

Transformation in the poly- crisis age

ESIR

Policy Brief No. 5

Independent
Expert
Report

Transformation in the poly-crisis age

ESIR Policy Brief No. 5

European Commission
Directorate-General for Research and Innovation
Directorate RTD — G
Unit G.1 — Common R&I Strategy & Foresight Service
Contact Ramona Samson (ESIR coordinator)
César Dro
Email RTD-ESIR@ec.europa.eu
Ramona.SAMSON@ec.europa.eu
Cesar.DRO@ec.europa.eu
RTD-PUBLICATIONS@ec.europa.eu

European Commission
B-1049 Brussels

Manuscript completed in February 2023

The European Commission shall not be liable for any consequence stemming from the reuse.

PDF	ISBN 978-92-76-61638-2	doi:10.2777/360282	KI-BE-23-001-EN-N
-----	------------------------	--------------------	-------------------

Luxembourg: Publications Office of the European Union, 2023

© European Union, 2023



The reuse policy of European Commission documents is implemented by Commission Decision 2011/833/EU of 12 December 2011 on the reuse of Commission documents (OJ L 330, 14.12.2011, p. 39). Unless otherwise noted, the reuse of this document is authorised under a Creative Commons Attribution 4.0 International (CC BY 4.0) licence (<https://creativecommons.org/licenses/by/4.0/>). This means that reuse is allowed provided appropriate credit is given and any changes are indicated.

Transformation in the poly-crisis age

ESIR Policy Brief No. 5

Expert group on the economic and societal impact of research and innovation

Sandrine Dixon-Declève (Chair)

Kirsten Dunlop

Andrea Renda

Céline Charveriat

Pierre-Alexandre Balland

Darja Isaksson

Francisca Martins

Montserrat Mir Roca

Gitte Pedersen

Sylvia Schwaag Serger

Luc Soete

Špela Stres

Daria Gołębiowska-Tataj

Rainer Walz

Adrian Curaj

Ailin Huang

Table of contents

INTRODUCTION: FROM PERMACRISIS TO POSITIVE PEACE.....3

1. A future within planetary, societal and economic boundaries.....3

2. Europe at a crossroads: the imperative to transform.....4

3. A renewed industrial and social policy for a stronger and more sustainable EU.....5

4. Reforming EU external action to achieve positive peace and global well-being8

5. Agile institutions in EU’s poly-centric governance.....9

INTRODUCTION: FROM PERMACRISIS TO POSITIVE PEACE

Since the early days of the Covid-19 pandemic, the ESIR group has advocated the need for EU institutions to avoid relying exclusively on short-termism, and instead adopt a **“protect, prepare and transform”** (PPT) approach as the most comprehensive strategy for resilience. “Protect”, through a swift and coordinated response in cases of emergency with policies that leave no one behind when crisis hits. “Prepare” for a broad set of future risks, through coordination, foresight, community involvement and re-skilling. “Transform” the economy and society, through challenge-driven approaches to research and innovation, triggering change that addresses the root causes of our current dysfunctional systems.

Only this approach can enable true resilience to future shocks. **Falling short of a full protect-prepare-transform agenda means ushering in an era of damage control and short-term, reactive decision making.** This would place the EU in a constant state of crisis management, in which crises never end, and their cascading impacts must be constantly mitigated. There would be no such thing as a time of peace, no “time to fix the roof”. Not surprisingly, the neologism “permacrisis” was chosen as the word of the year for 2022¹.

Against this backdrop, the pandemic years have led EU institutions to strengthen their response and crisis management capabilities². Many new initiatives and emerging policy priorities try to mitigate the consequences of external shocks when they hit; yet much less is being done to prevent shocks from occurring in the first place. In other words, **the EU is very attentive to the “protect” and increasingly wary of the “prepare” phase, but insufficiently geared towards transformation.** Today’s challenges require both anticipatory governance, long-term systems thinking and adaptive, agile decision-making. We must understand the real nature and root causes of the major crises we are in, and realise that we are no longer in mono-crisis mode: rather, we live in a poly-crisis age, which may evolve into permacrisis.

A permanent state of crisis (management) is not what the European Union was made for. Rather, the idea of European integration rose from the ashes of the Second World war as primarily a peace project, which created economic prosperity and paved the way for seven decades without conflict. Today, the poly-crisis age calls on the EU to rethink its mission and goals. **From “negative peace”, chiefly based on the absence of physical violence, the EU must become a champion of “positive peace”,** as defined by Johan Galtung already in 1967: a lasting peace built on sustainable investment in economic development and institutions, as well as on well-being and societal attitudes that foster peace³. Embracing positive peace and sustainable development in the age of poly-crisis means, *i.a.* leveraging EU’s poly-centric governance to build resilience; and harnessing Europe’s leadership in transformative technologies, social cohesion models and innovative creative industries for the green transition, as well as its vocation towards human-centric digital transformation. We explore how to do this in the next sections.

1. A future within planetary, societal and economic boundaries

Already prior to the pandemic and the invasion of Ukraine, **a poly-crisis was permeating across our socio-economic systems.** The extractive economy had already pushed the world far beyond planetary boundaries, due to the overexploitation of natural resources and skyrocketing emissions into the atmosphere, air, land and water. The economic system had become over-financialised,

¹<https://www.bbc.com/news/entertainment-arts-63458467>

²https://research-and-innovation.ec.europa.eu/system/files/2022-11/ec_rtd_sam-crisis-management-opinion.pdf

³J. Galtung, 1967, *An Editorial*, Journal of Peace Research, vol.1, issue 1,
See also <https://positivepeace.org/what-is-positive-peace>

even more than in the run up to the financial crisis of 2007-2008, and unable to service people's lives and livelihoods. Value chains had become, and still are, too fragile and dependent on single, often unreliable countries and sources of supply. Technological and knowledge systems have fallen short of accounting for human needs and are so privately governed that they threaten the digital sovereignty of European citizens and businesses. Social and political systems have fostered rising inequality, social fragmentation, and a deterioration of the political discourse, with citizens isolated into echo chambers to an extent that puts democracy at risk. Geopolitical changes and fierce rivalry between geopolitical blocks have led to new disruptions and endanger the multilateral order.

These individual disruptions have occurred in one form or another throughout history, and have become unsustainable over the past decades. **Among other factors, the financialisation of the economy and the acceleration of digital transformation have further intensified global interconnectivity, system interlinkages and cascading effects, in turn leading to major social and environmental tipping points.** Disruptions within one system quickly spill over into other systems, creating negative feedback loops. This development is a major driver of the current polycrisis world⁴; and leads to the imperative of “transformation in crisis”, which the ESIR group urges policymakers to adopt.

Russia's fully-fledged invasion of Ukraine in February 2022 marked another stress test, intensifying Europe's exposure to an even broader array of interconnected emergencies, deepening the trade-off between short-term responses and systemic transformation and reminding us of the many unsustainable geopolitical alliances and dependencies we have created for short-term profit rather than long-term stability and prosperity needed for all European citizens. From food to raw materials, energy, social cohesion and the very integrity of the single market, the continued demand for urgent, protective measures and instinctive reactions seems to overshadow the green and social policy goals originally enshrined in the European Green Deal, which were (not without difficulties) translated into priorities for national resilience and recovery plans.

2. Europe at a crossroads: the imperative to transform

Against the backdrop of war, the temptation is once again to concede to *force majeure*, requiring the Union to rethink its more ambitious plans and consolidate alliances that perpetuate current dependencies or even create new ones. **Yet the real choice is not between protection and transformation. Rather, it is between the fulfilment and the *impasse* of the EU project.** Europe is at a crossroads between two alternatives: following a short-term reactive path regardless of its impact on transformation, thereby risking further lock-in for societies and economies into suboptimal structures; or **embedding protective and preparedness measures into a deeply transformative agenda. ESIR sees this latter option as Europe's only successful path.** This requires putting in place an action plan that combines state-of-the-art knowledge, technology, human ingenuity with new strategies and transformative policies so as to enable initiatives like the EU R&I Missions to address key challenges for people, planet and prosperity in a determined and integrated way, building a shared vision for living sustainably and well. An action plan that reflects the lessons learnt from the pandemic and the emerging, compound effects of climate and conflict.

⁴ A global polycrisis occurs when crises in multiple global systems become causally entangled in ways that significantly degrade humanity's prospects. These interacting crises produce harms greater than the sum of those the crises would produce in isolation, were their host systems not so deeply interconnected. See: Homer-Dixon, T.; Renn, O.; Rockström, J.; Donges, J.F.; Scott J. (2022): “A call for an international research program on the risk of a global polycrisis.” 2022-3, version 2.0. Cascade Institute. <https://cascadeinstitute.org/technical-paper/a-call-for-an-international-research-program-on-the-risk-of-a-global-polycrisis/>; and: “What is a polycrisis and how is it different from a systemic risk?” *Discussion Paper*, Cascade Institute 10/2022.

But how to reconcile the needs of today with the call for enhanced preparedness and systemic transformation? **We are aware of the extreme difficulty of keeping to a long-term vision of transformation in times of emergency**, when the pressure for immediate responses to short-term needs becomes more salient. And indeed, the temptation to give up to short-termism will be strong. Just as sailors sometimes need to reach the nearest shore when a storm hits, many will suggest that Europe's journey towards resilience and sustainability may well need to take a detour until the emergency is over. **In our opinion, this is an illusion, and a very risky one, especially when crisis is linked to finite and dwindling resources. The state of crisis, without systemic, adaptation-oriented transformation, will never be over.** Worse, the EU project will risk collapsing under the weight of centripetal forces, of continued compound impacts and tipping points – political, socio-economic and environmental – that necessitate both short term levers for change and long term systems planning. Without a deeper plan of action to avert these tipping points, a likely scenario, today, is that financial resources mobilised through Next Generation EU will be spent to contain a wave of nationalism and protect Europeans from massive spikes in energy prices, yet precipitate Europe in an unsustainable *status quo ante* putting at risk the very essence of our democratic and collaborative Union.

As we argued in an earlier publication, the real failure for Europe is thus the failure to transform and to adopt systemic solutions responding to the complexity of today's challenges⁵. The imperative, going forward, is therefore to **give real meaning to the protect-prepare-transform approach, by taking concrete action to fundamentally overhaul the way in which policies and strategies are conceived, presented and implemented.** This, in turn, implies that we learn from the past ("institutional memory"), and adopt policies beyond the much-needed evidence-based policymaking, by making good use of foresight and scenario thinking, and by adding a complex adaptive learning-from-innovation approach that combines the long-term view with safe-to-fail experiments and policy coherence in short-term actions. This endeavour implies, i.a. an **exploration of existing tensions within EU policy**, such as the need for more coherence in mutually interacting domains such as environmental and industrial policies that encompass the landscape of needed green industrial development in the 21st century (in all sectors of industry including quaternary and quinary sectors such as information services and human services); a redefined strategy for Europe's role in the world (e.g., addressing the tension between an open approach to the world versus the need to face authoritarian and competitive countries); and the inherent tension between policy goals such as technology sovereignty and open strategic autonomy, and the need to mitigate climate impacts (competition for resources).

3. A renewed industrial and social policy for a stronger and more sustainable EU

The EU should embark on deep transformation by seizing the opportunities offered by the current state of emergency, in which inaction is simply not an option. This requires a number of steps, which we briefly illustrate below.

First, **Europe needs to radically rethink the way in which it handles the sourcing and use of raw materials.** Europe depends heavily on raw material imports. For some critical resources, this has created dependencies from supplying countries. A strategy that builds on broadening the resource base by extracting natural resources from developing countries in the current pattern has no role in our vision of a sustainable European or global economy. In order to shift from dependencies on a few suppliers and avoid future negative disruptions around raw materials and natural resources, there is a need to understand Europe's raw material needs, production and resource capacity. This, in turn, would allow to properly optimise and enhance a European value chain within a European Green Deal context by applying the protect-prepare-transform approach. **The EU has a unique opportunity to embed in its future industrial plans a gradual reduction**

⁵ <https://www.horizon-europe.gouv.fr/sites/default/files/2022-01/industry-5-0-pdf-5324.pdf>

in the use of critical raw materials, moving towards a predominantly regenerative, circular-economic model.⁶ This would mean a broadening of Europe's Circular Economy Plan towards new forms of material efficiency such as sharing and life-time extension, as well as a debate about the role of material consumption for wealth creation. It would require a focused debate on the prerequisites to open-up old or new mines in Europe, and the important environmental ramifications of doing so.

Second, **it is essential to address Europe's fossil fuel, and in particular oil and gas dependency head-on**, starting with ending any production subsidies *and* a total ban on new extractions of fossil fuels. The availability of inexpensive fossil-fuel energy has been a hallmark of the growth and development of most countries in the world whether the industrial growth of the last century or the information-intensive growth of the current era. The transition of the energy system from fossil fuels to clean energy has, as a consequence, been hampered by the "weight of the past" and kept most European countries locked into a fossil-fuel-based model of economic growth. This holds true both for the oil- and gas-abundant countries and for countries with little internal fossil fuel production but where the competitiveness provided by inexpensive energy access has significantly delayed transition towards sustainable sources. All this despite the fact that the cost of capital for clean energy investments has fallen rapidly and is today in many cases already lower than fossil fuel energy investments⁷. In this sense, the current energy crisis represents Europe with a "perfect storm": highlighting on the one hand its fossil fuel "addiction" as reflected in various direct and indirect fossil fuel subsidies and on the other hand providing unique opportunities for an acceleration in the energy transition towards clean energy.

Third, and especially in the current poly-crisis context, **coherence and directionality require a focus on strategic sectors, from energy to agrifood**. The post second-world war, European Community on Coal and Steel – the precursor of the EU – was a peace-building project grounded in two industries (energy and steel) whose integration would at once achieve cohesion and Europe's independence on foreign influence. Today, it is surprising that the creation of a European Energy Union or of a European Chips Union⁸, two essential industry sectors of today, did not receive the political support they deserved so far. The one sector which did benefit from a common European policy was of course the agricultural sector with the creation of the Common Agricultural Policy (CAP). Contrary to fossil fuels, the CAP has actually enabled Europe to remain by and large independent from foreign agricultural supplies, and this in turn helped Europe mitigate the impact of shocks created by Russia's invasion of Ukraine.⁹ This does not mean that the CAP is perfect as it is, and should not be reformed: as a matter of fact, the substantial independence of European food production achieved by the CAP has weakened the pressure to engage in a transformation

⁶ Currently, this seems to be hardly the case: for example, PV, wind energy technologies and electric vehicles generally require more minerals to build than their fossil fuel-based counterparts. We have to augment the deployment of these technologies with a circular economy perspective early on.

⁷ See e.g. IEA annual reports and the most recent IRENA infographic: <https://www.irena.org/newsroom/articles/2022/Jul/Competitiveness-of-Renewables-Continued-Amid-Fossil-Fuel-Crisis> and <https://www.weforum.org/agenda/2021/07/renewables-cheapest-energy-source/>

⁸ As a matter of fact the microelectronics industry of the late 70's was actually the precursor of the subsequent Research Framework programmes.

⁹ Following the Russian invasion in Ukraine, global market prices of agricultural products such as grain and oilseeds rose dramatically with the war having disrupted the supply of grain and oilseed from Ukraine with 50% and from Russia with 25%. The threat to global food security impacted particularly low-income countries in Africa, the Middle East and Southeast Asia, which strongly depended on imports from Ukraine and Russia and where the lowest income groups are now directly threatened in their food security. Europe's CAP by and large reduced such impact as illustrated in the Russian claims that the West will, as a result of its fossil fuel dependency on Russia, "freeze to death" while at the same time accusing Europe falsely and contrary to UN evidence, of benefiting most from the Ukrainian grain deal. See also <https://www.economist.com/interactive/graphic-detail/2022/11/26/high-fuel-prices-could-kill-more-europeans-than-fighting-in-ukraine-has>.

that today is needed for sustainability purposes, and also to ensure a more inclusive distribution of subsidies (currently the largest single beneficiaries of the funds are large corporations).¹⁰

Fourth, **the EU needs to strongly and coherently promote an Industry 5.0 approach, with particular emphasis on the quality and quantity of future jobs and meaningful work.**¹¹ In this respect, the EU faces a double challenge: ensuring that industrial transformation generates a high number of “good jobs”¹²; and ensuring that those jobs emerge in sectors that are compatible with, if not conducive to, Europe’s twin and just transition. In a poly-crisis era, this, in turn, requires:

- Departing from a static measurement of job quality and job permanence (such as the one carried out by the OECD¹³), to account for the extent to which meaningful work empowers and enables individuals, and provides long-term emotional as well as physical well-being through human connection, security and stability in jobs or through professional networks where relevant, and nurtures human capital¹⁴;
- Measuring and charting the skills and mindsets that will be required for the good jobs of the future, and promote policies that nurture skills and human development that are more oriented towards resilience, equipping people with the capabilities and agility to cope with complexity and adapt to change;
- Mapping areas where the EU features a level of technological leadership that, if accompanied by adequate policies and investment, may generate a large number of good jobs in the future;
- Understanding in which regions of the EU the opportunity for good jobs will emerge, and how to ensure that no one is left behind as Europe pursues the twin and just transitions;
- Implementing sustainable industrial policies guided by social dialogue to create meaningful and dignified work, including informal jobs and jobs in the arts/culture, underpinned by International labour rights and comparable pay for work of comparable value across all sectors;
- Increasing investment that addresses gender inequalities. The health and care crisis of the pandemic has deepened persistent inequalities for women, making visible low wages, in-work poverty, poor working conditions and loss of income in disproportionate numbers since women are over represented in sectors that were hardest hit by the health crisis.¹⁵

These four areas of reform call for a new long-term strategy, including the EU’s external action and the development of adequate anticipatory governance capacity and culture in EU institutions, two issues to which we turn now.

¹⁰It is interesting in this context to note the early ideas as expressed by Sicco Mansholt, a European Commissioner back in 1972, after having read the Limits to Growth report, to establish a system of production certificates based on what he called a closed circuit “clean and recycling” economy with a VAT system in favour of such products and higher taxation: a “penalty tariff” for non clean and recyclable products.

¹¹‘Industry’ in this context is intended in the holistic sense of all five industrial sectors in a ‘post-industrial’ society, from primary (raw materials), secondary (manufacturing and construction), tertiary (service industry), to quaternary (information services) and quinary (human services).

¹²In the words of [Rodrik and Stancheva \(2019\)](#), “good jobs” are meant as “jobs that provide a middle-class living standard, a sufficiently high wage, good benefits, reasonable levels of personal autonomy, adequate economic security, and career ladders”.

¹³OECD Statistics on Job Quality <https://www.oecd.org/statistics/job-quality.htm>

¹⁴ Further expanded in the ESIR Policy Brief ‘Industry 5.0 and the future of work’.

¹⁵Data from the International Labor organization (ILO) show that at least 13 million fewer women were in employment in 2021 compared to 2019, and 60% of workers in the as well in the informal economy are women.

4. Reforming EU external action to achieve positive peace and global well-being

As explained above, the case for reducing external dependencies is very strong. However, it is equally clear that the EU will not be able to achieve its goals, let alone its ambitions to lead the global transformation towards sustainability, if its external action continues to repurpose old schemes. For example, when it comes to raw materials simply trying to compete with other superpowers on access to key natural resources, often with no respect for the well-being of countries that possess them, would result in a likely “race to the bottom”, with the added risk that we exchange old dependencies for new ones. **The contradiction and tension, for example, between Europe’s current enhancement of fossil fuel stranded assets on the African continent and our calls for global unity and decarbonization is worrying.** International alliances should be reshaped based on a principle of equitable partnership. And it is a time for Europe to invest in true cooperation to address global challenges and a paradigm shift from competition for resources (natural capital, human capital, intellectual capital and financial capital) towards joint partnership in the implementation of economic models enhancing regeneration and circularity.

More generally, **Europe cannot be credible in its aspiration for a Green Economy if it at the same time it pushes an extractive economy outside of its borders.** Advanced business models of a circular economy, which go beyond recycling, have to be important parts of a strategy, as well as greater reliance on supply sourced within the EU¹⁶. This will require a substantial increase in EU funding for R&D.¹⁷ It can be foreseen that the upcoming EU Raw Materials Act will move in this direction, together with calling for increased international cooperation to increase diversity of EU raw material imports. However, it is of uttermost importance that international cooperation takes up the economic interests of the developing countries. Developing countries with mineral resources increasingly look at inclusive resource use as an economic strategy, including parts of the circular economy value chain.¹⁸ Building raw material and trade partnerships that respect social and environmental criteria and are synergetic would make the EU a much more attractive partner.¹⁹ The EU needs to **co-design strategies with its trade partners** to promote the sustainable use of natural resources and the shift from extractive economies to regenerative economies. This, in turn, can foster well-being and fair distribution of value and income, and foster practices for sustainable commodity trading in core resources and materials. Europe also needs new policy instruments, such as **extending the concept of carbon border adjustment to sustainable raw materials**, to stimulate both European manufactures and cooperating non-European manufacturers to move towards more sustainable raw material supply and use.

In this context, **the new EU Global Gateway appears as a once-in-a-generation opportunity for the EU to revamp its external action.** The recent launch of a Task Force on Sustainable Trade in the context of the EU-US Trade and Technology Council, and the publication of the new

¹⁶ See Geissdoerfer, M.; Pieroni, M. P.P.; Pigosso, D.; Soufani, K. (2020): Circular business models: A review. *Journal of Cleaner Production* 277, 123741; Lewicka E, Guzik K, Galos K. (2021): On the Possibilities of Critical Raw Materials Production from the EU’s Primary Sources. *Resources*. 2021; 10(5):50.

¹⁷ Christmann, P. (2021): Mineral Resource Governance in the 21st Century and a sustainable European Union. *Miner Econ* 34, 187–208.

¹⁸ Andersen, A. D., Johnson, B. H., Marín, A., Kaplan, D., Stubrin, L., Lundvall, B-Å., & Kaplinsky, R. (2015). Natural resources, innovation and development. Aalborg Universitetsforlag.
<https://doi.org/10.5278/VBN/MISC/NR1D>; Usman, Z.; Abimbola, O.; Ituen, I. (2021): What Does the European Green Deal Mean for Africa? Washington, D.C.: Carnegie Endowment for International Peace.

¹⁹ Reisch, V. (2022): The Race for Raw Materials. *SWP Journal Review* 2022, No. 1 puts it on p. 7 this way: “If the EU focuses only on its own interests, it will be unattractive as a partner for the resource-rich states of the Global South. In this way, if resource-rich third countries end up preferring other partners, this could pose an obstacle to the realisation of the EU’s plans”.

EU strategy for Global Health are both encouraging, since they outline a new approach oriented towards partnerships between equals (rather than “development aid”), and focusing action on the achievement of the SDGs and on leaving no one behind. The Global Gateway, now part of the EU-US-Indonesia Global Partnership on Infrastructure Investment, can become instrumental for the EU to finally reach alignment between a transformative EU internal policy with an equally ambitious external action.

5. Agile institutions in EU’s poly-centric governance

Pursuing long-term goals while adjusting for short-term emergencies is a challenging *modus operandi*, and requires adequate changes in the way decisions are adopted at all levels of government. These decisions, the way they developed through participative processes and communicated with different stakeholders, must address one more crisis – the crisis of trust towards governments and EU institutions alike²⁰.

Decision-makers have to both “learn to prepare”, i.e. invest in strategic foresight, agility and so-called “optionality” to enhance preparedness; and “prepare to learn” on the go, when crisis hits. While a lot of emphasis is currently placed on agile governance, we believe the latter is just a tiny portion of the change that needs to occur in government, and probably not the most salient.

Importantly, this is not only a task for EU institutions: their role is essential and pivotal, but certainly not sufficient for systemic transformation to occur. To the contrary, **Europe needs to rediscover the potential of its decentralised, “polycentric governance” in order to achieve resilience and sustainability**²¹. Polycentricity provides a number of theoretical advantages, such as adaptive capacity, the selection of appropriate institutions tailored to their specific context, the mitigation of risks through redundancies and a more democratic process through effective subsidiarity in decision-making. At the same time, redundancies and multiplicity of actors also lead to enhanced coordination and transaction costs. The EU’s ever-evolving poly-centric governance could be the starting point for imagining **an enhanced space for place-based experimentation and innovation, in the context of a decentralized, yet centrally coordinated system**.

Five ways in which this shift can be achieved are detailed below:

- The use of **strategic foresight and scenario thinking should be placed at the core of policymaking**. European decision-makers must develop a way to monitor and anticipate crises and their cascading, interactive effects (e.g. Ukraine war leading to energy and food emergencies). The identification of policy options and priorities should lead to the minimisation of catastrophic risks, through the adoption of a “maximin” strategy, in which the worst-case scenarios are adequately contrasted with protective, preparedness and transformative measures²². In a poly-crisis context, worst-case scenarios can lead to negative spillovers and thus cascading effects, such as the ones we are observing at present. A maximin strategy

²⁰Castells, M. et al (2017): Europe's Crisis, Polity Press.

²¹ Polycentric governance is a concept developed by Michael Polanyi and later developed by Vincent and Elinor Ostrom: it is defined as a method of social organisation in which individuals are free to pursue their objectives within a general system of rules (Polanyi, 1951; V. Ostrom, 1999), and thereby leads to a complex form of governance with multiple centers of decision making, each of which operates with some degree of autonomy (Ostrom, 2005; V. Ostrom, Tiebout, & Warren, 1961). Polycentric governance arrangements typically feature overlaps in decision-making centers nested at multiple jurisdictional levels (e.g., local, state, and national), and include special-purpose governance units that cut across jurisdictions Carlisle and Gruby 2019).

²² https://openyls.law.yale.edu/bitstream/handle/20.500.13051/8314/06_Sunstein_Article_Final.pdf?sequence=2

prioritises measures that have as effect to make the worst-case scenario as improbable as possible. Without such an approach, it is difficult to justify the adoption of measures related to emerging risks, especially when facing low-probability, high-impact scenarios.

- **Policymakers must increase technological and systemic adaptability and resilience.** Even the best foresight in a relatively stable environment will not prevent some disruptions from happening. In a context of polycrisis, scenario thinking and foresight need to be combined with capability-building and policymaking designed for systemic adaptive responses and outcomes. Preparing for constant change and disruption requires businesses, governments and communities to increase their adaptive capabilities and therefore their resilience. Innovation is one of the best means of doing so, when used as an activity of continuous learning and intelligence-generation to support decision-making and civic engagement (see ESIR Policy Brief 'Research and Innovation to thrive in the poly-crisis age'). Anticipation of shocks means creating resilience by building meaningful redundancies in supply chains, generating options and alternatives through innovation, and reducing dependencies on single, risky sources of supply. It means creating the skills and the research base that will be needed to create "good jobs":²³ not only jobs that increase the well-being of European workers, but also jobs in sectors that contribute to systemic industrial and business transformation. Systemic resilience requires diversity and resource richness with regard to both tangible (financial resources, production capacities, and infrastructure) and intangible resources (knowledge, creativity and social capital).
- **Systemic transformation should be promoted throughout R&I funding, including in the Missions and in all partnerships and industry alliances** that are currently shaping the industrial landscape of the Union. In the context of poly-crisis, innovation is a powerful means for facilitating managed transitions through deliberately chosen change (rather than crisis-induced reactions) which can involve, engage, bring hope and positive reinforcement for action amongst public and private stakeholders, towards a future that inspires and reassures. The EU Green Deal and Missions offer a unique opportunity to live-test innovation as a driver of transformation and thus build the capabilities, procedures and practices for future-fit industry and society in Europe. However, this will require Europe's R&I policy, strategy and governance to get behind them, and to adapt quickly to be effective for a context of continual mega-crises, with EU institutional culture, processes and directional signal aligned so as to be able to catalyse transformative actions and outcomes and to structure new markets.²⁴
- **EU leaders should ensure policy coherence internally as well as externally.** This should be intended as "horizontal coherence" (i.e. coherence across the spectrum of EU policies, from corporate governance to R&I policies, the Green Deal, the industrial strategy, the skills strategy, and the EU's common foreign and security policy); "vertical coherence" (coherence between EU policies, Member States' policies, regional cohesion policies and spending programmes, notably in the National Recovery and Resilience Plans (NRRPs) and in the way they are evaluated and endorsed by the EU); and "strategic coherence", intended as a common thread between current policies and the overall goals that the von der Leyen Commission has set for the EU. This, in turn, will require courage and powerful communication. The EU risks much more in surrendering to short-termism and adversity, abandoning its leading role in the global transformation, and the structural momentum initiated through the Green Deal and Horizon Europe programmes, than by keeping to its commitment to a green and social deal that makes both Europe and its partners more resilient to future shocks and stresses. By the same token, policy coherence also needs to be asserted and

²³ See ESIR Policy Brief 'Industry 5.0 and the future of work: making Europe the centre of gravity for future good-quality jobs in the poly-crisis age'

²⁴ See ESIR policy brief, "Research and Innovation to thrive in the poly-crisis age", February 2023.

maintained at the level of the EU R&I missions to ensure that these initiatives can achieve the transformative outcomes they are intended to produce. ESIR will detail the consequences within a companion paper on Europe's R&I policy, from Missions to the next MFF.

- **Europe's twin (and just) transition agenda must be fully embedded in the pathways developed under the EU's renewed industrial strategy.** Simply analysing alternative futures in terms of technology, as the Commission currently does in its pathways for EU industrial ecosystems, does not do justice to the strategic importance of this exercise²⁵. Once plausible and possible futures are observed, the Commission should engage in a “double backcasting” activity: on the one hand, assessing which innovations would be needed to ensure that the future of a given industrial ecosystem matches the EU ambitions in terms of social, economic and environmental sustainability; on the other hand, promoting those policies and spending programmes that are most likely to realise the desired scenario and optimise the systemic links between economic activities, technological development, research and innovation, skills development and education. The new Green Deal Industrial Plan, for example, with its focus on a simpler regulatory framework, greater access to finance for clean tech production, a human-centred green transition based on enhanced skills, and global cooperation in establishing open but fair trade for the green transition, will crucially depend on the way horizontal coherence is achieved through R&I policy, both at European and national/regional level²⁶.

The ESIR group will deepen these recommendations by unpacking existing trade-offs in key economic activities such as energy, food, raw materials as well as the care economy due to current pressure points and the future of work and putting forward new thinking so as to transform the EU missions and research and innovation policies into a reality. We are convinced that as instability and uncertainty increase, a revamped and courageous strategy can make Europe a true global leader on how to meaningfully respond to our 21st century challenges.

²⁵ https://single-market-economy.ec.europa.eu/industry/transition-pathways_en

²⁶ A Green Deal Industrial Plan for the Net-Zero Age:
https://commission.europa.eu/document/41514677-9598-4d89-a572-abe21cb037f4_en

GETTING IN TOUCH WITH THE EU

In person

All over the European Union there are hundreds of Europe Direct centres. You can find the address of the centre nearest you online (european-union.europa.eu/contact-eu/meet-us_en).

On the phone or in writing

Europe Direct is a service that answers your questions about the European Union.

You can contact this service:

- by freephone: 00 800 6 7 8 9 10 11 (certain operators may charge for these calls),
- at the following standard number: +32 22999696,
- via the following form: european-union.europa.eu/contact-eu/write-us_en.

FINDING INFORMATION ABOUT THE EU

Online

Information about the European Union in all the official languages of the EU is available on the Europa website (european-union.europa.eu).

EU publications

You can view or order EU publications at op.europa.eu/en/publications. Multiple copies of free publications can be obtained by contacting Europe Direct or your local documentation centre (european-union.europa.eu/contact-eu/meet-us_en).

EU law and related documents

For access to legal information from the EU, including all EU law since 1951 in all the official language versions, go to EUR-Lex (eur-lex.europa.eu).

EU open data

The portal data.europa.eu provides access to open datasets from the EU institutions, bodies and agencies. These can be downloaded and reused for free, for both commercial and non-commercial purposes. The portal also provides access to a wealth of datasets from European countries.

In this publication, the ESIR group advocates for the EU to embark on a deep transformation by seizing the opportunities offered by the current state of emergency.

Dealing with raw materials and fossil fuels dependencies and the need for coherence and directionality require the EU to strongly and coherently promote an Industry 5.0 approach, with particular emphasis on the quality and quantity of future jobs and meaningful work according to local specificities.

In the age of poly-crises, policymakers must increase technological and systemic adaptability and resilience and ensure policy coherence internally as well as externally.

Research and Innovation policy



Publications Office
of the European Union