



Inspire Policy Making with Territorial Evidence

ESPON TARGETED ANALYSIS //

TEVI 2050

Territorial Scenarios for the Danube and the
Adriatic Ionian Macro-regions

Final Report _ Scientific Annexes // 11 April 2022

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Disclaimer

This document is a final report.

The information contained herein is subject to change and does not commit the ESPON EGTC and the countries participating in the ESPON 2020 Cooperation Programme.

The final version of the report will be published as soon as approved.

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Scientific Annexes

The following present the scientific annexes of the ESPON TEVI 2050 Final Report.

1 Annex 1 – Participatory plan

The participatory plan and the establishment of the EUSDR Steering Committee and the EUSAIR Steering Committee have been the key building block of the process. Building on the importance of the participatory and co-creation processes, as this task was cross-cutting throughout the project. The two steering committees guided the process, choices and directions to be taken in the project.

Well-designed and organised participatory approaches with relevant stakeholders and at different stages are of utmost importance to shape the thematic relevance and gain inputs and verification. They are of high importance for the scenario development. Co-creation and participatory approaches are important to:

- Collect insights for the trend selection, the topics to focus and the geography.
- Support in defining the territorial implications of the scenarios.
- Support in verifying the assumptions and the conceptual path of the scenario to follow.
- Provide tailor-made and user-centred insights, focused on a later ‘application’.
- Build a common point of view and create ownership.

Stakeholder involvement and different participatory approaches are used for different stages and purposes of the process. In fact, a three-fold stakeholder involvement is in place for the project. First, regular internal meetings and workshops for different steps of the process within the research team ensured that all members share the same information and participate jointly throughout the process. Second, the stakeholder involvement regards the project stakeholders’ involvement, namely the EUSDR and EUSAIR Steering Committees and ESPON EGTC to increase ownership and participation in the process. Lastly, for a number of steps in the process, a wider participatory approach was implemented, where the team reached out to a wider audience through survey and selected workshops.

The EUSDR and EUSAIR Steering Committees were the backbone of the participatory approach of the project and play an important role throughout the process. The composition of the Steering Committees can be found in the Inception Report of the project. The EUSDR and EUSAIR Steering Committees were involved in different steps across the process to gain insights, knowledge and expertise, but also to tailor the findings better to the specific territorial needs and increase ownership of the key implementers. More specifically, the Steering Committees (a) took part in the project’s co-creation process and (b) was the committee of commenting the project’s deliverables. The EUSDR and EUSAIR Steering Committee members:

- Were personally involved and participating in the respective Steering Committee together with the service provider and the ESPON EGTC;
- contributed with inputs and content in all meetings and all workshops with the research team throughout the co-creation process of the project;
- gave feedback on and assessed the deliverables of the project;
- ensured engagement and continuation of their involvement throughout the entire lifetime of the project.
- contributed to the dissemination of project outputs within the governance and channels of the respective macro-regional strategy.

Although the Terms of Reference and consequently the technical offer envisaged Steering Committees of approximately 5-7 members, during the kick-off meeting the wish to enlarge the groups was expressed. To ensure a smooth process, it was agreed together with ESPON EGTC and three key stakeholders involved in the preparation of the Terms of Reference, representing the EUSDR, Slovenia and Greece, to enlarge the steering committees to 16 members for the EUSDR Steering Committee and 10 members for the EUSAIR Steering Committee.

The following table gives an overview of the participatory plan that was implemented in the project, including the different workshops and outreach activities that took place in the course of the project.

Table 1 **ESPON TEVI 2050 Participatory plan overview**

Co-creation approach	Target group	Focus	Communication means / Date
Internal co-creative workshop 1	Project team	Information on the status quo, cooperation potential and challenges. Improving the developed mapshots depicting cooperation rationales. Preparatory work for the Steering Committee workshop 1.	Online platform (Zoom) / 10 May 2021
Steering Committee workshop 1	EUSDR & EU-SAIR Steering Committees	Information on cooperation challenges and potential, based on exchange and group work on the developed mapshots. Gather information on trends and visionary projects in the two macro-regions.	Online platform (Zoom) / 19 May 2021
Survey	EUSDR & EU-SAIR Steering Committees and wider stakeholder group	Insights on trends, their maturity level and time horizon, drivers. More detailed results of the survey are presented in Annex A2.	Survey Monkey / 3 June 2021 – 2 July 2021
Internal co-creative workshop 2	Project team	Decision on selected trends for the survey. Introduction to the trends database, hindering and hampering factors of trends.	Online platform (Zoom) / 1 June 2021
Steering Committee workshop 2	EUSDR & EU-SAIR Steering Committees	Input on the territorial implications of trends. Reflections on the baseline scenario logic, based on the results of the first steering group meeting, first outcomes of the survey and first findings from desk research.	Online platform (Zoom) / 15 July 2021
Internal co-creative workshop 3	Project team	Developing the scenario cross assumptions for the alternative scenarios, based on the trends discussions in the Steering Committee workshop 2, the survey results and desk research.	Online platform (Zoom) / 16 July 2021 and 22 July 2021
Role play workshop & Steering Committee workshop 3	EUSDR & EU-SAIR Steering Committees and wider stakeholder group	Following the first draft results for the alternative territorial scenarios in the interim report, the workshop helped narrowing down to the alternative scenarios in an interactive process. The identification of the territorial implications of trends for the alternative scenarios was also discussed.	Online platform (Zoom) / 2 November 2021

Co-creation approach	Target group	Focus	Communication means / Date
Steering Committee workshop 4 – Fore-cathon	EUSDR & EU-SAIR Steering Committee	Co-developing the policy recommendations with the Steering Committees.	Online platform (Zoom) / 15 February 2022
Internal Workshop 4	Project team	Fine-tuning and nuancing the policy recommendations that came out from the 4th Steering Group meeting.	Online platform (Zoom) / 25 February 2022

Source: authors' own

According to the Terms of Reference, the service provider had to participate up to three specific outreach activities. The following table presents the outreach activities that the project participated.

Table 2 ESPON TEVI 2050 Outreach activities overview

Outreach activities	Target group	Focus	Communication means / Date
AEBR Task Force of External Borders Workshop on Future of Cross Border Cooperation at the EU External Borders	Wider audience	During the workshop, the project leader presented the first preliminary interim results of the project focusing on the trend selection and collection and the baseline scenarios.	Online / 22 October 2021
ESPON Seminar 'Quality of Life for territorial and citizen-centric policies'	Wider audience	During the workshop, the project leader presented the preliminary results on the future of the EUSDR and the EUSAIR macro-regions, reflecting on the first directions towards the alternative scenarios and the need for foresight thinking for sound policies.	Online / 1 December 2021
EUSDR Priority Area 3, 'Culture, tourism and people to people contacts'	Wider audience	The service provider presented the interim results of the ESPON TEVI 2050 project, as well as the first preliminary alternative scenarios inputs. Given that the event was targeted to the EUSDR macro-region, the results presented focused on the findings on the EUSDR.	Online / 28 February 2022
ESPON TerritoriALL Magazine	Wider audience	The lead partner of the project contributed with an article in the ESPON TerritoriALL Magazine, in the issue 5 of November 2021. The article 'What futures for the Danube and Adriatic Ionian macro-regions in 2050' presented some first key project results.	November 2021

Source: authors' own

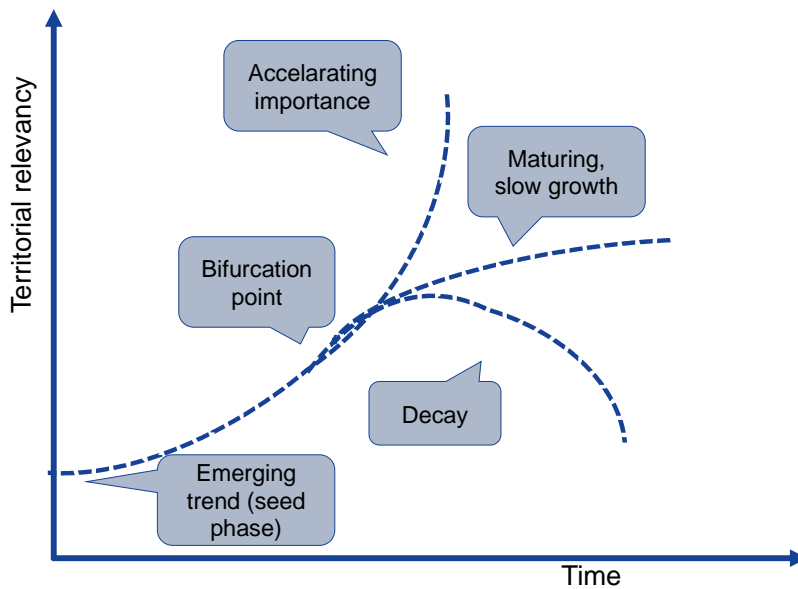
2 Annex 2 – Trends analysis: Drivers and future wheels

The following provides more details on assessment of trends as described in Chapter 3, notably the methods to assess the development of trends and the relation between trends.

The assessment of trends paid particular attention to their development. In the next 30 years, developments and trends change substantially. For example, current emerging trends can have become mature, or relevant trends might lose their importance. Any trend has a different development path with different moments of emergence, growth, maturing and peaking. The baseline scenario (Chapter 4) describes a future situation following the most likely development of the trends. The alternative scenarios (Chapter 5) describe a future situation following other development paths of trends.

The figure below illustrates different development paths of trends. Some trends may go through these stages in a few years, while others only make it until the growth stage. Different drivers and hindering factors may determine a trend’s development path. In addition, these factors or external factors may change the course of a trend’s development, a so-called bifurcation point. At the bifurcation point, a trend may suddenly gain or lose importance. The development of trends is assessed based on document review and the findings of the survey (see also annex A.2).

Figure 1 Possible development paths of trends



Source: authors’ own, based on Mcrit in ESPON Territorial Futures (2018)

Future wheels have been elaborated to assess the relation between trends and key driving and hampering factors. Per macro-region three future wheels have been developed, one per key topic for the macro-region as described in the service’s terms of reference (see also the examples in the figures below).

A future wheel is a visual tool to help thinking about relevant factors of a particular topic, trend or change. A topic is placed at the centre of multiple concentric circles. Secondly different orders of factors are displayed. A complete future wheel depicts a large variety of different factors relevant to the topic, relations between factors as well as the direction of the relations (driving or hampering).

The future wheels have been developed based on document studies and followed three working steps.

1. **Defining factors.** Factors show a sequence of related elements to the main topic from most obvious factors to more complex and distance factors. The first concentric circle depicts the directly related factors to the topic. The second circle depicts factors that are directly relevant for the factors in the first

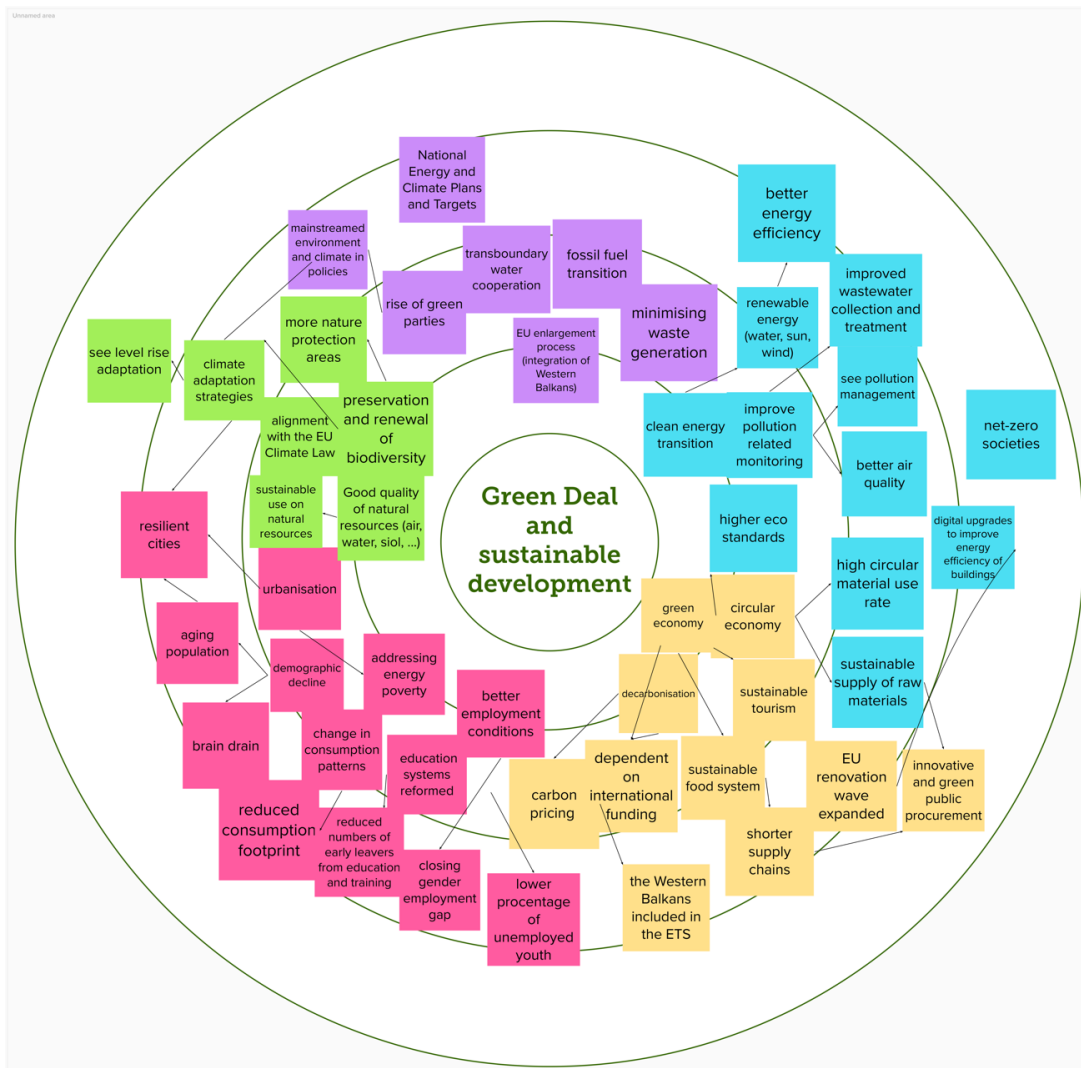
circle and the third circle depicts the factors relevant for the second level factors. Multiple factors can be relevant to explain a previous level factor. Hence, the model expands outwards. The WHY? – WHY? – WHY? – technique was used to explore a diversity of factors. When moving to the next circle one again ask “why is this factor relevant?”. *PEEST themes (different colours in the examples in the figures below) were used to ensure exploring factors from many different angles.*

2. **Defining relations.** Once the factors are depicted, relations between them can be drawn. A factor at the third level in the social sphere may not only influence the second level factor of the social sphere, but also technological or economic factors elsewhere in the wheel.
3. **Defining a relation’s direction.** Finally, the direction of relations can be depicted. Positive relations highlight driving forces, negative relations highlight hampering factors.

The completed future wheels show key factors relevant for a topic as well as driving and hampering factors.

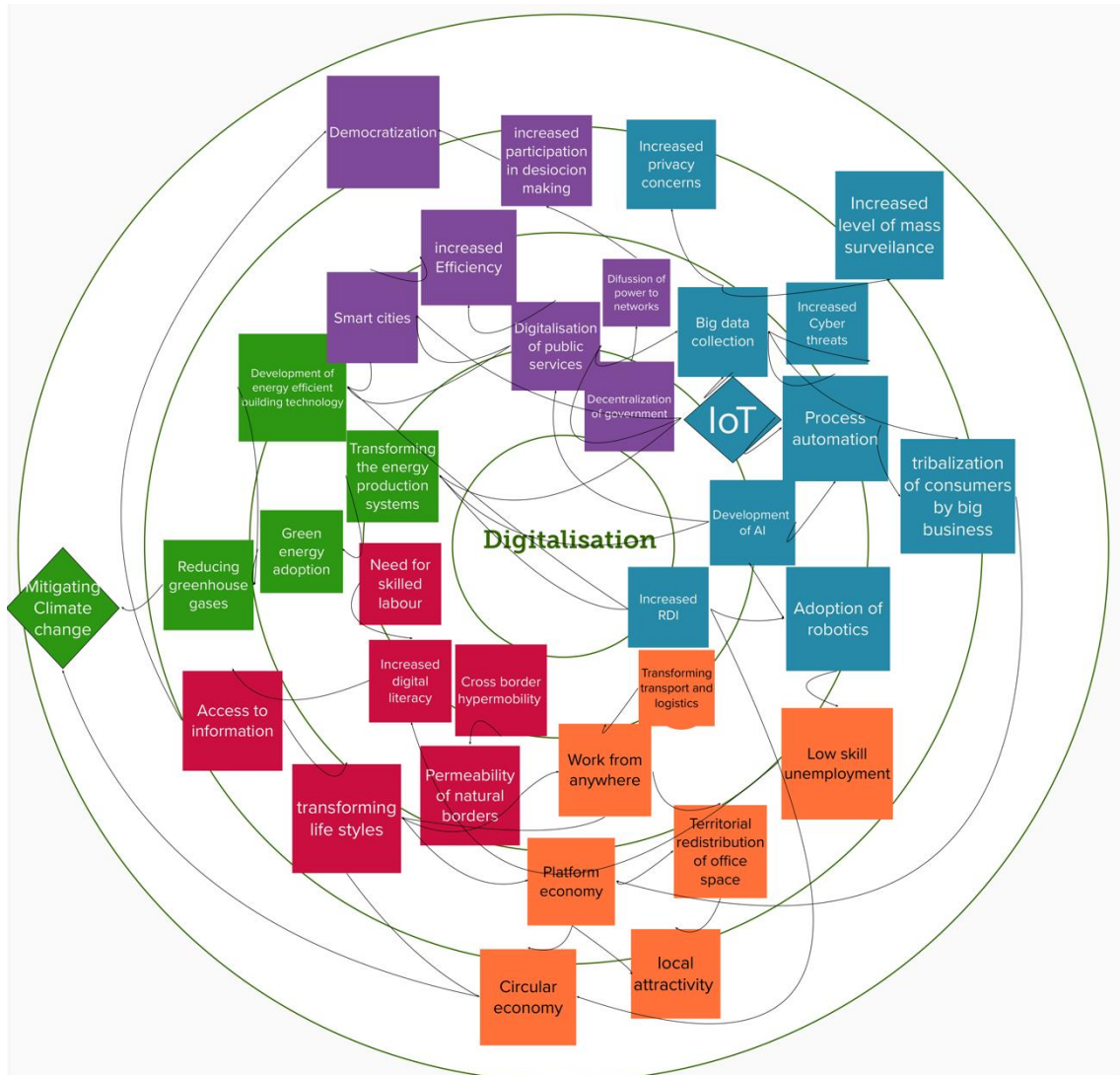
In this study we used the future wheel in two directions. Typically future wheels describe consequences of a trend. In this case the central topic can be an initiator and driver of diverse changes. In this case we explore the effects of the topic, e.g. “What are the effects of digitalisation for the Danube region’s society?”. In addition, we assess drivers of the topics by exploring consequences of a topic, e.g. Why is blue economy and innovation key for the Adriatic Ionian region’s development in 2050?

Figure 2 Example of a future wheel depicting the consequences of the European Green Deal and Sustainable development for the Adriatic Ionian macro-region



Source: authors’ own

Figure 3 Example of a future wheel depicting the consequences of the Digitalisation for the Danube macro-region



Source: authors' own

3 Annex 3 – Towards the alternative territorial scenarios

Annex 3 presents in more detail the process towards the development of the alternative territorial scenarios.

3.1 Scenario crosses

The alternative territorial scenarios show a more extreme version of the future in 2050 for the two macro-regions, compared to the baseline scenario. They describe different development paths, exploring different futures. They are a plausible description of how the future may develop, based on a coherent and consistent set of assumptions (the scenario logic), they are realistic, i.e. possible to happen, as well as balanced, i.e. discussing both positive and negative implications of these paths. The aim to raise awareness about the future and support out-of-the-box thinking.

The development of the alternative territorial development scenarios follows a thorough process building along the work of the first tasks of the project, namely the trend collection and selection and the survey results. Annex 3 reflects on these first tasks and focuses on the two stepping stones that were necessary for the development of the alternative territorial development scenarios, which were key for the role-play workshop and for the drafting and finalisation of scenarios. These were the development of the scenario matrixes, i.e. the development of the scenario logic, and the development of the four extreme narratives per scenario matrix to indicate possible directions of the future. The process was completed with the role-play co-creation workshop and the drafting and finalisation of the final scenarios, based on the inputs of the workshop.

The first steps towards the development of the alternative territorial scenarios were largely based on the steps already taken since the beginning of the project. More specifically, the trend collection and analysis that has been carried out as a first step, together with the co-creation part that defined the next steps. Taking onboard the thematic focus from the key topics of interest of the two macro-regions, as defined in the terms of reference, the desk research and co-creation process has identified further relevant trends related to these themes and gone beyond them. The trend selection and the co-creation process framed the assumptions and narratives below. These had a direct effect on other topics that were relevant for the two macro-regions and although they were not the key starting points for the assumptions, they were considered in the development of the alternative scenarios. Such examples of topics were tourism, cultural heritage and diversity, renewable energies, sustainability, education, transport and others.

The next step in the process was the development of the scenario logic in scenario matrixes, based on a combination of trends and factors. For the alternative territorial development scenarios, the scenario logic was based on a few selected trends and focused on a more extreme version of their future path. This scenario logic was depicted in scenario matrixes, as described in detail further below. In total four alternative territorial development scenarios were developed, two for the EUSDR and two for the EUSAIR. One alternative territorial development scenario for the EUSDR and one alternative territorial development scenario for the EUSAIR have the same set of assumptions (scenario logic). This means that both have the same starting point and logic but differentiate again based on the territories of focus. As there are different implications on the territories two different scenarios derived. Besides these two scenarios, two more were developed. These two derived from an entirely different set of assumptions or logics. This means that each has its own scenario logic that is more EUSDR or EUSAIR specific, focusing on more characteristic trends for each region. The scenarios are different following the assumptions and the different implications on the territories.

The desk research carried out so far through the trend collection and selection, together with the outcomes of the co-creation process and survey have shown that a shift towards more sustainable development, the uptake of technological advancements, the diversity of human settlements as well as governance and integration play an important role for the future territorial development in the two macro-regions. These outcomes play out differently in the two macro-regional strategies, and some may be relevant for both, or some more for one than the other. Governance and EU integration are topics that are of high importance for both macro-regions. Further EU integration or fragmentation, the EU enlargement or the threats to integration due to nationalistic movements, as well as the stronger national state versus a higher involvement of civil society

seem to be of high relevance for both macro-regions. On a different page, digitalisation is a key topic for the EUSDR, while environmental protection seems a priority for the EUSAIR, as shown both in the desk research and co-creation processes.

Bringing all these views together, the scenario logic developed for this project combined the factors and trends that lie behind those key points and built up a solid framework on which the narratives for the EUSDR and the EUSAIR in 2050 were based. As mentioned above, two of the scenarios are based on common assumptions, while the other two on different assumptions for the two macro-regions. To cope with this uncertainty, the scenario logic was depicted in three different scenario matrixes, and was a visualisation of four extreme contrasting uncertainties:

- One scenario matrix has been the basis for the common assumptions, i.e. for overarching issues that are of particular relevance and importance for both macro-regions.
- One scenario matrix has presented the guiding assumptions for the EUSDR with trends and factors and guiding questions that are most relevant for this macro-region.
- One scenario matrix has presented the guiding assumptions for the EUSAIR with trends and factors and guiding questions that are most relevant for this macro-region.

The following sub-sections present all three scenario matrixes and their axes, depicting also relevant trends that led to defining those axes.

To hint at possible directions of the future, a short description, i.e. an extreme narrative that combines the different extreme ends of the axes is shortly presented for each scenario matrix. These extreme narratives were not the final scenarios. They served as first indications of extreme futures based on the presented scenario logics. Therefore, they did not aim to cover every possible future aspect or relevant theme of 2050 in the two macro-regions, but rather gave a first hint of extreme future developments. At the end all these extreme narratives of all three scenario matrixes came together in a table to examine the possible combinations.

As mentioned, these were the first steps towards getting to the final scenarios. As regards the next steps in the process, the scenario matrixes and their extreme versions served as a first inspiration and guidance to be discussed at the role-play workshop. The latter has been an important element in the process, as it helped in defining the directions of the final scenarios and their territorial implications. Following the discussions of the role-play workshop the final scenarios were drafted and finalised at a later stage of the project.

READ ME: A Disclaimer

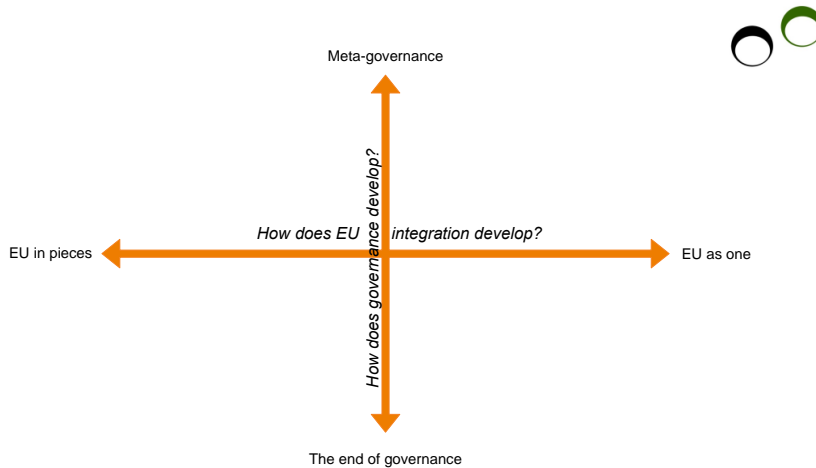
Scenarios are not about predicting the future, but rather serve as eye openers and stimulate out of the box thinking to facilitate more structured or systematic discussions about the future. It is up to the policy makers to filter the information they need from the different narratives, develop their strategies and objectives and create a desirable future. The extreme narratives per scenario matrix below include forward-looking statements to describe new services, developments, expectations, new products, new habits and actions. For them being of forward-looking character per se, they involve risks and uncertainties, as they refer to the future and several other factors or trends may cause other results or developments that diverge from these statements. As we talk about future developments and new trends in their extreme versions, exact numbers of developments, such as 'number of jobs created' are unknown and hard to tell, as in any foresight process.

3.2 Common assumptions' territorial scenarios

The way that governance and European integration may develop in the future was of key importance for both macro-regions. These two elements formed the common assumptions for the common territorial scenario. The figure below presents these assumptions in a scenario matrix and the four extremes that shaped it. The extremes in the axes answered two questions:

- In the horizontal axis the question was 'How does the EU integration develop?' looking at the extremes of 'EU as one' against 'EU in pieces'.
- In the vertical axis the question was 'How does the governance develop?' looking at the extremes of 'metagovernance' against 'the end of governance'.

Figure 4 EUSDR and EUSAIR common assumptions' scenario matrix



Source: authors' own

The sections below describe in more detail those two axes and what the different extremes are about, as well as some trends and factors they have been inspired from. The extremes represent groups of related and relevant trends which help formulating this possible extreme direction. The extremes in each axis go to a far stretched level but may still be possible to happen.

The horizontal axis: How does EU integration develop?

The horizontal axis answered to the question 'how does the EU integration develop', i.e. the directions to which EU integration may go in the future. It represented a group of factors reflecting the 'political and governance' sphere of the trends collection and encompasses trends such as EU integration, EU enlargement and increasing influence of global powers.

EU as one. The 'EU as one' extreme refers to a united, integrated European Union that goes beyond the Single Market and the fiscal union. United in diversity is implemented to the fullest, solidarity is a key component bringing together all member states and their citizens and promotes economic, social and territorial cohesion. EU integration is high with a reduced importance of border across EU and its borders with Enlargement and third countries. The European Pillar of Social Rights is fully implemented giving fair and inclusive opportunities to all (European Commission, 2021). There is a high level of trust in the EU institutions and policies, with the national level giving all its powers to the supranational EU level. The EU enlargement continues and is supported, with more and more countries from the Western Balkans joining gradually the EU. Equality, equity, fairness and cohesion 'as a value' are terms often discussed in this extreme where no region is left behind. Borders are open and better customs services are offered seamlessly contributing to cooperation, simplified rules, data exchange and common standards (Ghiran, Hakami, Bontoux, & Scapolo, 2020).

Integration does not only reflect the integration across member states but also within. Social cohesion and inclusion for all citizens is a norm. Strengthening the 'European way of life' through ensuring equal opportunities for everyone to enjoy their rights, regardless of any ethnical background, religion, gender and empowering people in disadvantages is a priority. Integration and inclusion support the entire society and builds a resilient and cohesive EU (European Commission, 2020b) based on common values and ethics and bridging differences through dialogue exchanges and cooperation.

- Related trends and factors:**
- EU integration;
 - EU enlargement;
 - Less importance for borders;
 - Stronger cooperation.

EU in pieces. This extreme works as the opposite extreme to the ‘EU as one’ extreme. ‘EU in pieces’ is inspired by trends such as EU fragmentation, discussions around places that ‘don’t matter’ or are left behind (Rodríguez-Pose, 2020), putting anti-EU movements and notions in discussion. This is an outcome of increasing social and territorial inequalities which lead to a stronger fragmentation across the EU. The ideals of the Territorial Agenda on a green and just future (Territorial Agenda, 2020) for all is put aside and replaced by an increasing involvement of global powers which influence people and places. Borders gain importance, increasing controls, security and decreasing the facilitation of trade (Ghiran et al., 2020).

The increasing influence of global powers in EU territories is even stronger with global powers such as China, Russia and Turkey being involved not only in investments projects, but also in the political sphere, influencing elections and parties, fuelling disputes across territories and nationalistic movements. Ethnical disputes revive, particularly in newest EU member states of the Western Balkans, while countries not yet EU members compete with new EU members on the integration progress. This revived older contested border issues and bilateral disputes (Civil Society Forum of the Western Balkans Summit Series, 2018), elevating the mental borders’ presence and ruining any previous efforts to open borders and free access (Euractiv, 2021) which hampers further any integration progress.

Related trends and factors:

- Populistic movements and re-nationalisation;
- Increasing influence of global powers;
- High importance of borders;
- EU as a free trade zone and Single Market.

The vertical axis: How does governance develop?

The vertical axis answered to the question ‘how does governance develop’, i.e. the directions to which governance may go in the future, looking into trends such as collaborative governance approaches, civil society increase, network governance against autocratic societies, less democracy, multipolar governance.

Meta-governance. This extreme concentrates on meta-governance, i.e. the ‘governing of governing’ according to which governance is set through established ethical principles and norms and is not necessarily exercised by the nation state. In this extreme, meta-governance is seen as the solution to governance failures, by coordinating one or more governance modes using different means to overcome these failures (Gjaltema, Biesbroek, & Termeer, 2019). EU functions as the ‘governance of governance’ providing norms on good institutional order (Pantzerhielm et al., 2018) and its member states deviate from the rationalist model and are open in the implementation of these norms.

E-governance, digital governments, more agile governments are just a few elements in focus. In this extreme the role of civil society is increased with NGOs playing an important role in the decision making. The state is no longer the key player, but rather a network governance is in place. NGOs contribute actively in addressing societal challenges, the traditional roles between the state, people and civil society is blurred, while new cooperation frameworks emerge (World Economic Forum, 2013)

Related trends and factors:

- Increased role for civil society;
- Network governance;
- The state not being the only player;
- E-governance.

The end of governance. This extreme functions as the opposite of the ‘meta-governance’. The ‘end of governance’ regards a governance system as in older times, where the ‘raison d’état’ rules. The state is the key player and all authorities are nationally controlled. The role of democracy is reduced and mistrust in government is increased. There is a decreasing role of different institutions and civil society organisations, the focus and power is given to the state and to international giants (European Commission, Joint Research Centre, 2019). Media and public speech is controlled, while surveillance mechanisms, censorship and low citizen participation are in place in exchange for more security, cyber security and a stronger rule of law (European Commission, Joint Research Centre, 2019).

Related trends and factors:

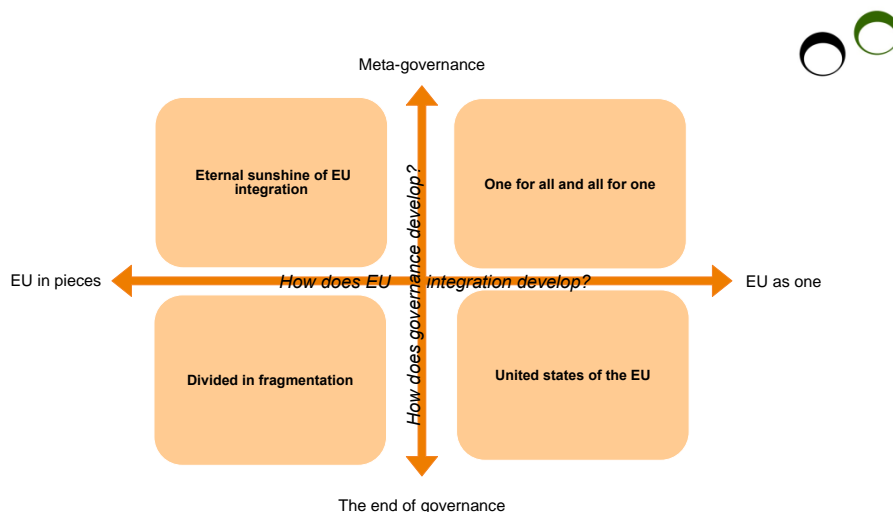
- Multipolar governance;
- Moving towards autocratic societies;
- Security, cybersecurity;
- Less participatory democracy.

The four narratives

The four narratives represented the combinations of the extremes of each axis in the four quadrants. As shown in Figure 5, these were

- ‘Eternal sunshine of EU integration’, coming from a combination of the extremes ‘EU in pieces’ and ‘Meta-governance’,
- ‘One for all and all for one’, which derives from the combination of the extremes ‘Meta-governance’ and ‘EU as one’,
- ‘United states of the EU’, which derives from the combination of the ‘EU as one’ and ‘the end of governance’ extremes, and
- ‘Divided in fragmentation’, which comes from the combination of ‘the end of governance’ and ‘EU in pieces’.

Figure 5 The four common extreme narratives for EUSDR and EUSAIR



Source: authors' own

Eternal sunshine of EU integration. The dream of European integration for some countries remains an eternal hope. At the same time the trust of already existing member states of the European Union towards the EU and its common values reduces. The influence of external global powers on the economic and social life of the regions has changed the perception of people towards the EU. In addition, the difficulty of the EU to fully facilitate its enlargement process and ensure a strategic autonomy to increase its sovereignty and become more resilient in the future on topics like defence, trade, digitalisation, monetary policy etc. opens a Pandora’s box. Regions shift towards ‘regionalisation’, i.e. forming sub-unions of territories with common regional interests.

One for all and all for one. The EU integration has deepened and the EU enlargement countries are now full members of the EU, enjoying the rights of the Union. The notion of the central national state is losing importance. The EU the guiding governance institution for all its members. Citizens enjoy cohesion as a value, while fairness and equity shape politics and daily life. There is a good uptake of EU funds by regions which helps in their further territorial development. The common ‘European way of life’ helps to overcome physical and mental borders: with the physical borders losing importance and people, goods and service moving freely along the regions, while with the shared common values, the mental barriers become obsolete.

The valorisation of cultural diversity characterises the EU. The strong civil society in place helps in supporting decision making and cooperation across the regions.

United States of the EU. With the EU integration taking different levels of progress across the candidate countries, with some being accepted as members, other being still in the process and others enjoying the Schengen agreement or the Eurozone. The nation states are the key decision making powers, in control of most powers, following however on broad terms and regarding major topics with the EU guidelines. The involvement of civil society is small. Often countries have the right not to adopt EU laws, if they do not fit with their national policies and legislation causing often hick ups in the EU legislative powers. EU funding is perceived by the majority of people as a contributing to more integration and cohesion. Citizens enjoy the rights of the European Union, on an equal level, resulting in some cases in ‘winners’ versus ‘losers’ regions, with the Union progressing further economically.

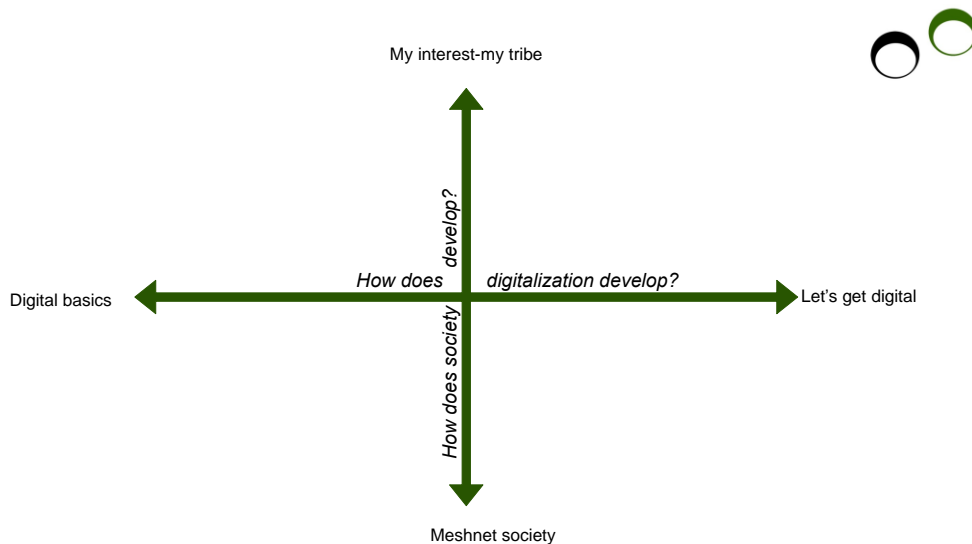
Divided in fragmentation. Going back to the future where the EU has not managed a deep integration, not only of new member states, but also of its existing ones. The enlargement countries are now ‘owned by the external global powers’ and adjust their national priorities towards the global interests. There is an increasing importance of Foreign Direct Investments from global players and a diversification of donors and funds. This has gradually increased the depth dependency of some countries, which result to lean back for EU support and more bailout programmes, putting at risk the economies of different countries. The cultural diversity is strong, posing a risk towards cultural divides and conflicts. The regional and local levels are undermined and have little to do with decision making.

3.3 EUSDR assumptions

The way that digitalisation and society may develop in the form the key assumptions for the EUSDR territorial scenario. The figure below presents these assumptions in a scenario matrix and the four uncertainties that shape it. The extremes in the axes answered two questions:

- In the horizontal axis the question was ‘How does digitalization develop?’ looking at the extremes of ‘let’s get digital’ against ‘digital basics’.
- In the vertical axis the question was ‘How does society develop?’ looking at the extremes of ‘human tribes’ against ‘meshnet society’.

Figure 6 EUSDR scenario matrix



Source: authors' own

The sections below describe in more detail those two axes and what the different extremes are about, as well as some trends and factors they have been inspired from. The extremes represent groups of related and relevant trends which help formulating this possible extreme direction. The extremes in each axis go to a far stretched level but may still be possible to happen.

The horizontal axis – How does digitalisation develop?

The horizontal axis answers to the question ‘how does digitalisation develop?’, i.e. the directions to which digitalisation may go in the future and influence the Danube region. It represents a group of factors reflecting the ‘technology’ sphere of the trends collection and encompasses trends such as industry 4.0, artificial intelligence, robotisation, platform economy, new consumption lifestyles.

Let’s get digital. In this extreme the Danube region has become a digital society. Industry 4.0 is fully in place with the digital transformation of business and public service being a top priority. Digital transformation shapes people’s everyday lives. The extreme highlights that the use of artificial intelligence is increased mingling real and digital life. Virtual reality is part of work and social life, production, while big data, data collection, and high digital connectivity go to the maximum. Digital skills are a prerequisite for labour market, putting at risk of unemployment and education of anyone who may not be a digital native. People are more open and more proactive towards digitalisation, seeing ‘innovation’ as the ‘thing to do’ and a driver for progress.

In addition, e-identities increase mixing real persons and avatars and blurring the lines between reality and virtual reality. Cyber-attacks increase and more controls and security are necessary. E-governance, e-services, e-health, smart houses, e-agriculture and digitalised transport (European Commission, 2020a) are common in this extreme. However, also an increase of fake news and reduced social interaction give a further impression of this extreme.

Related trends and factors:

- Artificial intelligence;
- New consumption lifestyles;
- Virtual reality;
- Industry 4.0;
- Job automation;
- E-services;
- Biotechnology;
- Renewable energies transition;
- Increased changes in energy demand;
- Increase of digital skills.

Digital basics. This extreme opposes to the ‘let’s get digital’ extreme, both to the extent of the accessibility to digitalisation, but also to the way people perceive access to digitalisation. In this extreme, people use digitalisation as a means to an end, and not really a driver for changing their lives or work. Digitalisation is therefore used where necessary, getting to a more reactive use to digitalisation, i.e. selectively reacting to different new developments, which differs from society to society. With increased cyber-attacks increasing, inappropriate personal data usage, sharing and exploitation, data leaks and little cyber security, people’s trust to technology reduces, while governments take stronger action in cutting accessibility where the latter is attached. Unlike when internet was a global commons, it has gradually become a pray of national or regional rules (L.S., 2016), increasing ‘splinternet’ effects in some places where more control is deemed necessary.

Although technological change has brought productivity gains, it has had several adverse effects on the employment side, with low qualified and middle skilled workers being more at risk (Joint Research Centre, 2019a). The increased social inequalities between digital literate and illiterate citizens, with those having digital skills having access to more labour market and education opportunities, result in a more fragmented digital society. This is more visible between the different age groups, as the young population is more adapt to new technological advancements, unlike older population, which in an ageing Europe poses further challenges. In addition, a large part of the population is opposed to digitalisation being used daily and to a large extent, mainly seeing it as a privacy and labour market threat. Those new age ‘Luddites’ oppose intentionally to digital progress, using only fragments of the possibilities that digitalisation can offer.

Related trends and factors:

- Automation of jobs;

- Increase of social inequalities;
- Ageing;
- Splinternet.

The vertical axis – How does the society develop?

The vertical axis answered the question on 'how does the society develop?' depicting two contrasting extremes in relation to how society develops by 2050. It represented factors stemming from the 'economy' and 'social' sphere. This is mainly characterised by concentrated and polarised 'human tribes', i.e. polarised settlements of society, drawing on trends of slowbalisation, tribalism etc., characterised by bonding of social capital as well as on the other side looking at network societies, where people connect and are organised through network, characterised by the bridging of social capital.

My interest – my tribe. Ideas are powerful. Groups who share same ideas, same interests and culture come together. In this extreme, a multipolar world is at the forefront. The end of globalisation as we know it and shift towards slowbalisation (European Parliament Research Service, 2020; The Economist, 2019), brought a re-thinking of the economic structures and a reaction towards going back to older ideas and 'tribal' behaviour (Debeuf, 2015). With social media taken up as a key information and news means, people group themselves in different online tribes. These tribes are not linked to any ethnical or religious links, but are rather comprised by people of similar culture, ideas, interests and values. Such 'bonding' social capital society reflects inward looking communities with high level of trust in the network structure (Patulny & Svendsen, 2007) and little connections to other groups. These polarised people tribes have a hierarchical structure and are led by a leader who coordinates the flow of information and exchanges.

In this extreme, commerce takes a new approach, with reduced trade relations, but also visible increasing inequalities, reduced migration and tourism, fair trade increases, less cross-border connections, less transport mobility are only a few consequences of this extreme which describe society in 2050. Autarky and self-organisation is prevailing, where circular and sharing economy organised at local level plays an important role. People having less interaction to others of different 'tribes'.

Related trends and factors:

- Local economy;
- Local mobility;
- Cultural diversity;
- Circular economy;
- Slowbalisation.

Meshnet society. This extreme highlights that society works in terms of people networks. The extreme takes the concept of 'mesh networks' to a societal extent. In this extreme, society is organised through networks of people, where services, ideas, resources, values are shared between persons and groups rather than central bodies. People are connected through different networks, being both transmitters and receivers of information, building a network where each individual is part and seen as a node boosting and passing information, ideas, values, services and data to the next one (based on Lüer, Jæger, Madeira, Böhme, Hans, Holstein, Toptsidou, Tulumello, Bina, Ferrão, Rogut, & Piasecki, 2014). Taking the idea of bridging social capital further (Patulny & Svendsen, 2007), this extreme shows how individuals representing different groups, ideas and values are brought together, have high trust in the society and have a loose network structure where individuals mingle with other networks and communicate openly.

In this extreme, the individual is put in the centre of attention having a person grassroot and bottom-up structure. Information flows freely and uncensored through people across different networks. Social media play an important role, helping the information flow run freely and uncensored. There are no central bodies or institutions and organisations, neither a clear hierarchy filtering the information. Citizens have a more direct access to decision making and influence in politics where the nation state is weakened, and citizens are in the centre of decision making and organisation. Communication and connectivity play thus a key role in this society and define social inclusion and exclusion: those connected feel more inclusive. This particularly affects the disconnected youth in the region who may feel more lonely and distanced of human-to-human interactions (Joint Research Centre, 2021). Especially after the COVID-19 pandemic such digital connectivity has become even more pronounced.

Related trends and factors:

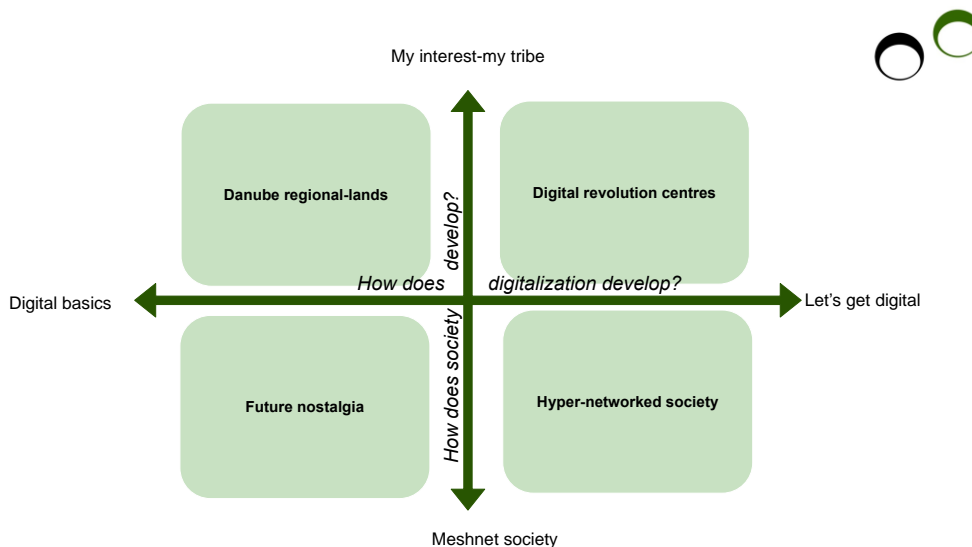
- Youth power;
- Content economy;
- Increasing globalisation and high interdependencies;
- Increasing social inequalities;
- Increase of information technology and communication;
- Increase of social media.

The four narratives

The four narratives represented the combinations of the extremes of each axis in the four quadrants. As shown in Figure 7, these were:

- ‘Danube regional-lands’, which derives from the combination of the extremes ‘My interest-my tribe’ and ‘Digital basics’,
- ‘Digital revolution centres’, which derives from the combination of the ‘My interest-my tribe’ and ‘Let’s get digital’ extremes,
- ‘Hyper-networked society’, which comes from the combination of ‘Meshnet society’ and ‘Let’s get digital’, and
- ‘Future nostalgia’, coming from a combination of the extremes ‘Meshnet society’ and ‘Digital basics’.

Figure 7 The four extreme narratives for EUSDR



Source: authors' own

Danube regional-lands. Social capital bonding is strong, as people who share similar ideas and values organise themselves in groups in a rather more ‘old-school’ and traditional way. The group leader plays a key role in keeping the group together, maintaining the strong local connections and shared values, as well as in the information sharing and exchange. Digital accessibility is only used when needed without it being the key for economic development and growth. As digital accessibility is limited, there is a fragmented access to multifold information with often biased information and fake news prevailing. Cyber attacks are common and more cyber security is in place. There are strong rules keeping the group together and the trust in the community is high, however, disagreements are frequent among people who are more sceptical towards the information availability. Splinternet, i.e. the breaking down of internet filtering and censoring information, is common. In addition, more political influence of global powers is visible and easier to manipulate the leaders of the ‘tribes’. Tribes of the regional-lands have little interaction with other tribes increasing polarisation, keeping different communities apart and promoting a more exclusive nature of bonding social capital

(Patulny & Svendsen, 2007). The sharing culture is important for the groups cohesion and some basic digital accessibility helps people to organise themselves through sharing platforms and similar business models. Sharing economy is also hyped by the millennials and generation Z in the Danube region who oppose to ownership and support sharing services, goods, resources etc. Interactions are limited and proximity plays a role in how often people meet. Physical meetings take place and mainly to other big poles, however, lack of fast connections and reduction of air travels due to a greener transition make travelling burdensome. When it comes to environmental protection, more isolated solutions per group are forwarded and although there is a shift towards more renewable energies, it this puts at risk the environmental protection, as there is a high loss of agricultural land and a threat to protected areas.

Digital revolution centres. Hyper digitalisation is a fact in the Danube region and groups of people make fully use of it. People sharing the same ideas and convictions come together in groups regardless of location and where they are based, thanks to the high digital connectivity. They have a strong community feeling and strong opinions for their groups and tribes. Highly empathetic communities are formed, with the group leaders caring for the well-being of their group members. Due to high digital connectivity, information flows uncensored and different groups interact and communicate without bias. Societal groups make use of digital connectivity for their education, as the latter becomes digital decreasing inequalities as more and more pupils can attend classes and courses, as well as for other services of general interest being covered through e-services. Following slowbalisation, the tribes are rather self-organised and growth is small scale. Digitalisation has allowed groups coming together regardless of location, however, this results in human interaction being replaced with online interaction blurring the lines between the virtual and real world. High digitalisation often happens at the cost of the environment, hence more air and water pollution happen, threatening the natural habitat of the Danube, as the protection element is more leaned towards the protection of businesses rather than the protection of the environment. Nevertheless, there is active civil society and groups focusing on environmental protection and protecting the Danube River as a common good. Civil society groups are The energy demand is high, with crypto mining and industrialisation consuming the majority. The travelling is reduced and only taking place for long trips, as all nearby services have been replaced by digital solutions. In the tourism sector new players enter the game offering smart services.

Hyper-networked society. Individuals in the Danube are in the centre of attention and closer to the citizens has never been more visible. Citizens have direct access to decision making and influence in policy making, as the nation state is weakened. There are networked communications facilitating the shift from traditional mass media to 'mass self-communication' through social media, strengthening social movements (European Union Institute for Security Studies, 2012). Such network society does not recognise borders, empowers the individual and the sense of belonging to a human community, giving also impetus for a stronger civil society (European Union Institute for Security Studies, 2012). With support of high digitalisation individuals connect to each other forming a network society, constructed by networks powered by digitalisation and information and communications technologies, taking basically the social networks to a new level (based on Castells, 2010). Young generations are pure digital natives, experiencing a 'fear of missing out' and high stress levels due to digital addiction. Social media are the means for free, uncensored information flow. Fake news and cyber-attacks are frequent phenomena mixing reality with fantasy. Personal data are often at risk and with limited protection, being often a pray to international digital behemoths. Tackling climate change has become a 'be the change you want to see in the world' thing, as each citizen contributes its bit. Knowledge transfer is easier. Through the networks people exchange and develop open sources applications and collective shared knowledge. Peoples' lives are mainly digital. This often results in higher loneliness and depression. Mobility is offered as a service with bespoke travel experiences combining different means of transport, such as electric cars, buses, bikes and night trains. Individuals travel for new experiences, to broaden their horizon and meet other cultures, which leads to higher tolerance and acceptance of diversity. Tourism products are alternative and tailored to the new users. Smart solutions are proposed, but also alternative sustainable tourism is in place, which makes places and activities more 'instagramable'.

Future nostalgia. Looking at the negative effects of digitalisation, such as reduction of the labour market, job automation, increasing cyber-attacks among others, individuals adapt a rather retro approach to technology. Going back to the future and to using technology only when needed, people stay in their regions as strong regional mentalities prevail in the Danube region. For places and people in 'left digitally behind' the state support and intervention is higher. People are more empathetic towards climate change, they have an opinion on the governance of the commons and proactively push for active change and preparedness. Social movements organised through social media to forward actions for climate change mitigation are frequent. Ageing is still a challenge in the region, with old and digitally illiterate seniors having little access to services

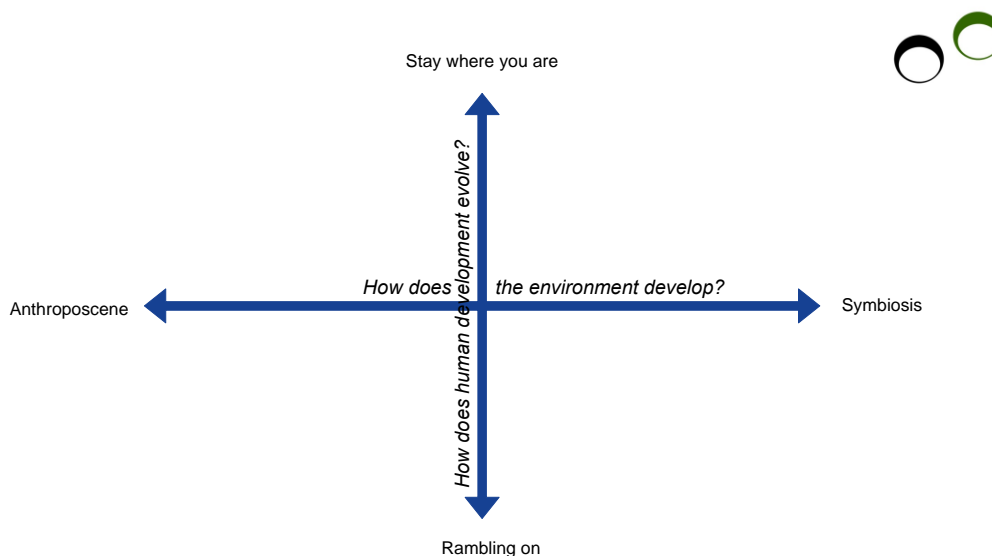
and social activities. The remaining young population, being more pragmatic to the conscious use of digitalisation and technologies follow a rather hipster or new age hippie lifestyle, spending more time in nature, shifting towards a meat-free and vegan diet, volunteering on environmental and social activities, expressing mindfulness and gratitude and focusing on achieving a better well-being, through socialising and pleasure. Local, bio production, re-industrialisation and autarky prevail, reducing the dependency of the Danube region on global players. The democratisation of energy is implemented where possible with people producing and sharing their energy surplus. Public transportation connecting different regional centres and seamless inter-modal transport connecting different means of transport reduce the carbon footprint and ease mobility. The domestic tourism prevails, with the sector offering alternative and sustainable services, such as glamping (glamorous camping) and eco-hotels.

3.4 EUSAIR assumptions

The way environment and human development may change in the future formed the key assumptions for the EUSAIR territorial scenario. The figure below presents these assumptions in a scenario matrix and the four extremes that shaped it. The extremes in the axes answered two questions:

- In the horizontal axis the question was ‘How does the environment develop?’ looking at the extremes of ‘symbiosis’ against ‘anthropocene’.
- In the vertical axis the question was ‘How does human development evolve?’ looking at the extremes of ‘stay where you are’ against ‘rambling on’.

Figure 8 EUSAIR scenario matrix



Source: authors' own

The horizontal axis – How does the environment develop?

The horizontal axis answers to the question ‘how does the environment develop?’, i.e. the directions to which the environmental situation may go in the future. It represents a group of factors reflecting the ‘environment sphere’ sphere of the trends collection and encompasses trends such as climate change, clean energies, land and marine biodiversity loss, sustainable lifestyles and others.

Symbiosis. This extreme refers to the achievement of the total balance between humans and nature: a symbiosis of the natural environment with humanity. With climate change being the biggest challenge, this extreme presents the green transition economy, where carbon neutrality is a fact, emissions are reduced, external energy dependency is reduced, sustainable transport is promoted and achieved and is clean, accessible and affordable (European Commission, 2019). In ‘symbiosis’, people have accepted the fact that economy is embedded with nature (Dasgupta, 2021). They have shifted their mindset towards more sustainable development and launched a societal transformation reconsidering their production and consumption habits (Büchs & Koch, 2019; Sandberg, Klockars, & Wilén, 2019) supporting actions of de-growth, i.e.

decoupling growth from resource use. Clean and renewable energies, the end of coal factories, better waste management, ecosystems services support are just a few elements that contribute to this symbiosis.

The symbiosis is not only linked to sustainable development, but also to symbiosis with the region's fauna. Protecting biodiversity is key under 'symbiosis'. This regards both land and sea biodiversity, highlighting sustainable food cultivation, sustainable fishing, ecosystems services, reviving endangered species, but also rewilding strategies to restore biodiversity that has been lost. Technology is a tool to support this symbiosis through better monitoring the stage of biodiversity status.

Related trends and factors:

- Climate change;
- Biodiversity loss;
- Artificial intelligence;
- De-growth;
- Rewilding strategies;
- De-carbonisation of economy;
- New sustainable lifestyles;
- Sharing and circular economy.

Anthropocene. The anthropocene is the opposite extreme of the 'symbiosis'. In this extreme the human beings and only them are responsible for epoch changes, as their activities influence immensely the environment. Increased growth, over consumption and hypercapitalism are just a few factors that have driven further this extreme. With technology advancing more and more, it has often been used as panacea for solving environmental challenges. Humans have collectively failed to engage with nature in a sustainable way and their demands exceed what nature can supply, endangering the prosperity of the current and future generations (Dasgupta, 2021).

Extreme phenomena such as floods, forest fires, droughts become more regular. The earth temperature has risen by 1.5 °C (IPCC, 2021), increasing further such phenomena. Pollution continues, travelling increases, while demands in energy and resources increase to cope with overproduction. Nevertheless, growth is steadily increasing and GDP reaches high levels, with economies and giant corporations thriving. Technology is used for innovative ways of food production and farming, however, the increased occurrence of natural hazards, as well as the continuously increasing demand has made food production more difficult and more expensive (European Commission Joint Research Centre, 2020).

Related trends and factors:

- Natural hazards;
- Temperature rise;
- Climate change;
- Loss of biodiversity;
- Overconsumption;
- Hypercapitalism;
- Air and sea pollution;
- Increased energy demand.

The vertical axis – How does human development evolve?

The vertical axis answered to the question 'how does the human development evolve?', i.e. the directions to which the human settlements and demography may go in the future. It represented a group of factors reflecting the 'social' sphere, encompassing trends such as brain drain, urbanisation, ageing, teleworking and others.

Stay where you are. In this extreme, digitalisation in combination with globalisation and internationalisation of companies influence the nature of work. The digital revolution modified the nature of work, as individuals

need to possess digital and non-cognitive skills (Joint Research Centre, 2019b), while new professions emerge related to the creator economy, such as social media manager, influencer, or podcast and youtube video producer (Joint Research Centre, 2019b; The Economist, 2021). This has allowed for a more 'place-based' approach to work in this extreme, as instead people being digital nomads, where people do not have a base for their work, but rather thanks to digitalisation can travel and work from different places, they stay and home and can work for different companies all over the world. With the increase of home office during the COVID-19 pandemic, such trends also increased.

Going also hand in hand with the dramatic effects of climate change (IPCC, 2021) that have made people consciously refraining from travelling, this place-based working approach also contributes in appreciating more a good quality of life in a more polycentric regional system, making at the same time 'good choices' for the environmental and reducing the carbon footprint.

The changes in the employment sector, by extension have also a direct influence on the demographic development and brain drain. Young skilled population does not leave its place anymore for more job opportunities but rather stays and works remotely for (big) international companies. The Adriatic Ionian macro-region becomes a pole of attraction of other migrants, as the low living costs and the good working prospects and quality of life are attractive incentives. Although brain drain is reduced, social inequalities are increasing, mainly due to the different level of broadband access available. At the same time, an increasing need for craftsmanship increases, as such professions tend to rapidly decline.

Related trends and factors:

- Teleworking;
- New office idea;
- Creator economy;
- Globalisation;
- Increased social inequalities;
- Increased need for craftsmanship;
- Broadband access;
- Digital natives;
- Climate change;
- Reduced travelling and flying.

Rambling on. Rambling on highlights the extreme version of brain drain, ageing and population decline. The labour force is smaller but more educated. Hence, the young and skilled people move out from rural to urban areas for better future prospects in both education and employment. This leads to increased human critical mass in urban areas (JRC & International Institute for Applied Systems Analysis, 2019), but also to a high degree of urbanisation, concentrating all services and chances in the big urban areas. Urban areas are the places where 'things happen', where business and pleasure co-exist and give opportunities to the 'creative class' (Florida, 2012).

Besides the internal migration, the youth also moves to other urban areas in EU countries for better future prospects. This supports the EU integration, exchanges and education of young people giving them more opportunities to develop a common European cultural identity. Furthermore, the remittances of the diaspora economically support the development of many outmigration places.

Related trends and factors:

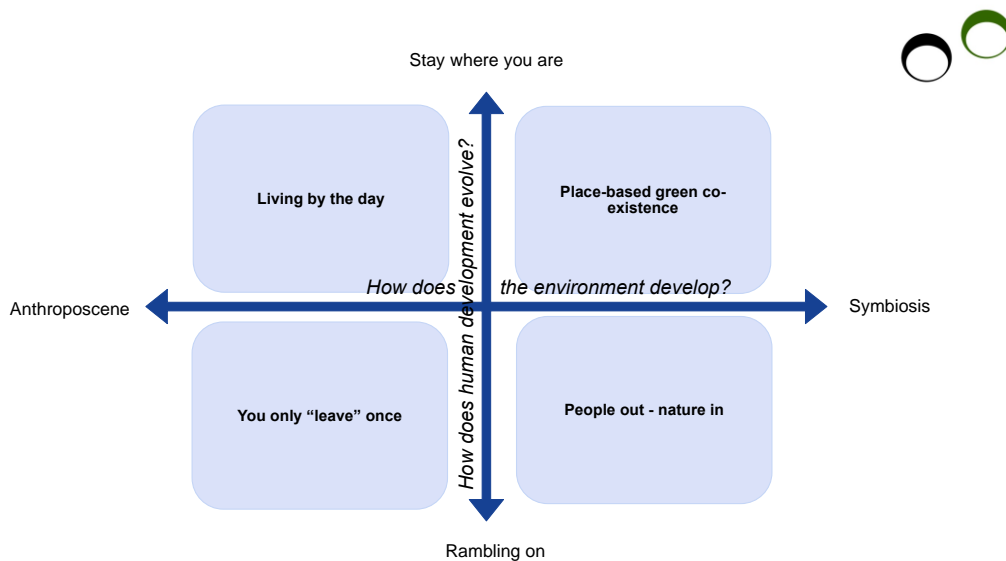
- Urbanisation;
- Increased social inequalities;
- Ageing;
- Shrinking regions;
- Population decline;
- EU integration;

- Multiculturalism
- Rise of the creative class;
- Migration increase.
- Paradigm shift towards sustainable travel and tourism.

The four narratives

The four narratives represented the combinations of the extremes of each axis in the four quadrants. As shown in Figure 9 these were the 'Living by the day', which derived from the extremes 'Stay where you are' and 'Anthroposcene', the 'Place-based green co-existence', which derived from the combination of the extremes 'Stay where you are' and 'Symbiosis', the 'People out-nature in', which derived from the combination of the 'Rambling on and 'symbiosis' and lastly the 'You only "leave" once', being a combination of the extremes 'Rambling on' and 'Anthroposcene'.

Figure 9 The four extreme narratives for EUSAIR



Source: authors' own

Living by the day. The 1.5 °C temperature increase of the planet has shifted people's minds towards demonising meaningless travels. People choose to stay in the Adriatic Ionian region and have even reduced commuting to the minimum as most of work takes place as home office. Well educated and skilled youth are no digital nomads anymore, instead, people work internationally for different companies from their home. Economic growth hence continues in the region, not only because of this service orientation, but also due to the full exploitation of the primary and secondary economic sector. Economic progress is put on the forefront particularly in those regions which were lagging for years behind. Thus, industrial giants and favoured by low taxation and hardly any environmental costs, with greenwashing phenomena being rather a norm. Workaholism, stress and anxiety and the constant strive for perfectionism are consequences of achieving the growth goals and are frequent among employees who lack an office environment. Traditional jobs, in sectors such as fishing, agriculture, manufacturing have been eradicated, some as a consequence of climate change which transformed the land and sea into non arable environments, others as a result of robotisation. Blue technologies are constantly research to provide new solutions on how to delay a climate catastrophe in the region and still reap the benefits of this unique environment. Food is mainly produced in vitro, which gradually has changed traditional cuisines in the region, such as the formerly famous Mediterranean diet. New crops in the region are introduced to cope with land changes. The extrovert economic profile of the region and as the brain drain drivers weaken, the region has attracted more and more people who choose to move to the Adriatic Ionian regions. This results in getting to know more cultures, exchange and create a new critical mass. Building on 'philoxenia' as a common cultural element, with culture being the connecting factor of places, the local tourism product offers tailored activities to the few remaining pristine places and mainly to those who can afford. An EU Tourism Policy is put in place to support smaller regions. The rich consider

space travelling and exploring new territories. Energy challenges remain, with clean energies being in progress.

Place-based green co-existence. Carbon neutrality is a fact. People's mindsets have changed. The Adriatic Ionian region has reduced its emissions and external energy capacity, clean and renewable energies are promoted and people and nature live in harmony and balance. Third and fourth generation of fossil fuels family-run businesses turn their industries into renewables. Reinforced by the COVID-19 pandemic, teleworking has brought new opportunities to digital literate population in the region. People stay in the Adriatic and Ionian region and follow their digital lives. Organised in small settlements, people form local communities, rather self-sufficient with strong 'togetherness' feelings. The nature preservation has helped the environment to revive, with the land and the sea thriving. Ecosystem services and rewilding strategies have helped the flora and fauna to restore. Local bio production of food, more sustainable fisheries & aquaculture and sustainable agricultural practices are in place. Extreme weather events still happen but to a lesser extent, while policy makers and people are better prepared. People chose not to travel. Local public transport is used for daily needs, while cars are heavily taxed. This polycentric regional system creates strong small communities, as well as virtual networks. Tourism has become more sustainable, making use of territorial comparative advantages, as well as rich local products and also rather domestic, i.e. small scale in local settlements.

People out-nature in. The need for environmental protection is unquestionable. Taking into account the shrinking population in most places in the Adriatic Ionian region other than the big urban areas, people made a big choice: to consciously give back to nature. Move out from areas with little prospects and moving in to large urban areas and their suburbs has left the remaining places as protected territories. Green and blue corridors are newly developed with the aim of nature restoration. This human 'inactivity' in those areas has led to a symbiosis, where formerly endangered species and extinct plants revived. Those vast areas offer ecosystem services and are attraction poles to regulated eco-tourism. On the other hand, increased urbanisation and the concentration of a big critical mass of well educated, creative and skilled people have transformed the cities in small silicon valleys. At the same time, social inequalities increase, as competition and unemployment are high. Urban farming is the only food production way, hence the region is heavily dependent on massively produced food supplements. Urban tourism is the most common tourism product offer however, congestion, highly populated places, unattractive buildings and architecture do not make urban areas appealing to tourists. Air travel has been banned within the region to further reduce the carbon footprint with only some special operating flights during summer season for holiday destinations, while rail networks and particularly night trains have re-emerged.

You only "leave" once. Depopulation, ageing and lack of professional opportunities increase brain drain. Young people leave the Adriatic Ionian region for a better future, but also to interact with other communities and develop a European cultural identity. Cities are also the centre of development: youth moving from rural to urban areas create a critical mass in urban areas, contributing to the development of creative classes. Urban areas are re-built towards the new profiles that each area wants to promote. On the contrary, rural areas remain uninhabited. The economy is supported through the diaspora remittances. Due to large drought periods, large agricultural lands are being used by international corporations for greenhouse locations. Tourism has become a niche. With the young population leaving and the different cities and coastal areas shrinking, the region has lost its cultural vibe. Hence tourism products are offered to the rich who visit the region, as tailored-made services, like private beach hopping, fine dining etc. Energy demands are high, with coal being still the key energy source. The largest consumption is observed in cities and touristic areas, with rural areas facing often blackouts. Mobility is diversified and new technological developments are combined with people's needs, making connections faster and safer. Older people try to preserve the cultural identity of the region, while the young want to enjoy the benefits of the good life, which they have been lacked due to years long economic crisis in the region.

The following table puts the extreme narratives of the assumptions for the Danube and the Adriatic Ionian scenarios and the extreme narratives of the common assumptions together. The table at this stage does not aim to present how each combination played out per policy and per every relevant theme. It gave some highlights of the extreme narratives combinations that serve as overall directions of the combinations of the governance and societal options with the key thematic assumptions. This helped to see where common ideas and concepts can be observed.

The table below shows the intermediate step towards bringing the assumptions and extreme uncertainties of the scenario logics together, as a preliminary step towards clearing out the uncertainties.

Table 3 Putting the extreme uncertainties of scenario logics together

	EU as one	EU in pieces	Metagovernance	The end of governance
Let's get digital	<p>Danube fit for the digital age.</p> <p>EU digital policies in place for all EUSDR countries.</p> <p>Stronger integration and higher digitalisation.</p>	<p>Fragmented digitalisation with global players providing access to digital services.</p> <p>National policies for digitalisation in place.</p> <p>More control and data privacy attacks.</p>	<p>EU providing the overall framework and EUSDR applying it where fit.</p> <p>EUSDR policy frameworks in place.</p> <p>Regional and local players of high importance.</p>	<p>Strict rules for digital protection.</p> <p>Influence of external powers in the use of digitalisation.</p> <p>National level filtering the digital information.</p>
Digital basics	<p>It's a long way to digitalisation.</p> <p>EU policies do not much with regional interests.</p> <p>Cohesion as a value and increased citizen wellbeing.</p>	<p>Digital accessibility to the 'have's'.</p> <p>Limited progress in digital accessibility, increasing business digital transformation.</p> <p>Places left behind not connected.</p>	<p>Danube diversifying its digital skills.</p> <p>E-governance lacking.</p> <p>Civil society on the rise.</p>	<p>No institutional protection of personal rights.</p> <p>Digital access where global powers have interest.</p> <p>Civil society inexistent.</p>
My interest-my tribe	<p>Small organised groups within the EU.</p> <p>New set of ideas and exchanges in place, support EU promoted issues.</p> <p>Small interest groups within the EU, staying in their regions.</p>	<p>Total fragmentation, where each country is further polarised in smaller groups.</p> <p>Corporations' interests influence these groups.</p> <p>People with shared values and ideas group but interchange is difficult.</p>	<p>Interest groups and their leaders are in the political scene.</p> <p>Networks play a key importance and social media support the connections.</p> <p>E-governance and high civil society is observed.</p>	<p>Interest groups driven by the state to promote specific interests.</p> <p>People and tribes are strongly controlled by the state as regards information flow.</p> <p>Cyber security is high with the state protecting its population.</p>
Meshnet society	<p>The positioning of social media as key information source, supports information travel freely across the EU.</p> <p>EU being close to the cities local strategies and movements are supported.</p> <p>EU wide important topics are taken up easier by citizens.</p>	<p>In view of fake news outbreaks, individuals organise themselves in networks and share information via social media.</p> <p>Borders have increased importance, which is counterbalanced by the freedom of internet.</p> <p>Growing inequalities and ethnical disputes revive.</p>	<p>Direct digital democracy is in place with people being highly involved in decision making.</p> <p>Agile governments are open to citizens wishes and needs and the youth is put at the forefront.</p> <p>Established norms and ethical principles shape the society rules.</p>	<p>Splinternet often cuts communication and people's networks lose connection.</p> <p>NGOs have little contribution fuelling a stronger citizen participation.</p> <p>Not everyone is connected resulting to more inequality and unfairness.</p>

	EU as one	EU in pieces	Metagovernance	The end of governance
Symbiosis	<p>The Green Deal is a fact and humanity has realised its inextricable connection with nature.</p> <p>Green growth and territorial and social cohesion are in place.</p> <p>More policy initiatives on biodiversity, perseverance, cooperation and justice are in place.</p>	<p>Nature revives, however in an uncoordinated way, as policies differ per country and region.</p> <p>Biotope networks do not function properly as borders are reintroduced that block movements.</p> <p>Climate change still a threat as no joint solutions are found.</p>	<p>Societies function based on norms and guidelines for sustainable development, following international guidelines.</p> <p>Sustainable green and blue development happens at regional scale.</p> <p>Small settlements and regionalisation prevail for the protection of the environment.</p>	<p>The state puts the overall rules for sustainable development.</p> <p>Governance mistrust hampers development and nature revival happens in an anarchic way and not through coordinated actions.</p> <p>Often decisions are made that put environment at risk, as they promote economic growth instead of green growth.</p>
Anthropocene	<p>Focus on economic growth and development, with little action against climate change.</p> <p>Hypercapitalism leads to greenwashin policies without concrete impact.</p> <p>Extreme weather phenomena continue and the EU is rather reactive.</p>	<p>Member states pursue own initiatives according to own policies.</p> <p>Global powers continue heavily investing in the region putting stronger pressure on the environment.</p> <p>People move to safer places due to the environmental situation and the revival of ethical disputes.</p>	<p>Growth differs from region to region with some being more privileged than others.</p> <p>Sustainable development at regional levels highly depends on international norms.</p> <p>NGOs are highly involved in climate change actions, often hampered by regional interests.</p>	<p>Growth is put as priority with international giant companies operating in the region.</p> <p>Clean technology is used to overcome environmental fallouts.</p> <p>Innovation is a panacea for solving most environmental problems, with tackling resource efficiency being the least successful</p>
Stay where you are	<p>Freedom of move, services and goods is a norm, however, people prefer to support 'EU in my region', staying in their homeplaces.</p> <p>Slowbalisation has allowed for moderate growth and a better environmental condition.</p> <p>Reduction of carbon footprint is also achieved through less travels, as people telework from home.</p>	<p>Staying in the region has been the last solution towards more sustainable development.</p> <p>People travel to a moderate extent as border controls have been re-introduced.</p> <p>People work from home for international companies the countries have made agreements with.</p>	<p>Stronger community feelings are built within countries and regions, as people stay and support their localities.</p> <p>The shrinking cities and ageing effect is gradually reversed, as migration is reduced and young people move less.</p> <p>New opportunities for the population stemming mainly from localising the tourism offers.</p>	<p>Within countries people stay in their regions with limited migration.</p> <p>The effects of brain drain are reduced, but also employment opportunities are few.</p> <p>Technology and digitalisation support education and employment opportunities, however those not connected feel disadvantaged.</p>

	EU as one	EU in pieces	Metagovernance	The end of governance
Rambling on	<p>People move freely across the EU and spend time in different places.</p> <p>Increasing EU integration and development of a common EU identity.</p> <p>Brain drain increases with some places being left behind as people search for new opportunities.</p>	<p>High urbanisation with people concentrating in large metropolitan areas.</p> <p>High critical mass concentrated in urban areas often underexploited due to restrictions in movement and ideas' exchange.</p> <p>The influence of global external powers is high making integration more difficult.</p>	<p>Within societies and countries people move and exchange ideas.</p> <p>The labour force is small and well-educated but more labour force is needed from other regions and countries.</p> <p>Urban hopping, i.e. people moving and changing jobs being digital nomads across the regions is a norm.</p>	<p>Cities are the places to be and youth moves out of rural areas, resulting in more shrinking and deprived cities.</p> <p>With the state being the key player and civil society having a small role, urban sprawl, insocial equalities and poverty risks are possible.</p> <p>Services are concentrated on urban areas, with e-services taking place to some extent and to a larger extent being poorly provided.</p>

Source: authors' own

Table 4 below takes the assumption a step further and puts the extreme narratives of the common and sepcifci assumptions developed under the scenario crosses, into perspective and in one matrix.

Table 4 Putting the extreme narratives of scenario logics together

		Common			
		Eternal sunshine of EU integration	One for all and all for one	United states of the EU	Divided fragmentation
EUSDR	Danube regional-lands	<p>Strong topical community feelings within Member States.</p> <p>Basic digitalisation usage hampers free and uncensored communication.</p> <p>Cyber attacks and interests from external forces prevailing.</p>	<p>EU integration in place but clashes between different opposing groups.</p> <p>Splinternet effects where the external powers are still influencing places.</p> <p>Limited digital accessibility and more EU funding uptake needed.</p>	<p>Groups leaning towards EU or external powers, depending on their interests.</p> <p>Investments is a hot topic of controversies between EU and global powers.</p> <p>Limited civil society in place.</p>	<p>Global interests influencing groups of people.</p> <p>Fake news and cyber attacks increase.</p> <p>High infrastructure funding rebuilding and re-branding many places.</p>
	Digital revolution centres	<p>Hyper digitalisation overcomes location and distance.</p> <p>Open information flows unite people in groups to regenerate EU values.</p> <p>Big corporations influencing the groups of people.</p>	<p>EU community well-being and common EU identity developed.</p> <p>Strong participatory democracy with e-governance.</p> <p>Citizen groups represented in EU institutions.</p>	<p>Nation states as key decision making powers.</p> <p>Digitalisation supports the integration of citizens in Enlargement countries.</p> <p>Inequalities decrease due to strong community feelings, for which digital</p>	<p>Strong community feelings but limited EU integrations.</p> <p>Environmental protections becomes secondary. Health problems stemming from climate change.</p> <p>High economic growth based on</p>

				connectivity is a prerequisite.	external influence.
	Hyper-networked society	<p>Individuals are in the forefront of society.</p> <p>EUSDR policy frameworks in place with citizens having high decision making power at local level.</p> <p>Social media the key interaction means.</p>	<p>Direct democracy and people centred EU cohesion.</p> <p>Multi-level governance fully in place with digital support.</p> <p>Strong EU regulations for environmental protection.</p>	<p>People networks are the key citizen organisation for rights support movements.</p> <p>Clashes between member states on EU legislation.</p> <p>EU funding supporting citizens' ideas but mainly on soft power issues.</p>	<p>Individuals form the civil society networks through social media.</p> <p>Strong cyber security and censorship.</p> <p>High economic development through Foreign Direct Investments in places with potential.</p>
	Future nostalgia	<p>High state support and limited EU funding to places digitally left behind.</p> <p>Territorial quality of life increases.</p> <p>EU institutions become unstable and citizens participation is low.</p>	<p>Strong cohesion and equity across places and people.</p> <p>High EU intervention to increase digitalisation and cope with global competition.</p> <p>Better environmental condition across places.</p>	<p>Retro approach to technology with digital illiterate senior population.</p> <p>Little dependency on global players and high inequalities within the EU.</p> <p>Strong governance of the commons organised at regional level.</p>	<p>Different approach to well-being following de-growth and little economic progress.</p> <p>Nature valorisation within regions.</p> <p>More socialisation, energy democratisation, sustainable services to cope with little economic growth.</p>
EUSAIR	Living by the day	<p>Youth staying in their regions having limited trust in EU.</p> <p>Environmental policies are dealt at regional level and EU has only an overarching jurisdiction providing guidelines.</p> <p>Brain drain reduces and external forces increase importance.</p>	<p>EU supporting places for economic growth.</p> <p>Frequent clashes between global corporations and EU regulations.</p> <p>Promoting EUSAIR as the key philoxenia element of EU.</p>	<p>Full exploitation of primary and secondary economic sector to increase national GDPs.</p> <p>EU regulation has little effect on environmental protection.</p> <p>External global powers and economic behemoths play a key role.</p>	<p>Economy led by the 'invisible hand'.</p> <p>Traditional jobs at stake with limited state support.</p> <p>Tourism as the key income provider.</p>
	Place-based green co-existence	<p>Carbon neutrality in the region.</p> <p>Organisation in small settlements following international guidelines for environmental protection.</p> <p>Digital literate population enjoys</p>	<p>EU Green Deal in place and coal production is limited.</p> <p>EU schemes support rewilding strategies and ecosystems services.</p> <p>EU support to provide incentives for</p>	<p>Sustainability efforts in place with little EU funding support.</p> <p>Economic growth versus environmental protection.</p> <p>People in small communities</p>	<p>Regional level with limited power.</p> <p>Citizen groups at local level producing bio and sustainable food.</p> <p>Teleworking for big companies which substitute</p>

		more opportunities.	people to stay in their regions and revive the EU identity.	heavily relying on state support.	the state power in many cases.
	People out - nature in	High urbanisation leaves space for nature. Common EU values reduce and global powers have more influence in the urban development. Critical mass of skilled people concentrated in major centres but with little internationalisation.	EU support to shrinking areas and places left behind. Nature restoration programmes for the EUSAIR for non-urban economic areas improve the environmental situation. Eco-tourism the key EUSAIR area economic source.	Countries in the EUSAIR deal differently with the vast nature areas often leading to exploitation. Tourism is dedicated to the rich and seen as national asset. Air travel is banned and rail connections serve urban areas and EU is characterised by global cities.	Limited incentives to keep people in the EUSAIR, instead nature revives in the empty places. Brain drain is high but employment in EU for non-EU members is difficult. Rail connections revive with support of external powers.
	You only "leave" once	People on the move and high brain drain. The EU as Single market prevailing. Coal still being the key energy source with little EU regulation on changing that.	High depopulation despite the strong EU cohesion. EU rural policies restricted to agriculture production and tourism. Senior population keeping up the EU values and local traditions.	Richer EU member states attract the skilled workforce. Higher inequalities between winners and losers in the EU. The region loses its vibe despite the state support for reviving.	Interaction with other communities to build an EU integration and revive EU values. Urban areas are the heart of economic growth. Digital poverty in rural areas.

Source: authors' own

This table together with the information presented in this Annex were the starting point for the preparation and organisation of the interactive role-play workshop. The information was used for the design of the role-play workshop, the description of the roles for the participants and the tasks. The role-play workshop was an important step in the process of the development of the alternative territorial development scenarios. During the workshop, the different future pathways were discussed. Given that these may have distinct implications for territorial development, the spatial implications were also discussed during the workshop, where also the direction for the four final scenarios was selected. Based on the inputs of the workshop the drafting and finalisation of the alternative territorial development scenarios followed.

4 Annex 4 – Research recommendations

Recent changes and challenges, such as the COVID-19 pandemic and the war in Ukraine, are just examples of unexpected events that have influenced several aspects of people's lives, shaken the economy, challenged political systems and policies' abilities to deal with uncertainty. What is more, they provided valuable food for thought about the future, with foresight gaining even more importance. The European Commission publishes an annual foresight report, while several EU member states launch foresight studies and initiatives. This has shown that foresight gets increasing attention at different levels and a more intensive use of foresight is necessary.

The territorial scenarios developed for the ESPON TEVI 2050 project have showed that the methodology of territorial foresight applied in the framework of the project has worked and can be applicable to a variety of themes. This has also highlighted the usefulness of the method for other themes, as well as other territories. The interactive and participatory part of the project, which has been the core of the process, has allowed participants to think territorially, even without particular territorial background, by initiating discussions on first maps about the different futures, and offer a format for structured thinking about the future. The participatory approach of the project has also allows to think out-of-the-box and unfreeze mental models and biases of participants, as well as on capitalising on experts' knowledge, to overcome data limitations.

Regarding the future steps on territorial foresight, a few ideas are:

- **Further testing the method on other topics.** The territorial foresight method is a flexible method that can be adjusted to different topics. Stimulating further discussions around 'What if' questions can be of relevance for policy makers.
- **Further testing the method on other territories.** So far the territorial foresight method has been implemented to develop territorial scenarios for the Baltic Sea Region in 2050, through the ESPON BT 2050 project, and for the Danube and Adriatic Ionian Regions, through the ESPON TEVI 2050 project. Implementing the method to different other territorial levels, not restricted to macro-regions, can be also relevant and useful for decision makers of different territories.
- **Implementing foresight in policy making.** Making the territorial foresight method more accessible to policy makers and involving them in the process increases ownership and makes the territorial scenarios more policy and place-based relevant.
- **Including foresight in other research activities, beyond the scope of foresight.** Including the aspect of foresight in other research projects, makes every project results more future-oriented and more 'futureproof' through identifying challenges and trends that may play a role in the development of the focus of each project.
- **Testing further participatory approach methodologies, such as the role-play and forecathon methods.** Both the ESPON BT 2050 and the ESPON TEVI 2050 project have implemented the role-play workshop method to identify different possible scenarios and their territorial implications, based on the preliminary findings of the project. The role-play workshop helped in stepping participants out of their actual roles and taking over a role assigned to them, so as to discussed unbiased and openly different futures. These workshops helped the team in already identifying directions for the territorial scenarios, as well as first territorial implications. The forecathon method i.e. a *forecast marathon*, is an event that aims to stimulate participants to forward thinking and co-working so as to identify the future dimension of different developments or trends in a co-creative and interactive approach. It is an off-the-shelf participatory tool which allows for speedy forecasts through a quick design and operationalisation of a participatory approach. The added value of forecathon is that from the very beginning participants own the process and work together for a common solution. It can, therefore, be used 'ad-hoc' for exploring different future pathways. Both methods can be further tested in different contexts, for different territorial levels and topics.
- **Use the results of the process for developing territorial visions.** The results of the territorial foresight process can be used to continue thinking about the future. Territorial scenarios can be the starting point for different territorial levels to start developing territorial visions. Territorial visions are key for the development of the territories as policy makers and citizens of the different territories can jointly develop a desired direction and future for their place.

The territorial foresight method broadens our thinking and perspectives. It is a discipline that helps exploring different possible future pathways, which eventually supports in taking the right decisions and choices to develop desired place-based and people-centred policies. Such way of thinking needs to be further cultivated, as future thinking is today more necessary than ever.

Besides exploiting further, the opportunities and advantages of the territorial foresight method and the different participatory approaches that can be implemented, the ESPON TEVI 2050 project results can serve as inspiration or starting points for their further capitalisation.

Regarding the future steps on capitalising the project results further, a few spin-off ideas are:

- **Exploring further diversified scenarios based on evolving trends.** As highlighted throughout the report, changes, trends, and new developments happen daily. Territorial scenarios are flexible tools, hence they can be developed on more specific themes, to get a more concentrated view on specific trends. The last years' events, such as the COVID-19 pandemic and the war in Ukraine can offer some first ideas for further scenarios. Examples of territorial scenario ideas can be, for instance, 'How will the future of the Danube and the Adriatic Ionian macro-regions look like in the post-Ukraine world?', or 'What if another pandemic breaks out in the EU by 2060, how will the Danube and Adriatic Ionian macro-regions look like?'. Further examples can be related to broader topics and wider territories. For instance, examples can be a territorial scenario for the Mediterranean area by 2060, or a territorial scenario for the EU Enlargement with Ukraine, Moldova and the Western Balkans by 2060.

Such scenarios can be developed as a short ESPON spin-off project. The project could run through a co-creation approach with the relevant stakeholders and include roughly three workshops per macro-region, (indicatively, one workshop to discuss and select relevant trends, one workshop to discuss alternative scenario directions and scenario matrixes, and a last workshop to discuss policy recommendations). The findings of the workshops would result in two short policy-oriented reports (one for each macro-region), with short territorial scenarios stories and policy recommendations. The focus could be on scenarios which thematically accompany ongoing policy debates either at EU level or in the macro-regions.

- **Building synergies with other ESPON projects.** Synergies of the ESPON TEVI 2050 project with other ESPON projects can offer a more integrated approach towards the capitalisation of different projects results. An example of such a synergy would be with the ESPON ACTAREA webapp project. The ESPON ACTAREA project built on soft cooperation beyond administrative boundaries, looking at how to implement and coordinate policy implementation in relation to existing governance levels. Its webapp tool is targeted to policy makers and practitioners and aims to contribute to the design and implementation of soft territorial cooperation instances. The webapp allows to ask questions such as 'Where are growth hotspots?', 'Where are potential growth factors located?' etc., allowing participants to use a set of drawing tools and draw on a canvas with predefined features to develop schematic representations that are easily comparable. The tool is designed to work on territories and spatial features and to be used for both physical and online meetings. Bridging the territorial scenario results of the ESPON TEVI 2050 project, a more focused territorial discussion through the ACTAREA webapp tool can take place to identify possible future actions and visualisations, following the scenario stories, on specific territories and on possible cooperation. For instance, if a specific aspect of the scenario is to the interest of the relevant stakeholders, the webapp can help them in defining and mapping starting points to get to that direction.

Further synergies can be built with the other ESPON territorial scenarios projects, such as the ESPON BT 2050 and the Alps 2050, on territorial scenarios for the Baltic Sea macro-region and the Alpine Space macro-region, respectively. Project results of these projects can come together and be discussed by the respective macro-regional strategies' players to develop a future vision, i.e., a desired future shared by all, for the macro-regional strategies. Example questions to this exercise can be 'Where do we want the macro-regional strategies to be in 2060?', 'What is a desirable future for the macro-regional strategy by 2060?' etc.

In other projects, the approach to territorial scenarios could be used to better illustrate the policy recommendations made by ESPON research and show how territorial development might differ in case the recommendations are followed.

- **Developing joint macro-regional strategies' plans.** Following up on the ESPON TEVI 2050 policy recommendations to think of and develop macro-regional sector plans and strategies, the four macro-regional strategies can come together to identify joint challenges and opportunities and develop strategies, plans or roadmaps on key sectors of their interests. Possible examples may include the green, digital and just transitions, demographic changes, carbon neutral transport or environmental and biodiversity protection. Such approach would bring the different macro-regionals strategies' players in more structured discussions and more integrated approaches towards the future of macro-regional strategies.
- **Video animation, visibility and promotion material.** Different communication activities can be put in place to capitalise and disseminate the project results of the ESPON TEVI 2050 project. 'What if ESPON 2050 was a movie?', i.e., developing a video animation of the key storylines of the project, starting with the 'status quo' of each macro-regional strategy in focus, and then showing visually the development of the territory from today until 2050, following the scenarios' story. The stories will be narrated in short videos and can be used as communication material in the Danube and the Adriatic-Ionian regions' websites, or during events, such as the respective macro-regional annual forums, ESPON annual events or other macro-regional strategies' events. Such a video could simply be a map of today which step by step is changing and evolving into a scenario map for 2050¹, commented by speaker explaining what is happening and way.

In addition, focused articles or short blogposts in the ESPON magazine or the macro-regional strategies' websites can also increase the outreach of the results. Both communication activities will be targeted to Danube and Adriatic-Ionian strategies' stakeholders to increase awareness on the future of their territories.

¹ This could be done in form of a map-based version of the visual utopias developed by Jan Kamensky <http://www.jan-kamensky.de/>

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