perception of our four shock events (Brexit, Covid-19 Recovery, New Globalization, European Green Deal) and how those events affect the development of their regions. Participation in the workshop was by invitation. Potential attendees were drawn from various sectors:

- Public sector: province, region, ministry, municipalities, economic board, trade union, public institutions
- Private sector: economic board and related companies
- Knowledge sector: experts, representatives of academic consortia, and R&D centres

The attendees who agreed to participate were asked to read a short summary of the project ahead of the workshop. The list of workshop attendees is in Appendix 1. The workshops gathered a mix of government, business, knowledge, market, and civic stakeholders. Their insights informed the reports as well as the broader explanation of results and anticipation of trends. The workshops also helped to explore the future of interregional flows in Europe and formulate policy options.

Each event had three parts:

- **Part I** – *presentation of the project*: general overview of the research project and the main results of our quantitative analysis of different kinds of flows, with a focus on the analysed region. The presentation was followed by a short discussion to collect the participants’ feedback on methodology and results (see Appendix 2);

- **Part II** – *introduction of the scenarios*: the implications of each shock event on flows, introduced through scenarios. This led into the workshop’s main discussion, which focused on the scenarios’ impacts for the analysed region;

- **Part III** – *policy implications*: a concluding discussion on the policy implications of the scenarios at the regional level.

Discussions between participants followed the focus-group method. We drafted a list of questions to help launch the discussions if necessary, but we kept them semi-structured. We did not seek to restrict ourselves to the list or to discuss each scenario separately. It was enough that every scenario was eventually discussed. We stimulated live interactions as much as possible and used the ideas of the participants to support the discussion. During each part of the workshop, one organizer made the presentation and another moderated the live discussion. The moderator would draw connections between the attendees’ ideas, taking notes, and clarifying only ideas that were raised orally. The whole event was recorded (with the approval of the participants), and for each part the organizers took notes to serve as a basis for our subsequent reporting.
The workshop on the current situation in Ukraine and its impact on the flow network in Europe had a slightly different methodology. It was combined with a seminar organised on 13 April 2022 in the Marshall Office of the Lubelskie Voivodeship. In the final part of the meeting a debate was organized with the participation of regional authorities, representatives of business and academia, during which a moderated discussion was held on the current and projected flows of people and goods in connection with the war in Ukraine.

2.3.2 Scenario case studies regions

Scenario case-study selection and realization was treated as qualitative research in several selected regions. Case studies served to deepen our understanding of the drivers and limits of interregional flows, to help interpret scenarios, and to develop and analyse policy recommendations for specific territorial contexts. We selected four regions on the following criteria: (a) region type, indicated in Task 2; (b) region development (GDP); (c) geographical location within Europe; (d) degree of peripherality; (e) degree of urbanisation. One region was selected in Ireland, because of the importance of connections with the UK and the Brexit scenario’s potential impact on flows. Four cases were selected in relation to four individual scenarios, but in each case four scenarios were tested (Table 2.1).

Table 2.1: Basic characteristics of selected scenario case study regions

<table>
<thead>
<tr>
<th>Scenarios</th>
<th>Selected region</th>
<th>GDP in PPS per capita in EUR in 2019 (EU=100%)</th>
<th>Population (mln) in 2019</th>
<th>Geographical location</th>
<th>Urban-rural typology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brexit</td>
<td>Eastern and Midland (IE06), Ireland</td>
<td>63,100 (209%)</td>
<td>2.37</td>
<td>Northern Europe</td>
<td>predominantly rural</td>
</tr>
<tr>
<td>Covid-19 Recovery</td>
<td>Comunidad Foral de Navarra (ES22), Spain</td>
<td>34,500 (114%)</td>
<td>0.64</td>
<td>Southern Europe</td>
<td>intermediate</td>
</tr>
<tr>
<td>European Green Deal</td>
<td>Śląskie (PL22), Poland</td>
<td>23,200 (77%)</td>
<td>4.50</td>
<td>Central Europe</td>
<td>predominantly urban</td>
</tr>
<tr>
<td>New Globalization</td>
<td>Zuid-Holland (NL33), Netherlands</td>
<td>40,100 (133%)</td>
<td>3.68</td>
<td>Western Europe</td>
<td>predominantly urban</td>
</tr>
</tbody>
</table>

The Eastern and Midland region covers 14,466 km² (21% of Ireland’s territory) and is divided into three sub-regions: Dublin, the Mid-East, and Midland. In 2019, the total population was 2.37 million. Although it is the smallest in the country, the region accounts for almost half of the country’s population (49%). The Eastern and Midland Regional Assembly is part of regional governance in Ireland, established under local government reform in January 2015.

The Eastern and Midland region’s economy is specialized in sectors such as ICT, entertainment, financial and business services, bio-pharma, medical and clean technologies, industrial products and chemicals. While services (ICT, retail, finance and business, etc.) dominates the national and regional economy, the region also has various natural assets, as well as renewable energy, tourism, and maritime potential. Between the early 1990s and 2007 the Dublin economy expanded by nearly 100%, with a substantial shift away from older manufacturing industries towards high value (e.g. financial) services and knowledge-based sectors and also low-skilled retail and domestic services. From 2012 to 2019, the regional unemployment rate steadily decreased from 14.6% to 4.7%. The manufacturing sector is a key contributor to Ireland’s economy and a key driver of RD&I. Especially active in this regard is Trinity College Dublin, which
collaborates mainly with industry but also with international research partners to develop new manufacturing technologies and processes to raise efficiency and improve the Irish economy (https://ec.europa.eu). The region has intensive cooperation and flows of people and goods with the UK and particularly Northern Ireland, so the impact of Brexit on existing flows seems important to determine.

The Chartered Community of Navarra (Comunidad Foral de Navarra, where “Foral” refers to the exercise of autonomous competence prior to the Spanish Constitution of 1978) is located in the north of the Iberian Peninsula, next to France, and at the western end of the Pyrenees mountains. Its area is 10,391 km², and it has a population of 640,000 in 272 municipalities (NUTS 5) and approximately 600 population centres, some with a scarce ten inhabitants and others (like Pamplona / Iruña, the regional capital), with a population of 200,000.

Navarra has a diversified economy open to the outside world. With some specialization in industrial production and exports in the automotive, renewable energies, and agri-food sectors (approximately 30% of the active population in the secondary sector). The Plan Reactivar Navarra 2020-2023 aims to effect a shift towards a new economic and social model, based on progress, cohesion, and innovation, but using community funds in the design of the Chartered Community’s response to the Covid-19 crisis. In the transition to this new model, Navarra must strive to accomplish fair digitization, accelerate its ecological transition, structure the territory, and deepen its framework of coexistence — all of this under public-sector leadership (driven by the European Green Deal) and with a clear external dimension (to deal with the New Globalization) in sectors such as digitization, automotive, renewable energies, and climate change.

Covid-19’s effect during 2020 and 2021 has been evident in health, social, and economic matters, but also in territorial matters and the provision of services to citizens. Covid-19 has affected labour and personal relations, capital flows, the provision of raw materials, production, and more. Indicators such as GDP, poverty, employment, unemployed population, and ERTE (Temporary Employment Regulation Files) can feed an analysis of the territorial effects of Covid-19 and help establish prospective scenarios to facilitate planning and decision-making for the distribution of economic activity and provision of services and equipment. They can also help develop indicators of service quality and accessibility.

The Silesian Voivodeship (województwo śląskie), one of 16 voivodeships in Poland, covers an area of 12,300 km² and has over 4.5 million inhabitants. It is the voivodeship with the highest degree of urbanisation (there are 71 towns in the region) and population density (372 persons/km²). Katowice is the seat of the voivodeship’s authorities. The Silesian Voivodeship has very good transport connections, thanks mainly to the A1 (from the Baltic Sea to Czechia) and A4 (from Germany to Ukraine) motorways. The voivodeship also has a well-developed rail network and an airport that served around five million passengers in 2019.

The Silesian Voivodeship has the highest proportion of people working in industry, accounting for almost 20% of Poland’s total average employment in the sector. Located in the central part of the voivodeship, the Upper Silesian Industrial District is the most heavily industrialised area in Poland. The voivodeship’s industrial plants include hard-coal mines, steelworks, and power plants. Mining is the fourth-largest contributor to GDP in the region, but the sector is a burden on the voivodeship, reducing entrepreneurship and labour-force participation. On a macro scale, the Silesian economy has been losing ground to other Polish regions for almost two decades. Although the region’s economy is still one of the most developed in Poland — second by GDP and fourth by volume per capita — the growth dynamics and the region’s share in GDP are decreasing. Back in 2003, the region generated nearly 14% of Poland’s GDP. Since then, the voivodeship’s share of GDP has been falling, and today it amounts to just over 12%. On a Europe-
an scale, the Silesian voivodeship is classified as a less-developed region. This means that GDP per housing unit does not exceed 75% of the EU average. The region has been restructuring its coal-mining industry for over three decades, during which time employment in coal mining has fallen by 385,000 to 83,000, but it still accounts for 46% of all workers in the sector in 31 European states. The last mine is expected to close in the next 30 years. There are also two car factories in the region. For these reasons, the region is optimal for detailed analysis of the structural changes to the economy and related changes to flows that the European Green Deal might produce.

The **Zuid-Holland** region’s population is nearly 3.7 million, and its population density is about 1,373/km², making it the country’s most populated province and one of the world’s most densely populated areas. Situated on the North Sea in the west of the Netherlands, South Holland covers an area of 3,419 km², of which 605 km² is water. It borders North Holland to the north, Utrecht and Gelderland to the east, and North Brabant and Zeeland to the south. The provincial capital is the Dutch seat of government, The Hague, while its largest city is Rotterdam. The Rhine-Meuse-Scheldt delta drains through South Holland into the North Sea. Europe’s busiest seaport, the Port of Rotterdam, is in South Holland. It has commercial networks with many regions, strongly focused on the chemical industry and manufacturing and industrial FDI from many regions outside the EU. The region performs well in international metropolitan and ‘regular’ urban functions.

The following maps (**Fig. 2.1-2.3**) show the basic characteristics of the flows in the four selected regions. The role of the Dutch region in international capital flows, both in- and outbound, is clear from the maps, justifying analysis of the New Globalization scenario in this area. Strong and close cooperation in commuting and goods flows is noticeable between the Irish region and English regions, especially with Northern Ireland. The level of capital and goods flows is not strongly outlined in the maps for regions from Poland and Spain. This is mainly due to a much lower GDP and, in the case of the Navarra region, a smaller population.

The data show great diversity in the studied regions, not only in location and economic structure, but also in the shape of flows. Accordingly, the designed research will provide more universal answers to our project’s fundamental questions.
Figure 2.1: Foreign-direct-investment flows from four scenario case studies regions, 2018

Figure 2.2: Labour flows to four scenario case studies regions, 2018
Figure 2.3: Flow of goods to four scenario case studies regions, 2018
3 Description of scenarios

3.1 Brexit

On 31 January 2020 (00:00 CET), the UK became the first — and so far the only — country to leave the EU. Already after the end of World War II, the UK was in favour of a united Europe, being convinced that only a united Europe could guarantee peace. The UK accessed the EU (i.e., the then ECs, EEC, EAEC, and ECSC) on 1 January 1973, without a referendum.

On 7 February 1992, under Prime Minister John Major, the UK signed the Treaty of Maastricht and became one of the founding countries of the EU. The treaty was ratified without a referendum, raising legitimacy issues. The perceived lapse in democracy led to the formation of UKIP, a Eurosceptic right-wing populist political party that played a leading role in Brexit.

Euroscepticism was growing steadily in the UK because of populism, nationalism, imperialism, fragmentation, and inequality (Bachman & Sidaway, 2016). On 23 January 2013, then Prime Minister David Cameron (Conservative) committed during his pre-election campaign to conducting an EU membership referendum by the end of 2017. After their win at the polls (7 May 2015), the Conservatives introduced into the UK Parliament the European Union Referendum Act 2015 to make a legal provision for the referendum. David Cameron was a so-called remainer, preferring to keep the UK in the EU.

The referendum was held on 23 June 2016, and 51.89% of voters voted to leave the EU. The “leave” vote was greater in areas with low income, high unemployment, and a low-skilled population (Becker et al., 2017). Prime Minister David Cameron resigned, and the withdrawal process started under Prime Minister Theresa May (Conservative). On 29 March 2017, May triggered Article 50 of the EU (Notification of Withdrawal) Act 2017.

Brexit negotiations began on 19 June 2017. The EU appointed Michel Barnier as Chief Negotiator. The EU and the UK reached an agreement for withdrawal on 13 November 2018, but the UK Parliament declined to ratify it. The UK was then required to leave the EU by 12 April 2019. However, the UK government managed to extend the deadline until 31 October 2019. However, the UK government managed to extend the deadline until 31 October 2019. On 24 May 2019, Prime Minister May resigned. On 24 July 2019, Boris Johnson (Conservative) be-

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1 In his famous speech in Zurich, on 19 September 1946, the former Prime Minister Winston Churchill (Conservative) called for a “United States of Europe”. See https://europa.eu/european-union/sites/default/files/docs/body/winston_churchill_en.pdf for details.
4 UKIP won the 2014 European elections with a voting share of 27.5%. This was the first time since 1910 that neither the Conservative Party nor the Labour Party had taken the largest share of the votes in a nationwide election.
6 On 9 July 2016, the UK government rejected a petition to conduct a second referendum.
came Prime Minister. On 17 October 2019, a revised withdrawal agreement signed by the EU and the UK and the EU (Notification of Withdrawal) Act 2019\(^8\) required the British Prime Minister to seek an extension of the UK withdrawal date. The final withdrawal date was set for 31 January 2020. The Conservative Party won the general elections of 12 December 2019. This result signified the end of the Brexit procedure, as the Conservative Party had obtained the required majority in the Parliament. The Brexit withdrawal agreement was ratified by the EU Act 2020\(^9\) on 23 January 2020.

Following Brexit, the UK entered a transition period until 31 January 2020. Under the withdrawal agreement, which still applies, EU law has no primacy over UK law. Northern Ireland continues to participate in the EU Single Market for the trade of goods and remains a *de facto* member of the EU Customs Union. The Brexit withdrawal agreement sets out only how the UK leaves, not what is to happen afterwards (Latorre, Oleksyuk, Yonezawa, & Robinson, 2020). On 30 December 2020, the EU-UK TCA was signed between the EU and the UK to govern relations between the two. Concerning trade in goods, even if customs formalities were required, goods were not to be subject to any tariffs or quotas. For trade in services, each party was to treat the other party’s service providers no less favourably than its own. There was to be no free movement of persons.

Brexit might be regarded as what economists call a “black swan” event: i.e. a known possibility that is so uncommon as to be unexpected when it does occur (Whyman & Petrescu, 2020). The literature assumes two scenarios: (a) a “soft” Brexit (i.e., small barriers-to-trade; EEA-status, FTAs, or customs union), and (b) a “hard” Brexit (i.e., large barriers-to-trade; WTO trade rules).

Given that the analyses are heavily dependent upon a range of assumptions, and given that Brexit has no precedent, it is difficult to find a single “right” answer to the economic impacts of Brexit. Difficult as it might be to specify economic outcomes, however, the literature tends to agree that both the UK and the EU will suffer economic losses and that the UK is likely to be the most affected.

The paradigm of the EU, even though it manifests primarily in economics (i.e. economic integration), does not rest solely from economic incentives; contrariwise, economic integration requires not only an economic rationale but also strong political will (Rodriguez-Pose, 2002). Indeed, after so many clashes of national interest and compromises (Milward, 2000), European integration culminated in the establishment of the EU. Currently, the EU operates within a Single Market\(^10\) that guarantees the free movement of goods, capital, services, and people (known as the “four freedoms”) between EU countries, EEA countries, and Switzerland. Within the EU framework, the gradual weakening of (artificial) border impediments to the movement of goods, capital, services, and people constitutes the structural element — and the pure essence — of European (economic) integration. The EU’s territories have been experiencing a unprecedented change and spatial economies have been progressively transformed into integral parts of the European (economic) space (Petrakos, et al. 2005 and 2011).

Brexit may have important implications for both the EU and the UK. On the one hand, the EU has lost its second-largest economy by GDP. On the other, the UK cannot easily replace its ties with the EU through agreements with other countries. Broadly speaking, losses from Brexit

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would seem to arise — for both the UK and the EU — from increased barriers to trade, differentiated treatment of FDI, migration restrictions, and supply-chain disruptions.

3.2 Covid-19 Recovery

Covid-19 emerged in late December 2019 in Wuhan, China, and quickly spread to other countries around the globe (Li et al., 2020; Guan et al., 2020; Shrestha et al., 2020). By March 2020, Europe became the centre of the global Covid-19 outbreak, with confirmed cases in all countries. From then on, European countries adopted strict measures to limit economic and social activities to curb the spread of the virus and its related impacts.

Our analysis of this scenario considers the formation of a post-Covid-19 economy. The ‘new normal’ assumes changes in the way people work (teleworking), the development of e-services, the alteration of international-mobility patterns (including commuting), the reduction of external flows (e.g. China), and the consequences of anti-Covid programmes to mitigate the effects of the crisis at the European and Member State level, among other things.

The Covid-19 pandemic has changed the European continent in ways no one could have ever imagined, and the effects have brought to light Europe’s vulnerability and lack of resilience to a global health problem (Böhme et al., 2020). Due to the ageing population, different intense internal and external mobility for work or leisure, and other factors have affected some European countries more than others.

To gain medical control over the spread of the virus, almost all European countries and regions restricted physical distance and mobility (Hale et al., 2021a and 2021b). As simple as this intervention may sound, it has had severe side-effects on social and economic functioning (Akter, 2020; Bahmanyar et al., 2020; Eurofund and European Commission Joint Research Centre, 2021; European Commission - COM 662, 2021; OECD, 2020b, 2020c and 2021a). From a territorial perspective, the Covid-19 pandemic has affected daily social and economic life differently in different European cities and regions (Böhme and Besana 2020; Böhme et al., 2020). Health and demography aside, this has to do with the basic services and infrastructures of a society and economy. We must consider several dimensions: health, the economy, social and political affairs, etc.

The way in which Europe mitigates the pandemic and faces the recovery will be key to the future of each of its countries, regions, and cities. The Covid-19 pandemic is testing Europe’s cities and regions, probing the functioning of our very societal principles, and will continue testing them in the coming years.

Europe must be prepared to accept the new challenges of this kind of crisis, using them as a turning point to move forward such EU policies as the Green Deal, Digitalisation, and Territorial Cohesion.

The Covid-19 crisis has affected European economies through several channels. This includes effects on national and international flows of goods, services, people, capital, and knowledge. The way in which governments at different levels design and implement recovery policies will determine the performance of these flows, and thus the EU’s long-term future.

The Covid-19 crisis has revamped discussion over the redefinition of global value chains (GVC) (Miroudot, 2020). Much like the global financial crisis, Covid-19 has caused important disruptions in GVC (Espitia et al., 2021; UNDP, 2021), affecting the flows of goods and services. The reorganization of value chains, rising trade costs, diversification to enhance robustness and resilience, and the vulnerability of supply chains have come into question.
Covid-19 will have long-term effects on services as well. All things related to people mobility will affect all services that use mode-2 and mode-4 delivery. Tourism and related activities have been affected over the short to medium term. Recovery and strategic plans will depict how these trends evolve over the long term. It is also possible that, as digitalization and teleworking spread (Sostero et al., 2020; Eurofund 2020; European Commission 2020a; Eurofund and European Commission JRC 2021), several services will be provided differently, substituting mode 1 for modes 2 and 4. In fact, the rise of teleworking has shown that the provision of services can be (partially) decoupled from the movement of people (consumers, providers, or intermediaries).

Additionally, the long-term effects of Covid-19 will overlap with those of the new trends in globalization (protectionism, shortening of GVC, geopolitical tensions between the United States and China, etc.) and the EU Green Deal, which might change the performance of regional labour markets, affecting the intensity and shapes of their commuting flows. The spread of teleworking and the development of new communications technologies (5G, IoT, 3D printing, etc.) might affect where people decide to live and work.

The long-term restructuring of the economy is expected to have important consequences for the balance sheets of every country and region — although it is still too soon to preview how the EU will manage the growing public-debt/GDP ratio — and of their national or regional governments. As in the 2008 financial crisis, the application of correct macroeconomic measures can speed up recovery, while mistakes can restrict access to the financial sector for governments, businesses, and families. The EU’s management of the reconstruction program clearly suggests changes in crisis governance since 2008, but the nature and scope of the second economic shock, the one related to indebtedness, remains unknown.

Finally, the Covid-19 pandemic is likely to have significant effects on flows of higher-education students across Europe. With H2020 flows, the Covid-19 pandemic has triggered new priorities that might reshape the regional distribution of certain economic activities and the ability or willingness of people to travel, thus affecting knowledge flows or at least their preferred pipelines.

Globalisation mechanisms such as trade and travel, along with the rise in urbanization and the closer integration of the world economy (global interconnectedness), are key drivers that explain observed patterns in the disease’s spread worldwide (Shrestha et al., 2020). Indeed, transmission of the virus has clearly benefitted from the forces of globalisation to reach the most economically integrated metropolitan areas (topological diffusion) (ESPON 2020). The ESPON (2020 and 2021) reports provide a good analysis of this.

The ESPON EGTC (ESPON 2020 and 2021), the OECD (OECD, 2020a and 2020c), and the think tank Spatial Foresight (Böhme & Besana, 2020; Böhme et al., 2020) have analysed the pandemic from a territorial perspective. The various risks linked to the pandemic vary greatly by place of residence, and the regional and local impact of the Covid-19 crisis is highly heterogeneous. This has significant consequences for crisis management and policy. Regionally differentiated impact calls both for a territorial approach to policy responses on the health, economic, social, and fiscal fronts and for strong inter-governmental coordination.

### 3.3 New Globalization

Globalization and the expansion of international trade and investment accelerated after the fall of the Soviet Bloc under US leadership. In fact, in the last decades, the world economy has been experiencing hyper-globalization (Rodrik, 2018a), which has seemed uncontested on the surface but has slowly eroded trust and public support for the so-called liberal world order in advanced countries. This is due, in part, to sharp increases in inequality and a perception that the gains from trade have been unequally distributed. This social and political discontent crystal-
ized after the global financial crisis and the subsequent recession and led to the election of political leaders that openly opposed free trade and globalization (Rodrik, 2018b).

US President Donald Trump, elected in 2016, was the most consequential of these leaders. His so-called “trade wars”, his attacks on the World Trade Organization (WTO), and his preference for bilateral economic negotiations — with consequent neglect of multilateralism and global governance — translated into trade restrictions and undermined international cooperation.

However, in the middle of these economic and geopolitical tensions, the Covid-19 pandemic struck. In the words of Carmen Reinhart, Chief Economist of the World Bank, this was “the last nail in the coffin of globalization”.

It is still too early to know the long-term impact of the pandemic on international trade and globalization. The WTO estimates that in 2020 international trade flows could fall by as much as 32%, the sharpest decline in centuries, because of the lockdowns and the global recession (WTO, 2020). Recent news of the increase in the transportation costs, bottlenecks in the main maritime hubs, and all kinds of disruptions in the supply chain for microchips and the items that incorporate them reflects some of the risks that a highly interconnected economy faces after a sudden reprieve of activity.

Several authors have suggested that the pandemic might lead to an acceleration of global trends that could hamper international trade flows and multilateral economic governance. Trade in manufactured goods could suffer should there arise a new wave of trade tensions between the US and China or new obstacles to international cooperation. It could suffer also should strategic industries be redefined and nationalized, or trade flows be regionalized because of changes in the structure of global value chains, or discontent increase with economic liberalism in general because of the scale of the economic downturn (McKinsey, 2019; Ortega, 2020). Trade in certain online services could expand thanks to an acceleration in digital transformation (Baldwin, 2020), while services that rely on face-to-face interaction might shrink. Within this context, this scenario explores the impact that the tariffs imposed (or announced) by the Trump Administration after 2017 might have on the EU.

In January 2018, the US imposed tariffs on imported washing machines and solar panels. In March, new import tariffs were approved on ‘iron and steel’ and ‘aluminium’ of 25% and 10%, respectively, on the questionable basis that they constituted a threat to American national security. At the same time, the US dropped out of the Trans Pacific Partnership (TPP), renegotiated NAFTA (now called USMCA) and the US-South Korea FTA, and started a trade and technological confrontation with China.

On 23 May 2018, the US Secretary of Commerce initiated an investigation, pursuant to Section 232 of the Trade Expansion Act of 1962, to determine the impact on national security of imports of automobiles (including cars, SUVs, vans, and light trucks) and automotive parts. The main targets seemed to be the EU (especially Germany) and Japan. On 22 June 2018, the US threatened to impose a 20% tariff on all imports of vehicles from the EU, arguing that they were a threat to American national security. In May 2019, the US established a fragile truce with Japan and the EU through a six-month postponement of new tariffs on vehicle imports from the EU and Japan while negotiating free-trade agreements with both. Moreover, in November 2019, Trump granted a further extension as he refused to nominate new judges to the Appellate Body of the dispute settlement mechanism of the WTO, thus impairing a body that the EU considers a cornerstone of global trade.

Moreover, on 18 October 2019, the WTO authorized the US to adopt tariffs worth 7.5 billion dollars a year in compensation for the damages caused by the illegal aid granted by several European countries to Airbus, against the interests of Boeing and the laws of the free market.
The authorized tariffs included products directly related to the aerospace sector, where tariffs could amount to 15% and apply exclusively to the four European countries that produce Airbus components. Additionally it included many items subject to maximum tariffs of 25%, applicable to a much longer list of EU countries. The products in this second section had little to do with Airbus’s business and included such items as wine, olive oil, cheese, and zinc.

Although these US protectionist actions are different from the other unilateral tariffs analysed, because they are legal under WTO law, they severely affected several European exporters.

Finally, as the trade war between the US and China reached a temporary ceasefire in January 2020, Trump seemed determined to apply tariffs on European automobiles. Only the Covid-19 pandemic stopped him.

Although Gros (2019, p. 20) believes that ‘this is not a trade war, but a struggle for technological and geo-strategic dominance’, it is important to keep in mind that these protectionist threats will always be hanging over our heads. The issue is not whether the tariffs were finally applied but that they might be used again as a weapon of trade policy against EU interests (Llano et al., 2018). Indeed, the threat of tariffs can serve as leverage, a negotiating tool, for the US or some other big country.

If US protectionism continues and other countries retaliate, the world could enter a protectionist spiral like that of the 1930s. Although Trump’s political term has since ended, it is likely that the economic and geopolitical confrontation between the US and China will continue, though in other language and under another guise.

Some years before Covid-19, after decades of hyper-globalization, experts had begun to perceive a turning point in the intensity of international trade and FDI relative to the world’s GDP. Such trends coincided with an escalation of geopolitical tensions between China and the US, with indirect effects on the EU. Moreover, this wave of protectionism went hand in hand with Trump’s new policy style, and with the final materialization of the divorce between the UK and the EU.

The current Covid-19 crisis and the way the EU and its member states are managing it might introduce new barriers to the free movement of goods, services, people, and capital. This could trigger a general reaction in favour of regionalization and domestic economies, giving a final push to the hyper-globalization of the previous decades.

We have used this scenario to try to foresee the consequences of this new era of protectionism. This particular dimension of the new globalization was driving the main discussion at the IMF and ECB and informing their global outlooks just before Covid-19. Examining the three main protectionist measures that the US imposed on or announced for the EU just before Covid-19, we have focused attention on the inter-sectoral and inter-regional effects that such measures might finally have across Europe.

The rise of protectionist measures drew the attention of the main international institutions just before the pandemic. The topic is now being revisited by such leading economists as Baldwin, who has also discussed the potential rise of new tariff and non-tariff barriers to trade and FDI worldwide.

Just before Covid-19 hit the world, protectionism was a key concern for the global economy. Over the past years it has been moderated, or at least presented in another way. When Trump was defeated by Biden, tensions between the US, China, and the EU calmed down, or at least took on a more official and diplomatic cast.
Given the difficulty of predicting specific protectionist measures, we have quantified the measures announced just before Covid-19, since they top the list of potential threats if a new wave of protectionism rises after the recovery.

### 3.4 European Green Deal

In December 2019, the European Council, in view of the need to step up global climate action and in line with the Paris Agreement, set a target for the EU to achieve climate neutrality by 2050, taking into account both reductions and removals in greenhouse gas emissions (*The European Green Deal*, 2019). At the same time, the European Commission presented a new development strategy: the European Green Deal. This will be the EU's main development strategy and will replace the Europe 2020 strategy. All sectoral strategies and policies in the EU will be aligned with it, as will EU-level legislation implemented subsequently by Member States. The European Green Deal is a comprehensive strategy that identifies the main problems and challenges, covering all areas of social, economic, and environmental life.

It sets out a vision of the desired state in 2050, i.e. zero net greenhouse gas emissions by the EU economy. This document was followed in March 2020 by the related Green Deal Investment Plan and the Just Transition Mechanism (*Sustainable Europe…*, 2020), which aim to:

- enshrine in EU law the goal of achieving climate neutrality by 2050,
- establish a process for monitoring the achievement of targets,
- define a ‘process to be used in case of insufficient progress’.

Taken together, these vectors of action represent a clear shift from vision to operational plan, with monitoring of goal attainment and sanctions for delays in implementation.

Also adopted in March 2020 were the New Industrial Strategy for Europe and the outline of the Circular Economy Action Plan. In May 2020, the "Field to fork" strategy was presented, which calls for the creation of more sustainable food systems, for higher-quality food with fewer negative environmental impacts from agriculture, and the EU Biodiversity Strategy 2030, which aims to protect vulnerable natural resources. In sum, over the last two years the EU has adopted framework documents for the shift towards a zero-carbon economy. These will be in turn transposed into implementation documents and programmes, recommendations and regulations, shaping the way the private sector operates (*Sustainable Europe…*, 2020).

The European Green Deal aims to protect, conserve, and enhance the EU’s natural capital, and protect the health and well-being of citizens from environmental risks and impacts. This transition must be just and inclusive. It must put people first and pay attention to the regions, industries, and workers that will face the greatest challenges. Since it will bring substantial change, public participation and confidence in the transition are paramount if the policies are to be accepted and work. A new pact is needed to bring together citizens in all their diversity, with national, regional, and local authorities, civil society, and industry working closely with the EU’s institutions and consultative bodies (*The European Green Deal*, 2019).

This scenario addresses the efforts the EU is expected to make to promote a more environmentally friendly economy and how they will affect the flows in diversified ways. It can address changes in the structure of the European economy (especially in the energy sector) as well as changes in the modal structure of transport for passengers (reducing air and road transport, supporting rail, trams, and other forms of public transport as well as bikes, etc.) and in the transport intensity of the economy with regards to freight. The scenario might include changes related to the development of the *circular economy*, which entails shortening the transport distance for certain goods and promoting prosumers (consumers who also produce the product).
The European Green Deal might reshape the regional distribution of certain economic activities associated with services. Everything related with transport services, tourism, and local mobility of people (commuting) is expected to experience severe adjustments if the EU and the rest of the world’s countries really seek to fulfil their national commitments in relation to the Paris Agreement and the struggle against climate change.

The decarbonisation of freight and passenger transportation, promoted by EU reconstruction funds, might boost the development of certain regionally agglomerated industries but also put pressure on others whose products face shrinking demand. The spread of electric vehicles, for instance, might have a clear impact on the European car industry, as most EU producers are at a disadvantage with respect to their Japanese, Korean, or US counterparts and could face protectionist measures from the US or China. All of these shifts, although centred on manufacturing, might impact trade in commercial services. If the expansion of the international trade of services has gone hand in hand with a globalization of the flows of goods and FDI, it is reasonable to expect a moderation of the expansion if we expect insourcing to increase in these spheres.

The European Green Deal might in principle reshape the regional distribution of innovation and knowledge towards an increasing agglomeration of innovation around the largest clusters, and probably reduce the propensity for personal mobility and all kinds of spatial interactions that might increase the carbon footprint of people mobility. In this regard teleworking too will tend to substitute for various kinds of personal mobility, such as international conferences and other face-to-face relations traditionally associated with the spread of knowledge.

The fundamental objective of reducing CO₂ emissions to zero is to combat climate change, but limiting emissions will have serious consequences for the operations of the EU’s economies. The European Commission has identified sectors that will come in for particularly strong transformational pressure. These are: transport, energy, agriculture, construction, steel, cement, ICT, textiles, and chemicals.

Through grants and investment programmes, the Green Deal and Just Transition Fund aim to secure the professional transition of people likely to lose their jobs, to revitalise and diversify local economies, and to restore land. Supporting the territories and populations most affected by the necessary extinction of the most polluting activities will improve the lot of the most deprived, and thus demonstrate that Europe can bring added value to these citizens. More fundamentally, however, it will also strengthen the political legitimacy of the climate transition, at a time when the Union has set itself the ambitious objective of achieving carbon neutrality by 2050.

The Just Transition Fund, established before the proposed recovery plan, aimed to inject €7.5 billion in financing, mainly through the multiannual budget and the "InvestEU" programme, into the green economy by 2029. Its purpose is to initiate climate- and social-transition policies in the regions most affected by the foreseeable disappearance of high-carbon emitting activities, located in Eastern Germany and Central and Eastern Europe, but also in the south (France, Italy, Spain, Greece, etc.).

### 3.5 Aggression in Ukraine

In 1991, Ukraine gained independence from the Soviet Union. This event was preceded by the adoption of the Declaration of State Sovereignty of Ukraine in 1990 and an attempted coup in the USSR in August 1991. It should be noted that the previous attempt to create a Ukrainian state (Ukrainian People’s Republic), in the early 20th century, was defeated by the aggression of Bolshevik Russia.
After gaining independence, Ukraine remained under Russia's political and economic influence for a long time. The latter saw Ukraine as a strategic partner and the most important country in the protectorate it was establishing. The basic document regulating bilateral relations, the Treaty of Friendship, Cooperation and Partnership, was signed in 1997.

In the 1990s, despite its relative geopolitical weakness at the time, Russia continued its policy of keeping Ukraine in the post-Soviet space. The problems of the period included the division and basing of the Black Sea Fleet (the agreement was ratified only in 1999), support for separatist movements in Crimea, and the delimitation of the border between Ukraine and Russia. The border dispute lasted more than ten years and was accompanied by a series of contradictory statements by Russian officials against Ukraine's territorial integrity. The agreement on the state border was signed only in 2003 and ratified in 2004. In the year of its signing, moreover, there occurred the first significant territorial conflict over control of the Kerch Strait (Tuzla spit). But this was settled politically.

The signing of the border agreement forced Ukraine to sign a second agreement with Russia on the creation of the "Common Economic Space", whose implementation was later blocked at the legislative level by Ukrainian legislature, with reference to the Constitution.

Also, political and economic agreements between Ukraine and Russia tended to be non-transparent in the 1990s, which ended up indirectly affecting conditions for both the Orange and the Dignity revolutions. In 1994 came the Budapest Memorandum, through which Ukraine lost its nuclear arsenal in exchange for security guarantees. These, as we know, have proved ineffective.

In addition, the late 1990s and early 2000s were for Russia times of economic growth and increasing claims to global dominance, with the emergence of a "Eurasian" geopolitical doctrine. Its author, O. Dugin, notes that the very existence of a sovereign Ukraine amounts to a geopolitical declaration of war on Russia. In this view Ukraine is Moscow's main and most serious problem. Somewhat later Ukrainian experts would note that the doctrine is probably about not just the intention to establish a protectorate, but also the territorial division of Ukraine, with inclusion of the southern and eastern regions in the Russian Federation.

In his speech to the Federal Assembly of the Russian Federation on April 25, 2005, Putin proclaimed the well-known thesis that "the collapse of the Soviet Union was the greatest geopolitical catastrophe of the century". He also declared the creation of the Eurasian Union. Later, in 2007, he spoke at the Munich Conference, emphasizing "Russia's re-entry into the world arena" and imperial ambitions. He has since described a historical Novorossia as including the Ukrainian regions of Kharkiv, Luhansk, Donetsk, Mykolaiv, Kherson, and Odessa.

Thus begins a period in which Russia exerts an ever-stronger influence on the politics, economy, energy, and information sectors of Ukraine. Russia expands its business interests and promotes pro-Russian political parties. Ukraine, meanwhile, is still hovering between the European and Russian spheres. Certain political forces manage to produce interregional polarization, not unlike S. Huntington's so-called intercivilizational "fault line". The population of Ukraine's industrial east and part of its south — both considered mostly pro-Russian but in fact heavily influenced by Soviet narratives and Russian propaganda — provides electoral support to the Party of Regions and Viktor Yanukovych, who runs for President. The central and especially western regions of Ukraine support the pro-European leader, Viktor Yushchenko.

The election campaign and numerous violations of the law by pro-Russian forces, and Russia's explicit and secret support for its candidate, gave rise to the Orange Revolution, which resulted in Yushchenko's winning the election. Thus 2004-2005 marks the first clear and unpleasant
signal for Russia about the uncontrollability of Kyiv and the strengthening of the European vector in Ukraine.

The second step, unfriendly from Moscow's point of view, was Kyiv's undisguised support for Georgia during the 2008 war, in which others in the Commonwealth of Independent States did not follow suit.

Russia's responses were the so-called “gas wars” of 2005-2006 and 2008-2009, restrictions on exports of certain groups of commodities (“food wars”), attempts to discredit Ukraine's foreign policy, and the intensification of informational pressure through controlled media. Until recently, the Kremlin exerted political leverage through the energy dependence of Ukraine and the EU. The share of Russian business in communications and telecommunications, fuel and energy, and banking had grown tremendously.

The Ukrainian population’s support for the Russian vector remained relatively high. According to polls in 2002, this path to Ukraine's development was supported by 56% in 2002 and 54.8% in 2010.

In 2010, Russia's “fifth column” nevertheless brought to power Viktor Yanukovych, who, in signing the Kharkiv agreements to extend the lease for the navy's base in Crimea until 2042, effectively betrayed Ukraine's national security interests in exchange for gas. He also significantly undermined Ukraine's defence capabilities (low funding, sale of property). Even during his presidency, however, preparations had begun for the signing of the Association Agreement with the EU in 2013. The goal of Ukraine's membership in the European Union was also reflected in the Ukrainian law of July 1, 2010, titled “On Principles of Internal and Foreign Policy”, which, however, included non-aligned status.

Pressure on the Ukrainian government and Viktor Yanukovych's refusal to sign the Association Agreement led to the mass protests known as the Revolution of Dignity, and to a radical change in political elites. In 2014 Ukraine and the EU signed the Association Agreement, and in 2017 Ukrainians started to enjoy the benefits of visa liberalization.

In turn, Russia responded by annexing Crimea and occupying parts of Donetsk and Luhansk oblasts in 2014. It was recognized as an aggressor by Ukraine, which subsequently renounced its trade and political agreements. For the last seven years, then, Ukraine has been in a state of military conflict with Russia. The conflict's intensity decreased somewhat in 2019, after the next presidential election, pending a change in Kyiv's political course. Efforts to restore Ukraine's territorial integrity on the basis of the Minsk agreements failed, as did negotiations in the Norman format.

Since the beginning of the occupation, public attitudes towards European and Euro-Atlantic integration have changed significantly. In 2021, they were supported by 62% and 54% of poll respondents, respectively. EU Support was notable also in the east and south of Ukraine, at 43.6% and 48.8%. Significant progress has been made on the Ukrainian language and Church autocephaly, but attitudes towards Russia have deteriorated significantly.

In 2021, apparently aware of the trends, Moscow increased the concentration of military equipment, weapons, and troops near the Ukrainian border and on the territory of Belarus. There was also growing political pressure on Ukraine, the EU, and the United States to demand Ukraine's non-aligned status and to restore Russian influence in Eastern Europe.

On February 24, 2022, declaring a “special military operation”, Russia launched a war around the perimeter of the common border. As of May 2022, the Donetsk, Luhansk, and Kharkiv oblasts have suffered the most bombing and shelling, the Kherson and Zaporizhia oblasts remain almost completely occupied, and the Kyiv, Sumy, and Chernihiv oblasts have been liberated.
from occupation. At present, it is impossible to clearly determine the conflict’s development and probable duration. Many experts are inclined to see a more or less long-term scenario, with consequences of various scale, and do not rule out the transition to a frozen conflict with socio-economic consequences of its own. Nor do they rule out the use of nuclear and chemical weapons. Their forecasts are usually based on an assessment of Russia’s prospects for military, technological, and economic depletion, Ukraine’s military performance, and likely political and geopolitical changes (China’s role, elections, key global players, the sentiments of Russian elites, etc.).

For Europe and the globe, the war in Ukraine will have significant consequences for the restructuring of trade ties and energy strategies. These include sanctions imposed on Russia, programs to support the growing number of refugees, and pledges of support for economic and infrastructural recovery in Ukraine.
4 Quantitative analysis

4.1 Brexit

Brexit is a (trade) shock that is related to economic disruptions, new barriers and constraints, and adjustments. Its effect is global and multidimensional. It is leading to a redefinition of roles and to a reconfiguration of economic systems at the national and sub-national level. However, for the UK, the losses of regional competitiveness are considered more certain and less sensitive to the exact design of a Brexit deal (Thissen et al., 2020). This study aims to investigate quantitatively Brexit's effect on the regional exports of the EU27+UK+EFTA area through a two-part counterfactual analysis: the first considering the UK as party to a free-trade agreement and not as a member of the European Union (European-trade-agreements approach), the second applying an increase in non-tariff costs (non-tariff-cost approach).

According to the first approach, Brexit will lead to changes in trade flows in all regions of the EU27+UK+EFTA territory. Goods exports will experience a decline (~2.2%), which on the European level will be slightly greater in lower-productivity goods (~2.4%) than in higher-productivity goods (~1.8%). This seems to hold for the UK. However, it appears that exports of higher-productivity goods will decline in most European regions, especially those of Eastern Europe, while regions in Norway, Switzerland, Iceland, and Croatia will show no reduction. Lower-productivity goods will experience feeble growth in most of the area, while the eastern part of the ESPON area (Lithuania and regions of Bulgaria, Poland, Slovenia, Hungary, and Romania) will be more prone to declines in goods exports (Figure 4.1).

Exports of services will unambiguously outperform exports of goods in all cases, enjoying an increase (of 1.8%) that will be greater in higher- than in lower-productivity services (2.4% and 1% respectively). Regionally, there will be great growth in Western and southern Europe (regions in France, Spain, Portugal, Italy, Malta, Belgium, Netherlands, Denmark, Luxembourg, Switzerland, Norway, Sweden, Iceland), modest growth in Central Europe (regions in Germany, Poland, Czech, Austria, Greece, Cyprus, Finland, and part of Sweden), and low growth in Eastern Europe (regions in the Baltics, Croatia, Slovakia, Slovenia, Romania, and Bulgaria) and Ireland. The only dip in services exports will occur in the UK, which will generate negative growth rates in the exports of all subsectors.
On the other hand, our second methodological approach generates declines in export flows, especially in goods. Specifically, a hypothetical 5% increase in the trade cost of goods will lead to a 1.4% decline in exports (2.1% in lower-productivity and 1.6% in higher-productivity goods). A greater decrease in exports seems to occur in regions of Bulgaria, Greece, Poland, Czech, Slovakia, Croatia, and Denmark (not, of course, in the UK), whereas increases in exports may occur mainly in regions of Germany, Italy, Norway, Iceland, Ireland, and Latvia (Figure 4.2).

For services exports, a hypothetical 2% increase in trade cost due to Brexit seems to lead to a 1.0% decline in exports (0.4% in lower-productivity and 0.3% in higher-productivity goods). In most of countries exports of services seem to perform better than exports of goods, presenting a smaller decline or a higher increase in volume. Only Germany and Malta present a higher increase in goods, and Latvia presents a positive change in goods by comparison with services. Of all the countries considered the UK, as expected, displays the highest reduction in exports in all goods categories. The greatest reductions in exports of services, as our second method demonstrates, may occur in Eastern and parts of Western Europe, specifically in regions of Poland, Hungary, Slovakia, Bulgaria, Denmark, France, and Spain.
To conclude, we expect Brexit to cause a serious reduction in UK exports in 2020-2026. The amount varies by methodology (the first shows a greater reduction in services, the second a greater reduction in goods). In either case, changes to trade rules along with red tape, customs checks, and disruptions to trade are unambiguously associated with a drop in the UK’s export flows. Brexit seems to exert a greater negative influence on higher-productivity than lower-productivity goods, whereas services — especially high-productivity services — perform better, displaying a smaller negative change or a higher positive change. Moreover, regions from the Central-Eastern Europe seem to be less resilient to Brexit, showing a negative change in their exports of goods or a weak increase in their exports of services. This relates to their production structure, as regions that experience greater export losses have a significant preponderance of lower-productivity goods.

More information available in IRIE report “Scenario: BREXIT”.

4.2 Covid-19 Recovery

Rather than look for short-term impacts, European policymakers are trying to apply the lessons of the previous crisis to find novel ways to turn the pandemic into an opportunity to build a better long-term future. To that end, they have made a clear commitment to a greener, more-digital, and more-resilient Europe. Indeed, these are the three pillars on which the Next Generation EU (NGEU) funds rest.

The Covid-19 crisis is affecting European economies through several channels. Beyond the immediate shock to health and health systems, the disruption caused by lockdowns, shutdowns, and preventive measures has had inevitable consequences for countries’ social, economic, technological, environmental, and political landscapes — not to mention national and international flows of goods, services, people, capital, and knowledge. The way in which governments
at different levels design and implement recovery policies will determine the performance of these flows, and thus the EU’s long-term future.

We have considered several case analyses under this scenario, but we are presenting the results for only one simulation, which assumes the most likely impact of NGEU funds on each Member State, depending on the allocated amount (focus on the grant share). We have assumed that the NGEU will induce a change in levels of investment in the sectors and regions that were already driving business as usual in 2017.

All analysed cases show that Next Generation EU funds had a clear positive effect throughout Europe, including non-EU27 countries. In general, the territorial effects in terms of VA and employment are much aligned. Although the results show heterogeneity across regions, the main differences occur at the country level, indicating that the territorialisation applied by the EC is the mechanism that will, in the end, determine the funds’ territorial effects. The distribution of funds by country is clearly biased towards Eastern and southern Europe, with a remarkable concentration in Slovenia, Bulgaria, and Croatia, followed by Spain, Italy, Portugal, and Greece.

Curiously, although the EUREGIO-2017 table captures all the inter-sectoral inter-regional linkages between countries in the ESPON space — which might suggest strong flow spillovers from the Eastern-southern countries to the core European economies — our results do not show any outstanding rebound effect. Indeed, the initial allocation of NGEU funds by country seems to determine their final distribution, by blocks of regions mainly within each country, and with no clear signs that leading regions in rich economies (Germany, France, the Netherlands) benefitted from funds allocated to the most-damaged or least-advanced economies.

**Figure 4.3: Impact of NGEU funds on the regions: (a) value added, (b) employment**
Analysing the combined impact of the recession caused by Covid-19 and of investments from the NGEU funds, we can make the following conclusions. Firstly, all cases show a clear heterogeneity across countries and regions in total effects obtained. Secondly, the negative effects of 2020 are greater than the positive effects produced by the NGEU funds. Consequently, although the NGEU is the largest mobilization of EU funds in history, it is still unable to compensate for the largest economic shock to the EU since the Second World War, and its effects vary by geography. Regions in Central-Eastern European countries show the clearest positive effects when we aggregate the two shocks, while effects in the southern countries, which were more damaged by the pandemic (Spain, Italy, France), are less evident. In general, the regional net effect in these countries is negative, with small exceptions in some scenarios. Portugal is the only southwestern country where the net results in VA seem to be systematically positive in the three scenarios, while the results for employment are less robust. Finally, there are important positive spillovers to non-EU countries, such as the strong positive results for Switzerland in all scenarios, as well as benefits, mostly for employment, in certain regions of the UK. Meanwhile, the most negative net effects, consistent in all scenarios, are in the southern regions in Norway and Iceland, which, unlike Switzerland, cannot enjoy the indirect effects exerted by the IO relations of the EU27.
Figure 4.4: Europe after the pandemic and NGEU intervention: (a) value added (b) employment

Note: Own elaboration based on the EUREGIO-2017 simulation.

More information is available in the IRIE report “Scenario: Covid19 recovery, the impact of Next Generation EU funds”. 
4.3 New Globalization

After decades of hyper-globalization, the intensity of international trade and FDI relative to the world’s GDP has produced symptoms of stress and moderation. Such trends have coincided with an escalation in geopolitical tensions between China and the US, with indirect effects on the EU. Protectionism coincided also with Brexit and Trump’s new style of policymaking. Experts consider that post-Covid globalization will be different, expecting a new wave of protectionism with nations seeking security and autonomy over pure efficiency. New barriers to the free movement of goods, services, people, and capital are likely. This could incite families, firms, and nations in general to withdraw into regionalization and domestic economies, giving a final push to the hyper-globalization of the previous decades. Given the difficulty of predicting the specific protectionism measures to come, such preconditions were made – the new tariffs on the metals (iron, steel, and aluminium), the products list of those affected by the Boeing-Airbus trade dispute within the WTO, as well as 25% tariffs on automobiles.

As Figure 4.5 shows, the aggregate effect of the measures considered is not great, at least not by comparison with that of the other shocks considered in this IRIE project (Brexit, Covid-19, EU Green Deal). The negative effects range between $-0.01\%$ and $-0.55\%$ of regional GDP. That said, it is important to remember that such effects result from the unilateral decisions of a country — in this case the US — that is not the main trading partner of any of the EU countries in isolation. A new tariff in a big market can generate significant effects in regions that are highly dependent on the sector, and have negative spillovers into the rest of the EU economy. It is also remarkable that such shocks never come alone and overlap with other difficulties already experienced by some of these sectors, which are by definition exposed to very demanding international competition, with tight mark-ups and difficult supply chains schemes.

Figure 4.5: Value added total effects in %. All sectors affected by all tariffs.

![Image of map showing percentage changes in value added across regions](image_url)
As we can see, the main negative effects concentrate in Slovakia and Germany. This indicates that the most negative measure that the US has considered taking against the EU economy targeted the automotive sector, to which Germany and some neighbouring eastern countries are the most exposed. The main effect in relative terms corresponds to the EU automotive sector, followed by the metals sector and the sectors affected by the WTO dispute. This is why the main aggregate shock is very similar to that produced by the automobile tariffs alone. However, the regions most affected by the metallurgical tariffs are located in southeastern Europe, the Netherlands, Austria, and Portugal. While the regions affected by the long list of products in the WTO-Airbus dispute are mainly located in the UK, which accounts for the top 30 positions in the ranking.

More information is available in the IRIE report “Scenario: New Globalization, what if winds of protectionism blow again against the EU?”

### 4.4 European Green Deal

The term *just transition* refers to the need to achieve a climate-neutral economy in coal regions, with a particular emphasis on quality of life for the inhabitants and the environment. It is currently one of the most important policy objectives of the European Union, and is inseparably connected with the term *energy transition*, which focuses on replacing traditional sources of energy production, such as hard coal or lignite, in regional economies with environmentally neutral sources, and thus on moving away from the fuel and energy industry. The goal is to counteract climate change and environmental degradation through a process that takes social, economic, and environmental conditions into account.

We present below the main results from what is our widest and most aggressive scenario, since it assumes that the substitution of “coal & lignite” affects both the intermediate input for producing electric power and the removal of heating based on these fuels. Based on the importance of hard coal and lignite production in Section B (Mining and Quarrying according to NACE classification) and substitution of this input by raising the production of the alternative sources the total results are presented in terms of Value Added, Employment and CO2 emission (*Figure 4.6*).

Firstly, the results show negative and positive effects in terms of VA. The regions that suffer the greatest negative impacts lie in Central-Eastern Europe and specialize in coal and lignite, while the positive effects appear in a larger number of regions where the alternative energy sectors (C19 and D) are present in the same country or in adjacent countries. The negative shock is quite great in some regions, reaching values of 3% of 2017 Value Added. The positive effects are more spread between regions, with lower positive effects (below 0.8%) affecting more regions.

Secondly, since the substitution is assumed to happen within each country where mining is reduced, and its neighbouring countries, negative and positive effects take place within groups of countries. Note that this picture arises by construction and does not need to correspond to reality. However, it illustrates how negative and positive spillovers can be compensated for, as neighbouring economies usually have tight regional sectoral interconnections. In this respect, it is remarkable that negative effects observed in Poland, Bulgaria, and Romania generate positive effects both in those countries and in Germany, Slovenia, Austria, and Italy. This result corroborates the idea that the countries that have endured the most CO2 emissions from neighbouring “coal & lignite” use are the same as those that will potentially profit from their substitution. Total effects on employment are reasonably aligned with the those on VA.

Finally, the CO2 estimation reflects a strong and generalized reduction in the emissions across most regions in Europe. The exceptions, increases in the CO2 emissions, are concentrated in
Germany, Switzerland, Poland and the Baltic republics. Note that these increases are lower than 2% in most cases and lower than 6% in all cases. The power generation sector in these countries is considered as decarbonized or mostly decarbonized, so they do not have room for improvement and they are increasing their production causing CO2 emissions. The largest CO2 abatements are obtained in the regions where coal and lignite were more intensively used.

**Figure 4.6:** Scenario European Green Deal. Total effects: VA, employment, and CO2 emissions: (a) value added (b) employment (c) CO2 emissions.
4.5 Aggression in Ukraine – Input-Output analysis

In the early hours of February 24, Russian troops entered Ukrainian territory, engaging in the largest military offensive in Europe since World War II. In just two weeks since the beginning of hostilities, the escalation of violence has only increased, going from what was expected to be a "lightning raid" to a "total invasion", with large-scale attacks. Within days of the start of the Russian invasion of Ukraine, NATO countries imposed unprecedented economic sanctions on Russia. These sanctions reinforce those already applied by the EU when Russia invaded Crimea in 2014, although raising them to higher levels. The sanctions have been strengthened further by the high level of coordination with the US and other OECD countries, which includes traditionally neutral countries with an important role in finance, such as Switzerland.

Because of the complex nature of this shock, we start with a detailed analysis of exports of goods and services between the Russian and Ukrainian economies and the rest of the world, identifying the affected flows in the EUREGIO-2017 framework. We then simulate the total isolation of these two economies in their commercial relations (goods and services) with the rest of the world, using the "hypothetical extraction method" (HEM), which can quantify the effects of halting for one year all exports and imports between Russia and Ukraine and the rest of the world. The exercise makes it possible to quantify the maximum effect of complete isolation. We next conduct an additional simulation, to determine the magnifying effect of an increase in prices on consumption.

We begin with the international effects obtained through our analysis of quantities applied to the EUREGIO-2017. We obtain an average impact in terms of Added Value of more than one point.
(−1.25%), where Cyprus (−6.2%), Lithuania (−4.0%), and Ireland (−3.9%) are the most affected economies.

**Figure 4.7:** Quantity effect (demand + supply) in % of regional GDP.

At this point, we proceed to calculate the additional fall that a rise in prices would induce on each of the countries and regions considered. As indicated, we have taken two complementary approaches, one based on the average elasticity between consumption and prices for the EU27, the other assuming a fall in elastic products, given the income restrictions over the very short term. In both cases, using the Leontief demand model, we obtain additional reductions in sectoral and regional Added Value, which must be added to the previous ones. The impacts are quite similar with the two approaches, ranging from slightly less than half a point in the US and Canada to around one and a half points in Bulgaria and Slovakia.

**Figure 4.8:** Expected reductions in GDP due to price increases: income drag approach

*Source: own elaboration based on the simulations using EUREGIO-2017.*
Interestingly, our results for the two approaches are similar but with certain differences. The effects obtained through the income drag approach are slightly greater, and more severely concentrated in north of Eastern Europe. The average-elasticity approach leads to more intense effects in Spain as a whole, while the rent approach leads to greater effects in Portugal and France, and less uniform shocks in Spain.

Under the worst scenario for the ESPON space (UE27, UK, Liechtenstein, Norway, Iceland, and Switzerland), with full intensity for one year, the fall in GDP might be –1.77 %, with a loss of 3,789,887 jobs. Inflation will rise 3% over pre-war rates.

In the moderate scenario, where we expect a mild quantity effect and transitory shock over prices, ESPON countries might suffer a –0.59% decrease in the GDP, at a cost of 799,480 jobs. Inflation will rise 1.3% over pre-war rates.

More information is available in the IRIE report “Scenario: The economic impact of the Russian invasion of Ukraine: and input-output analysis”.

4.6 Aggression in Ukraine – analysis of refugees flows

Refugee volumes and distribution will depend on developments in the war situation. To better address this complicated and largely unpredictable mix of factors and events of a military, political and economic nature, we proceed by way of collapse into the two orthogonal dimensions of:

- war severity,
- war duration.

Final cases result from the sub-division of the aforementioned severity and duration dimensions into two broad categories as low or high. The result is for the following 4 cases to be generated.

Case A (limited damage in the context of a short war)

The conflict ends soon. Destruction proceeds at an intensity similar to that recorded so far (up to 15th May 2022). Only 8 regions of the country are affected. A reconstruction process supported by Western countries commences. As a result, only a small percentage of all Ukrainians decide to go further than their selected country of first contact. A large proportion go on to return to Ukraine, while most of the remainder remain in the neighbour EU Member States of Poland, Slovakia, Hungary and Romania). The percentage of those proceeding beyond Europe also remains small (ESPON Space).

Case B (limited damage in the context of a long war)

The conflict drags on, but is frozen. Destruction follows on at an intensity similar to that recorded so far, and affects only part of the country. No large-scale reconstruction process can begin as foreign funds may not truly be engaged until war is completely extinguished. Nevertheless, non-impacted regions regain some economic activity. Even so, more Ukrainians elect to move beyond their countries of first contact. While only some go back to Ukraine. Many others remain in neighbouring EU countries (Poland, Slovakia, Hungary and Romania). Still, the percentage who now go beyond Europe increases (ESPON Space). Meanwhile, some will come to the EU for purely economic reasons, perhaps in line with the availability of seasonal work. Those failing to find a job will either return or head off in search of work beyond ESPON Space.

Case C (major destruction in the context of a short war)
The conflict ends soon, with a high-intensity impact of the war, but no accumulation over time. While the territorial extent may be wide, only some regions suffer total economic failure. A process of reconstruction with the support of Western countries can begin, even as the cost is enormous. As a result, some Ukrainians return to their own country, while some stay in neighbouring EU states (Poland, Slovakia, Hungary and Romania). A small percentage also go beyond Europe (ESPON Space). The rapid nature of this scenario needs to be borne in mind, and in particular the way in which people from border and neighbouring regions will actually benefit. Currently, there are also internally displaced people, the number of which cannot be estimated accurately (7.7 million people in Ukraine as a whole, according to the IOM, with about 3 million in western regions).

Case D (major destruction in the context of a long war)

The conflict lasts a long time. A combination of war of high intensity and a high level of cumulative damage ensures that certain towns and regions simply collapse, even as the rest of the country heads for economic failure. Furthermore, the reconstruction process is unable to begin. Numbers of refugees increase, and first-line countries will no longer be able to accommodate further waves of migrants. As a result, more Ukrainians start to reach areas beyond the country of first contact. Almost no one returns to Ukraine. In this scenario, the assumption is that approximately 30% of the population of regions not affected to a significant extent before now become refugees, as do about 50% of people thus far displaced internally. Additional migration from previously-affected regions will also account for a certain share. In this case, there are new refugees who will remain in ESPON Space and beyond (as a diaspora) for a long time to come. The total number of refugees then exceeds 10 million, even as the percentage of all of these heading beyond Europe (ESPON Space) is on the increase.

The inflow of refugees from Ukraine in case A (limited damage and a short war) will mainly concern the so-called First-Contact countries, i.e. those with a land border with Ukraine (Fig. 4.9). The inflow will definitely be concentrated in Poland (1.567 million) and its regions. Largest numbers of people will remain in the Warsaw-Capital region (348,100), and mainly in Warsaw itself. More than 428,900 Ukrainian citizens fleeing the war will arrive in Romania. Where that state’s regional configuration is concerned, it is Bucharest that will be markedly dominant (at 118,300), while the distribution across other regions will be a relatively even one. More than 279,000 Ukrainian citizens arriving in Hungary, mainly in Budapest (98,300) and the region neighbouring Ukraine (Észak-Alföld, 73,200). For Slovakia, the number is an estimated 196,100, the vast majority of whom will remain in the Východné Slovensko region neighbouring with Ukraine (141,200, or 72% of the total inflow). In the remaining ESPON Space countries the inflow of Ukrainians will be relatively small (at 303,300 in total). Of the countries concerned, it will be the Czech Republic that will receive the largest inflow (131,400), with this primarily concerning Prague and its surroundings (Strední Čechy; 70,400 people in total), as well as Lithuania (28,900).
Figure 4.9: Inflows of refugees from Ukraine by region, Cases A-D

In Case B (limited damage but a long war) there will be limited change in the spatial distribution of inflows, at either national or regional levels. The main streams will still go to the First-Contact countries, above all to Poland (1,603,000). However, this inflow will be slightly greater than in Case A. Regions with the highest values for flows will experience even greater streams (greater by 2-3% than in Case A). Western European countries will be much more affected by the inflow of people from Ukraine, though this will not yet be clearly visible regionally. Total numbers outside First-Contact countries will be markedly greater – at up to 866,400. This may be due to the first signs of saturation of accommodation facilities in the First-Contact countries and refugee reception capacities. Hence, streams of people will head to other countries to a greater extent. However, geographical proximity and migration networks will continue to play a decisive role.

In Case C (major destruction, but in the context of a short war), severe war damage will result in an even greater outflow of refugees from Ukraine, both from war-afflicted and non-war areas. The inflow of Ukrainian citizens to the First-Contact countries will be even larger, as will those into other countries, which will record approx. The inflow of Ukrainian citizens to First-Contact countries will be even larger, as will those to other countries, which will experience an increase of about 45% compared with Case B. In some Western European countries there will be noticeable concentrations of people coming from Ukraine. In addition, Lithuania, with its small population, will experience a relatively large influx of people from Ukraine (of some 120,400 people).

Case D (of major destruction in the context of a long war) assumes the largest number of people arriving from Ukraine. Apart from the First-Contact countries, which will receive more than 4.6 million people (Poland - 2.9 million, Romania - 804,100, Hungary - 523,000 and Slovakia - 367,600), the regions of other ESPON Space countries will also be affected greatly (receiving a total of 3.4 million people). The already mentioned Case C situation will be augmented by fur-
other regions of Western European countries: in Italy - Emilia-Romagna (29,100) and Lazio (20,500), in Portugal - Centro (20,800), in Sweden - Stockholm (26,900), in Germany - Berlin (28,000), Oberbayern (25,800) and Düsseldorf (24,600), and in France - Île de France (23,100). The inflow into the Baltic States will also increase significantly, especially in regions of Lithuania.

In relation to the population of the regions in case A, very high numbers of refugees from Ukraine are recorded in Central and Eastern Europe. In some regions of Poland (including Warsaw), as well as Slovakia and Hungary, and in Bucharest, the level is at about 10%. These values correspond with the current (May 2022) level of migration inflow. Taking into account the structure of migration (dominated by women and children) such a level can be treated as a challenge for the labour market, and even more so for the proper functioning of public services. In some regions of Poland, as early as in April, numbers of refugees from Ukraine aged 0-18 accounted for 15% of all members of the analogous age group in the Polish population. This reflects the unbalanced demographic pyramid in Poland. Child care and school education can thus be expected to be key dimensions capable of limiting further concentration of refugees in certain regions.

A significantly different picture for differences in the indicator can only be observed in Case D. Practically the entire territories of Romania, Hungary, Slovakia, the Czech Republic, Poland, Lithuania, Latvia and Estonia will record population growth of almost 10% as a result of refugee inflow. In Western Europe the figures are lower, but even so account for more than 1% of the previous population in some areas. This is to be observed in Portugal, Denmark and the Stockholm area of Sweden. Internal differentiation is to be seen in Germany and Spain (with a concentration on the east coast). In France, Paris has the highest concentration of refugees.

More information is available in the IRIE report “Aggression in Ukraine”, an analysis of refugee flows”.

### 4.7 Resilience

Since the recession of 2008, much has been said about regional resilience in Europe. Briguglio et al. (2009) and Pontarollo & Sepieri (2020) distinguish between economic vulnerability and economic resilience, the former being an economy’s exposure to exogenous shocks, the latter an economy’s policy-induced capacity to recover from such shocks. Thus, vulnerability stems from a country or region’s exposure to a direct shock and to its structural characteristics, while resilience incorporates the capacity to manoeuvre of economic institutions and policy.

Various authors (Pontarollo & Sepieri, 2020; Martin, 2012; R. Martin & P. Sunley, 2015; Diodato & Weterings, 2015) have delved into the conceptualization and empirical measurement of resilience at the regional level, suggesting alternative methods and variables that, in summary, we can associate with the following four dimensions: resistance (sensitivity of output and employment to the shock, which determines the demand for public action), recovery (speed of return to the pre-shock state), reorientation (capacity to change sectoral composition and other structural features after the shock), and renewal (ability to bend the pre-shock growth path towards a better profile).

Although the resilience of each territory is shock-specific and extrapolating past measures of resilience to the future can be problematic, in this section, we borrow the Regional Economic Resilience Index (RERI) suggested by Pontarollo & Sepieri (2020) and compare their results against our own. This index offers a solid measure of regional resilience throughout the EU in a period that is very close to the moment when all the shocks investigated in that report occurred (Figure 4.10).
Given importance of path-dependence to the resilience of EU regions (Tsiapa et al., 2018), this analysis explores whether pre-existing capabilities and higher levels of resilience after the financial shock of 2008, proxied by RERI, prefigure the evolution of regions in a subsequent crisis and specifically the performance of regional export activity in the Brexit scenario. From the correlation of RERI with the change of exports of goods due to Brexit and their regional subcategories, it seems that higher levels of regional resilience during the post-crisis period of 2008-2015 are related to greater export growth of goods, especially of higher-productivity goods (as the correlation is statistically significant), after Brexit. Consequently, it appears that historical contingency is related to a strong historical over-determination (Chapple & Lester, 2007), as previous regional resilience predetermines the future level of resilience, locking regions into their previous development path. More analytically, regions that are locked into a negative trajectory, specifically regions less resilient both to the shocks of the financial recession of 2008 and to Brexit (lower export growth in higher-productivity goods), are located mainly in the Eastern European countries of Bulgaria, Poland, Croatia, Greece, Czechia, and Slovakia. On the contrary, regions that are locked into a positive trajectory, specifically regions more resilient both to the shocks of the financial recession of 2008 and to Brexit (greater exports growth in both higher-productivity goods and services), are mainly in Germany, Sweden, Norway, Austria, Ireland, Estonia, and Latvia.

For the Covid-19 Recovery scenario, the relationship is positive, indicating that, on average, the most negative effects of the pandemic have occurred in regions with lower resilience, while the least negative VA effects are associated with regions with the highest RERI. Most importantly, NGEU funds might partially mitigate the situation. The scenario that sums the negative effects of Covid-19 and the positive effects of NGEU funds for territorial and sectoral distribution suggests that, in general, the NGEU alone will not compensate for the heavy shock suffered by most regions of Europe in 2020. Generally speaking, only the regions of Central-Eastern Europe are undoubtedly and systematically better off after the allocation of NGEU funds, while the less resilient regions in Spain, Italy, and other southern countries, where the pandemic shock was more negative, have not felt so strong an effect (Figure 4.11).
For the *New Globalization* scenario, the relationship between RERI and the aggregate shocks of US tariffs in terms of VA is negative, indicating that, on average, the most negative effects of the protectionism measures adopted by US might hit the regions with the largest resilience levels, while the less negative VA effects are associated with the regions with the lowest RERI. Moreover, the graph suggests that the concentration on the less resilient regions is more clear (narrower dispersion of the dots around the regression line) while the range becomes wider on the most resilient territories (Figure 4.12).

**Figure 4.12: The regional shock of US tariff’s vs the Regional Economic Resilience Index**

For the *European Green Deal* scenario, the negative shock in terms of Value Added (but also in relation to employment) is highly concentrated on a short list of regions (highlighted in red with the corresponding label), all of them located in Central-Eastern Europe (Poland, Bulgaria, Ro-
mania, and Greece). For the rest of Europe, the effect is predominantly null, with certain regions absorbing the positive effect of the energy-mix substitution (Figure 4.13).

**Figure 4.13: The regional shock of European Green Deal in VA vs the RERI**
5 Qualitative analysis

Although the information below is structured in line with the scenarios, participants in the workshops did not see a strong differentiation between them. The general conclusion from the workshops was that the scenarios overlap and that it is difficult to create a hierarchy between them because of their strong connections. Workshop participants argued that all scenarios will be important to all regions and interact in different ways, depending on location and economy. For them, New Globalization is ‘the scenario’, whereas the others are shocks that happen under the umbrella of this ubiquitous phenomenon. Therefore, all scenarios somehow rely on the New Globalization’s rules, even the Aggression in Ukraine scenario. Similarly, it is difficult (and probably incorrect) to address each flow alone, as the flows are themselves significantly interrelated. From their perspective, and because they are immersed in the New Globalization era, flows of goods and services are always affected first. This then triggers a cascade effect on the other flows: people, capital, and knowledge. Finally, the respondents posed the question of the temporal scale. This is an important aspect to consider when we compare different shocks, and the IRiE scenarios are quite heterogeneous in this regard. Moreover, the scenarios’ impacts are too one-directional, as regions may also create change and influence the scenarios themselves.

5.1 Eastern and Midland region (IE)

Brexit scenario

Brexit is the most important scenario for the E&M region — the one that will probably exert the greatest effect, the region having a peculiar geographical position with respect to the other regions, because the two states are so close. Participants in the workshop were confident in the region’s capacities to address the Brexit scenario: the region can survive the storm and even expand its activity. The observed development on the island was described as phenomenal.

The Irish government has tried to mitigate the effects of Brexit by introducing local and national supports and policies. The Irish government prepared for Brexit by figuring out what was at stake strategically and fundamentally in Irish jurisdiction. Back in 2018, Ireland published its new National Planning Framework with a National Development Plan — the funding arm of the National Planning Strategy. In the early days of planning the National Planning Framework, all jurisdictions worked very closely together while also renewing the regional development strategy in Northern Ireland, so the strategies could work well together. The cross-border regions’ cooperation in this matter was strong. The Irish government’s goal was also to maintain peace and prosperity, and this required not returning to border control, for flows of either goods or people. Protecting the Good Friday agreement was fundamental. Thanks to that agreement, one part of the UK (Northern Ireland) is in some way still a part of the EU, participants claimed. If the Northern Ireland decided to re-join the Republic, it would automatically become a part of the EU as well. This is very important to maintain interactions between the two jurisdictions on the island. Because the Irish government was afraid to lose the UK market, new markets were found within two to three years. This was a significant boost for businesses. Brexit caused a shift in thinking. Businesspeople now think of three markets: Ireland, Great Britain, and the rest of the world. In the opinion of one workshop participant, Brexit could have led to a greater event: unification of the two parts of the island of Ireland.

There is much local mobilization to address challenges. Entrepreneurs have done a lot to make local assemblies aware of Brexit and help them adapt to it, hosting Brexit information centres. When Brexit finally occurred, cooperation decreased but it is still existing: driven by businesses, local authorities, and the community. One participant stressed that on the Dublin-Belfast corri-
or there are eight local authorities working together, engaging with academia and the business community and taking quite a holistic approach to development.

Since 2018, a lot has changed in terms of flows in the E&M region, particularly in transportation and shipping routes. Opening up new routes and new possibilities is not restricted to physical infrastructure. There is also digital infrastructure, crucial for the knowledge economy.

**Covid-19 Recovery**

Workshop participants described the Covid-19 Recovery scenario as having huge effects on the E&M region, but rather smaller than those of the Brexit scenario. It is nowadays the most important scenario, since it is changing the reality of labour and its related legislation — and influencing almost everybody in the region and beyond. Participants therefore argued that the challenges of Covid-19 recovery are not unique to the E&M region and resemble the challenges elsewhere in Europe.

Participants agreed that the Covid-19 pandemic has taught us about the unpredictable and changing dynamics of external uncontrollable shocks. Nevertheless, we need time to fully determine the appropriate analytical framework for Covid-19 and collect evidence and data.

**New Globalization**

Workshop participants defined this scenario as muted until recently — that is, until the end of February 2022, when the Russian invasion to Ukraine took place. Now, with the war in Ukraine and the European reaction, the big geopolitical change has awakened the New Globalization scenario, making it probably the most impactful one for the future. The war in Ukraine will probably make European cohesion and cooperation more important. The events that began at the end of February 2022 have made European countries realize they need one another.

Representatives of the E&M region reminded the rest of us that the US has always been the key influencer in the Irish peace process. But they nevertheless have a different perspective on things: they see the US, the EU, and the UK as forming a triangle with Ireland at its centre. We should not underestimate this vision in the wider perspective of influences.

Regardless of the Russo-Ukrainian war, the E&M region has good FDI links with European and US capital markets. It can therefore handle this scenario. Brexit is also a bonus here, as it makes Ireland the only EU centre with native speakers of English.

**European Green Deal**

Since the Green party won the national elections in 2020, a rapid change in green development has taken place in Ireland. Ireland has passed the new Climate Action bill, whose chief aim is a 51% reduction in greenhouse gas emissions by 2030, with a 7% average annual reduction. Moreover, the E&M is a Just Transitioned region, so a lot of local and national support have been put in place there to drive change.

However, the Green Deal’s implementation has turned out to be much more challenging than the Irish government thought, especially with respect to energy transition and energy supply. In reality, the Green Deal should be influential as the E&M region is in the Just Transition structures. The Midland is the first Just Transitioned territory in northern Europe. Still, participants recognized agriculture as the sector with the highest emissions in the E&M region.

In terms of the European Green Deal, Ireland has a big problem in agricultural production, as it must shift to more sustainable forms of farming. Over the long term the Green Deal could affect Ireland’s agricultural production sector negatively, for lack of innovation. Traditionally, Ireland has had small fields, which are not profitable. Participants of the workshop claimed that Ireland
probably cannot be the “breadbasket” of Europe, but there is potential to expand the sector. The EU and to some extent the Irish national government are encouraging a shift to crop production, for both environmental and diversification reasons. At the moment, Ireland produces as much milk as Great Britain, an economic strength that should be protected.

Participants agreed that the European Green Deal can work in Ireland. The country is already evolving a single market in electricity and energy, and its efforts to create renewable energy may bring make it a renewable-energy exporter, which would certainly improve the island’s integrity and security. Moreover, rail connections in Ireland have been improved.

5.2 Navarra region (ES)

New Globalization

In Navarra, the most worrying scenario is New Globalization. According to the policy representatives, the industrial structure of Navarra might struggle to meet the scenario’s challenges. Digitalization, industry 4.0, reshoring, and global supply chains have become common topics of debate in the post-pandemic recovery and the building of a ‘new normal’ in a globalized world. The problem has been addressed from the top down, without the key step of diagnosis. A region must have deep knowledge of its current situation before it can carry out a detailed place-based analysis and plan for the future. In this regard, boosting Research & Development & Innovation, education, and knowledge networks might make a difference. Equally important is to be able to generate Navarra’s own business network.

International trade is fundamental here. Its ups and downs present a constant challenge and places Navarra in a situation of constant vulnerability. This risk must be integrated somehow into public policy. Recent crises such as Covid-19 and the war in Ukraine are taking place with an unprecedented level of debt in certain Member States. Public spending is highly compromised, and the rebound effect will be difficult to manage.

These shocks cannot be cushioned with public budgets, which have been stretched by the financial crisis. There is an urgent need to intervene in market regulations. Inflation cannot be stopped with interest rates, but only by intervention.

Evaluating the region with respect to these mega-trends, the experts considered that Navarra’s size matters: ‘Navarra is small to face these impacts alone’, they said. ‘We are trying to maintain social standards, equity, etc., but these are very disproportionate challenges’.

They feel limited by the size and weight of Navarra in the general picture of these scenarios. Navarra is defined as ‘peripheral’ to the EU, but its location is less of a limitation that its population size. Navarra is comparatively very small, and to face the challenges of the scenarios the region would need to achieve a critical mass in population. One way to do this is to strengthen the Euroregion Nouvelle Aquitaine – Euskadi – Navarra. As part of the Euroregion, Navarra would gain the necessary critical mass to integrate into the European network and obviate its peripheral location. The resulting synergy might favour intra-Euro-regional trade and employment.

Another important point raised by the stakeholders is the obstacles to cross-border regional cooperation. These are obstacles arising from national competencies, so regional governments are often limited in their actions.

For one representative, the problem is not just the population’s size but also its characteristics — it is an ageing population. This places a burden on the provision of services, although the region is privileged in terms of public services. Policies should consider not only the regional
context but also regional characteristics at both European and global scale. This would be a better way to position the region to deal with the New Globalization scenario.

In light of the impacts of Covid-19 and the war in Ukraine, should Navarra revisit its sectoral policies? For some stakeholders the answer is clearly yes; Navarra must question its strategic sectors. The automotive sector is key to the region. However, we are entering into a war economy. Should the region rethink and retool its sectoral strategies accordingly? Navarra seems to have drifted towards becoming a factory. Rather than reinforce production, its development should go toward more R&D&I (e.g., engineering, design, etc.).

In line with the discussion on sectoral policies, the stakeholders emphasized that production chains are not the same as value chains. Where is the production and where is the value? This is very important for diagnosis. The price of a barrel of oil is falling, whereas the price of petrol is going up, which ultimately affects the end-consumer. The same is happening with supermarket products. There is a mismatch of intermediaries. The European Union must intervene in the markets. There must be bans, limits. The stakeholders considered that, far from being a real solution, Next Generation funds might benefit the very companies that exacerbate these problems. We need regulatory changes at the European level to deal with supply and demand shocks.

When linking Cohesion Policy and the scenarios, they saw a clear roadmap for Europe — one involving smart specializations. The EU is trying to move beyond geographical boundaries to act at the European level. Policies are being organized this way, and the stakeholders see this as an improvement. Has cohesion policy managed to reduce inequalities? Some stakeholders believed that it has failed and perpetuated differences. Others, however, considered that differences persist but have been smoothed out or reduced. They suggested moving out of cohesion and value chains to seriously tackle all this and change regulations that the EU considers immutable, lest they sink the ship. Europe, they said, must prevent the creation of inequalities between producers, consumers, etc.

Regional representatives considered data and indicators to be of primary importance for the purpose. There is a statistical and methodological challenge. For example, they do not consider GDP a good basis for regional comparisons. They know Navarra’s GDP but not its distribution within the region. Per-capita income would be more enlightening. And other, more creative development indices should be explored.

Brexit

This scenario was subsumed into the New Globalization scenario.

Covid-19 Recovery

The management of the Covid-19 crisis has been characterized by very strong public intervention, driven mainly by the lessons learnt from the managerial mistakes of the previous crisis, in 2008. Indebtedness and inflation are the major concerns of the post-Covid-19 era. The Next Generation funds are an example of agility in regulatory decision-making. Examples of this kind are all but absent in the management of other crises, such as that presented by the New Globalization scenario.

European Green Deal

The panel saw the European Green Deal as ‘the opportunity’ for Europe to differentiate and position itself as the green block in the globalised world. Europe is saying, ‘Let’s be the green and value-trading block’. Europe must put restrictions on relations with regions that do not hold
these values or meet these standards. This could be Europe’s version of protectionism. However, Europe’s new green protectionism would be small in the global context.

In this scenario, strongly embedded in the globalization framework, imports have come to play a fundamental role, especially with respect to raw materials. Navarra has pioneered renewable energies, but can it continue down this path without the raw materials to support the technology? The region is very energy dependent. It has the technology and the strong companies, but it does not have the materials. It is very important to control the energy supply and reduce dependence. Proximity markets could help to achieve these objectives. Local products such as biomass, pellets, and woodchips cannot power industry in Navarra, but they can power homes.

As for Navarra’s strategic sectors (automotive, renewable energy, and agri-food), the stakeholders highlighted the importance of the primary sector. Navarra has potential in this sector, and considering the impacts of all scenarios on supply chains, the region must think to focus its efforts there, exploiting its full potential (to reduce dependence).

For the Navarra stakeholders, ‘economic development’ is a contradictory objective for the European Green Deal. Growth patterns, consumption patterns, leisure, energy types for daily use, sustainable or sustained development — all of these need careful consideration at the European and regional level.

5.3 South Holland region (NL)

Brexit

Participants generally saw this scenario as beneficial for South Holland (SH). There are several places with opportunities to capture activities and flows from the UK — except in finance, where London is currently improving its position as a financial centre. Nevertheless, whether headquarters remain or return to London, European regions will benefit from production, logistics, and warehousing. Warehousing in particular has increased in SH, and in the Netherlands generally, because traders and producers from the UK need it to remain active in the EU. More broadly, SH has been attractive as a workplace for companies moving from the UK to the Netherlands: the UK is indeed the main source of incoming companies to the Netherlands, according to the Economic Board. However, lower exports could affect SH in the agri-food and flower-agriculture sectors.

Divisions by sector should become more visible in the way companies relocate to specific regions. Clearer sectoral divisions between regions may enhance competition for specific flows rather than cooperation between regions. However, the Economic Board considered that Dutch regions stand in cooperation with one another, not in competition. For example, finance is more developed in the Amsterdam metropolitan region, while life sciences and health are clustered in SH. The science park surrounding Leiden has attracted more than 40 companies in the life-science sector.

Covid-19 Recovery

Attendees did not fully agree on Covid-19’s impacts. Some considered the economic effects so far to be minor, with economic growth coming back to pre-Covid levels: there is no decline in new companies investing in SH, thanks to the region’s good digital infrastructure — which economic added value should continue to expand — and flexible production sites. Others think the recovery should be nuanced in light of inflation, supply chain disruptions, and their effects on low-income households. In any case, the regional economy should remain open to foreign travel and business.
Also, we should not forget delayed effects: so far, compensatory measures in sectors such as hospitality have limited bankruptcies, but those same companies might be hard hit when governmental support ends. Attendees agreed that the Netherlands should work to improve companies’ resilience. So far, the pandemic has affected mostly companies whose business relates to Schiphol airport. In particular, logistics has suffered greatly from global disruptions, except in such sectors as food trade (considered ‘essential’).

Finally, Covid-19’s effects on knowledge flows are still very uncertain: on the one hand, accelerated digitalization could foster global collaborations; on the other, travel restrictions could favour small-scale regional cooperation with more facilities to organise physical meetings.

**New Globalization**

To some extent, participants considered that the Covid-19 scenario provides a glimpse of the New Globalization scenario — in terms of value-chain disruptions, for example. The way flows are addressed will depend on qualitative goals and the values that can emerge from flows, the way they change and interact. At the regional level, SH should reflect on its strengths and the way it can bring change, seize opportunities, and adapt to scenarios such as New Globalization. The Regional Growth Agenda supports the manufacturing industry as well as investment in innovative, knowledge-intensive sectors, which will perhaps not affect the intensity of flows but definitely transform them with more value captured regionally. Some participants would also like to see FDI more focused on European regions rather than the US or China.

In the Eurodelta, there is a plan to build short value chains for the manufacture of new technological products. The goal is to no longer rely on other continents for raw materials (e.g., lithium and other materials needed for mobile phones and healthcare). The initiative connects with the retooling of European supply chains towards circular economic chains. This is consistent with the fact that global companies still operate in different regional economies, mostly affecting the activity of specialized companies. Companies themselves are looking for opportunities to source goods over shorter distances, which makes the province’s goals to make value chains more regional very relevant. However, this requires incentives, such as the Dutch Growth Fund, which helps companies develop new products and services.

**European Green Deal**

This scenario is very much related to New Globalization in current strategies, such as the Eurodelta vision. It also examines the role of actors and their relationships: how can regional actors promote change? How do they collaborate at different scales and in different contexts (e.g., ARA ports together, ports and municipalities, regions and the EU)? Who are the agents of change, and how do they deal with conflicting interests?

However, the European Green Deal scenario specifically shows the essential role of planning in at least two of its aspects. Firstly, a port will aim to attract new residents, including potential workers. To do so, it must improve quality of life and organize land use so as to accommodate both its own activities and attractive housing developments, which create spatial issues. Secondly, the port of Rotterdam is a leader in both petrochemical (slowing down) and bio-based fuels (and increasingly in the local sourcing of other materials), but land scarcity obliges it to set priorities to effect the industrial transition. The transition is part of the Regional Growth Agenda. In such situations, the region serves as another agent of change, rather than just absorbing the scenarios’ impacts. The hydrogen plan for the aeronautics industry (currently used by Airbus and KLM) presents opportunities for SH within this scenario too, given the connections with industry, travel, and (most importantly) knowledge flows (e.g., how to use Dutch knowledge for such developments). This again shows how all scenarios are interrelated.
5.4 Silesian region (PL)

European Green Deal

This is the most important scenario for the Silesian region, which has the European Union’s highest proportion of people employed directly in the mining industry, Poland’s highest urbanisation rate, and one of Europe’s worst environmental quality indicators.

Participants were well aware that the direction set for environmental change — towards climate neutrality on the continent and a reconfiguration of energy-production structure — is irreversible. Besides, this is not a new process, as both employment and coal mining have been declining in the region for several decades. However, what is causing some concern is the failure to recognise the socio-cultural role of mining. The 200-year tradition and the mining-based development of the cities of the Upper Silesian conurbation serve as an identity marker for the region and its inhabitants. It is not just the change in the economic and energy sectors that need attention; the social sphere does as well. And it is precisely the social sphere that regional authorities consider one of the greatest uncertainties in the region’s future within the European Green Deal scenario. Many uncertainties also relate to specific political decisions: for example, on the carbon tax (the higher it is, the fewer the opportunities to improve the region’s competitiveness), on the form and continuation of the European Union Emissions Trading System (EU ETS), and on the timing of mine closures in relation to geopolitical shocks (e.g. the current Russian invasion of Ukraine). In the attendees’ opinion, coal could become a transitional fuel and, with the use of the latest technologies, be used for several more decades.

EGD is about more than the decarbonisation of the economy. It is also about a comprehensive reconfiguration of the Silesia Voivodeship towards a green economy. This will entail the building of new relationships in the main green-economy sectors, starting with renewable energy sources, and continuing through the circular economy and low-carbon transport. But with the region’s rather low level of networking and of integration into the European flow network, this will prove to be a challenge. The region has no knowledge resources (e.g. Horizon2020 projects) to foster value chains in the green economy. It must build new relationships, related mainly to knowledge and competencies, to replace what it has in industry. Without such new relations, the European Green Deal scenario is unfavourable for Silesia. Interestingly, however, the participants unanimously emphasised that discussions on the economy’s decarbonisation had brought the region “into Europe’s salons”. Because it is difficult to decide on the European Union’s future under the European Green Deal paradigm if the region with all the carbon potential is not in the discussion. In striving to meet its challenge, Silesia has entered into a network of flows from which it has hitherto been absent, because “there is a lot of business to be had on a big change in a relatively large and strong region”.

Energy transition will affect not only the mining sector and environmental protections but also competitiveness, comprehensively understood — because the region’s economic and demographic structure and its network of inter-sectoral connections predict an increased demand for cheap and clean energy. Companies in the region usually have old infrastructure, often not up to new standards, so we can expect energy shortages and problems of access. So far, the region’s energy has been drawn from its own resources: regional hard-coal-based sources. Potential shortages can therefore strongly impair the region’s competitiveness. At the same time, however, energy is the responsibility of the national administration and its sectoral policy. Regional policy has very limited influence. Therefore, the regional authorities themselves are tak-
ing up the challenge and have strongly emphasised the need to take the "green economy" into account for the creation of a new regional development strategy. In other words, the regional authorities want to take a leap forward and prepare for the inevitable changes.

**Covid-19 Recovery**

The consensus among participants was that the Covid-19 pandemic changed the previous system of linkages: "in the maps presented, we observe a world that no longer exists". In the future, it will be very valuable to track the flows that have changed significantly because of the pandemic and the economic downturn. Although this is a scenario and an external condition that strongly influence current policymaking, it is important to stress that the region is not unique in this respect. The pandemic has affected the whole world, every region, every place. Considering the size of the region, its economic specificity, and the existing flows, we can assume that the Silesian Voivodeship coped better on average than the European Union, but worse than Poland.

**Brexit**

This scenario was taken to be part of the *New Globalization* scenario and treated as the last important one for the region.

**New Globalization**

This scenario needs to be considered alongside the *Covid-19 Recovery* and *Brexit* scenarios, but it will also be significantly influenced by the subsequent fate of the war in Ukraine. We are certainly seeing protectionism rise in the world and economies close within small alliances. It would therefore be valuable to extend the project’s research to analyse flows with the rest of the world.

As with the *European Green Deal* scenario, the use of tariffs, embargoes, and taxes will depend on political decisions at the EU and national level. The region has no separate policy on these issues and has no influence on them. The region will simply bear with the arrangements made elsewhere. For example, the Silesian Voivodeship has proven hard-coal reserves, and if the European Commission wishes to maintain greater energy independence from Russia and use coal as a transitional fuel over the long term, the region will benefit. New mines will be opened, and there will be an increase in the exchange of goods, capital, knowledge, and labour. If there is no such decision, as already indicated above, the region will look for other solutions to increase its competitiveness — probably by joining the European knowledge-exchange network. Similarly, the amount of help Ukraine will receive to rebuild after the war will depend on decisions at the European level. For example, there is a very well-developed steel industry in the region, which may benefit.

To sum up, in this scenario, it is not the region that sets the main conditions or shapes the spectrum of solutions. Depending on its potential and the diversification of its network, it may be more or less influenced by the assumptions. However, the Silesian Voivodeship is trying to assume the role of an active player, create a regional development policy convergent with the current paradigm of the European Union, and use the negotiating opportunities associated with its regional specificity (mining).

### 5.5 Aggression in Ukraine

Because this Scenario was not considered in selected regions, the presentation of results will have a slightly different format. The results are based on the sources indicated in the methodological section. However, we pay particular attention to the situation in Poland, the country that has received the largest group of refugees from Ukraine.
Migration has been typical of Ukraine almost since the year of its independence, 1991 (as well as historically: during the 18th and 20th centuries). Until 2014, migration was related mostly to labour, and in the 1990s the demand was mostly for unskilled labour. In the 21st century educational migration has gradually gained popularity, as has migration of workers with higher education in certain fields, such as IT. The reasons have to do with both economics and living standards. About half of visits have been short-term, and the most attractive destinations in the EU have remained Poland, Italy, Czechia, Germany, Spain, Hungary, and Portugal. After 2014, visa liberalization and Russian aggression (annexation of Crimea and occupation of the Donetsk and Luhanski oblasts) were among the factors intensifying migration. Pendulum migrations have remained particularly common in Poland.

With the beginning of the war in 2022, traditional migration routes have remained in place. With respect to the EU and ESPON space, then, the scenario’s effects will relate to significant regional differences and be strongest in first-contact countries, especially Poland. Poland and Ukraine are, of course, direct neighbours, and the length of their border has made Poland the main destination for Ukrainians fleeing the war. In addition to the geography, Poland and Ukraine are culturally and linguistically proximate. Even before the war, Ukraine’s citizens would come to Poland in large numbers in search of work and a better life. And so Poland has become the first and often final stop for Ukrainians fleeing the war. Although most refugees want to return to Ukraine, one in three that were asked this question declared a desire to stay longer in Poland. Some (12%) intend neither to stay in Poland nor to return to their homeland. Most of these prefer such destinations as Germany (26%), the US (16%), Great Britain (11%), and Sweden (10%). This may be due both to the opening of these countries to war refugees — previous legislation did not allow free access to the labour markets of any of these countries — and to their social policies. Nevertheless, most refugees (56%) intend to return to Ukraine immediately after the end of hostilities (Uchodźcy z Ukrainy w Polsce, 2022).

Refugee behaviour will be determined chiefly by the duration of the war, the scale of the destruction, the host country’s capacity to assimilate refugees, the Ukrainian government’s economic policy, and the availability of international assistance for its implementation.

According to pre-war estimates, after a few years a quarter to half of migrants felt as comfortable in their host countries as in Ukraine and gradually moved towards permanent immigration status. With further destruction and risks, the share of such migrants may increase, and it will then be possible to reduce demographic pressure in EU countries by filling certain segments of the labour market.

Martial law has since 24 February 2022, and with few exceptions, prohibited male citizens aged 18 to 60 from leaving Ukraine. The vast majority of refugees (94%) are therefore women. Previous research into the gender structure of migrants from Ukraine shows a fundamental difference. Until now most Ukrainian migrants have been men, but the war has suddenly and decisively reversed the trend. However, the age structure has not changed much. The most mobile group is still people aged 26 to 45. This may result from the courage necessary to seek safety outside one’s own country. On the other hand, it may relate to the need to protect children from the threat of Russian troops. Almost two-thirds of refugees from Ukraine (63%) have come to Poland with children under 18. Much of the uncertainty refugees face has to do with family separations, as most husbands must remain in Ukraine. The better the women and children can integrate abroad, the more likely the fathers will be to join them after the war. Another source of uncertainty, however, is the degree of destruction of Ukrainian cities.

Among the disadvantages of this migration for the EU labour market is precisely this gender imbalance among the refugees. The predominance of women with children does not serve such
sectors as construction, which typically requires male employment. Some of the newcomers (women with small children, the elderly, the disabled) will need significant social support. In addition, a significant percentage of the migrants will never have been abroad before (or been only to Russia or Belarus) and thus will integrate slowly or not at all into the new social structures.

According to experts, there is a high probability that young ambitious people will integrate well, study in the EU or abroad, or be as employable as the local population, with high qualifications, language fluency, and more. A survey conducted in Poland in April 2022 showed that most refugees (63%) want to take advantage of special employment programs introduced by the Polish government. It is worth mentioning that almost two-thirds of refugees have higher education and work in fields (education, medicine, industrial production, construction, and IT, among others) where professionals are in short supply in Poland. There is also no shortage of service and trade workers (Uchodźcy z Ukrainy w Polsce, 2022).

The number of refugees, both new and present in host countries since the start of the war, may later be adjusted by the Ukrainian government. Of particular importance are social-support programs, rapid reconstruction, the provision of temporary and permanent housing, business support in relatively safe and unaffected regions, labour-market regulation, access to quality education, and so forth. Drafts of such programs are already in preparation, but of their success only time will tell.

Most refugees from Ukraine (as many as 63%) intend to take up gainful employment during their stay in Poland. Only one-fifth of respondents (20%) declare they will be living on their own financial means. However, refugees’ poor knowledge of Polish, their gender, and their need to care for minors may hinder them on the Polish labour market — especially as almost 70% of refugees wish to live in cities with more than 200,000 inhabitants. Big cities can provide easy access to social infrastructure but not necessarily to jobs or flats (Uchodźcy z Ukrainy w Polsce, 2022).

Accordingly, surveys conducted in March-April 2022 reveal high motivation to return to Ukraine from abroad, low motivation to leave Ukraine among those who remain, and a significant willingness to help rebuild the country. Surveys also reveal the problem of insufficient savings and unemployment. Against this background, there are patterns of indeterminate behaviour and situational decision-making with respect to migration and host countries. With a severe or prolonged war, the migration wave will increase, despite low expectations during the initial stages of the war (Uchodźcy z Ukrainy w Polsce, 2022).

It is important to remember that the war in Ukraine involves more than a change in the scale and structure of population flows. A number of other sectors will also be affected by the current situation — in the first place, future flows of goods, because of the closure of Ukraine’s ports on the Black Sea. Transport through Baltic ports in countries west of Ukraine may become more important, and require infrastructure investments to improve accessibility and capacity. (For example, there will need to be a rail link between Hrebenne, Poland, and Rawa Ruska, Ukraine.) Currently there are particularly big problems in the agri-food market. Participants in our workshop in Lublin also emphasised disturbances in local labour markets if certain Ukrainian companies decide to relocate to Poland.

5.6 Resilience

All five scenarios are going to be important to all regions, and they will have different effects depending on a region’s location, economy, etc. There’s a difference in what will and what
should influence a region. The scenarios overlap, and it was difficult for participants to rank them by importance. The following, then, are the most important observations that affect the resilience of regions and can to some extent be shaped by regional policymakers:

- The crucial element is to have high exports in relative terms with diversified goods and interactions with many regions in the EU (dispersed pattern).
- The competencies to address most of the potential impacts and exploit the opportunities that may arise exist at the EU level rather than in Member States or regions, so regions should be active in lobbying, dissemination, and promotion.
- A potential way forward to improve regional potential and resilience is to foster Euro-regions and bilateral cooperation/networks.
- Another key observation is the discussion’s focus on combining spatial planning and socio-economic development policies.
- Resilience can also manifest in the recognition of regional diversity and better use of local assets.
- Resilience also means adapting to and accepting change: institutional structures must be sensitive to changing legislation and pan-European shocks.
- Resilience is improved also by an active attitude toward shaping the future: rather than passive waiting, a participatory approach to creating documents at different hierarchical levels, so that legislation takes into account the specificities and needs of individual regions as much as possible.
- It is also important to plan and concentrate on a few key but diversified efforts to make the most of a region’s potential and external conditions.
- Policy should shape flows, not the other way around.
- Support should be increased for regional R&D and universities, to strengthen competitiveness and innovation.
- Finally, the current shift in policy increasingly requires evidence-based decisions and stakeholder involvement in data-driven thinking.
6 Policy implications

It is worth pointing out that each of the scenarios we have analysed had appropriate legislative instruments prepared by the relevant institutions. They also included assumptions related to policy objectives and key stakeholders who may be involved in the implementation of particular scenarios.

EU, national, and regional authorities must ponder the potential impacts of Brexit to design and implement counterbalancing policies. Because analyses of Brexit’s impacts depend upon a range of assumptions, and because Brexit has no precedent, it is difficult to find a single “right” answer. The only certain thing is that the mere reproduction of policies in different contexts — the “one-size-fits-all” approach — is not going to produce the anticipated results. Instead of designing and implementing isomorphic policies, we must put place-based policies, policies that take geographical context into consideration, at the forefront of intervention. We hope the results of the ESPON IRiE project will serve as a catalyst to this end.

The Covid-19 pandemic has generated demand for the protection of Member States and the stimulation of national economies. The EU had intended to establish a budget to develop Europe between 2021 and 2027. In its statement from April 2020, the CoR Conference of Presidents called for a recovery plan for the European Union in line with the European Green Deal and digital transition agenda. In May 2020, the European Commission published a proposal for a Council Regulation establishing a EU Recovery Instrument (COM(2020) 441 final/2), also referred to as ‘Next Generation EU’ (Böhme et al., 2020; European Commission, 2021). The package consists of a long-term budget and the multiannual financial framework for 2021-2027, made up of €1.211 trillion in current prices (€1.074 trillion in 2018 prices), combined with a temporary recovery instrument, NextGenerationEU (NGEU), worth €806.9 billion (€750 billion in 2018 prices). The funds under the Recovery and Resilience Facility will be distributed in accordance with the national recovery and resilience plans prepared by each Member State, in cooperation with the European Commission, and in line with an agreed allocation key.

If we keep the New Globalization scenario in mind, it seems prudent for the EU and each national and regional authority to ponder the potential effects of such protectionist measures, evaluating the risk a given economy embraces when engaging in the global economy, conducting a specific industrial policy, promoting certain sectoral specialization, or concentrating efforts on a certain geographic location. Globalization entails great opportunities for growth and welfare, but risks as well. Since all regions in the EU will be affected by tariffs directed at the main European value chains (automotive, chemicals, food, pharmaceuticals), it seems reasonable to have “contingency plans”. Sectoral and geographical diversification requires time and smart specialization strategies. As Covid-19 and Brexit have taught us, unprecedented and radical shifts are not only possible but will disrupt our current relations and limit our capacity to survive in isolation, precisely because of our great dependence on international resources.

All EU actions and policies will have to contribute to the European Green Deal’s objectives. The challenges are complex and interlinked. The policy response must be bold and comprehensive and seek to maximise benefits for health, quality of life, resilience, and competitiveness. It will require intense coordination to exploit the available synergies across all policy areas. The European Green Deal is an integral part of the Commission’s strategy to implement the United Nations’ 2030 Agenda and sustainable development goals. To deliver the European Green Deal, there is a need to rethink policies for the supply of clean energy for the economy, industry, production and consumption, large-scale infrastructure, transport, food and agriculture, construction, taxation, and social benefits. To achieve these aims, it is essential to prioritize the protec-
tion and restoration of natural ecosystems, the sustainable use of resources, and the improvement of human health. This is where transformational change is most needed and potentially most beneficial for the EU’s economy, society, and natural environment. The EU should also promote and invest in the necessary digital transformation and tools, as these are essential to the changes. To achieve the ambition set by the European Green Deal, there are significant investment needs. The Commission has estimated that achieving the current 2030 climate and energy targets will require €260 billion in additional annual investment, about 1.5% of 2018 GDP28. This flow of investment will need to be sustained over time. The magnitude of the investment challenge requires mobilising both the public and the private sectors.

As for existing regional policies, the four cases illustrated the various ways in which regions respond to the scenarios at the policy and strategic levels but also lack policy frameworks.

Firstly, in the workshop for Eastern and Midland (Ireland), participants highlighted that local communities have been mobilised to address challenges (e.g. Brexit) but pointed out also that there remains a disconnection between national and regional responses. There is also inconsistency in spatial and government hierarchies. Despite local innovations, Ireland remains very centralised and innovation does not emerge equally everywhere.

The EU Cohesion policy has made digitalisation one of its core pillars, and Covid-19 has already effected a fairly quantum shift in patterns of mobility and digital working. It has given policymakers an idea of what is possible with virtual working. A different understanding will emerge of the indicators for ongoing interregional cohesion and transnational connectivity, of interregional interaction, and of the composition of flows, which consist of more than physical movement, physical connectivity, and infrastructure.

Within the European Green Deal, Ireland has implemented national policies, while at the EU level the Just Transition mechanisms have not yet been put into place. Ireland has struggled to transition to green energy. Although the E&M region has been appointing the managing authority for Just Transition mechanisms in Ireland, the program isn’t yet finalised, the money has not yet arrived, and the policies have not yet been implemented. Difficulties with the European Green Deal are also caused by organization: local actions are not coordinated by local authorities, but driven by the department of agricultural advising agency, by various farming collectives, and so forth. Some evidence for the transition of farming to more environmentally friendly practices does exist, but there is room for policy to implement the EGD in a pretty major way. Policy might help citizens seize an opportunity to shift their energy supply completely. Moreover, the Irish potential in renewables (the most powerful source of wind energy in the world, after Seattle) might help Ireland become an energy-producing country for Europe and farther regions. Policy decisions made now might completely rewrite not only the next 25-30 years but even the next 100 years of Irish economic history. Multilevel governance for implementation of the Green Deal is an urgent necessity in Ireland. Regional Assemblies are a key asset, but individual local authorities need to take on a leadership and implementation role for their own areas. This will be required in new climate legislation but will be a major cultural shock to some local government structures.

In the workshop of the Comunidad Foral de Navarra (Spain), participants stressed that in the New Globalization scenario especially (interlinked with Brexit, the Ukrainian war), the competencies to address most of the potential impacts and exploit the opportunities that may arise exist at the EU rather than the Member State or regional level. In other words, regions such as Navarra are highly dependent on the decisions of others. For example, Spanish regions are exposed to decisions made by the European Central Bank on inflation and public debt.
Energy has posed a structural challenge for decades but has become an urgent problem with the Ukrainian war. This is highly relevant for industrial regions, as energy costs are a competitive factor of the first order, for both production and distribution. This is why the lack of a raw-materials strategy at the EU level might harm industries and the Just Transition in the near future as well as might affect post Covid-19 recovery opportunities. The EU must act decisively to improve its regulation of the distribution and energy sectors; this must form part of its strategy to deal with New Globalisation effects. The approval process of the Next Generation EU funds may set an example for the speed required, although implementation and evaluation might require a more flexible approach. In distribution, there is a huge gap between prices obtained by agri-food producers and prices applied to consumers. As for energy, Navarra might use its potential to develop the biomass industry and reduce energy dependency, combining this with its already highly developed renewable energies industry (mostly wind) and the potential development of new solar capabilities. Reshoring and shortened global value chains are among the New Globalisation trends that might affect Navarra. A clear challenge exists here, as well as an opportunity linked to the agri-food industry and mostly to the creation of R&D centres rather than increasing our production capabilities.

In Zuid-Holland (Netherlands) participants found that spatial policymaking in the Netherlands has been successful in terms of “old globalization”, where economic benefits have come from quantitative growth (agglomeration = prosperity). The question was, how far it is possible to adapt quantitative growth into qualitative growth (R&D, etc.)? National policy in the Netherlands has so far focused on providing infrastructure, but at the regional level there is a need to identify activities that should be attracted. Indeed, in New Globalization, the question of regional requirements for survival — which areas and infrastructure should be reserved for functions that will be important tomorrow? — relates to spatial policy. From a policy perspective, combining such functions is key.

The European Green Deal and New Globalization scenarios are much interrelated and present the most policy opportunities, whereas Brexit and Covid-19 are from a policy perspective mostly related to the attractiveness of living and working environments. One of the main policy areas underpinning New Globalization and EGD is spatial planning.

Effective policy planning is needed to link choices to agglomeration ideas. There is an implicit idea in current spatial policymaking that large cities benefit the most from globalization (agglomeration effects vehiculated by ‘old’ globalization principles). However, under the New Globalization scenario, regions become the critical layer. It’s a completely different way of thinking. The SH province needs effective policymaking to preserve existing areas — such as industrial areas useful for the transition to a circular economy, even if they are not the most profitable. However, current discussions about land-use change are too narrowed by function. To make this shift happen, the province has been trying to cooperate with other regions of the Eurodelta on challenges such as energy materials and feedstock. It also acknowledges that, in the past, the departure of any industry was seen as an opportunity to develop housing. Conversely, land scarcity today makes it necessary to balance programmatic choices and combine functions through mixed-use developments that allow remaining industries to endure and tackle housing shortages through the development of attractive living environments.

A key challenge for the future is the integration of policy and the interconnexions between scenarios. For example, sustainable goals may imply that more space is left for rivers, which would impact the port and its ecosystem of companies. More broadly, choices must be made regarding the kind of growth SH wants. For instance, how to enhance qualitative material growth as well as quantitative growth in knowledge flows, jobs, and FDI? FDI is no longer the only key indicator of success from the perspective of New Globalization, as other sectors (e.g. ‘green’
products) become more valued in trading centres. Hence, trade restrictions may help accelerate the transition to circular economic chains (which top the political agenda in SH) and to alternative investments (e.g. in hydrogen technology).

Finally, in the case of Śląskie (Poland), participants found that there is a disconnection between regional and national policies, especially with respect to the green economy. This is because energy (as well as science) falls under sectoral policy, which itself falls under the domain of the state, and over which regional policy has very limited influence. Sectors under the green economy, meanwhile, are funded by regions. Participants also stressed the need to adjust regional policies to increase regional resilience. This requires a more strategic vision in policymaking, a shift towards small policies and strategies to big actions. It also requires long-term strategic direction from a higher level (e.g., spatial planning, transport policy, energy policy, and regional promotion), the better to interlink the policies.

The basic direction for systemic change in the region has been set by the European Green Deal, and the region must follow this path. A green taxonomy has been adopted, thematic concentrations have been imposed, negotiations are advanced, and all the logistics have been prepared. It is possible that, because of the war in Ukraine and the embargo on Russia, the region’s stakeholders’ will more readily accept the proposed softer and longer shift away from coal-based energy. However, this will not change the fundamental trend. Energy security will take on a different dimension but leave the trend intact.

In the stakeholders’ opinion, now is the moment that the region should lay emphasis on development. Regional and local authorities should not disperse funds as they have done so far, but concentrate on three or four objectives. The dispersion of funds into many different scenarios will keep the region absent from the European map of flows in all dimensions. In Western Europe, the issue of concentration is crucial, and it is necessary to create structures that reflect this economic reality. We need to bet on growth vectors that will increase the region’s resilience. Hybridity, the accumulation of many processes, a little bit of everything, is a mixture that works for some regions. Silesia, however, has begun many processes with unclear scenarios for completion. This is the moment to put an end to small policies, small strategies, and small actions.

The quantitative analysis within the scenarios illustrates only a selection of narrower issues. When combined with the opinions expressed in the workshops, however, it can be helpful in formulating territorial and sectoral policy options. It is a very good illustration of the spread of external shocks in the system of European flows. It also enables very precise identification of territorial units threatened by particular events or policy decisions.

The studies carried out in the framework of T1 and T2 prove that European regions are strongly interconnected by economic, social, and knowledge flows. The overall volume of most flows is increasing. At the same time, the dynamics of change differ in different parts of Europe, and in different types of regions. The vulnerability of regions to external shocks is also very different. Metropolitan regions have proven to be more resilient to certain types of external shocks. At the same time, resilience to particular shocks depends on an economy’s structural features and is sometimes a complex spatial mosaic.

We are dealing with an open system shaped by slow socio-economic changes, economic cycles, and unforeseen events, as well as large-scale changes in policy or cooperation rules. The testing of scenarios is crucial to illustrate selected external shocks to the system of linkages and to assess their future dynamics. An increase in the intensity of flows implies a steady increase in the interdependence of regions. Therefore, no projection (demographic or economic) or development policy can concern only an individual region or even a Member State. It must be open geographically (to the entire European space, including the space outside the EU), sec-
torally, and thematically (external shocks, including further ‘black swans’). Research has found that geographically very distant regions can sometimes remain strongly dependent on specific core areas (e.g. the UK). They are not perceived to be threatened by anticipated changes in the freedom of movement (e.g. Brexit). However, their low degree of partner diversification results in unexpectedly high degrees of exposure. Knowledge and monitoring of this relationship then becomes a key element to effective regional policy.

The impact of external shocks on flows and on the situation of regions may be direct (e.g. reduction in goods flows in a specific sector) or indirect (through the reduction of input-output linkages). In some cases there is a clear spillover effect. Also of some importance is the preparation of regions for change, which is influenced by the quality of regional and local institutions. Large economic programmes implemented on the European level (such as the green deal) should take greater account of the interaction of regions, including the potential for spillover effects. Regions that may be negatively affected by policies should be objectively identified (through flow analysis). Their number may be limited, which may reduce the cost of possible support.

The study confirms that different factors, different levels of policies, and specific stakeholders determine the level of exposure to shocks as well as the ways to counteract them. The influence of the European Union is indirect and reflected, inter alia, in cohesion policy, which potentially increases the resilience of regions. The size of regions has proven to be important, as well as the scope of competencies located at different levels of territorial governance.

It seems advisable to link the objectives of cohesion policy more closely to the results of analyses of flows in Europe. A low, quantified level of participation in the space of flows could serve as an indicator of the need and level of support. Intervention (at the European or Member State level) could be understood as alternatively subject to:

- the region (understood as a node of flows);
- a relationship between certain regions (two or more).

In the latter case, public support could aim at better handling of the flows (transport investment and logistics), generating new relations, and acting to deconcentrate the flows (environmental objectives, mitigation of climate change). Such an approach would provide a better basis on which to evaluate the many linear investments made under cohesion policy.

Our analysis of the impact of external shocks provides a reason to broaden the scope of long-postulated analyses of the Territorial Impact Assessment (TIA) type. Such analyses should cover the impact of certain decisions not only for a given region but also for neighbouring regions and cooperating but distant regions. We propose a document with the working title “Flows-Oriented TIA”.

Separately, the challenges faced by policymakers in different sectors and spatial scopes in light of the war in Ukraine should also be reported. One-third of refugees from Ukraine declare that they will be staying in Poland, so their inflow may provide long-term support to the Polish labour market (and probably to the markets of Central-Eastern Europe as well). Reversed gender migration creates both a shortage of able-bodied men and a surplus of women persistently looking for work. It is therefore necessary and urgent to adjust workplaces to the new gender structure. After shelter, what women fleeing war need most, if they are to regain stability and security, are jobs and a sense of independence.

Unlike migrants who were working in Poland in 2021, few war refugees speak Polish. Only 9% declare having good or very good knowledge of the language (as compared to 45% of economic migrants surveyed in December 2021). Moreover, as many as four-fifths of refugees have not
worked in Poland before. This only makes it more difficult for them to find a job to match their skills. Many refugees will be forced to work below their level of competence until they learn Polish. Language courses may prove crucial for refugees’ quick integration into Poland and its labour market (Uchodźcy z Ukrainy w Polsce, 2022).

Local and national authorities realise that humanitarian cooperation is currently the most important issue. However, the implementation of joint projects under the cohesion policy and various cross-border activities will have to be postponed until after the war. It is very important to pursue a policy looking at the general interest. This will entail developing national and European programs to benefit both Ukraine and the regions of the European Union. A good example is the mechanisms that were present on the Polish-German border two decades ago. Such instruments, whether national or European, must be carefully prepared and adjusted, perhaps on the basis of flow analysis and additional research. The question of what regional policy in Ukraine will look like after the war is not without significance. It is certain that the existing solutions will have to be changed, because of the destruction of infrastructure, the change in economic potential, the displacement in population, and the expected modification of geopolitical orientations. What will redefine future relations and shape the flows of goods, people, and capital is not just EU policy but also Ukraine’s own new doctrines of socio-economic and spatial development.
7 Conclusions

The quantitative and qualitative research carried out within the framework of Task 3 of the IRiE project provides only a fragmentary picture of the response of the European space of flows to external shocks. They cannot be treated as a full multidimensional picture. Nevertheless, they have enabled us to "open several windows" onto regularities in the territorial distribution of the effects of selected scenarios. These "windows" are thematic (selection of scenarios), sectoral (quantitative analysis), territorial (selection of case studies), and institutional-expert (selection of stakeholders participating in qualitative research). This approach fulfilled its purpose, providing, in line with the ESPON IRiE project, complementary information on possible changes in the pattern of flows. It also provided a basis for formulating policy options at different levels of territorial organisation. The study confirmed that the scenarios are only "photographs" of certain fragments of the projected reality. Moreover, the quantitative simulations carried out cannot be taken as a measure of the absolute impact of the different scenarios on the regions. However, they are very valuable as an indicator of the impact's territorial differentiation. They indirectly prove the role of flows as the basic determinant of this differentiation. The future pattern of flows will therefore be the product of a number of changes, only some of which were included in the analysis. In the context of territorial policies, these changes must be considered together. Already in the course of the study, another shock related to the Russian aggression against Ukraine has become apparent. In the following months or years, it may determine the dynamics of the pattern of flows. However, this does not mean that other factors will lose their importance.

Our study has shown that the impact of shocks associated with the realisation of individual scenarios is strongly differentiated by territory. This depends both on the economic structure of individual units and on their position in the flows system. The nature of the external shock determines the scale of its impact on individual regions. In the case of events such as the economic crisis caused by the Covid-19 pandemic, as well as Brexit, the impact is visible in all regions of the ESPON space. However, the differences in its magnitude are significant. Shocks related to the green deal and tariffs (New Globalisation) are also widespread. Nevertheless, when we look at individual sectors (as the project testing allowed) shocks are visible only in a limited group of units, while the scale of their impact in other regions is more even. This demonstrates that even if the overall impact is pan-European, the 'channel' by which it reaches individual regions may be different in each case. This relates directly to a region's position in the pattern of interregional and cross-sectoral linkages. This leads to the more general conclusion that an effective response to external threats should be different in individual units as well. The quantitative analysis also confirms that a region's vulnerability to economic shocks is also determined by its sectoral specialisation, its inclusion in the group of 'cohesion countries', and the duration of its country's EU membership. As shown, Brexit seems to influence higher-productivity goods more negatively than it does lower-productivity goods. On the other hand, regions from Central-Eastern Europe seem to be less resilient to Brexit because of the negative change in their goods exports or the weak increase in services.

A comparison of the results of the scenario analysis with those of T2 indicates that factors determining the exposure of regions to external shocks may also include geographical and sectoral concentration and, in some circumstances, geographical distance from the source of the shock. However, the impact of both factors is not unambiguous. The example of the Brexit shock shows that entities located in the vicinity of the UK (Ireland, but also the Netherlands) are at once more at risk (the UK is their key partner, generating a large proportion of flows) and better able to prepare for the expected changes in the pattern of linkages. As a result, the shock
may paradoxically turn out to be positive or at least neutral for them. For example, in the case of Brexit, relations with the UK, already outside the EU, may become an economic stimulant. On the other hand, some regions distant from the UK show surprisingly high economic sensitivity to Brexit (weakening of trade). This applies to entities from Central and Eastern Europe. In their case, the UK’s departure from the community may prove to be more problematic, as they have a lower diversity of economic partners and their institutions have not prepared for the changes. At the same time, the study confirmed that even in the case of shocks strongly related to individual sectors — New Globalisation, Green Deal (mining) — some impact is visible even in remote regions of the ESPON space. This confirms the existence of a multidimensional pattern of relationships between regions in Europe, where distance is only one of many explanatory factors.

The qualitative study indicated that the impact of some scenarios on the position of regions and the pattern of flows may turn out to be greater than the quantitative studies show. This is particularly true for the impact of the Green Deal, which is a programme that touches upon many areas of economic and social life. Its importance was stressed by stakeholders in virtually all regions surveyed. The impact on the agricultural and transport sectors, among others, was pointed out. Stakeholders expect a kind of green protectionism to emerge across the European Union. In some regions, attempts are already being made to monitor and manage external flows (South Holland). Their aim is to promote shorter supply chains in accordance with circular-economy principles. In this context, shortening the distance of economic relations (especially trade relations) has two overlapping dimensions: European and regional. The European dimension results from the experience of the Covid-19 pandemic (shortage of components), while the regional dimension is the fulfilment of the objectives of the Green Deal, also in terms of reducing the transport intensity of the economy.

The quantitatively tested external shocks partly confirmed the earlier synthetic assessments of regional resilience. However, there were noticeable differences resulting from the flow approach. A statistical relationship was found between the magnitude of the RERI defined earlier and the indicators used in the quantitative part of the scenario analysis. It was shown that the most negative effects of the pandemic have occurred in regions with lower resilience, while the least negative VA effects are associated with regions with the highest RERI. Similarly, the most negative effects of protectionism (new tariffs) hit regions with lower resilience, while the least negative VA effects are associated with regions with the highest RERI. In the case of the Green Deal and the impact of the termination of coal and lignite mining, such a relationship is not apparent, because of the limited number of units affected. These units, located in Central and Eastern European countries, were characterised by very different levels of RERI. In the case of Brexit, moreover, the strength of the relationship is relatively weak. This may be because centres with high resilience did not also have the strongest trade relations with the UK. This leads to the conclusion that resilience to traditional economic crises (such as the 2008 crisis) does not translate into resilience to a drastic change in economic policy (such as the European Green Deal) or to rapid changes in trade rules (such as Brexit).

The long-term impact of the Covid-19 pandemic cannot yet be assessed. Quantitatively, it is possible to analyse the distribution of negative effects in terms of added value and employment and the distribution of positive effects in terms of the NGEU Fund instrument used. Tools used at European Union level do not always have a sufficient territorial dimension. The same applies to the NGEU fund, which is distributed to individual member states, with countries in the eastern and southern parts of the community receiving the most. The results of the input-output analysis do not indicate in this case a strong spillover effect and thus an equal impact on the whole community. The comparison of the negative shock associated with the pandemic crisis and the
positive one in the form of stimulation of the economy by the NGEU indicates that the regions of Central-Eastern European countries are the ones that seem to enjoy the clearest positive effects when we aggregate the two shocks, while the results obtained for the regions in the southern countries more damaged by the pandemic (Spain, Italy, France) is less evident. This leads to the conclusion that **instruments designed to stimulate the whole community economically should be more carefully territorialised**, to account for the pattern of flows between regions.

A **spillover effect** is instead evident when we simulate an increase in tariffs on the products tested. A new tariff in a big market can generate important effects in regions highly dependent on the sector, and provoke negative spillovers into the rest of the EU economy. The spatial picture of this spread then relates to specific sectors of the economy, while multifunctional units — often metropolitan areas, including the capitals of Southern and Central and Eastern Europe — prove more resistant to negative changes. More territorially selective is the impact of changes in specific traditional sectors of the economy. An example is the simulated closing down of coal and lignite mining in the European Green Deal. Its negative impact on VA and employment in several regions of Central and Eastern Europe is very strong, but does not translate into losses in most other units in Europe. Moreover, investments in other energy branches offset losses within individual Member States (other regions experience growth — e.g. as a result of renewable energy development). This result argues in favour of the idea that countries that endured the most CO₂ emissions of neighbouring “coal & lignite” use will potentially also benefit from their substitution. At the same time, the limited number of regions strongly affected by the decarbonisation of Europe’s energy sector may argue for a **greater concentration of resources spent under the Just Transition Fund (JTF)**.

Qualitative studies have shown that the shocks analysed might change the **internal structure of regional economies**. The governance level of regions is also important in terms of their ability to create their own policies on economic and social flows (migration). This is particularly visible in the case of self-governed regions (such as Navarra). For this reason, among others, the distribution of flows should be considered in the context of territorial inequalities and the cohesion policy aimed at reducing them. It should be stressed that in the stakeholders’ view these phenomena are strongly linked. An unregulated and unmonitored system of flows can lead to an increase in inequalities by, among other things, multiplying the number of intermediaries. These intermediaries play a modifying role, **causing positive or negative effects of change to become spatially detached from their underlying causes**. There is very little monitoring and control of such dependency chains at the EU level.

Stakeholders assessed the importance of individual scenarios differently (in relation to the original project assumptions) as modifiers of the future flow regime and thus of the position of regions within the regime. The most important of these were changes related to the Green Deal and the New Globalisation, in which they perceived both Brexit and the current war in Ukraine. Stakeholders in several regions stressed the importance of changes related to climate policy as a rationale for a new deal. They pointed out that the European Green Deal supports the development of the **circular economy**. In that view, reducing and re-localising flows should be seen as positive for the local economy. Some regions like South Holland have introduced documents (Regional Growth Agenda) to encourage the re-localisation of value chains through a search for opportunities in neighbouring regions.

Quantitative research has also revealed the special position of **EFTA** (non-EU) countries. Their position in the economy of flows is important despite their being formally outside integration processes. This leads to the reflection that the networking of economic and social life in Europe
takes place in part independently of formal integration. EFTA countries (especially Switzerland and Norway) are also relative beneficiaries of Brexit.

The war in Ukraine will in all likelihood have an unprecedented impact on the EU’s economy and society, but these have a considerable spatial differentiation. The origins of this conflict in recent history go back to the early 1990s, and the problems have grown significantly over the past 30 years. The main reason for the aggression is Russia's desire to maintain its influence over Eastern Europe and the former Soviet Union bloc. Estimates of the war’s duration and degree of escalation vary significantly with assessments of the Ukrainian and Russian armies’ capacity, assessments of the likelihood of nuclear- and chemical-weapons use, the behaviour of political elites, and the West's energy dependence on Russia.

EU countries have received a first wave of Ukrainian refugees from the start of the war, with its mass shelling of large cities and occupation of certain territories. Russian withdrawals from certain regions and the shift of hostilities to the east and south of the country have led to an increase in the return flow of migrants to Ukraine and a significant reduction in the dynamics of entry, some of it on economic grounds.

Studies of selected scenarios have confirmed the importance of learning about the vulnerability to external shocks of both individual regions and the entire European system. We have shown the importance of strong interregional ties as well as their impact on the economic and, in part, social situation of territorial units. However, the scale of the ESPON IRiE project did not allow for a comprehensive understanding of the vulnerability of all regions to various external influences. The problem certainly requires further research. This can be done in two ways:

(a) Detailed monitoring of the flows matrix across Europe. In the longer term, the assessment of the dynamics of changes in the pattern of linkages could be related to political and economic events occurring during the period under study. A prerequisite for this is the coordination of data collection on flows at the level of national statistical institutions and Eurostat

(b) Continuation of quantitative and qualitative studies on a sample basis, but covering a larger number of cases, representing (also quantitatively) different types of flows. Such studies can be undertaken immediately as a continuation of the work done within the ESPON IRiE.

Both of these approaches also require an extension of the quantitative analysis to units (countries or, preferably, regions) located outside ESPON space. We know that most shocks are global and come to Europe from specific directions. Some of the best evidence is the current geopolitical crisis caused by the Russian military aggression against Ukraine.

Our research has confirmed that the analyses particularly relevant to the vulnerability of regions to external shocks are now:

- Of regional dependence on countries outside ESPON space, especially in Eastern Europe (vulnerability to war in this part of the continent).
- Of the consequences of shortening supply chains to achieve a circular economy, and of the readiness of local economies for such stimulation by European and national policies.
8 References

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https://www.wto.org/english/news_e/pres20_e/pr855_e.htm
### Appendix 1 – List of workshops’ participants

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<tr>
<th>Workshop</th>
<th>Name</th>
<th>Institution</th>
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<td>European workshop</td>
<td>Nicolas Rossignol</td>
<td>ESPON</td>
<td>Head of Territorial Evidence Unit at ESPON EGTC</td>
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<td>Marie-Lorraine Danjeard</td>
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<td></td>
<td>Marta Zabost</td>
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<td>European workshop 25th of May 2021</td>
<td>Jorge Vega</td>
<td>National Stakeholder; Spain</td>
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<td>(on-line)</td>
<td>Immaculada González</td>
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<td>Piotr Żuber</td>
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<td>Miren Ausín</td>
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<td>Malachy Bradley</td>
<td>Eastern and Midland Regional Assembly</td>
<td>Regional Stakeholder; Eastern and Midland Region, Ireland</td>
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<td>Artur Ochojski</td>
<td>University of Economics in Katowice</td>
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<td>Liana Papaterpou</td>
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<td>Rodrigo Cardoso</td>
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<td>February 2022 (on-line)</td>
<td>Marcin Dąbrowski</td>
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<td>Juha Halme</td>
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<td>Michael Darcy</td>
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<td>Karen Keaveney</td>
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<td>Caroline Creamer</td>
<td>National Institute for Regional and Spatial Analysis (NIRSA) at Maynooth University, ESPON Contact Point in Ireland</td>
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<td>Joan Martin</td>
<td>Chief Executive, Louth County</td>
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<td>Caitriona Mullan</td>
<td>Consultant - with cross-border spatial development expertise</td>
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<td>Mike Brennan</td>
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<td>Xabier Velasco Echeverría (ESPON IRiE; NASUVINSA), Sheila Izquieta Rojano (ESPON IRiE; NASUVINSA), Carlos Llano (ESPON IRiE; CEPREDE), Nicolas Rossignol (ESPON), Izaskun Abril (Government of Navarra), Peio Pellejero (Government of Navarra), Patricia Ruiz (Government of Navarra), Iñaki Arrizabalaga (Government of Navarra), Garbiñe Basterra (Government of Navarra), Pablo Muñoz (Government of Navarra), Luis Goñi (SODENA), Juan Carlos Longás (Public University Of Navarre)</td>
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<td>Elwira Lorenz</td>
<td>Marshall Office of the Lubelskie Voivodeship</td>
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<td>Magdalena Ziekińska</td>
<td>Marshall Office of the Lubelskie Voivodeship</td>
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<td>Marzena Nawrocka</td>
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<td>Katarzyna Kędzierska</td>
<td>Marshall Office of the Lubelskie Voivodeship</td>
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Appendix 2 – Feedback on the relevance of the project

- According to the majority of participants, results of the project are expected, not surprising and support their own perspective.

- The project is relevant to the regional economic board to assist in their future investments, because they need to know existing connections in specific sectors before making investment decisions.

- The economic board would be interested to use the project data as a tool for dialogue with the national government and other stakeholders. The data will certainly be valuable for regional strategy setting.

- Having more information on the dependency to different sources of flows is also important for discussions during the policy-making process. Results of the project can be significant for regional stakeholders in the matter of being a kind of “a wake-up call” as they underline the position of the region in the European system of connections and expose its weaknesses.

- The online tools are found particularly attractive and valuable, because they can be used as a catalyst for knowledge and verification of certain aspects of local development strategies and policies. It means that the project results can be an effective tool in the evaluation of previous activities (i.e. policies, strategies, interregional collaborations, etc.).

- Knowledge about flows structure and using the project data together with the results of other ESPON projects (e.g., STICE – interregional mobility flows) is also important to determine which regions are the most essential to collaborate with.
  - Municipalities find the data useful, especially on FDI and goods’ flows, to help decision-making on future acquisitions and the kind of investments they want to attract from specific regions.

- Region’s vulnerability can be determined by which flows the region is dependent on at the moment and this can be extracted from the results of the ESPON IRiE project. Therefore, data was found useful for examining regional resilience.
  - Municipalities are especially interested in learning more about what can foster the resilience of the region, which is a top priority for policy making at the municipal level.

- The rest of the world outside of the ESPON space is very much missing, which does not allow to paint a complete picture of the exact situation with flows; often flows from the rest of the world determine the NUTS position.

- More specific information should be provided by sector (e.g., life sciences, robotics) and from a longitudinal perspective (which flows increase/decrease over time). Although it is valuable that the data are collected for a period of 9 years, which allows to follow the dynamics of the processes.

- Participants in different regions expressed their worries that data used in the project do not capture years after 2018. It was noticed that data from 2018 and before is heavily historical as so much has changed, mainly due to the pandemic (graphs and maps
“show the world that no longer exists, because the pandemic has caused this system of connections to collapse”).

- Business representatives of the Eastern and Midlands Region (Rep. of Ireland) pinpointed that region’s economic and, subsequently, policy focus is on the Foreign Direct Investment (FDI) and Data Processing Area and its influence on GDP, which was not captured in the project results. Therefore, the project results might not fit into the policy debate, particularly in the wider economic development area which seeks to capture one of the key drivers for the growth.
  - Also in the context of Silesia (Poland) and European Green Deal, it was emphasised, that the economic part of flows, above all of energy flows, did not resonate enough in the project results.

- In terms of policy making, the ESPON IRiE data will help local stakeholders – including the economic board – objectify flows and consider them explicitly and quantitatively in policy. Data-driven policy-making has received increasing attention but it requires good data and much analysis from policy-makers, making it difficult to move towards evidence-based choices. Moving from figures to evidence is a very difficult task. Estimates and forecasts can support a decision, but the question remains whether a projection is right or whether something should be done about it. Also, policy-makers and researchers speak different languages, which makes it sometimes difficult to turn research outcomes into policy recommendations. Policy-makers indeed have to take risks and make ‘uneducated guesses’.

- Regarding the role of the European Commission, the latter should collect local planning decisions – which are of the competence of the Member States and their territorial administrations – to reinforce global-local relationships. This is also essential because the local planning level is where the impacts of the scenarios are the most visible. The results of the IRiE project should also be used to draw more evident links between space and networks and explore them to determine future policies, in particular spatial planning policies.