



Scenario 1: Technocracy for the common good

- Sustainability is achieved through state control, which prioritises society's collective interests.
- Digitalisation enables unprecedented monitoring and control of social and ecological systems.
- Economic activity is centralised with large businesses under substantial state influence.
- The EU is a well-functioning partnership among strong, like-minded governments leaning towards deglobalisation and protectionism.

In 2050, Europe has achieved high living standards and healthy ecosystem through meticulous, top-down steering of the economy and society. Frustrated with the persistent and growing social and environmental problems generated by liberalised markets, Europeans have increasingly turned to the state for solutions. National governments have a strong role in organising production and consumption so that it operates within environmental limits, relying on ICTs and other high-tech innovations that enable unprecedented monitoring of ecological, social and economic systems.

Centralised, data-intensive planning enables robust economic growth within environmental and social boundaries. The strong performance of national economies generates the fiscal revenues to sustain powerful centralised governments, public services and welfare systems. This model of governance focuses on maximising the collective interests of society – for both current and future generations. While this sometimes means setting aside individual rights and personal freedoms for the sake of the common good, the political system enjoys broad popular support because of the widely shared prosperity and stability that it provides – as well as the control that governments exert over public discourse.

The digital transformation pervades all aspects of life, the economy and the built environment. Connectivity is ubiquitous. Pro-social and pro-environmental lifestyles are encouraged through nudging and choice editing. The online public sphere is vibrant, with high participation of citizens, public authorities and businesses. Government uses the latest digital solutions to scan for societal problems or unrest and provide solutions for citizens. Civil society organisations have an important role in governance but operate primarily as extensions of government influence, rather than independent and critical voices.

State interventions and network economies contribute to the emergence of 'big businesses' that

collect vast amounts of behavioural data from users, develop powerful AI tools and dominate their respective industries. While these businesses are potentially influential political actors, governments curb their power and ability to profiteer, for example by imposing strict rules for corporate governance (e.g. relating to remuneration, liability for harms), enforcing rigorous transparency and increasing public ownership in some sectors. The overall aim is to create and sustain a business sector that generates collective societal value ahead of private profit.

The tendency towards centralised planning is reflected in the ways that sectors are structured and operate. For example, the energy system embraces the use of nuclear power and centralised power generation combined with long-distance transfers of energy. Agriculture is large scale and intensive, making widespread use of high-tech solutions such as precision farming, new kinds of ICT, artificial intelligence (AI), robotics and gene technology. From automation to data collection and analysis, the digital evolution of agriculture is a fact of life on farms across Europe. Agricultural yields have increased, production costs are reduced and environmental standards are complied with. In general, ecosystems and natural resources are primarily valued for their capacity to serve human interests, with large-scale industries such as fishing and forestry relying on monitoring to secure maximum sustainable yields. Within cities, advanced planning has expanded green infrastructure as a means to deliver valuable services such as mitigating climate change impacts related to air quality, flood risks and urban heat islands.

The EU is a well functioning partnership among strong national governments, which together focus on protecting European interests and shielding Europe from external pressures, including immigration and economic competition. The economic model leans towards deglobalisation and self-sufficiency.



Scenario 2: Unity in adversity

- Faced with severe environmental and climate disasters, Europe has become much more unified.
- The EU has a common constitution and uses stringent regulations and rigorous enforcement to set the boundaries for economic activity – promoting growth but prioritising the environment.
- Investments in nature are heavily promoted as a means to mitigate and adapt to environmental and climate-related problems.

For Europe, the decades leading to 2050 have been difficult. Europe's socio-economic and political systems have evolved quite substantially, with nature providing the primary driving force behind this change. Growing climate change impacts and recurrent environmental disasters have seriously affected human health and livelihoods, triggering widespread acceptance of the need for a new approach to economic development and governance. Confronted with adversity, European countries have responded by joining forces and becoming much more closely politically integrated.

A strong, federal EU government is responsible for delivering sustainability, primarily through the imposition of stringent, top-down measures such as regulations and economic instruments. Europe's common constitution identifies the need for the economy and society to operate within strict environmental limits as its core guiding principle. Governments still promote economic growth as a means to sustain employment levels and fiscal revenues but GDP is no longer the primary measure of economic performance and its outlook is uncertain. European governments are therefore trying to become more 'growth agnostic' – looking for ways to make social well-being and the functioning of the state less dependent on increasing GDP.

European solidarity and deepening integration offer a partial response to these challenges. EU level taxation of individuals and companies provides the resources to meet climate adaption costs and finance large fiscal transfers between regions, cushioning the effects of localised shocks and crises. Coordination of tax rates has eliminated many tax havens and enabled much more robust taxation of multinationals, including powerful tech companies. These efforts have been further reinforced by measures to shift the tax base, to include digital taxes, financial transactions taxes, progressive consumption taxes and wealth taxes.

The eurozone has been greatly strengthened and digitalisation of the currency has further bolstered efforts to address tax evasion by greatly increasing transparency, as well as giving the European Central Bank much greater control over monetary conditions, helping to manage inflation and minimise unemployment.

Political and economic integration is further consolidated through new rules on how the European market works. Strong regulations control financial flows and current account imbalances within Europe and help reduce market instability. Corporate governance rules strengthen workers' voices and mandate maximum differences between top and bottom earners in companies. EU laws on environmental and social governance have been greatly strengthened, with comprehensive sustainability accounting requirements enabling the rewiring of financial flows. Together these actions contribute to shift in understanding of the role of businesses in society. Strictly limited and exclusively public funding of political campaigns reduces the ability of the rich to control the political process and create a permanent upper class. In general, inequalities are successfully addressed through top-down policies characterised by extensive regulation and intervention to shape market outcomes.

The increasingly severe environmental and climate pressures of recent decades have also shaped Europe's management of nature. There is a strong emphasis on investing in ecosystems to reduce impacts from climate change and environmental degradation. Blue and green infrastructures are prominent features of urban areas. In many rural areas agricultural and nature are highly integrated with the aim of increasing the provision of regulating services and supporting services, thereby enhancing farming output and mitigating natural hazards. For example, soil management is adapted to increase soil biodiversity and to enhance nutrient cycling, soil formation, carbon storage and primary production.



Scenario 3: The great decoupling

- Technological breakthroughs and social innovations have enabled an extraordinary decoupling of GDP growth from adverse environmental impacts. The bioeconomy is at the core of this transformation.
- Businesses in competitive, liberalised markets have driven green growth, with effective government interventions shaping market incentives and managing the impacts of rapid economic change.
- Cooperation between EU countries is flexible and pragmatic, focusing on a limited number of areas.

In 2050, Europe's economy is growing strongly while remaining within environmental boundaries. Technological breakthroughs and related shifts in social practices and norms have enabled an extraordinary decoupling of GDP growth from adverse environmental impacts. Economic growth has generated the resources to invest in rapid innovation and continual investments in the upgrading of energy, mobility, food and the built environment. Green lifestyles have become the norm, with new technologies driving the adoption of new habits and routines. Resource efficiency and circularity are fully integrated into daily life.

The effects of rapid technological and social innovation are particularly evident in the bioeconomy, which is now highly integrated into society, from primary biomass production (e.g. plants, algae, bacteria), through biotechnology (e.g. cell factories, genome editing), to innovative, circular business models. Complex secondary and tertiary production processes enable high circularity of biomaterials, reducing demand for critical resources outside the EU. Fossil fuel substitution has been largely achieved through increased production of alternative fuels such as algae-based biofuels, developments in the production of "green hydrogen" and the cascading uses of agricultural waste. Despite growing climate change impacts, crop yields are increasing. Large-scale farms use the internet, data analytics, improved sensor technology and drones to collect data, enabling agricultural automation that goes far beyond precision farming. Significant biotechnological advances enable environmental restoration and play a key role in addressing pollution.

Efficient, liberal markets have played a central role in enabling green growth, but government interventions have been essential to correct market failures and drive forward innovation. Responding to weak growth and high unemployment, governments across Europe have liberalised labour laws and lowered corporate tax rates, while investing in research, skills, experimentation and

learning. Environmental, resource and consumption taxes have helped to sustain tax revenues and incentivise green innovation but also produced regressive effects. The euro has broken up, causing economic disruption and a weaker EU but ultimately creating a more flexible policy environment, better adapted to national realities.

Cooperation between EU countries is pragmatic. Member States focus on a small number of areas of European competence. National policies are debated and adopted with a prominent role for civil society organisations as accepted mediators between policymakers and the public, ensuring a functioning exchange between stakeholders.

The emphasis is on creativity, flexibility and mobility. Following the liberal ethos, policy focuses on equality of opportunity, rather than equality of outcomes. Government policies actively promote the emergence of disruptive innovations and entrepreneurship that can drive transformative change, while constraining the power of incumbents and limiting monopoly power. The result is a highly competitive market characterised by diverse platforms. National currencies are increasingly complemented and replaced by digital alternatives operated by multinational companies.

Robotics, automation and artificial intelligence are thriving, driving productivity gains and economic growth. This creates an uncertain work environment, especially for low and medium-skilled workers but the labour market is adapting. Booming labour platforms create a new kind of 'crowdworking', with short-term 'gig' engagements expanding rapidly at the expense of full- or part-time employment. Leisure and working time merge seamlessly. Job insecurity and inequality are generally accepted because social mobility is high and growth means that governments have resources to finance generous social protection (e.g. unemployment benefits), retraining and fiscal transfers to households or communities in need of support.



Scenario 4: Ecotopia

- The need to preserve and reconnect to nature and the local community is part of society's 'common sense'. Technology is used sparingly as a means to enable sustainable lifestyles.
- Consumption and resource use are being scaled back. Reduced economic output is limiting the size of the public sector, implying a bigger role for civil society in maintaining welfare.
- Businesses are managed with the involvement of diverse stakeholders, while communities play an active role in bottom-up decision-making processes, including at European scale.

Europe has undergone a profound socio-political and economic shift, reversing some of the societal changes of past centuries. In particular, markets and centralised governments are no longer so dominant in shaping collective thinking and action. Power has shifted to local communities and civil society organisations.

Scepticism about market-driven development is reflected in the dominant norms and shared discourse across society. In place of profit-maximisation and conspicuous consumption, the economy now prioritises sufficiency and equity. Sharing and collaboration are often favoured over competition, especially at local and regional levels. Consumption and resource use are being scaled back, with the result that economic output has declined. This has necessarily reduced the fiscal resources available to central governments, contributing to a reduction in the state's capacities and roles, including in its ability to finance public health and welfare expenditure. While this has created challenges, it has also created space for civil society and grassroot initiatives to play a more important role in devising and delivering novel ways of providing care and support. Social and cultural innovations often have a more important role than technologies, although there are many exceptions. For example, ICTs are important in engaging communities and enabling individuals to help each other via non-market transactions.

Social, economic and political systems are decentralised. So far as possible, public policies are debated and adopted with the involvement of citizens and non-governmental forces are actively engaged in political processes. There is a strong emphasis on experimentation in governance, with lessons learned widely shared and discussed. At the European scale, the EU persists but is relatively weak. Member States normally join forces flexibly in 'coalitions of the willing' to tackle policy areas such as defence, taxation or social affairs. Cities, regions and non-governmental groups have a strong voice in EU policy discussions.

Economic activities and sectors are similarly fragmented and localised. Decentralised digital currencies are used to boost local economies or reward unpaid work (e.g. care for the elderly). Businesses are often managed by stakeholders, including customers, employees and local communities. The energy sector is likewise highly decentralised. Private households and commercial units produce and store energy through a mix of renewable sources. Energy production is largely self-sufficient with centralised production largely reserved for industries. Nuclear power plants are close to being completely decommissioned.

Declining economic activity has alleviated some of the social and environmental pressures that previously demanded public spending. Finding ways to live and do business within nature's limits is now part of society's 'common sense'. Ecosystems are prized for their inherent value, rather than their capacity to generate profits. The widespread desire to reconnect with the natural world (together with other factors such as new technologies enabling remote working) has encouraged people to move out of cities to ecovillages and local sustainable communities in rural areas. Meanwhile nature has been invited back into cities, with public authorities making available land and resources for engaged citizens to greatly expand blue and green infrastructure.

Many agricultural areas that had been abandoned have been reinhabited. Natural resources are managed with the aim of maximising biodiversity and resilience, rather than economic returns. Agriculture is generally less large-scale and much more diverse, providing high-quality traditional food, recreational facilities and health care. Just as citizens wish to reconnect with nature, more engaged consumers want to reconnect with their food, understanding much more about how it is sourced, processed and produced. Environmental and health problems associated with intensive agriculture and long food chains have led most consumers to favour organic and local food.