# POLICY BRIEF | TRANSFORMATIVE PATHWAYS FOR A SUSTAINABLE AND RESILIENT EUROPE

## INTEGRATED SOLUTIONS TO ADDRESS HIGH LEVELS OF CLIMATE CHANGE

Transformative approaches are needed to meet the Paris Agreement's goal of keeping global mean temperatures below 2°C (and ideally below 1.5°C) above pre-industrial levels, as well as to adapt to and cope with severe climate change impacts. IMPRESSIONS has co-created a suite of transformative mitigation and adaptation pathways to avoid the most dangerous impacts of climate change, build the capacities to respond to climate impacts and create opportunities to deliver multiple benefits.

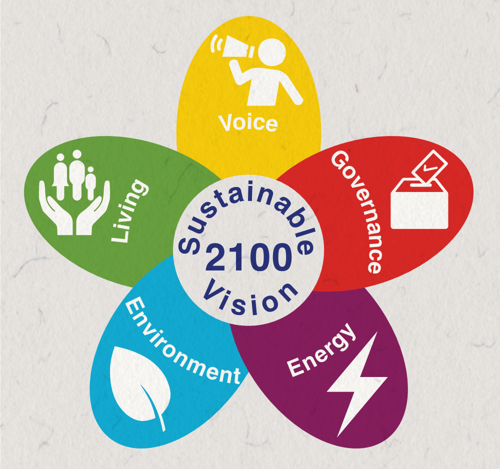
## Key messages

- **Policy integration is crucial** to achieve the Paris Agreement goal and adapt to the impacts of climate and socio-economic change. An integrated perspective that takes into account the links between multiple policy domains, sectors and scales can facilitate synergies and alleviate trade-offs between adaptation, mitigation and other goals.
- **Pathways provide an organising framework and an effective approach for developing integrated courses of action** that deliver transformative change towards a long-term vision of sustainability and resilience. Positioning climate mitigation and adaptation within a long-term vision draws attention to the social, institutional, economic and technological actions that are required to achieve the 2°C goal.
- **From the development of pathways, we conclude that institutions, behaviours and values need to change** in order to achieve long-term sustainability and resilience. Social cohesion, equitable access to services and increased knowledge and awareness can support individuals and communities to invest in sustainable technologies and adapt to climate change. Consistent, sustainability-oriented regulatory frameworks on sustainable production, consumption and resource management underpin the deep changes of values, lifestyles, markets and management approaches that are needed.
- **Europe can provide leadership** in motivating and coordinating global, national and regional action on climate, sustainability and resilience. Europe can lead by example, with transformative policies such as the CAP agri-environment schemes and (a revised) Energy Strategy, and strengthen international alliances to propel global sustainability commitments. Decisions should be taken in a highly participatory, transparent and reflexive manner that acknowledges that uncertainty cannot be controlled.
- **Innovations in technologies, infrastructure and land use** can help to provide multi-functional solutions to reduce emissions, adapt to climate change and enhance wellbeing. This includes both high-tech and low-tech solutions such as water-sensitive infrastructure, European smart grids and household rainwater harvesting, as well as social innovation and empowering local communities. Nature-based solutions provide cost-efficient co-benefits for the environment and people (e.g. biodiversity corridors, river re-naturalisation, green infrastructure).

## Why use a pathway approach?

A pathway approach starts from a long-term vision for sustainability and resilience (‘Where do we want to be in the future?’) and ‘backcasts’ possible courses of action (‘How do we get to the future we want?’). Each pathway addresses one or more of the vision elements, which could relate to areas such as lifestyles, equality, governance and environmental protection. Pathways are composed of one or more alternative or complementary strategies, with each strategy consisting of short-, medium- and long-term actions that are assigned to different actors. Short-term and medium-term actions can remove obstacles and pave the way for long-term actions that are more daring and radical.

As visions have multiple elements, pathways inevitably address multiple policy domains, sectors, institutions and scales. They provide integrated strategies to address the social, institutional, economic and technological root causes of problems such as high emissions, vulnerability to climate impacts and unsustainable resource use. By focusing on actors and actions, they help to explain how to put in place the institutional conditions that are needed to shape development trajectories pro-actively in order to achieve the vision.



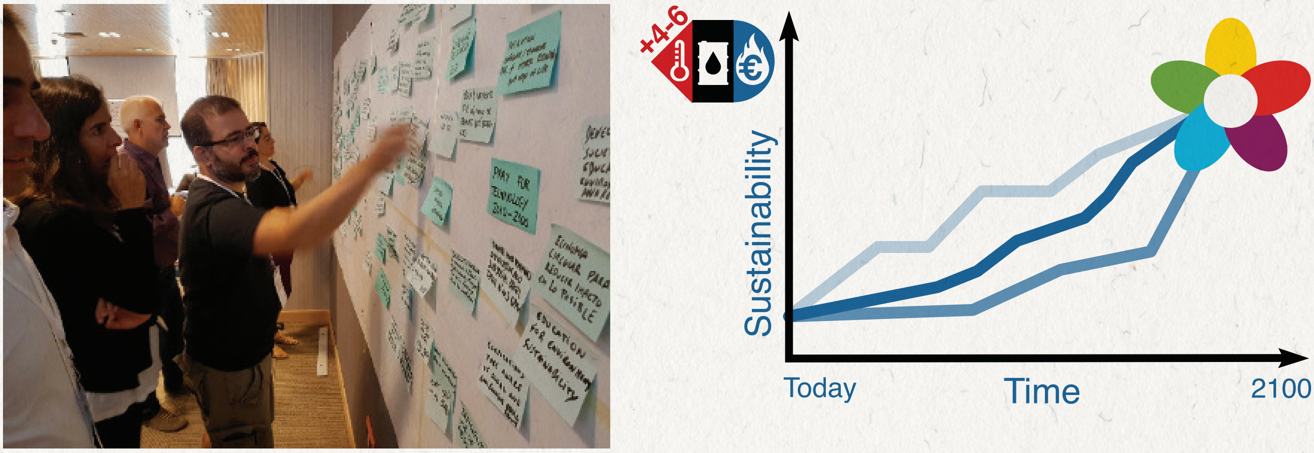
Pathways are co-created with stakeholders: in this way, they can produce more robust, context-relevant and credible insights for decision-making, and increase the legitimacy and acceptance of the decision-making process.

The pathways approach is suitable when there is high complexity, high uncertainty and potentially severe future damages. In this context, there is less interest in ‘optimal’ policy and more interest in reflecting on the possible consequences of climate and socio-economic change and identifying robust responses. The pathways approach can maintain flexibility, build the capacity for action across sectors and encourage the emergence of transformative solutions, which are pathways, strategies or actions that make ‘game-changing’ contributions to achieving the vision.

## Co-creating transformative pathways for Europe

In a series of participatory workshops, IMPRESSIONS stakeholders developed a shared vision for each of four case studies that cover different scales in Europe: European continental scale, Scotland national scale, Iberian transboundary river basins and Hungarian municipalities. For example, the ‘Vision for Europe’ was centred around equality, climate mitigation, resilience, sustainable lifestyles, environmental management, and collaborative and participatory governance. IMPRESSIONS stakeholders and researchers then co-created a suite of pathways to support society in moving towards this vision under the socio-economic constraints within each scenario. The aim was to identify additional strategies that are needed to reach the vision on top of the level of adaptation/mitigation already present in the input scenario.

The scenarios provide different risks, constraints and opportunities. For example, actions in the SSP3 scenario, which features intense geopolitical conflict, are predominantly ‘bottom-up’, driven by local communities that self-organise to build self-sufficiency. In the SSP4 scenario, which features high inequality, the centralised authority of a strong elite enables a strategic top-down approach to planning, and in the techno-centric SSP5 scenario many of the actions are market-based. An iterative co-creation process between IMPRESSIONS experts and stakeholders enabled pathways to be analysed and verified between the workshop cycles.



*Stakeholders identify pathways composed of short, medium and long-term actions to achieve the vision of sustainability within the constraints of each climate and socio-economic scenario*

## What are the transformative pathways and solutions for a sustainable Europe?

The pathways identified by stakeholders include strategies and actions for technological innovation (e.g. renewable energy, water efficiency), nature-based solutions (e.g. sustainable urban drainage systems, renaturing river banks), and strong regulations and incentives to encourage sustainable lifestyles, innovation and economic activities.

Three groups of transformative mitigation and adaptation pathways were developed that are robust across the different case studies and scenarios. Together, these pathways contribute towards achieving a long-term vision for a sustainable and resilient Europe at multiple scales. They are:

- **Shift towards sustainable lifestyles:** a cultural change in ways of living, commuting, producing, purchasing and learning for a reflexive and sustainability-oriented society. Strategies include establishing holistic and equitable education and health systems, supporting local communities and markets, and encouraging sustainable production and consumption through regulation and raising awareness. Transformative solutions include local currencies, environmental tax reform and a Sustainable Economy Fund.
- **Establish good governance systems for sustainability:** putting in place the conditions for participatory, transparent, learning-based and multi-level governance in Europe. Strategies include strengthening collaboration for sustainability through international and transboundary alliances; and decentralising decision-making within multi-level structures to pay attention to local opportunities and needs. Transformative solutions include participatory democracy and establishing a small “labs” approach to governance.
- **Promote integrated and sustainable resource management:** shifting towards context-sensitive, multi-functional and efficient resource management for environmental protection, resource security and European self-sufficiency. Strategies address water, energy, food, land-use and biodiversity holistically, to create synergies and alleviate trade-offs. Transformative solutions include the densification and energy self-sufficiency of cities, and a reform of the Common Agriculture Policy (CAP) with a greater focus on the bio-economy and community-based agriculture.

## Policy Recommendations

- **Develop integrated climate mitigation and adaptation policies to achieve long-term sustainability and resilience goals.** An integrated perspective focuses attention on changing the underlying social, institutional, economic and technological conditions that produce high emissions, vulnerability and inequality. The pathways show many possible synergies between climate change mitigation, adaptation, and social and environmental wellbeing, such as through strengthening local, low-carbon and self-sufficient communities. They also reveal trade-offs, such as between increased use of air conditioning and carbon emissions.

- **Invest in social and human capital to support shifts to sustainable lifestyles.** The pathways underscore the opportunities arising from strong social cohesion at European, national, regional and local levels, for achieving a united Europe in the face of climate change and other risks and for enabling community-based adaptation. Social cohesion requires investments in new education systems that internalise environmental and social values and knowledge (e.g. respect for the environment and people), strengthening local communities and diversified local markets, and setting up social protection and solidarity mechanisms.

- **Strengthen participatory, transparent and learning-based governance at multiple levels.** Democratic, flexible and cooperative governance systems are better able to deal with the multiple challenges that today's societies face. Multi-level and democratic decision-making fosters a common European identity and taps into the skills of diverse societal actors. It promotes cooperation across scales to take local priorities, needs and opportunities into account for a Europe that is sustainable and resilient as a whole. Governance experimentation is an important mechanism to deal with deep uncertainty and complex problems that have no 'silver bullet' solution.

- **Put in place strong and consistent regulatory frameworks and policies to ensure sustainable resource management, production and consumption.** Stringent, sustainability-oriented regulatory frameworks on sustainable resource management, production and consumption underpin the deep behavioural and institutional changes of values, lifestyles, markets and management approaches that are needed to meet climate and social goals. The frameworks need to be translated into consistent sets of policies, including regulation, taxes and incentives (e.g. carbon tax, green energy subsidies).

- **Innovate 'hard' and 'soft' measures for sustainable water, energy and agriculture.** Profound innovations in technologies, infrastructure and land-use are needed to shift towards low-carbon, sustainable and resilient societies. This encompasses innovative high-tech (e.g. smart grids, water desalination) as well as low-tech solutions (e.g. household rainwater harvesting). Nature-based solutions should be strengthened as a way to provide cost-efficient co-benefits for adaptation, mitigation, the environment and people (e.g. biodiversity corridors, natural flood management, river re-naturalisation, green infrastructure).

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**Find out more**: www.impressions-project.eu, deliverables 4.1 and 4.2.