IMAJINE

Scenarios For The Future Of European Spatial Justice

"We will not know our own injustice if we cannot imagine justice.

We will not be free if we do not imagine freedom."

Ursula K. Le Guin

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WHAT IS IMAJINE?

IMAJINE (Integrative Mechanisms for Addressing Spatial Justice and Territorial Inequalities in Europe) is a Horizon 2020 European Union research project. IMAJINE's 15 participating institutions represent 13 countries. You can learn more about the project at www.imajine-project.eu.

Economic prosperity and standards of living may vary depending on where people live and work. These neighbourhood, municipal, regional, or national disparities go against the principle that EU citizens should have equal rights and opportunities no matter where they live.

IMAJINE explores ways to reduce **territorial inequality** – that is, disparities between different places in Europe.

IMAJINE works to promote **spatial justice** – that is, to ensure different places are treated fairly and equitably, and that people's ability to realise their rights does not depend on where they live.
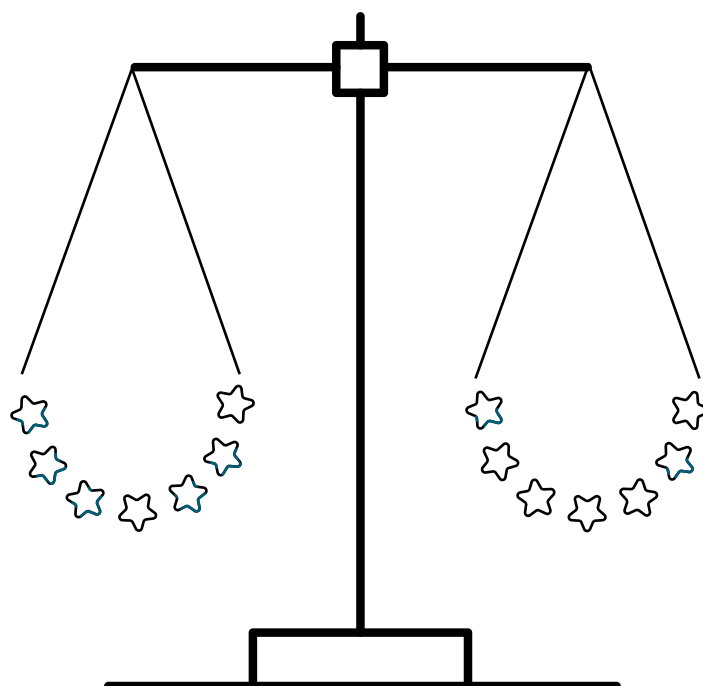
WHY SCENARIOS?

As part of the broader IMAJINE project, one team was asked to look at the future using scenario planning. This approach imagines several plausible futures that challenge current assumptions about where Europe is headed. The scenarios, which are informed by emergent IMAJINE findings, are the first step in developing useful methods that can be applied to reduce territorial inequality and promote spatial justice in Europe.

imagined future contexts

These scenarios do not represent desired futures, nor are they predictions of what will come to pass. They are **imagined future contexts** for the question of European territorial inequality and spatial justice, crafted to **stretch plausibility** and **challenge assumptions** about what the future may hold.

Justice is not computational, even when the courts tell us that they are deciding a case "on the balance of probabilities", as the standard of proof is sometimes defined. The economist John Kay points out that "legal reasoning uses a narrative rather than a probabilistic approach": we argue a case in court and seek to win by telling the more compelling or persuasive story.

how inequality and injustice might be understood tomorrow

Given that justice is narratively and socially defined, it is insufficient to merely "run the numbers" when considering the future of spatial justice. We need to think, not just about how Europeans define regional inequality today (something that is in itself a main goal of IMAJINE), but **how inequality and injustice might be understood tomorrow.** No one has privileged access to the future, and it is impossible to gather data and evidence from events which are yet to happen. Even when foreseeable trends do seem to exist, the experience of COVID-19 has reminded the world how easily a seemingly inevitable curve can be bent or broken by events which decisionmakers had not accounted for.

Therefore, IMAJINE uses an approach which combines **narrative and systems thinking**, evoking plausible visions of tomorrow in order to challenge assumptions, stretch perceptions, and shift people's mental models: **putting the imagined future to work in the service of the present.**
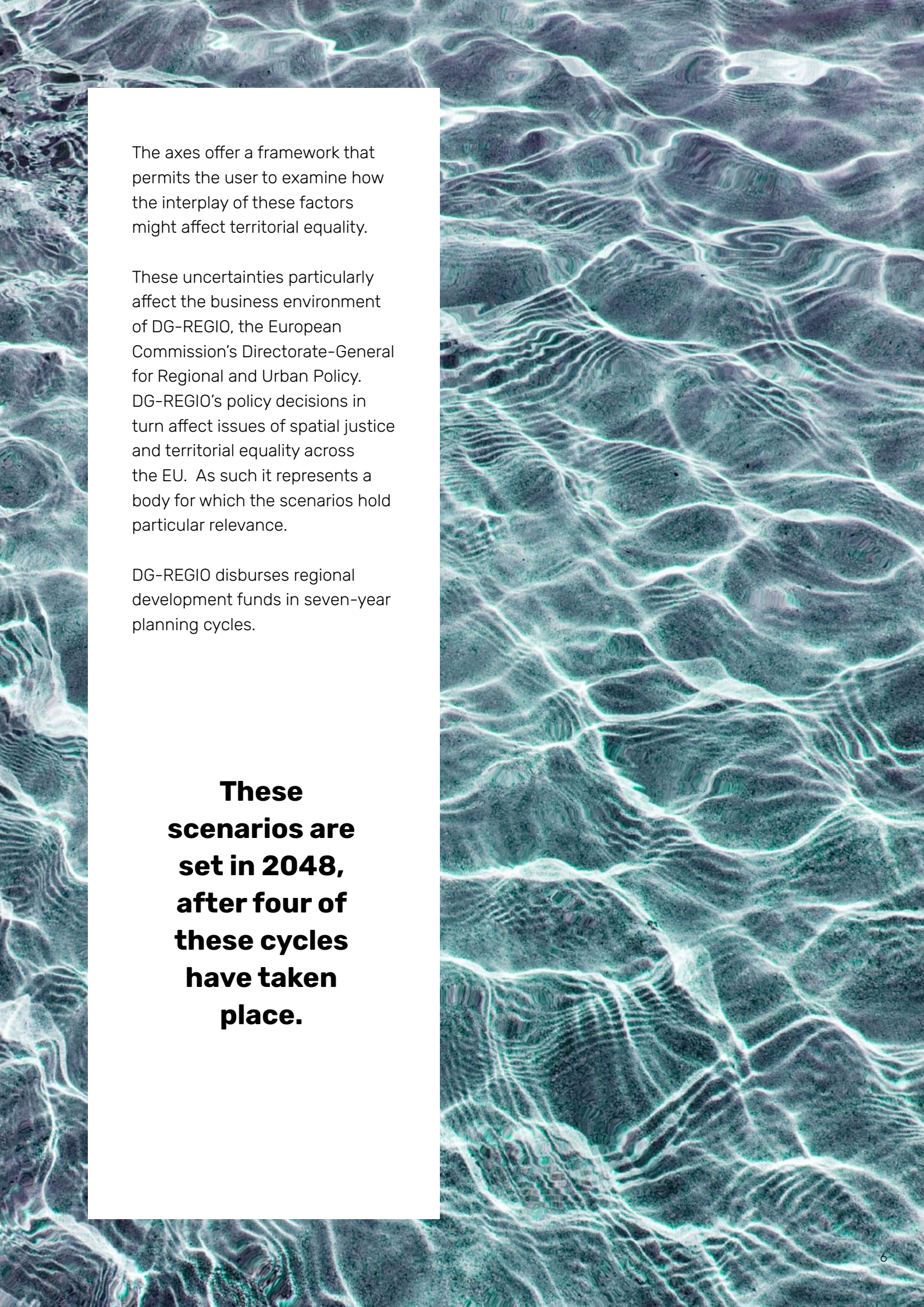
The scenarios emerge from a 2 x 2 grid which represents different outcomes to two key uncertainties:

- **the degree of either solidarity or autonomy** in policymaking across the European Union, and

- **the pursuit of either economic prosperity or well-being** as a prevailing goal of European society.

Solidarity is a key concept underpinning EU territorial cohesion, with **autonomy** as a way to express concerns on spatial justice and perceived unfairness.

Notions of **economic prosperity** suggest a greater emphasis on measures such as GDP, whilst **wellbeing** reflects more holistic measures of inequality. In the response to COVID-19, we have seen policymakers make these kinds of "wellbeing vs. prosperity" trade-offs as they weigh measures which may protect citizens while adversely impacting the economy.

Solidarity

Silver Citadel

Green Guardian

Economic prosperity

Wellbeing

Silicon Scaffold

Patchwork Rainbow

Autonomy
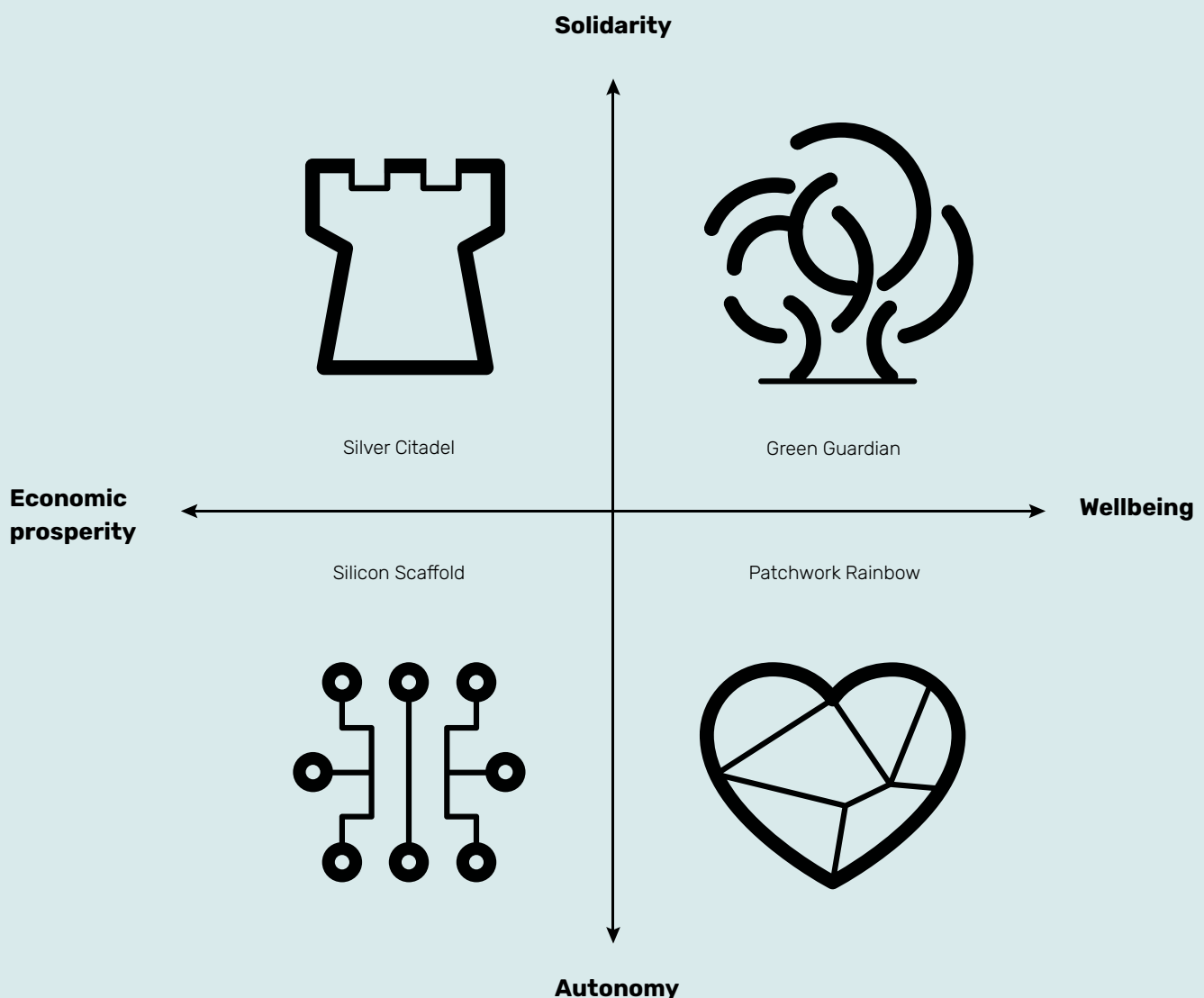
The axes offer a framework that permits the user to examine how the interplay of these factors might affect territorial equality.

These uncertainties particularly affect the business environment of DG-REGIO, the European Commission's Directorate-General for Regional and Urban Policy. DG-REGIO's policy decisions in turn affect issues of spatial justice and territorial equality across the EU. As such it represents a body for which the scenarios hold particular relevance.

DG-REGIO disburses regional development funds in seven-year planning cycles.

These scenarios are set in 2048, after four of these cycles have taken place.

USING THESE SCENARIOS

These scenarios are intended for a wide range of stakeholders as the basis for discussion around territorial inequality and spatial justice. Each future can serve as a vantage point on the present, from which we may interrogate and reframe our understanding of the here and now.

Questions might include:

How might your sector, institution, community, or region fare in this scenario? What strategies would need to be in place for you to achieve your goals?

How might the dynamics of a pressing current issue, e.g. regional autonomy movements, Brexit, play out in each of these scenarios?

How might inhabitants of these futures look back on the decisions and choices you are making today?

What signals of emerging change in the present does each scenario highlight?

Are there indicators in your present context which suggest we might be moving towards one of these scenarios?

What might the near-term of each scenario look like in the context of your sector, institution, community, or region?
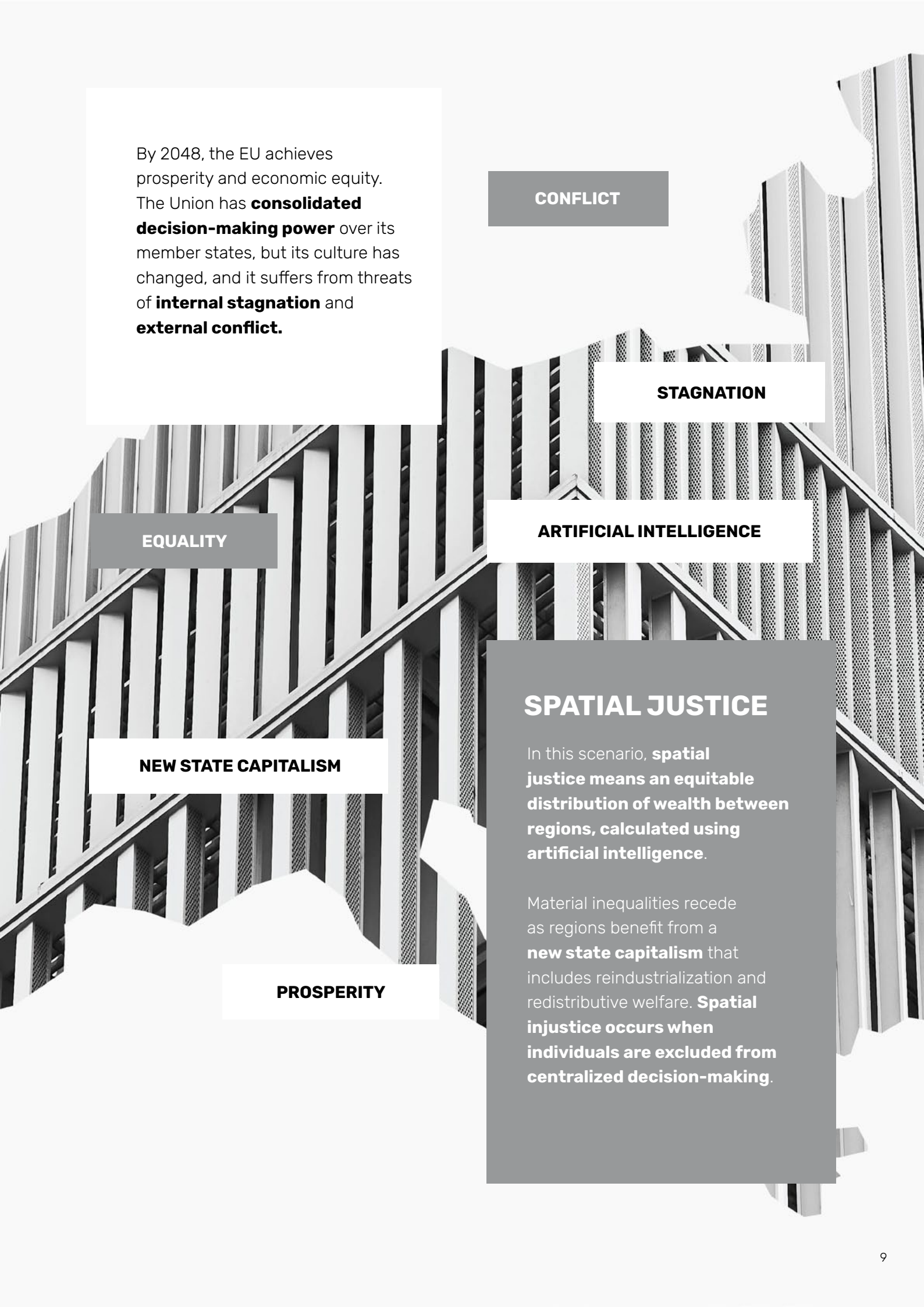
How might contemplating this near-term affect your choices, policies, and strategies?
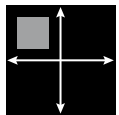
SILVER
CITADEL

By 2048, the EU achieves prosperity and economic equity. The Union has **consolidated decision-making power** over its member states, but its culture has changed, and it suffers from threats of **internal stagnation** and **external conflict.**

CONFLICT

STAGNATION

EQUALITY

ARTIFICIAL INTELLIGENCE

NEW STATE CAPITALISM

SPATIAL JUSTICE

In this scenario, **spatial justice means an equitable distribution of wealth between regions, calculated using artificial intelligence**.

Material inequalities recede as regions benefit from a **new state capitalism** that includes reindustrialization and redistributive welfare. **Spatial injustice occurs when individuals are excluded from centralized decision-making**.

PROSPERITY

STORY HIGHLIGHTS

In the wake of the COVID-19 pandemic, EU and national institutions intervened robustly to target development in lagging areas of Europe. The shared experience of the pandemic and the proactive role played by the EU in leading the successful recovery strengthened public support for **pan-European solidarity** and the European Social Model, with a retreat of both populism and separatist movements.

Arabic is now an official language of the EU

Years of immigration, and changing attitudes and behaviours around sustainability, have altered European culture and society. The EU appointed its **first Muslim president**, a Swede of Somali ancestry, in 2035, and Arabic is now an official language of the EU. The legacy of internal migration has become evident, as former migrant workers from Eastern Europe who had settled in countries of Western and Northern Europe exerted a growing political influence promoting cross-European ties. Meanwhile,

remittances that had been sent home and the entrepreneurial skills of return migrants laid the foundations for **Eastern Europe's new industrial revolution and economic boom**.

strengthened public support for pan-European solidarity

European citizens worry about **stagnation**, and the limited channels through which they can influence the new centralized politics. Their calls for political and economic freedom accompany a rising pacifist movement troubled by wars to the east and tensions to the south of the EU's territories. In public, Europe's leaders blame peace activism on foreign agitators and next-generation information warfare. **Concerns about an ageing Europe** are also emerging; what is the fate of Europe when countries like China are also facing an ageing population crisis?

CULTURE AND SOCIETY

Migration from the global south during the 2020s and 2030s has **reshaped European values**. Alcohol consumption has dwindled due to cultural, health, and environmental concerns; new recreational drugs are preferred. In this Europe, it is considered strange and old-fashioned to drink wine! Europeans embrace a wider range of gender and sexual identities, and have developed new categories to reflect people's preferences.

For 20 years, the EU has taken a mission-oriented innovation approach to tackle Europe's most serious and difficult challenges, collaborating with business and civil society. Collective bargaining with the union movement achieved a "Just Transition" to a sustainable 21st-century economy. The result was a Scandinavian-style **"New European Social Model", supported by artificial intelligence**. This model balances equity and prosperity, but requires social conformity to function. For example, in-migration has been restricted to maintain the delicate balance of regional equality.

ECONOMY

The new centralized pan-European state capitalism includes a **unified EU-wide tax and welfare system**. This approach distributes wealth equitably across Europe's regions. Next-generation automated "manufactories" create and distribute physical goods locally, complemented by circular economy practices.

GEOPOLITICS

The EU has expanded eastwards to include Turkey, Ukraine, and Belarus. Southern expansion is blocked by the influence of China, Europe's rival in Africa. Europe's armed forces, largely automated, are in **sporadic conflict** on the Russian border. Europe is more isolationist and protectionist. "Fortress Europe" aggressively heads off migration from climate refugees, and the humanitarian crisis to Europe's south is complicated by Chinese rivalry and the cultural loyalties of Europeans descended from southern migrants.

ENERGY

Europe's energy economy minimises imports and maximises exports. Fossil fuel use is reduced, and the energy sector focuses on **exports from hydrogen and zero-carbon fuels.**
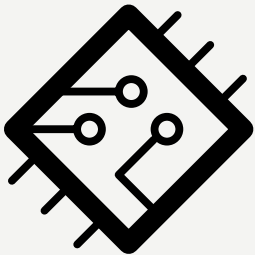
TECHNOLOGY

Conflict to the East drives technological innovation: within Europe, innovation in manufacturing, transport, and telecommunications is racing ahead. **The EU has also become a significant power in outer space.** However, Europe relatively lags its rivals in genetic engineering and biotech, affecting medicine, agriculture, and other sectors.
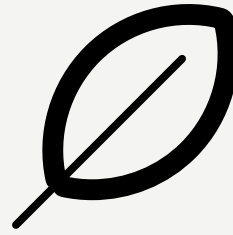
ENVIRONMENT

The EU sees environmental protection as necessary to ensure growth, not an end in itself. Its model still depends on resource exploitation, despite an **increased focus on sustainability**. The ecological debate has been reduced to a clear and quantified set of specified criteria for sustainable growth. **European Sustainability Goals** have evolved to replace the UN's Sustainable Development Goals (SDGs), including a drive to **rezone polluting industries into outer space** and develop space-based solar platforms. The EU explores the use of cloud seeding technology to prevent drought and strengthen food security.

As a humanitarian, I would be deeply concerned not only by the battles along the borders, but by restriction on immigration. Is this Europe distributing aid and assistance beyond its territory, and if so, is that aid dependent on ideology?

Malka Older
Faculty Associate, School for the Future of Innovation in Society, Arizona State University
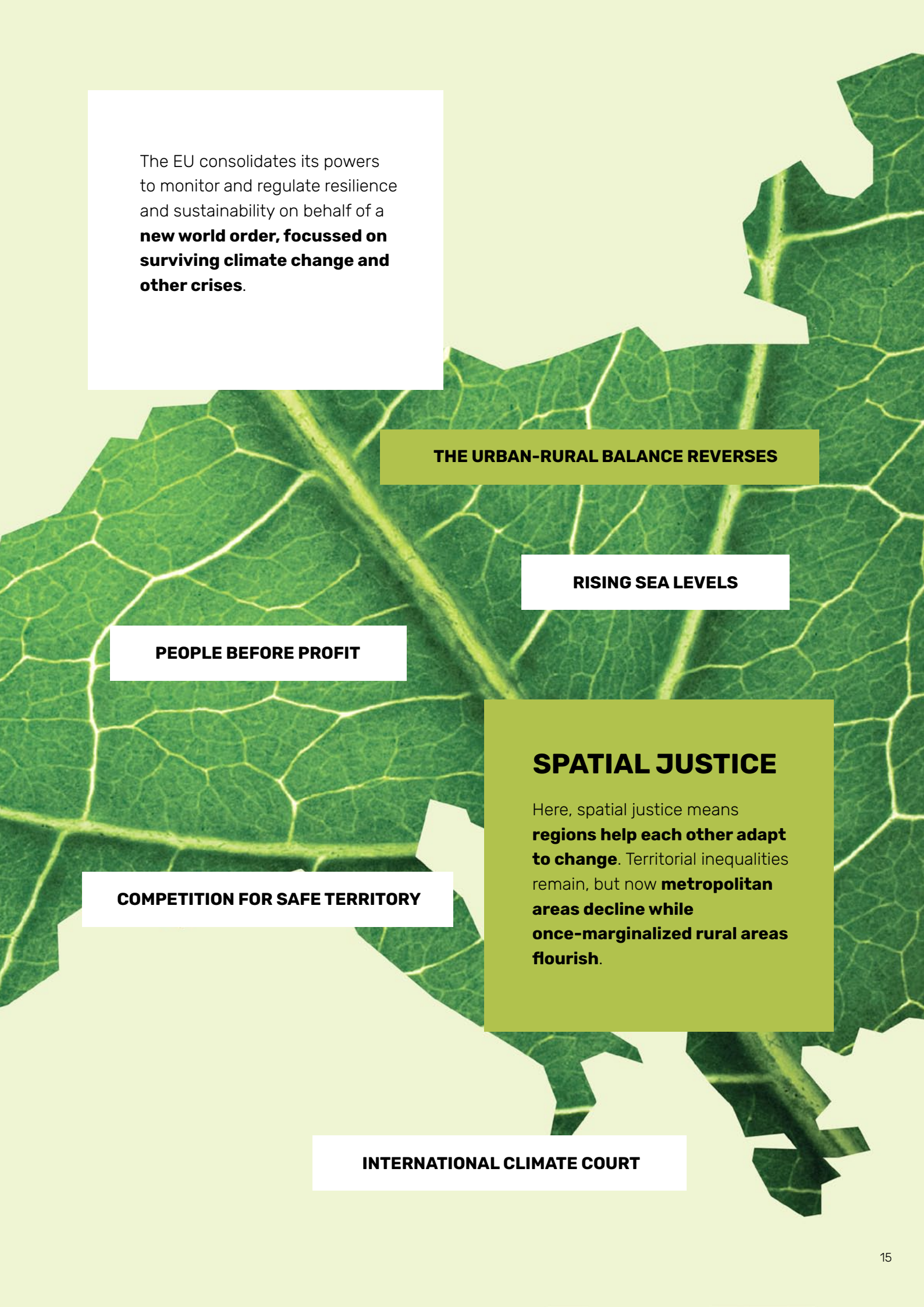
GREEN
GUARDIAN

The EU consolidates its powers to monitor and regulate resilience and sustainability on behalf of a **new world order, focussed on surviving climate change and other crises**.

THE URBAN-RURAL BALANCE REVERSES

RISING SEA LEVELS

PEOPLE BEFORE PROFIT

SPATIAL JUSTICE

Here, spatial justice means **regions help each other adapt to change**. Territorial inequalities remain, but now **metropolitan areas decline while once-marginalized rural areas flourish**.

COMPETITION FOR SAFE TERRITORY

INTERNATIONAL CLIMATE COURT

STORY HIGHLIGHTS

After the COVID-19 pandemic, crises and disasters continue. Large parts of the Netherlands have flooded, and Dutch refugees have spread across the EU.

Coastal areas and crowded cities have been abandoned, as people feared **the impact of climate change**, including **rising sea levels** and further pandemics. In the 2020s and 2030s, climate change resulted in the **re-emergence of ancient pathogens** and resulted in a series of zoonoses - animal diseases which were transmitted to humans.

Rural areas have become highly valued for their lifestyle opportunities, and telepresence technologies have facilitated the move away from urban living. There has been increasing **competition for territory perceived as safe from the ravages of climate**.

Excess is now passé

European citizens vilify Western politicians of the past for putting economic growth ahead of the emerging climate catastrophe. The **International Climate Court**, founded in the 2030s, puts some former politicians on trial for their actions.

"Excess is now passé". Europeans feel **remorse for the environmental costs of their old lifestyle.** Ideals of sustainability, wellbeing, and civic responsibility dominate.

living as though my fulfilment depends on the fulfilment of the other

China has become the preeminent global power, thanks to its leadership through the climate catastrophe. This brings **increased esteem for Chinese culture and values**, supplanting America's 20th-century cultural hegemony.

Europeans strive to live up to a communitarian ethos, **"living as though my fulfilment depends on the fulfilment of the other"**. People value **material security over abundance**, and cherish a sense of community, on- or offline.

Europeans prize volunteering, sports, "big culture", and other activities which offer **a sense of belonging.** A New Olympiad showcases athletic skills, but also gives awards for achievement in the arts, philosophy, and humanitarian endeavours. Europeans send a team to the 2048 Kuala Lumpur Olympics hoping to win gold for Best Regional Reduction in Carbon Footprint.
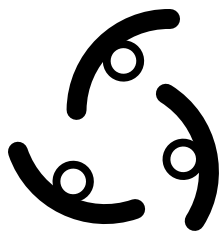
CULTURE AND SOCIETY

Europe proclaims that **"a society is only as strong, healthy, and prosperous as its weakest, sickest, or poorest member"**, although practice doesn't always live up to the rhetoric. When the Dutch became climate refugees, it reshaped European attitudes to refugees and to climate change.

The threat of the climate crisis causes people to **value human life more than ever before**. In the 2020s and 2030s, solidarity became less about having values in common with your neighbours or people who shared your ancestry and more about modifying your behaviour to stop disease, minimise environmental damage, and protect fellow Europeans. This included wearing masks during a pandemic, accepting public health restrictions, and abandoning unhealthy or environmentally damaging practices like meat-eating.

Europeans in 2048 favour security over privacy, and accept tight surveillance and regulation. The EU strives to **end inequalities based on race, gender, and age**.

The new world order has agreed successors to the UN Sustainable Development Goals (SDGs) of the 2020s. These incorporate **new ideas of social and economic justice, emphasising harmony, conflict avoidance, and equity**. EU Structural Funds are no longer distributed according to GDP, but on an assessment of social and environmental threats and needs, with **success measured by a range of wellbeing indicators**. Integrated, multi-level policy-making means that **environmental sustainability and preventative health strategies** are foregrounded across all areas of government.

Businesses and individuals receive **sustainability and wellbeing ratings** which determine access to contracts and opportunities for advancement. Crime includes attempts to manipulate, trade, and game these ratings to private benefit.
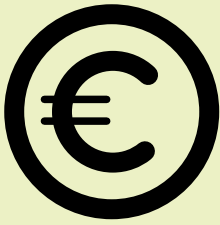
ECONOMY

Europeans talk of **"yield"** and **"fair share"** instead of **"profit"** and **"net worth"**. Today's regulations include restricted movement of persons, goods, and services. Meanwhile, ownership of second houses was curtailed in the 2030s. As a result, economic decisions are **locally scaled** and **sensitive to spatial issues**.

Rural-urban disparities in services and infrastructure have closed with the shift in population. In-migrants to rural areas have bought up farm buildings and land sold off as livestock farming declined with the rise of veganism and the advent of lab-grown meat. The EU's Common Agricultural Policy has been replaced with a **Common Food and Health Policy**.

Where possible, the EU forms **"bioregions"**: self-reliant areas able to maintain their own food, energy, water, and community resources. A **Europe-wide network of family farms** delivering healthy, sustainable produce replaces factory farming. In the struggling cities, people eke out a living in **farmers' collectives and permaculture projects**.

GEOPOLITICS

The UN, WTO, WHO, and other institutions have been replaced. **Newly risen powers**, above all China, have **remade the world** as the Allies once did after 1945 with the United Nations, Bretton Woods, etc. These powers have set **a new international consensus on migration** and the management of climate refugees.

The EU has expanded into North Africa with China's approval and manages the Mediterranean, enforcing and interpreting the "new SDGs" within the territories under its control. The Union also manages payment of **"climate reparations"** from regions held historically responsible for causing the climate catastrophe.

An immediate issue is that because energy (and other) resources are unequally distributed, some communities may be energy poor and some energy rich. This is akin to the levelling up agenda in the UK, where the communities that would benefit most, are usually also suffering from a lack of resources which means unless they are specifically targeted, they will likely benefit last, if at all.

Jeffrey Hardy
Senior Research Fellow, Grantham Institute, Imperial College London
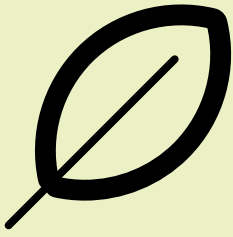
ENVIRONMENT

Dramatic sea level rises have caused people to abandon coastal communities across Europe. The Netherlands have all but ceased to exist. Pandemics spread easily in densely populated areas, so Europeans have also deserted their cities. **Urban areas have become ghettos**, populated by a new underclass. Rural areas are now highly valued, and people compete for territory seen as safe from the ravages of disease and climate change.

TECHNOLOGY

The EU focusses on **technologies to protect against or mitigate the effects of climate change**. These include artificial shoring and erosion control, sustainable green power, efficient energy storage, and biotechnology.

This scenario describes a rediscovery of the kinds of values that underpin heritage: responsibility, stewardship and care. Recognising the different forms of natural heritage across regions would entail recognising the cultural heritage that goes with this, in the form of traditional small-scale farming practices. …land ownership: do the families farming these bioregions own the land, passing it on to the next generation, or does the demand for "safe" rural land mean they are all tenants? Perhaps owners make no profit, in this scenario, and reward comes through reinventing these old practices for new crops, soil and climate

Richard Sandford
Professor of Heritage Evidence Foresight and Policy, UCL

ENERGY

Bioregioning encourages **local sustainable energy generation,** with any surplus distributed Europe-wide for the greater good. The EU develops massive offshore wind farms and other large-scale projects to share resources and reduce costs. **Fossil fuels have been entirely abandoned**.
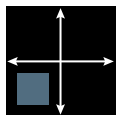
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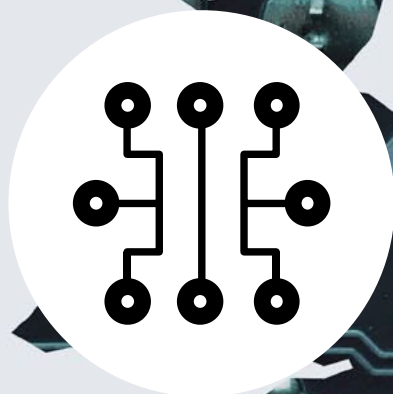
The EU consists of digital relationships in a world shaped by transnational corporations. City-states and regions with corporate affiliations develop their own authority. The EU's limited strength resides in its ability to **regulate the infrastructure** on which this virtual world runs, **brokering digital access**. Its job is to keep the lights on and data running quickly and smoothly through its territories.

NON-TERRITORIAL ECONOMY

REMIXABLE CITIZENSHIP

SHARED VIRTUAL SPACES

SPATIAL JUSTICE

Spatial justice means **the right of regions to hold on to wealth they have generated**. Territorial inequalities are intensified and complicated. Rich regions get richer, poor regions get poorer, and **economic life takes new forms in digital space**.

DIGITAL TARIFFS

TRANSNATIONAL CORPORATIONS

21

STORY HIGHLIGHTS

In this fragmented, digital Europe, **citizenship is more like a software subscription**. The lines between government and business blur, and a successful region like "Tesla–Brandenburg" thrives thanks to its world-spanning corporate connections.

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world-spanning corporate connections

In the 2020s and 2030s, richer regions grew dissatisfied with the EU's mechanisms for redistributing resources. Many citizens felt that **European society was becoming more unequal and unfair**. After years of turmoil, the UK achieved a degree of success in its post-Brexit trajectory, albeit without Scotland, which after independence forged alliances with Norway and Iceland. Although the UK had to make many compromises on workers' rights and other standards, some EU member states and regions came to see it as having re-established a sense of national identity and self-determination to which they also aspired.

To address inequalities, the EU tried **experiments for restructuring the economy and society** in defined geographic areas. These experiments led to different regions pursuing different approaches. In time, the EU had to accommodate **widely differing economic models and arrangements within its territories**.

By 2048, a **non-territorial economy** has developed in digital space. Powerful cities and regions cut their own deals with corporations around the world. Tensions arise as regions strive to keep the wealth they have generated.

The bitterly-won independence of Catalonia, dissolution of Belgium, fragmentation of Italy and enhanced autonomy of Bavaria, as well as **the increased powers of city-regions** – especially in Eastern Europe where cities tower over rural hinterlands as **islands of growth** – have entrenched a trend of **self-interest among wealthier regions**.

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increasingly dependent on transnational corporations

Less developed regions that had previously benefited from redistributive policies have in turn become **increasingly dependent on transnational corporations** that invest in infrastructure and provide public services in return for fiscal breaks and access to natural and agricultural resources. The most prestigious brands, however, favour partnerships with thriving hi-tech 'smart' cities.
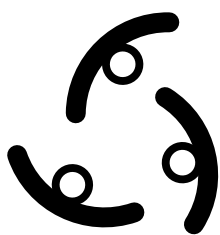
CULTURE AND SOCIETY

Digital citizenship is now **a set of online rights and responsibilities independent of geographical location**. People's identities are tied to the transnational combines employing them. **Communications infrastructure** and **digital literacy** affect people's ability to thrive.

As the principle of **physical freedom of movement has been eroded by obstacles** introduced by autonomous regions, digital citizenship offers a way for the skilled and affluent to buy into desirable labour markets and tax and welfare systems. With remote working and remote access to public services such as education and health now the norm, the benefits of **digital citizenship** can be enjoyed without necessarily residing in the territory.

The new digital citizenship can be **"remixed"**: some rights and responsibilities can be split off and delegated to or shared with relatives, friends, business partners, or autonomous software entities. People can even acquire digital rights from other jurisdictions: a **"pick and mix"** citizenship with new winners and losers. Although "remixable citizenship" creates new entrepreneurial opportunities, it also creates new threats. Many prefer the comparative safety of a corporate **"walled garden"** in which their employer's region provides public services such as utilities, healthcare, and education, integrated into employment contracts and citizenship benefits.

Workers and corporations navigate this form of citizenship to obtain the best outcomes. The "have-nots" include those who are disadvantaged by their citizenship contracts and struggle to renegotiate or opt out of unfavourable "pre-packaged" options created by corporations and territories.
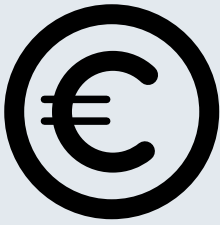
ECONOMY

"Economic bridges", successors to the air bridges of the COVID-19 pandemic and the passporting systems of the finance sector, connect regions around the world. **Extended transnational networks are more significant than physical locations**. A biotech hub in Europe may have more in common with its corporate partner cities in China or North America than it does with one a few hundred kilometres away within the EU, especially when virtually augmented office spaces and personal implants mean that telepresence is the norm. Regions like "Tesla-Brandenburg" pay a **digital tariff** to the EU to fund the orbital and terrestrial infrastructure that integrates their systems into the wider European network, and to ensure speed and quality of access.

While many regions develop rewarding international relationships, others lack investment. Less successful regions return to **traditional economic activities** like heavy industry, resource exploitation, and intensive farming. Such efforts meet with little success, reminding citizens of their economic vulnerability and limited options to achieve prosperity.

GEOPOLITICS

Europe's **external borders are more porous** in a world defined by digital space. "Europeans" – people with digital European citizenship rights – are found around the world. Citizens of **other digital jurisdictions** can also be found within Europe's geographical borders. People live and work in **shared virtual spaces**, and access to opportunities depends on the **virtual communities** in which one can enroll as an individual or household.

…corporations have taken much more dominance in a more digitized world. Do trade unions still exist and, if so, in what form? Have industrial relations also been digitized? How has this impacted workers' rights? Does the European worker protection legislation still subsist? Has it been reduced? What is the minimum standard to ensure occupational health, safety, and privacy of the workforce?

Aída Ponce Del Castillo
Senior Researcher, European Trade Union Institute
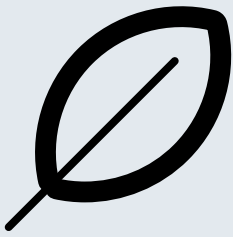
ENVIRONMENT

Europe cannot pursue a coordinated sustainability agenda, as institutions have fragmented and **digital space is prioritised over the physical**. Corporations find ever more innovative ways to **export the problems** they cause to distant parts of the world, or even into orbit. City-states try to control their local environment to ensure citizen-employees' comfort, but there is **little sense of connection to nature**. Some regional renewable superpowers emerge, but this is based on economic, not environmental, benefits.

This is a political ecologist's nightmare scenario; one in which socio-ecological sustainability, at least, could become an extremely difficult agenda to prosecute. "Think Global, Act Local" disintegrates as individuals disconnect from physical places - if we become virtual 'cowboys', spending our days on ever-expanding digital frontiers, will we fight to protect the 'real' world?

David Robertson
Lecturer in Sustainable Development, Monash Sustainable Development Institute, Monash University
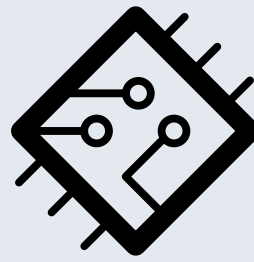
TECHNOLOGY

Telepresence technologies, telecommunications infrastructure, and energy technologies have been improved - as have technologies to mitigate the effects of climate change, though they are deployed inconsistently. The technologies available to a region depend on its **international and corporate affiliations** and thus vary across Europe

ENERGY

The energy system is a **poorly coordinated patchwork**. "Beyond-Net-Zero" homes, generating more energy than they consume, are popular in some regions, but there is no consistent policy or facility to redistribute excess power. The principal concern has been to create platforms that allow innovators and diverse forms of energy production to mingle in a stable energy system. One of the EU's legacy roles is to regulate and stabilise the interfaces between these diverse energy systems.
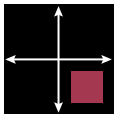
PATCHWORK
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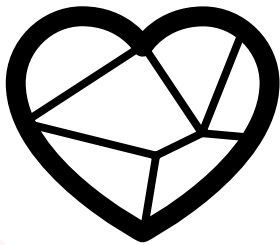
The European Union strives to **mediate internal conflicts** and provide some unity in external relations. It offers a **shared informational framework**, offering a minimum of trusted information that its diverging members can accept. It holds together, barely, because its constituent parts recognise they are too **small to bargain with the new superpowers**.

CHOOSE YOUR OWN PARADISE?

NEW FORMS OF KNOWLEDGE

RADICAL DECENTRALISATION

SPATIAL JUSTICE

The EU brokers the last talking shop for a patchwork Europe. Spatial justice is a cultural issue: communities' right to define their own values. Territorial inequalities become more fragmented and pronounced.

LIBERTARIAN VALUES

STORY HIGHLIGHTS

Different regions embrace **wildly varied ideas** of identity, social value, and human wellbeing. For some, this is a Europe where you can **"choose your own paradise"**. For others, it feels like being **cast back into the Middle Ages**. Flows of migration have changed and Europeans from the worst-off regions are emigrating to a **thriving, Chinese-sponsored Africa**.

Successful struggles for independence

Increasingly frequent and bitter culture wars over issues like gender and cultural identity caused European society to fragment in the 2020s. **Distrust was rife**, and Europeans struggled to agree on common sources of information as they navigated the rise of next-generation social media.

Since 2020, online mapping has varied according to the location of the viewer; by 2030, it had become **almost impossible for the public to agree on trusted sources of information**.

New forms of knowledge have challenged traditional science and medicine. Some of these new forms are effective, others tend towards the irrational. In the 2020s, a series of violent protests against 5G rollout, and the election of politicians holding extreme conspiracy theory views, helped precipitate the **widespread collapse of public trust** in big institutions and big business. In the wake of this collapse, regions began to break away.

Public perceptions that local and regional authorities had handled the COVID-19 pandemic and its aftermath better than national governments and the EU strengthened calls for greater autonomy and emboldened city mayors and regional leaders. Successful struggles for independence in Catalonia and Scotland not only prompted **the growth of secession movements** elsewhere but also **radical decentralisation** as nation-states sought to stave off complete disintegration.

Regions used their new powers to move in contrasting directions reflecting the **different cultural, economic and political forces driving autonomy claims**, some adopting progressive policies and others populist positions – including reasserting traditional Christian values in the face of wider multiculturalism.

Regions use their new powers

Demands for autonomy did not stop with regions. The same factors that fuelled regionalism revealed **tensions and inequalities within regions**. With the capacity of states weakened by the economic decline of Europe, the cost of care for the burgeoning elderly population and the reduced tax take from the contracting working-age population, responsibility for welfare and public services increasing fell to community groups that organized on a local scale and followed self-defined values.

CULTURE AND SOCIETY

Europeans express **strong libertarian values**. People move between communities based on their **individual preferences**. In some regions, gender categories have evolved far beyond those of 2021 and five-person marriages are not uncommon. In others, communities apply strict, regressive interpretations of traditional cultural or religious rules.

In some regions, climate catastrophes have triggered a **growing ecological consciousness**. These communities have an advanced notion of animal rights, respecting the sentience of nonhuman creatures and treating them as equals. Some rivers and mountains have been granted legal personhood, as happened in Australia and New Zealand in the early part of the century. In other places, even software agents have rights: **mistreating Siri in these regions is seen as equivalent to mistreating a pet**. Other regions have responded to the same crises by returning to **stronger expressions and more conservative interpretations of their traditional culture**. The heirs

to the 5G conspiracy theorists of the 2020s reject the use of augmented reality and telepresence technology, calling for "Reality or Nothing!". Their view of the world is one that they will continue to defend, violently, if necessary.

Fragmentation has created **new opportunities for people to thrive**. Some regions, cities, and villages cultivate the most enlightened, progressive, and compassionate attitudes in the world. However, the proliferation of identities and antagonistic groups across Europe has led to **lower social connectedness and increased conflict**.

As inequality increases, and the spread of telepresence technologies is limited, successful regions become more appealing. This causes **territorial disputes**, as the most desirable communities physically grow. Some autonomous regions now have **shantytowns** and **displaced persons' camps**, populated by internal migrants from across Europe.
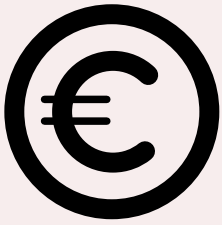
ECONOMY

Huge spatial inequalities exist within and across regions and groups in Europe. Some regions sustain themselves through relationships with international "sponsors", their economies based on **strong external affiliations** to powers overseas. Others exemplify **degrowth** and **"back-to-nature" pastoralism**.

GEOPOLITICS

The world perceives Europe as a **backwater**, although some enterprising European regions have built international relationships to sustain their chosen way of living.

At Europe's southern border, emigrants from the most impoverished regions seek to **emigrate** to the prosperous communities of a Chinese-dominated Africa.
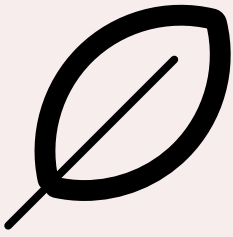
ENVIRONMENT

Some regions lead the world in environmentalism and sustainability, while others show an almost complete disregard for such concerns. Europe's communities define sustainability in different ways. This creates **more division among sustainability's champions**, as fractious alliances emerge and dissolve when agendas align or diverge.

TECHNOLOGY

Europe lacks up-to-date artificial intelligence, quantum computing, and biotechnologies. While technology has advanced compared to the 2020s, **Europe significantly lags its global peers**. This is the least technologically advanced scenario. Some regions may have more advanced tech courtesy of their external partners, but Europe is not a place of high technology or leading innovation.

ENERGY

Varied local energy systems have proliferated that are **hard to integrate**. The energy network has developed piecemeal, as better-resourced regions sell energy to more challenged places. Some regions' foreign sponsors provide access to advanced energy generation and distribution technologies. Others "go it alone" using local resources or making deals with other regions.

Conflict on earth also spreads into space – space faring nations invest in protective technology and policies. Authoritative nations make advancements in areas where Europe lags behind – space provides the opportunity to apply technology and take advantage of assets in outer space where behaviours are less controllable

Taskeen Ali
Head of Horizon Scanning, UK Space Agency

RESPONDENTS

As part of the scenario process, the IMAJINE team consulted with a wide range of international experts on sectors ranging from geopolitics, food policy, and sustainability to media, culture, gender, and sexuality. A number of experts here offer their responses to the IMAJINE scenarios and their implications.

Joshua Polchar
Foresight Lead, Observatory of Public Sector Innovation, OECD:

Scenarios are used by the OECD and many of its members to expand the number of things they consider relevant and pressing to prepare for in the future. They also help policy makers to understand the connections between issues that might have otherwise seemed unrelated. By framing a great many of the areas of the OECD's work in the context of spatial justice, the IMAJINE scenarios are of potential relevance in a wide variety of domains.

The reflections that follow consider the scenarios in the context of public sector innovation, the focal area of the OECD Observatory of Public Sector Innovation (OPSI). Just like the scenarios, these reflections are thought experiments—they do not represent the views or recommendations of the OECD or any of its members.

Public sector innovation can and must exist in all four scenarios. But where it occurs, how it is carried out, and what purposes it seeks are different in each. This multifaceted refraction of futures invites a critical reflection of the present state of public sector innovation.

Silver Citadel, with its centralised structures and risk of stagnation, questions how to balance the potential of public sector innovations to reach increasingly large publics, but also the potential obstacles they might face on the way. When devising and implementing prototypes and experiments, policy makers should ask themselves whether they want an initiative to address a large number of people, potentially in ways that are insufficiently well adapted to their individual needs or which cannot be applied in the local context; or whether to focus the initiative on a smaller number of people who can be better understood and accommodated in terms of needs and implementation. In short: should innovation be broad and shallow; or narrow and deep?

Green Guardian demonstrates that changes in behaviour—and hence the success of public sector innovation—are connected to underlying values, in this case action to protect ourselves and each other in the face of climate-related disruption and other potential disasters. Responsiveness to change is indispensable to survival and success, but humans often forget or deny this fact. Public sector innovation as a way to respond to change is therefore not a nice-to-have bonus for when governments have time; it is a fundamental necessity. Demonstrating how to innovate in ways that anticipate and respond to existential challenges such as climate change is therefore justifiably of great importance in our agenda.

Silicon Scaffold is immediately striking for the apparent relationship between fragmentation and experimentation. It is always worth discussing how to balance the benefits of diversity and autonomy to pursue alternatives with the benefits of consensus and interoperability around standards. These twin forces for prosperity are at the heart of organisations such as the OECD. Digging deeper, this scenario also invites discussion of how states and markets interact—and who is tasked with innovation: the public or private sector. Of course this is not a dichotomy, which makes the discussion all the more rich and relevant in considering how public sector innovation is designed and executed today.

Patchwork Rainbow presents perhaps the biggest obstacles to the model of international consensus-building championed by organisations like the OECD. Of course that does not mean that such work is any less needed—even though it could become much more challenging. The scenario reveals that different forms of public sector innovation may be required in different places to reflect different needs; but more than that, it sparks the imagination that what is considered "old news" in one place (future or elsewhere) might be considered cutting-edge innovation in another.

Through OPSI, the OECD is developing ways to take scenarios such as these beyond imagination and into action. Reflections like those above can be directed into creative new ways to solve existing and future problems—and make the most of opportunities. To achieve this, OPSI is developing workshop techniques, analytical methods, and implementation approaches in a programme called Anticipatory Innovation Governance.

Annina Lux
Manager - Strategic Foresight, Capgemini Invent:

How European spatial justice will develop until 2048 has a far-reaching impact on the public sector. Looking at the four scenarios Silver Citadel, Green Guardian, Silicon Scaffold and Patchwork Rainbow, three general considerations become clear:

1. Each scenario draws a vastly different organizational landscape for the public sector. This includes not just the kind of public, private and civil society organisations that exist in the future, but also the organizational level that will be in focus, from local to international organisations.

    In Silver Citadel, the EU as a regional organization is the main public sector player. In Green Guardian, a new International Climate Court holds stakeholders accountable, while international organisations like the UN, WTO and WHO have ceased to exist. In Silicon Scaffold city-states and regions are at the centre of governmental power in a blurry world heavily shaped by transnational corporations. In Patchwork Rainbow, the EU as a shared identity has all but ceased to exist and has been substituted by highly individual regional entities with differing economic and political influence.

    What public sector organisations (and other stakeholders) will shape our future is a key issue, for spatial justice and beyond – and one that needs to be tackled proactively by the public sector. All four scenarios make it blatantly clear that we must build and shape the organizational landscape (of the public sector) that we want to see in the future, starting today.

2. Each scenario maps a vastly different experience of what it means to be European. By definition, public sector organisations both shape and are shaped by European citizens. Consequently, how the European experience develops in each scenario has a huge impact on the public sector.

    In Silver Citadel, a "New European Social Model'' and a mission-oriented and diverse European value framework define what it means to be European. Necessity-based pan-European solidarity is at the heart of Green Guardian´s society. Silicon Scaffold is driven by a digital "pick and mix" citizenship experience, while Patchwork Rainbow puts individual preference first.

    What it means to be European across the European space inevitably both determines and is determined by the perception of and expectation towards public sector institutions on all levels. The relationship between the nature of the European experience and the public sector is a precarious and a precious one. In order to build a positive future – including and especially for spatial justice - the public sector must both act and listen proactively.

3. Each scenario conveys a vastly different use of digital and physical space in European governance. The virtual and analogue geography impacts heavily on how governance is enacted and lived in Europe. This refers not just to the space that needs to be governed by public sector organisations, but also the way European citizens live politics – locally, nationally and on a European and global level.

    While the Silver Citadel world is driven by AI algorithms, personal community contact is at the heart of Green Guardian. In Silicon Scaffold, a fragmented digital Europe leads to a "software subscription" citizenship. Patchwork Rainbow, in turn, violent protests against 5G and the lack of trust in technology and government lead to a more analogue space.

    Striking a positive balance between the digital and the analogue is one challenge the public sector will have to solve. This includes both the much-discussed and much-needed digitalization as well as the necessity to critically reflect on the role of and need for physical space.

The public sector is at the centre of transforming the European space. While this responsibility has largely been recognized and is being tackled in future-oriented projects like IMAJINE, there is a long way to go here. Thinking about the implications of these four scenarios definitely provides a stimulating and thought-provoking impulse in this.

Aída Ponce Del Castillo
Senior Researcher, European Trade Union Institute:

My thoughts and questions on the scenarios for the future of European Spatial Justice, focusing on the trade union movement and on workers.

In scenario one, "Silver Citadel", collective bargaining achieved a "Just Transition" to a sustainable 21st-century economy. This "just transition" needs to also include digital and climate transformations. I have several questions: with high solidarity in place and with the achievement of collective bargaining, what does the trade union movement look like? Have trade unions become stronger social actors? Finally, how was manufacturing moved back to Europe and what compromises were made to achieve this?

In scenario two, "Green Guardian", it seems that worker protection is a less important issue. However, the sense of belonging is highly valued, does it apply to belonging to a trade union? Has trade union representation increased here? Have trade unions expanded the scope of their action to include environmental-related action?

Privacy and data protection rights have been given away. This is disappointing as it took a long time to obtain these rights.

In scenario three, "Silicon Scaffold", corporations have taken much more dominance in a more digitized world. Do trade unions still exist and, if so, in what form? Have industrial relations also been digitized? How has this impacted workers' rights? Does the European worker protection legislation still subsist? Has it been reduced? What is the minimum standard to ensure occupational health, safety, and privacy of the workforce? Have the workforce acquired more digital rights and how can they exercise them? It seems that digitalization has permeated workplaces broadly, and online and hybrid work became the norm. Does this mean that there is an increase in psychosocial risks, such as increased isolation or a new version of "Zoom fatigue"?

In scenario four, "Patchwork Rainbow", the fragmentation of society and the general distrust probably mean that solidarity has disappeared as a value, and that trade unions have died. Worker protection, health and safety, are probably individual and personal matters, as is social security.

These four scenarios help us to reflect about today's challenges, the values that we want to preserve, and the goals that we, as humanity, should strive for, for the benefit of the people and the planet. Today, we should upgrade solidarity as a value to the next level and think in terms of "Solidarity 2.0".

Malka Older
Faculty Associate, School for the Future of Innovation in Society, Arizona State University:

As a science-fiction author, I have a number of futurist-y responses to these intriguing scenarios. But this set of responses is supposed to come from my sector. I work or have worked in three main sectors: international assistance (relief aid and development); academia (although as something of an outsider); and creative writing. I also have another channel for considering spatial injustice that is not related to work: as a mother who has literally moved countries for, in one direction, better playgrounds and cleaner air and, in the other direction, a better school (and stricter pandemic-related school policies).

The Silver Citadel scenario is described as stagnant, but as a creative worker with many friends in creative industries dealing with varying degrees of precarity, I imagine that its redistributive policies might allow for a flourishing of the arts and creative freedoms. Similarly, a more even wealth distribution would mean maybe not needing to decide about where to live based on opportunity for my children, but on other factors such as local culture or weather or geography. But would that be true? Would equivalent wealth necessarily translate into similar policies everywhere? The idea of overarching European policies seems to suggest so, but I imagine local organizations like schools would still find ways to differentiate themselves. Similarly, as an academic I can imagine this wealth offering a lot of opportunities for research with fewer constraints; but there is some suggestion that research topics might be proscribed. As a humanitarian, I would be deeply concerned not only by the battles along

the borders, but by restriction on immigration. Is this Europe distributing aid and assistance beyond its territory, and if so, is that aid dependent on ideology?

The emphasis on volunteering and community in the Green Guardian makes me think that relief and development assistance would thrive — at least within Europe — but perhaps at the cost of continued inequality. Still, I can imagine lots of innovation, community initiatives, changed ways of living that would provide a lot of fodder for creative endeavors — and a healthy place to bring up children, although the choice of bioregion seems critical. I can imagine that having the climate crisis strike the Netherlands would change the European attitude towards climate refugees, but what would happen to the attitude of the Dutch? And would national/regional differences persist at that point, or would it truly be seen as something happening to Europe? Would the Dutch climate refugees scattered through the Union adapt and create fusion cultures in their new homes, or would they cling to "Dutchness"? I wonder if academia would be starved in the cities, but it seems that the focus on sustainability and ingenuity would lead to at least some grants in those areas.

As someone who has been working independently for years, the Silicon Scaffold scenario of allegiance to larger corporations is unappealing, even if I appreciate some of the aspects of virtuality and remoteness. Working in creative industries seems like it would be unlikely, humanitarianism even more so (although perhaps there's a window-dressing sort of corporate social responsibility - not very satisfying) and even aside from that I would need to make difficult choices about work for the benefit of my children. Perhaps "pick-and mix" citizenship would work well for these things, and I could consult in exchange for prize education rights while sacrificing some degree of comfort to continue to write. Seems stressful though. Sounds like academia could work out well for some — I can imagine some exciting transnational research — but probably heavily driven by corporate interests.

My question about Rainbow Patchwork is: how much choice do I have? If that is determined by circumstances of birth, then I should apply the veil of ignorance, but if there's a certain amount of freedom to choose and migrate around Europe to preferred communities for most if not all, then I can see the appeal in selecting a place with opportunity in creative industries, thriving academic research, a sense of responsibility and aid to others, and great schools for kids. Realistically, though, I would have to choose between various degrees of each of those criteria; and, again, bringing my kids up in a privileged enclave while knowing things are going very wrong in other places not far off is stressful. We know that the consequences of environmental, economic, and other types of misbehavior do not respect our imaginary borders.

Alex Glennie
Senior Policy Manager, Innovation Growth Lab:

Innovation policies can broadly be understood as government-led interventions that seek to spur the development and commercialisation of new ideas, products and services. They sit at the intersection of research and development (R&D), industrial development and entrepreneurship policies, and involve a constellation of actors including governments, large businesses, startups, researchers and other innovation support intermediaries. At the Innovation Growth Lab (IGL), we work closely with policymakers to increase the impact of innovation policies, by ensuring that they are informed by new ideas, experimental approaches and robust evidence.

The IMAJINE scenarios present both challenges and opportunities for the world of innovation policy. Of the four imagined futures, European policymakers of today will likely find Silver Citadel the most comfortable to contemplate. It aligns with established thinking about the kind of growth that innovation policies are typically designed to promote: technology-led, with a focus on maximising profit alongside meeting societal needs. It would also vindicate current strategic efforts to support homegrown European 'unicorns' (startup companies which are valued at more than $1 billion, such as Uber or Airbnb), as a means of shoring up the region's global position. Green Guardian would require policymakers to adopt a different perspective on what kind of growth should be sought and to fully embrace principles and practices of 'inclusive innovation', but is otherwise congruent with current efforts to stimulate green innovation.

The other scenarios are more challenging to accepted innovation orthodoxies. Silicon Scaffold describes a world where the most powerful corporations set the terms and conditions of economic and social development. In this context, innovation policymakers would likely need to adopt significantly different roles and responsibilities than currently; perhaps becoming advisors to transnational companies on the implications of new technologies and digital systems for citizens, rather than investors in or instigators of innovation in their own right. The Patchwork Rainbow goes further, challenging the confidence that European policymakers have in the region's technological prowess. An environment where new forms of knowledge compete with traditional understandings of science and medicine would also disturb the current generation of technocratic innovation policymakers, who generally aim to design policies that are informed by 'evidence'.

These scenarios are an important provocation for innovation policymakers, who should use them to test assumptions about their future role in managing both the development and the consequences of innovation and new technologies. They suggest the need to grapple more urgently with the tensions and challenges involved in embedding a 'mission-oriented' approach, and to prioritise the development of more anticipatory forms of regulation and innovation governance. For advocates of the use of rigorous evidence in policymaking - such as IGL - scenarios like Patchwork Rainbow also reveal the importance of engaging more thoughtfully with different perspectives on the value of scientific approaches and results, and to actively work on building trust in these methods across the political spectrum.

David Robertson
Lecturer in Sustainable Development, Monash Sustainable Development Institute, Monash University:

Scenarios and futuring are familiar in sustainability discussions. However, the chosen axes for these IMAJINE scenarios - solidarity/autonomy and prosperity/wellbeing - explore governance and notions of what it means to live a good life, in contrast to sustainability futuring which commonly includes a clearer environmental dimension. Interrogating these futures, I sensed some close familiarities with the present, as well as some situations in which core assumptions and logics of sustainability felt unstable. Interestingly, the most provocative and challenging passages were rarely in the 'environment' sections. Rather, the implications of these scenarios for the values and mental models of future citizens, and the knock-on effects for sustainability, caught my attention.

Silver Citadel
A key phrase in this scenario is that the model "balances equity and prosperity, but requires social conformity to function." Sustainability is highly normative; in this 'ecological modernisation' scenario, I could foresee behavioural scientists in collaboration with AIs given great power to 'nudge' publics toward acceptable and defined 'sustainable' actions. Such norming may stigmatise those with less capacity to enact those behaviours or purchase the 'right' products; or, to stifle more radical or global conceptions of sustainability. Ultimately, without acting to resolve inter-regional conflicts, the Silver Citadel may remain reactive to global-scale threats and challenges posed by cross-boundary systems such as oceans and the atmosphere, and ultimately, could stagnate and suffer as a result of its rigidity.

Green Guardian
This scenario interweaves many existing and emerging concepts in sustainability, from permaculture-inspired language to 'bioregions' and more. It is generally optimistic and more people are engaged, hands-on, in sustainability-related endeavours. Active engagement in culture as an expression of communalism emerges more strongly here than in most current sustainable development discourses. The regionalisation of populations may repair the human-environment disconnection experienced by our current, more-urbanised populations. That said, drivers for change are still anthropocentric (such as pandemics and climate refugees), and deeper ecological philosophies which place inherent values on nature and wilderness, or movements such as 'legal rights for rivers' remain at the fringes - they appear, instead, in the 'Patchwork Rainbow'. With an exodus from cities, true wilderness would be (even more) rare across EU territories.

Silicon Scaffold

This is a political ecologist's nightmare scenario; one in which socio-ecological sustainability, at least, could become an extremely difficult agenda to prosecute. "Think Global, Act Local" disintegrates as individuals disconnect from physical places - if we become virtual 'cowboys', spending our days on ever-expanding digital frontiers, will we fight to protect the 'real' world? Place-based sustainability action offers opportunities to cross boundaries, form connections, and negotiate over local governance - but in Silicon Scaffold's 'non-territorial economy', this is no longer the case. As we have already seen, digitally-driven mega-corporations can find ever-more creative ways to externalise the negative parts of their business models. Experimentation with different economic models in different regions might throw up unusual, and positive, approaches to sustainability in this scenario - but they may fall victim to the ruthless pursuit of GDP more effectively optimised by other systems, and never flourish outside of their own 'sandbox'.

Patchwork Rainbow

The current, fractured way in which we interpret 'sustainability' - what it is to develop; what a good life and good society look like; what the 'environment' is and our relationship with the biosphere - all of these are contested in contemporary sustainability discussions. In Patchwork Rainbow, divergence dominates over convergence of these. In my mind, I imagine the UN's colourful "Sustainable Development Goals" being torn into pieces and cast to settle like confetti over the EU; highly progressive practices concentrate where they are most pressing, or grow from existing protected niches - but are not shared or scaled up. It is far from an ideal scenario, but it is the most familiar. It is a context of possibility and barriers, in which change remains possible. The ingredients of utopias are scattered throughout Europe, but symptoms of wicked problems are equally widespread, and sustainability is even more a contest of ideas than it is today.

In summary, these scenarios are a prism through which we can examine our current understandings. As I read them, they highlighted the 'goldilocks zone' of sustainability practice - to develop principles that are clear enough to be enacted widely in a way which brings benefits to many, but not so rigid that they atrophy and constrain societies. Further, it made me question how increasingly-immersive virtual frontiers may erode, undermine or render irrelevant some key assumptions of contemporary sustainability thinking - and for that provocation, I am thankful to the scenario creators!

Camilla Chlebna and Ricarda Schmidt-Scheele,
Working Group 'Organisation & Innovation', Institute of Social Science, Carl von Ossietzky University Oldenburg:

Europe faces the need to transform its energy systems towards more sustainable forms of energy provision and consumption. Regions constitute important areas for realising such transitions. However, different conditions and resources shape the restructuring of energy sectors, which is why implications of the IMAJINE scenarios will differ across EU regions. We illustrate this for Northwestern Germany – a region that is highly invested in renewable energy sources with respective companies and R&D organisations, is well connected on the inter-regional and international level and at the same time is imminently threatened by impacts of climate change. We highlight possible consequences of the scenarios through factors that can be practicable for stakeholders in other European regions.

Regional transitions are highly place-dependent, meaning the availability of natural resource endowments and existing infrastructures impact investments and innovative activities. In Silicon Scaffold and Silver Citadel, Northwestern Germany can profit from its vast potential of renewable energy sources (particularly wind); while it may strengthen its position as an exporting region, the gap to other, less-advanced regions in terms of renewable energy production may increase. In the world of Green Guardian, such disparities can potentially be overcome through increased exchanges and cooperation between regions. With its dominance in on- and offshore wind, Northwestern Germany can take on a leading role with respect to innovation processes, possibly together with the neighbouring region North Netherlands.

Green Guardian as opposed to Patchwork Rainbow also highlights how important the formation of regional visions and policies is for the progression of energy transitions. In the latter scenario, leading public and private organisations whose engagement in local processes has proven a central success factor, could move to regions with more favourable conditions, causing increased disparities of identities and the risk of regions breaking into fragmented communities. The role actors and organisations have for the stabilisation of energy transitions cannot be overestimated. The extent to which existing large companies in Silicon Scaffold commit to the region will be decisive for its prosperity and a successful reorganisation of the energy sector.

For the scenarios Silicon Scaffold and Patchwork Rainbow, we see unique challenges for the production and sharing of knowledge. Both scenarios show a tendency towards individualism and isolation of regions rather than further integration. Knowledge in Silicon Scaffold is likely to concentrate in those areas that fully participate in the rollout of digitalisation early on and take on the help of large corporations. Peripheral regions that are less advanced in digital technologies may fall further behind with some regions at the real risk of being abandoned altogether. The lack of trust between civil society and public sector in Patchwork Rainbow is likely to impede knowledge sharing and united efforts in light of concurrent challenges. Here, the falling back on traditionalism reduces interregional relations, both between actors and in terms of material flows.

Lastly, regional energy transitions do not happen in a vacuum; they are intertwined with socio-political developments. The

fact that peripheral regions could suffer substantively from a lack of digitalisation and lag behind in broadband access in Green Guardian and potentially in Silicon Scaffold might cause a ripple effect. For Northwestern Germany, a resulting relocation of the central energy provider and employer to another region could affect not only its socio-economic development but also the progression of the energy transition.

So, where does this lead us? What makes the scenarios useful for stakeholders across EU regions is that they do not picture the future as black and white; rather, the plausibility and topicality of all scenarios highlight diverse chances of and barriers to energy transitions. We see that in future worlds like Green Guardian the energy sector has the potential to counter spatial inequalities if inter-regional dynamics are exploited. In Silver Citadel and Silicon Scaffold, regional context conditions could further strengthen individual regions but also reinforce existing disparities.

The transition of energy sectors is a complex social process of change and reorganisation that is inextricably linked to regional development prospects and vice versa. We believe that the scenarios can help regional stakeholders to systematically assess how their energy sectors may become a catalyst for regional prosperity and reduce inequality.

Jeffrey Hardy
Senior Research Fellow, Grantham Institute, Imperial College London:

Taking a purely energy perspective on these scenarios:

Silver Citadel
The focus on minimising imports and maxing exports, coupled with the AI driven distribution, implies a planned energy system. To my mind, this will be centrally planned energy generation and transmission, distributed where the source is. For example, wind in the UK, solar where it is sunniest (and indeed in space), fossil fuels with carbon capture and storage where the reserves are and a supergrid to connect all the sources and distribute them. It could also result in energy being 'allocated' by AI, so every citizen has a 'fair share'. This could imply some peer-to-peer trading if someone doesn't use their allocation, or needs more. Hydrogen likely generated from excess renewables, like wind and tidal via electrolysis. Transport therefore a mix of electric vehicles and hydrogen (for example for HGVs, ships and possibly aviation via synfuels (hydrogen and CO_2 combined).

Big challenge for me is overcoming the energy independence of member states, building a supergrid and the advantages and risks of being so tightly coupled and dependent on one massive system. A blindspot could be the unknown effects of climate change on the viability of certain energy resources (for example, if rain patterns change in Norway, hydro is not so viable).

Green Guardian
The reversal of urbanisation and focus on place based energy and resource independence implies a network of place based energy systems. What I mean by this is the local energy system will be dependent on the resources available. So community A might be windy and community B sunny. It also implies, potentially, an emergence of local biorefineries, where local crops and agricultural and forestry waste are converted to useful materials and chemicals. Thus communities seek to satisfy their own energy and wider needs, and trade (buy, sell or share) locally with other communities first. Wider energy resources, like offshore wind, and perhaps tidal barrages or lagoons (the former could be a climate change defence), are a sort of insurance policy – a grid that is there when you run short.

An immediate issue is that because energy (and other) resources are unequally distributed, some communities may be energy poor and some energy rich. This is akin to the levelling up agenda in the UK, where the communities that would benefit most, are usually also suffering from a lack of resources which means unless they are specifically targeted, they will likely benefit last, if at all. There is also a danger of 'selfish' behaviour and hoarding of resources.

Silicon scaffold
Basically Cyberpunk. I like the framing of a patchwork of energy resources, somehow bodged together. This implies a supersmart grid, where each energy resource can plug in via an API. The BIG question for me is who owns and operates the grid. I don't know if you know your RPGs, but is it the equivalent of ComStar in BattleTech. What I mean is that the grid operator is really the arbiter of your access to energy. I would imagine also, something akin to tokenization of energy by way of tracking energy credits or the like – some sort of DLT or equivalent. For the humble citizen, could this mean energy rationing or energy credit linked to employment?

Terrifying, but not implausible.

Patchwork Rainbow
The ultimate energy patchwork. The opposite of the supergrid implied in the first two scenarios, whereby electricity grids barely reach between countries. Energy systems could be a mix of all the above descriptions. For example, more prosperous regions could feel like a mini silver citadel – a planned energy system maximising benefit from local resources. Others might feel like individual communities. Some places may be under the thrall of outside countries, for example reliant on a cable bringing solar power and a pipe bringing hydrogen/fuel from vast solar fields in Africa. For many, it may mean a return to unreliable access to energy.

Taskeen Ali
Head of Horizon Scanning, UK Space Agency:

All comments here do not represent UK Space Agency or HMG policy and views. These are entirely the author's personal views.

Future scenarios provide an interesting backdrop to how outer space may interact and weave into society playing a role in spatial justice. Outer space has dominated the minds of the curious and has provided a sense of distance 'out there' to humanity. However, this notion is very likely to descend on earth testing our imagination, where outer space approaches even closer to impact below the Kármán line. Here I describe how the four scenarios evoke plausible novel relationships with outer space that bear strategic implications for society.

In the world of the Silver Citadel outer space plays a big part within information warfare as earth observation data provides new repositories of data enabling novel ventures and innovation. Rezoning of the earth's polluting industries into space as a new EU sustainability goal e.g. space based solar power and space mining. The EU could play a large role in advancing outer space and advocate for better space governance using soft power.

The Green Guardian provides an environment where accurate climate related data from space becomes more valuable. Outer space plays a significant role in the wellbeing of society for Europeans and the globe. Nuclear power is on the rise and there are some considerations for its use in space. Authoritarian regimes start to have a strong influence on outer space geopolitics. The EU heavily incentivises the use of green technology to access outer space. Satellites enable superior and health technology that can be easily tracked, real time applications make remote locations more connected. Outer space technology and service spillovers become increasingly valuable for the economy and societal wellbeing.

The Silicon Scaffold will see new space jurisdictions in outer space e.g. plans for hanging cities in Low Earth Orbit. Public private partnerships in space on the rise and governments using more private sector actors to deliver space ambitions. Outer space plays a significant role in enabling telepresence and economically becomes an increasingly pivotal sector for enabling digital space. Citizens of digital jurisdiction also transcends into outer space. We see rezoning in this scenario with innovative ways to solve problems on earth to shift polluting industries into outer space. We see macroeconomic implications - for the first-time space activities start to pay taxes on earth to licencing countries – this may shift activities to emerging spacefaring nations.

In Patchwork Rainbow the rise of space private sectors start to challenge governments. Fragmentation also extends into space relations amongst nations and high autonomy brings about race for space using private sector actors Space also creates inequalities with those who can access space and also retain intellectual properties of knowledge from space.

Protests against 5G also impact the space sector and space launch from the UK and EU. Artificial intelligence is widely used for space technology – some testing grounds are replaced with simulation generated by AI. Decentralisation impacts the space community to develop in unexpected locations. Conflict on earth also spreads into space – space faring nations invest in protective technology and policies. Authoritative nations make advancements in areas where Europe lags behind – space provides the opportunity to apply technology and take advantage of assets in outer space where behaviours are less controllable.

Peter Scoblic
Co-Founder and Principal, Event Horizon Strategies:

A consistent conception of future geopolitics suffuses the IMAJINE scenarios, and U.S. policymakers, particularly those in the national security establishment, would likely be heartened by at least one aspect: three of the four scenarios refer to China's great power status (and the fourth implies it), specifically with respect to its dominance of Africa. So, in Silver Citadel, the EU is unable to expand southward because it is "blocked by the influence of China, Europe's rival in Africa." Green Guardian describes China as a "newly risen power"— one that has remade the international order and serves as the gatekeeper to Africa. Patchwork Rainbow speaks of "the prosperous communities of a Chinese-dominated Africa."

This emphasis on China mirrors that in the scenarios that the U.S. National Intelligence Council issued in its recent Global Trends 2040 report, most of which feature a rising China. Indeed, the belief that China will become an ever more capable power with expansionist tensions currently dominates foreign policy discourse in Washington. For example, the Biden administration's Interim National Security Guidance, issued in March 2021, dubbed China a "threat" and described the U.S. relationship with a "more assertive and authoritarian" China as one of "growing rivalry." And, in June, Kurt Campbell, the White House's top Asia official, described an end to "engagement" with China, as Secretary of Defense Lloyd Austin ordered a speedier response to China's military growth.

One might ask, however, whether current concerns about China are not overwhelming our conception of the future. Although there are certainly plenty of signs of a rising China, there are also strong signals of impending problems in the PRC, including demographic trends, environmental threats, and economic dangers. In considering the futures of 2048, one might also look to the past of 1988, a time when many feared a rising Japan that would dominate the globe even though the seeds of the coming lost decade(s) were about to sprout.

It is easy to forget just how quickly tectonic shifts can alter the geopolitical landscape. As one Pentagon official wrote in an April 2001 memo to then-Secretary of Defense Donald Rumsfeld:

If you had been a security policy-maker in the world's greatest power in 1900, you would have been a Brit, looking warily at your age-old enemy, France

By 1910, you would be allied with France and your enemy would be Germany.

By 1920, World War I would have been fought and won, and you'd be engaged in a naval arms race with your erstwhile allies, the U.S. and Japan.

By 1930, naval arms limitation treaties were in effect, the Great Depression was underway, and the defense planning standard said "no war for ten years."

Nine years later World War II had begun.

Other geopolitical elements of the scenarios might spark interest, curiosity, or alarm. On the whole, they should force American policymakers to consider whether they are undervaluing Africa as an economic market, technological partner, and site of coming great power competition. More specifically, Silver Citadel's vision of an expansionist EU that finds itself in conflict with Russia raises the question of what happens to NATO in these scenarios, at a moment when the United States has withdrawn from Afghanistan and is considering a broader retrenchment to deal with crises at home. The collapse of international institutions in Green Guardian might please elements of the American Right, which has long hated the United Nations and which applauded President Trump's withdrawal from the World Health Organization. The porous borders of Silicon Scaffold highlight the unintended centripetal consequences of a tech-driven libertarianism, but its regional inequalities are familiar to anyone looking at a map of how COVID-19 is resurging across the United States. Indeed, the pandemic has highlighted just how disunited the United States is—and the potential for far greater fissuring. Finally, Patchwork Rainbow forces American policymakers to ask what exactly they would do if Europe fell into disrepair, depriving it of a vital trading partner and creating a power vacuum that U.S. rivals might eye hungrily.

Niamh NicGhabhann
Senior Lecturer, Department of History, University of Limerick:

Joan Didion's statement that 'we tell ourselves stories in order to live' refers to the way that humans tend to use the fragments of the present to weave a coherent narrative around our current condition. The arts, broadly defined, and cultural policy are intimately bound up with these stories that circulate, told by so many different people in so many different circumstances in order to make sense of life, of their place, and of justice and injustice.

In the case of the Silver Citadel, we see the establishment of a centralised Museum of Europe. This would disrupt many of the established 'national' collections in order to prioritise a sense

of new European identity. This would tour regularly across the European territory, enabling equal access to this 'mega-collection' in which the histories of Istanbul are as central as those of Paris and Berlin. Central European funds are used to create cultural passports, allowing citizens to access a broad range of artistic and cultural opportunities without income barriers. Artists and cultural managers find themselves having to negotiate an increasingly polarised funding climate, which promotes ideas of boundaries rather than transnational connections between Africa, China, and Europe.

Festivals provide temporary but essential opportunities for alternative narratives, which draw on the long-standing connections between these countries, hosting artists where they can and reawakening an understanding of these rich and deep cultural relationships. In an aging population, the arts become important modes of health, healing and expression, with dancers working gently with those who are less mobile, and visual artists collaborating with people undergoing dialysis. Artists, filmmakers, writers, and critical theorists are relied on to challenge and explore the impacts of AI-generated decisions on society, with new genres of surrealism emerging that insist on the importance of individual creativity. Story-telling, oral histories and archives are being created to capture the experiences of a generation born before the arrival of the world wide web.

In the Green Garden scenario, the idea of cultural tourism, and of creative industries built around the idea of carbon-heavy weekend city breaks to attend festivals, concerts, or museums have disappeared. The restricted movement of people means that people access global arts and culture digitally, often through neighbourhood groups or with families. Church buildings, synagogues and mosques that had been abandoned for years are restored as essential multi-faith community centres. Those who came to Europe following the Syrian and Afghan refugee crises have established cultural centres aimed at expressing a sense of hybrid identity, to learn about and remember a past home, and to act as spaces of grief and loss. These centres are central to the way that Dutch climate refugees learn to become part of their new societies.

With the return to agricultural subsistence, there is a resurgence of interest in surviving intangible cultural heritage and practices like traditional songs, crafts, languages, and festivals linked to the land. New critical theories discount the literary and artistic canons of the past, seeing them as evidence of corruption and inequality, and scholars delve deep in the archives to find alternative voices. In a highly regulated society, underground festivals and events become an important part of youth culture, often occupying abandoned shopping centres and stadia. Heritage and planning agencies are continually at risk of corruption, as those who retain financial capital wish to annex rural landscapes and areas of natural beauty for themselves. The ancient ideas of retreat to the pastoral idyll become current again, and are the new signifiers of status, while the crowd is a place of danger. Handmade items become highly prized, whereas branded relics of industrialised production, which flood the urban ghettos, have lost all value. The travelling circus is one of the few artistic forms that connects people across Europe,

bringing stories, food and ideas from place to place, lighting up the neighbourhoods once a year.

In the Silicon Scaffold, there is a crisis in public funding for the arts. Regional, national, and European funding for public services are drained due to changed tax systems, which leave little to no money available for arts, culture, and heritage. Certain projects remain well-funded, due to the presence of philanthropic schemes, but these are closely wedded to specific corporate agendas, leaving little space for critical reflection or creative freedom. Changes in corporate leadership can mean the sudden end of certain types of programming – LGBTQIA film festivals, for example, or the preservation of certain kinds of religious heritage.

This collapse in public funding has meant that access to the arts has become much more expensive in some cases, while in others groups have turned to co-operative models and crowd funding in order to access arts education for children, to support festivals and cultural institutions, or to preserve cultural practices that are important to them. In some cases, these localised systems of funding reinforce societal divisions, and the lack of a cultural public sphere for the exchange of ideas reflects the increased polarisation of society more broadly.

Digital citizens living across the world depend on volunteer-led cultural clubs and societies to maintain a sense of connection to home – as has been the case in the past, a disconnection from the homeplace leads to the recreation of home through dance, music, literature, the visual arts, film, and song. In some cases, these home-making practices connect together to form celebrations of new, hybrid identities. In others, they can reinforce boundaries and divisions, and hinder creative innovation, preferring the recreation of one, single idea of home. A widespread sense of social, environmental and political volatility leads to a lack of trust in shared public spaces, with people preferring to remain in private spaces defined by membership criteria.

In the Patchwork Rainbow, cultural policy-makers are tasked with the challenge of re-creating conversation and connection. Many cooperation programmes have been dismantled due to fundamental issues of mistrust and clashing political perspectives, drastically reducing the places where people can meet and engage with each other.

Ideas of shared 'European' identity are loaded with conflict, with some viewing it as destructive to tradition and others seeing it as a damaging neo-colonial force. Transnational networks of cultural managers and policy-makers work together, but along specific ideological lines for the most part. Digital activists work to capture aspects of minority heritage before it disappears, either through wilful destruction or neglect, and archive this material for the future. Support networks exist for artists and creatives who are under threat due to their work, and for those who cannot migrate due to physical, social or economic barriers. Philanthropic support of the arts is deeply divided, with only a few committed to carving out space for genuine dialogue across identity boundaries. New modes of artistic expression grow from

camps of displaced people, expressing new kinds of solidarity and creativity, and many are drawn to this as a source of inspiration for new kinds of societal organisation. Self-expression and creativity has moved from the public to the private sphere, reflected in the growth of private collections and membership-based arts experiences, or underground cultures. The growing risk to the environment provides a common ground, and people from different ends of the ideological spectrum can connect with aspects of intangible cultural heritage associated with the environment, such as folk songs, seasonal festivals, and the harvest, recognised as ever more precious in its precarity.

Richard Sandford
Professor of Heritage Evidence Foresight and Policy, UCL:

Silver Citadel
For some kinds of natural and cultural heritage, calculating the economic return from their ongoing maintenance is straightforward: such heritage will be visible to the algorithmic systems determining regional wealth. But distributing such situated assets will be impossible, and regions already blessed with many heritage sites and practices might find that they receive less from the AI as a result. Other forms of heritage will be less visible to the wealth-assessing robots, perhaps to the detriment of the groups for whom this heritage matters, if this reflects the value society places on it.

In the face of the social changes described, the heritage currently placed at the heart of a 'European' identity might be more marginalised, perhaps growing in importance to any reactionary groups trying to resist these changes. Perhaps political leaders will feel the need to construct a more mobile heritage, not tied to particular times or places, as a vehicle for the values of this new society and a way of diminishing regional differences: this, too, might be resisted by groups keen to celebrate difference through existing heritages, both long-established and more recent. Or perhaps the heritage that performs the task of bringing people won't be an elite confection but something drawn from memories of solidarity and protest in support of peace: perhaps the heritage that matters to people will be the Monday demonstrations, the school strikes, and Greenham Common.

The scenario illustrates the importance, for groups currently developing ways of valuing cultural heritage capital, of continuing to look beyond market price as a mechanism for revealing the importance of heritage. It raises questions about the importance of recognising difference and diversity. And it leaves room to imagine the new kinds of culture that will emerge from the tangling of different kinds of heritage.

Green Guardian
This scenario describes a rediscovery of the kinds of values that underpin heritage: responsibility, stewardship and care. Recognising the different forms of natural heritage across regions would entail recognising the cultural heritage that

goes with this, in the form of traditional small-scale farming practices. No mention is made of any change in models of land ownership: do the families farming these bioregions own the land, passing it on to the next generation, or does the demand for "safe" rural land mean they are all tenants? Perhaps owners make no profit, in this scenario, and reward comes through reinventing these old practices for new crops, soil and climate.

In the face of internal migration and widespread disruption, all kinds of heritage will play a role in supporting people and communities through change and uncertainty, with language and culture providing a continuity absent from day-to-day life. New folk songs, using the traditional four-to-the-floor kick drum and hoover bass beloved by their grandparents, record the stories and experiences that don't feature in the scenario's "big culture": perhaps, though, in this scenario of solidarity and new community, the boundaries between formal and informal heritages will be less strongly maintained.

When will the behaviours learned, in Europe, during the 2020 pandemic become part of our culture? This scenario suggests a tension between having common local values and acting in ways that benefit people on a larger scale. But perhaps by then we will have been able to expand our understanding of who we are in community with: we might value human life precisely because we recognise our connections to each other.

Silicon Scaffold
It's hard to see a place for heritage as we understand it now in this world. Culture feels like something that exists in the shadows, shared in the spaces between walled gardens, with the exception of high-status or squarely-mainstream cultural experiences used by firms to cement a sense of belonging. But in constantly-remixed and divided societies, responsibility for maintaining sites and protecting culture over the long-term would always fall to someone else. Perhaps, though, the invisibility of culture in this scenario is a cause for optimism: through the looking-glass, beyond the corporate identity brokers, communities might develop their own, unregulated systems for looking after their heritage, new systems of folk culture that help regions cohere in the face of these divisive corporate forces.

But maybe a different, more personal, kind of heritage will be valued in this scenario: the bundles of identities and associated rights that individuals accrue might be passed to others, not necessarily through traditional familial routes but through new mechanisms of inheritance, creating bonds across generations that have more to do with local laws than genetics, and creating lines of descent and inheritance that bear no resemblance to the ancient nuclear family of the twentieth century. If citizenship can be bought off-the-shelf, why not ancestry?

This scenario, unlike the others, seems to have no place for heritage, or for the values that underpin its importance to us: relations between people and organisations are a matter of calculus, not community, and networks are provisional, always subject to change. Under those conditions it's hard to see how any but the smallest groups would be in a position to sustain collective memories, or foster a continuing sense of identity

through shared cultural practice. Perhaps this scenario is here, like Clarence for George Bailey, to show those working to protect and celebrate heritage what the future would be like without them in it.

Patchwork Rainbow
The most visible aspect of heritage in this scenario is its capacity to be put to work in the service of division. Heritage can be thought of as an ideologically-inflected reading of history, a process of choosing and selecting aspects of the past that speak to particular values, sustaining communities and strengthening identities. This world illustrates the way that process, in conditions of mistrust and inequality, can support reactionary and insular perspectives, fuelling conflict.
But this world also offers hope: from this profusion of new ways of living, new forms of culture, new modes of expression, new values and ways of caring must emerge, and with them perhaps approaches to building communities across time that could outlast this fragmented European moment and point the way to a more coherent model. For some regions thrown upon their own resources, their cultural and natural heritage might serve as a reservoir from which to draw new ideas. For this Europe as a whole, there will still be sites and practices that are meaningful to more than one group, and while this can drive conflict, it holds out the prospect of one day serving as a ground for a common identity.

From the perspective of the present, this scenario challenges ideas of universally-held heritage values. In this world, UNESCO's notion of a common heritage for all humanity is nowhere to be seen, and the Council of Europe's understanding of heritage as a medium for mutual understanding is difficult to imagine persisting. It underlines the importance of finding ways to imagine heritage as a reservoir of new futures, acting as the wellspring of our movement forward, as a counter to its employment in the service of denial and division.

All these scenarios address futures in which the management of cultural and natural heritage can contribute to spatial injustice, whether (for example) through the failure to recognise and value local heritages, or through the uneven effects of climate change on heritage. They are valuable provocations and invitations to reconsider the nature and role of what we currently think of as 'heritage'.

Erik Boekesteijn
Senior Adviser, National Library of the Netherlands:

What might the IMAJINE scenarios mean for the European library of 2048? Here are some thoughts on how the institution might adapt to serve Europe in these four very different futures.

In the first scenario, Silver Citadel, we see the emergence of "the Library for Life". This is a platform to elevate discourse and a place for debate. A great deal of information is in the public domain, and a single digitized EU library collection exists in the cloud, with its servers running on satellites in space. The "Librarian for Life" is always available 24/7 to answer questions or check information.

The library has become an of/by/for all model, where ownership is in the hands of the people. Storytelling has become an important skill and the role of the librarian is to create and maintain a safe space where people are respectful to each other & willing to listen to each other's stories. A librarian in this scenario would be:
- A big data and algorithm educator
- A revealer of misinformation strategies
- A facilitator of digital literacy
- A heritage organizer
- A community convener

In the second scenario, Green Guardian, we see "the Library as Sanctuary". It is a place of refuge to improve life and wellbeing, a place of kindness. Lifelong learning takes place here: people learn from an early age to be good to the Earth and to each other. Storytelling, the preservation of memory, and an attention to heritage are among the most important and valued skills.

The librarian of Green Guardian would be
- An anti-discrimination activist
- A heritage organizer
- A public history campaigner
- A storyteller
- A literature and art specialist
- A tranquility and meditation expert

In the third scenario, Silicon Scaffold, the library as innovation hub is completely modular and can be customized to people's own needs and desires. This is the "Full Digital Experience Library". Key functions include education in digital skills, sharing knowledge, and trading the "new gold" that is data. Digital citizenship is most important and libraries play a key role in teaching & informing people about the benefits and use of smart city tech.

In this future, the librarian is:
- A big data and algorithm educator
- A revealer of misinformation strategies
- A facilitator of digital literacy
- A smart City Agent
- A facilitator of innovation processes
- A networker and convener
- A design and innovation coach

Finally, in Patchwork Rainbow, we see "the Last Library Standing". Libraries are no longer connected, but in some areas communities are still keeping the libraries up as public domain space - both digitally and as physical buildings. Collections are very random, formed from what people can bring together. These independent libraries differ yet have in common that they focus on wellbeing and community spirit. They teach self-determined common values and ethics around face to face contact and communication.

The librarian of Patchwork Rainbow is
- A facilitator of civic discourse
- An organizer of democratic debate
- A community engagement champion
- A social constructivist
- A community activist

These scenarios are plausible assessments of the future context for European spatial justice and territorial inequality, being explored by the IMAJINE project "Integrative Mechanisms for Addressing Spatial Justice and Territorial Inequalities in Europe".

The scenarios are designed to challenge current assumptions and received understandings about spatial justice, territorial inequality, and the future of these issues. They do not represent predictions or expressions of desired states.

For more information regarding IMAJINE,
please visit imajine-project.eu, or contact Professor Michael Woods, Project Leader, at zzp@aber.ac.uk

For more information regarding the IMAJINE scenarios, please contact Dr. Marie Mahon at marie.mahon@nuigalway.ie