



Scientific Advice Mechanism

Scoping paper

Strategic crisis management in the EU

Improving EU crisis prevention, preparedness, response and resilience

22 June 2021

1. The issue at stake

The COVID-19 pandemic has been a major global shock and has exposed a lack of preparedness. It has been a health crisis which has led to a larger social and economic crisis.

Many advisory and task force groups were established or called upon to mobilise the best available knowledge and evidence to inform the policy response to the COVID-19 crisis¹. The health crisis response has included biomedical research and vaccine development done at unprecedented speed and efficacy, and a major overhaul of the EU framework to deal with future health crises - including improved preparedness for, and management of, future pandemics². The response to the broader socioeconomic crisis includes massive funds for the recovery in the short and mid-term (see Annex).

While only beginning to recover from the aftermath of the pandemic, the EU and the European societies must be prepared for a range of other future natural or human-made shocks which include and go beyond major health threats. They may be related e.g. to climate, environmental, energy, digital, socioeconomic, or security dimensions. They are likely to be interrelated and to co-occur, to have cascading negative impacts on other domains, and to be a part of global threats.

Improving EU crisis management has thus become an essential issue for protecting and enhancing the present and future wellbeing of EU citizens. We define 'crisis' as an intense shock or imminent threat that have severe and wide-ranging impacts and require urgent response³. Strategic crisis management, however, must extend its scope beyond emergency response. It must include crisis prevention, preparedness, and resilience in the face of crises (which includes the ability to absorb the shocks, and recover from them by bouncing forward).

The EU has reacted to past or ongoing crises (e.g. in disaster relief, climate change, food safety, energy security) mainly through boosting sectoral mechanisms and policies. The 2019-2024 European Commission has set itself, yet before the Covid-19 pandemic, the ambition for '[the] approach to crisis management [to] become more consistent and better integrated'⁴. There is now the Commissioner for Crisis Management, responsible for the policy fields of civil protection and humanitarian aid. Responsibilities include 'promoting and developing an integrated approach to crises so that policies address urgent relief and longer-term solutions'⁵. The Commission has also increased its ambition to embed strategic foresight into its policymaking in order to anticipate diverse crises and influence future scenarios (see Annex).

Supporting that policy ambition with evidence-based advice implies an urgent need to investigate – based on the best available cross-disciplinary expertise – improvements to the overarching EU crisis management framework. Such a framework must be able effectively to anticipate various major threats, risks and crises, help to prevent them by addressing their root causes which make the EU and citizens vulnerable to emergencies, respond to them effectively when they do occur, as well as to absorb and recover from major shocks, based on robust, future-proof policies. The framework must be able to integrate Commission-internal and external crisis management actions effectively.

¹ Bodies set up specifically for COVID-19 included notably: the Advisory Panel on COVID-19; Peter Piot as the Special Advisor to President Von der Leyen on the response to the coronavirus and COVID-19; JRC Coronavirus Task Force, a task force on COVID-19 research and innovation led by DG Research and Innovation. Other existing structures also contributed knowledge and advice to the process, notably: the European Centre for Diseases Prevention and Control (ECDC); the European Medicines Agency (EMA); the Group of Chief Scientific Advisors; the European Group on Ethics in Science and New Technologies (EGE); the EC Expert Group "Economic and Societal Impact of Research and Innovation" (ESIR)

² The joint opinion '[Improving pandemics preparedness and management](#)' by the EC's Group of Chief Scientific Advisors, the European Group on Ethics in Science and New Technologies (EGE), and Peter Piot, Special Advisor to President Von der Leyen on COVID-19, was among the sources which informed that overhaul.

³ The definition is consistent with the EU political and legislative definition (see the Annex), and those identified through the initial review of scientific literature; see esp. Tagarev, T and V. Ratchev (2020) "A Taxonomy of Crisis Management Functions". *Sustainability* 12: 5147.
<https://doi.org/10.3390/su12125147>

⁴ https://ec.europa.eu/commission/commissioners/sites/default/files/commissioner_mission_letters/mission-letter-janez-lenarcic_en.pdf

⁵ https://ec.europa.eu/commission/commissioners/2019-2024/lenarcic_en

In addition, the conceptual frameworks which have been used to inform EU policies related to crisis management require critical re-examination. One of the chief concerns is that various sectoral policy strategies in the EU use different concepts and terms (e.g. crisis, resilience, adaptability, disaster risk management/reduction, emergency response) for similar issues – which may lead to fragmentation or limitation of knowledge, evidence and expertise that inform the overall EU crisis strategy, as well as to fragmented crisis management mechanisms and operations⁶. Each conceptual framework and its terminology capture different aspects and consider others problematic, and the way they frame a policy problem already suggests particular solutions.

2. The request to the Group of Chief Scientific Advisors

The present scoping paper formulates a request for independent scientific advice by the EU Commissioner for Innovation, Research, Culture, Education and Youth, acting on behalf of the College of EU Commissioners, to the Group of Chief Scientific Advisors (GCSA), who will collaborate with the European Group on Ethics and New Technologies (EGE).

The request is made in response to GCSA own initiative, i.e. to prior advice to the Commission by the GCSA Chair, recommending that the Group is consulted on the policy issue defined below⁷.

The Group of Chief Scientific Advisors, in collaboration with the EGE, is asked to produce a scientific opinion addressing the following main question:

Based on a broad and multidisciplinary understanding, how can the EU improve its strategic crisis management?

The scientific opinion should be delivered by the end of Q2 2022.

The opinion should present recommendations for a coherent, comprehensive, cross-sectoral EU strategic policy and operational framework for crisis management (defined broadly to encompass crisis preparedness and response as well as prevention and resilience).

It should respect the EU competence and remit, and the principle of subsidiarity.

The recommendations should be demonstrably applicable to a broad range of threats and crises, including e.g. those concerning health, climate, the environment, socioeconomics, or security – supported by case studies. They must be consistent with the EU fundamental values and freedoms, and social rights.

The opinion should rely on the work of the Science Advice to Policy by European Academies (SAPEA) consortium, which should be tasked with developing a comprehensive and cross-disciplinary evidence review for that purpose (including natural sciences, social sciences, and the humanities). The existing EU sources knowledge and evidence (as outlined in the Annex) should be used as part of the evidence base, but not duplicated.

The opinion should be guided by the following set of questions, which should also guide the evidence review work.

⁶ See e.g. Mercer, J. (2010) 'Disaster risk reduction or climate change adaptation: are we reinventing the wheel?' *Journal of International Development: The Journal of the Development Studies Association*, 22(2), 247-264.

⁷ In accordance with Article 2A of the Commission Decision C(2015)6946 of 16.10.2015 on the setting up of the High Level Group of Scientific Advisors as amended by Commission Decision C(2018)1919 of 5 April 2018

Overarching questions

EU added value and subsidiarity

What new EU-level policy would have the most added value:

- for which types and sources of threats (e.g. climate-, health-, security-, -related;),
- for which stages of crises (e.g. prevention, preparedness, response, recovery),
- for which time scales (e.g. short-, mid-, long-term)?

What are the differences and commonalities between crisis management mechanisms in Member States, and at lower levels of government, including science advice to policymaking in crises? How do they affect crisis management at the EU level?

How to improve intelligence on the differences in preparedness at national and sub-national levels which affects the EU level?

What is the role and impact of regional research and innovation on crisis management at the EU level?

What could the EU do more – while respecting subsidiarity – to support crisis management at these levels for major cross-border and/or trans-boundary threats, including the support for cross-sectoral resilience?

Clear definitions for a comprehensive approach

Crises, disasters, emergencies, risks; resilience, adaptation, absorption, recovery: what do these concepts share? Can they be integrated in a comprehensive EU framework that draws on the totality of relevant scientific knowledge?

Integrated EU crisis management framework

What improvements can be made to the overarching EU-level crisis governance and operations that can apply to any type of crisis or threat, including unknown risks?

Which types of known threats merit a classic risk-based approach at the EU level? How best to integrate them in the above multi-hazard crisis management system?

What types of intelligence can support EU crisis management better? In particular, how to improve further:

- the use of strategic foresight in crisis prevention and preparedness;
- the potential of reference scenarios and emergency exercises;
- harmonised data standards for sharing at the EU level;
- science advice to EU policymaking in crises?

How better to integrate crisis preparedness and response, and long-term crisis prevention and resilience, into a single coherent crisis management framework?

Equality, trustworthiness and participation

How can EU policies in crisis management mitigate impacts that increase inequalities among regions and social groups?

How do social inequalities within the EU impact crisis management at the EU level?

What can be achieved at the EU level to promote the trustworthiness of crisis management mechanisms, and citizen participation?

Case studies

How would the EU management of specific threats and crises under study be improved in the light of the overarching improvements recommended for to the multi-hazard crisis management framework?

Selection methodology

The criteria that are initially adopted for the selection of case studies are:

- Estimated likelihood, scale, impact and complexity
- Estimated state of preparedness
- The degree of cumulative and cascading effects
- The likelihood of co-occurrence with other crises
- The degree to which EU strategy and policy can make a difference
- Non-duplication of existing advice to EU policy

Based on the preliminary analysis of the above criteria, the following case studies are selected:

- 1) Climate change, environmental degradation including biodiversity loss, and their cascading impacts.
- 2) Security, including large-scale cybersecurity threats, strategic autonomy and hybrid threats.
- 3) Serious cross-border health threats (beyond pandemics).

Both the selection criteria and the list of cases studies can be revised in the light of the evidence review.

ANNEX: THE POLICY CONTEXT AND RELEVANT SOURCES OF EU KNOWLEDGE AND EVIDENCE

A. The policy context

The EU solidarity clause (Article 222 of the Treaty on the Functioning of the European Union, TFEU)⁸ stipulates that the Union and its Member States 'shall act jointly in a spirit of solidarity if a Member State is the object of a terrorist attack or the victim of a natural or man-made disaster'. The central EU mechanism for implementing the solidarity clause is the **Integrated Political Crisis Response (IPCR)**, established in 2018 and managed by the Council of the EU. It has the task of 'co-ordinat[ing] the political response of Member States for 'major and complex crises, including acts of terrorism'.⁹ The Decision setting up the IPCR defines a crisis as 'a situation of such a wide-ranging impact or political significance, that it requires timely policy coordination and response at Union political level'.

Under Article 196 of TFEU¹⁰, the EU has supporting and complementary competences in **civil protection**, which covers prevention of and response to 'natural and man-made disasters within the Union'. In the field of **humanitarian aid**, Article 214 of TFEU commits the EU to 'ad hoc assistance and relief and protection for people in third countries who are victims of natural or man-made disasters'.

At policy implementation level, the objective of the **Union Civil Protection Mechanism**¹¹ (UCPM) is to strengthen cooperation between the EU Member States (and 6 other participating countries) in the prevention, preparedness and response to disasters. Assistance is mobilised via the Emergency Response Coordination Centre (ERCC). Countries may commit national resources for emergency response to the European Civil Protection Pool (ECPP). RescEU is a reserve of resources, such as a firefighting and medical evacuation aircraft, stockpiles of medical equipment and field hospitals. In June 2020, as a direct response to the pandemic, the European Commission (EC) has proposed a targeted revision of the UCPM legislative framework, on which a political agreement was reached in February 2021. It aims to offer more comprehensive cross-sectoral emergency management support to Member States and their citizens through a significantly increased budget, better preparedness and more flexible and faster response options.

In November 2020, based on lessons learned from the COVID-19 crisis, and informed by scientific advice¹² the European Commission (EC) has put forward a proposal for a major legislative package called the EU Health Union with a view to overhauling the entire **EU health crisis preparedness and response architecture**. The framework covers **health threats of biological origin (including communicable diseases)** as well as of **chemical, environmental, climate-related and unknown origin**. The core elements of the package, next to revamping the overall EU framework, include extending the mandate of the European Centre for Disease Control and Prevention (ECDC)¹³ and of the European Medicines Agency (EMA).¹⁴ It also sets out the main elements of the future EU health emergency preparedness and response authority (HERA) to be proposed by the end of 2021. The European Council conclusions of 11 December 2020 highlight 'the need to pursue work to increase resilience in the area of health, including by taking forward the proposals for a Health Union and making full use of the potential of health data in Europe'.¹⁵ In February 2021, the European Council asked the European Commission to produce a report on lessons learned from the COVID-19 pandemic by June 2021, coordinated by the Secretariat-General. The report intends to be comprehensive rather than sectorial and, will be carried over and continued in the second half of 2021.

The EU has launched a massive financial response to the COVID-19 crisis and recovery. In addition to the EU budget for 2021-2027, EU leaders have agreed on Next Generation EU, which is a €750 billion temporary recovery instrument. The main part of Next Generation EU is the **Recovery and Resilience Facility**,¹⁶ which offers loans and grants to support longer-term public investments and reforms as well as the green and digital transition. In addition, REACT EU¹⁷ funds shorter-term crisis repair measures. Furthermore, the European Commission has adopted a broad range of specific measures¹⁸, including the vaccine strategy and the vaccination strategy, mobilising further funds for research on biomedical countermeasures, and socioeconomic

⁸ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A12016E222>

⁹ <https://eur-lex.europa.eu/legal-content/en/TXT/PDF/?uri=CELEX:32018D1993&from=EN>

¹⁰ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A12016E196>

¹¹ https://ec.europa.eu/echo/what/civil-protection/mechanism_en

¹² See esp. the joint opinion '[Improving pandemics preparedness and management](#)'

¹³ https://ec.europa.eu/info/sites/info/files/proposal-mandate-european-centre-disease-prevention-control_en.pdf

¹⁴ https://ec.europa.eu/info/sites/info/files/proposal-mandate-european-medicines-agency_en.pdf

¹⁵ <https://www.consilium.europa.eu/media/47296/1011-12-20-euco-conclusions-en.pdf>

¹⁶ <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1598607812570&uri=CELEX:52020PC0408>

¹⁷ https://ec.europa.eu/info/sites/info/files/com_2020_451_act_v8.pdf

¹⁸ https://ec.europa.eu/info/live-work-travel-eu/coronavirus-response/overview-commissions-response_en

measures such as temporary support to mitigate unemployment risks as a result of the pandemic (the SURE initiative), as well as special temporary rules on state aid.

In addition, in **public health**, the Communication "On Effective, Accessible and Resilient Health Systems" (2014)¹⁹ is an earlier policy response to what are recognised as growing common challenges facing the European health systems over the preceding decade. While health care systems reform is primarily the national prerogative, the Communication outlines a number of supporting EU initiatives. The Communication identifies a set of factors, which 'helped some health systems safeguard accessible and effective healthcare services for their population'.

The Regulation on **transmissible animal diseases** (2016)²⁰ lays down rules for, among others, early detection and notification, disease prevention and control, preparedness and the ability to launch a rapid response. In addition, a EU Veterinary Emergency Team (EUVET) is established (2007)²¹ to 'assist the Commission in technical veterinary matters relating to the animal disease control measures to be taken in the event of outbreaks of the diseases or suspicion thereof'.

In case of **food and feed safety** crises or incidents, the 'General Food Law' (2002)²² sets out the legal framework for emergency measures and crisis management to contain risks to human health, animal health and the environment. A 'general plan for crisis management in the field of the safety of food and feed' (2019)²³ is established specifying the practical procedures necessary to manage crises and incidents, including a communication strategy in accordance with the principle of transparency.

In the field of **security**, the Counter-Terrorism Agenda was adopted in December 2020. In 2021, the European Commission will deploy a pool of protective security advisors to advise on the vulnerabilities of public spaces (the EU Protective Security Advisory missions). The Commission will also study the concept of preparing an EU handbook for securing cities from antagonistic drones.

In **cybersecurity**, a key document for incident response is the Commission Recommendation of 13 September 2017 on Coordinated Response to Large Scale Cybersecurity Incidents and Crises ('Blueprint')²⁴. Blueprint is based on the rules proportionality, subsidiarity, complementarity and confidentiality of exchanged information (especially crucial for cybersecurity). Although it recognizes all phases of crisis management lifecycle (prevention/mitigation, preparedness, response and recovery), it focuses on response as the most urgent part of this lifecycle. Blueprint describes three levels of incident response – technical (with prevalent role of CSIRT Network), operational (with recently established CyCLONe) and strategic/political (IPCR level). The framework assumes that all three levels must work together for efficient response.

One of the future elements will Joint Cyber Unit (JCU) that will aim better to protect the EU from the most serious cybersecurity attacks, especially cross-border ones. This includes facilitating instant decision-making during cybersecurity crises decisions, based on thorough analysis of available data.

Blueprint and JCU are based on the concept of sharing information among relevant EU and national stakeholders to boost the EU response to cybersecurity risks and threats.

Cybersecurity certification (covered the EU Cybersecurity Act)²⁵ has a role in improving the resilience of critical infrastructure. That topic that is currently investigated by the JRC²⁶. An earlier scientific opinion of the EC's Group of Chief Scientific Advisers has informed the Cybersecurity Act²⁷.

Internally to the European Commission, the ARGUS general rapid alert system has been in existence since 2005.²⁸ Its general aims include (1) 'providing an internal platform enabling the Directorates-general and services of the Commission to exchange, in real time, relevant information on emerging multi-sectoral crises or foreseeable or imminent threat thereof requiring action at Community level, whatever their nature, to facilitate coordination and cooperation and ultimately improve the efficiency and the consistency of the Commission response'; (2) 'making available an appropriate coordination process to be activated in the event of a major crisis, and (3) providing the context to communicate effectively with citizens and to offer a balanced, coherent and complete picture of the efforts deployed by the Commission.

¹⁹ <https://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX:52014DC0215>

²⁰ <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:32016R0429>

²¹ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32007D0142>

²² <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:32002R0178>

²³ [https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=pi_com:C\(2019\)1064](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=pi_com:C(2019)1064)

²⁴ <https://eur-lex.europa.eu/eli/reco/2017/1584/oj>

²⁵ <https://eur-lex.europa.eu/eli/reg/2019/881/oj>

²⁶ <https://publications.jrc.ec.europa.eu/repository/handle/JRC120910>

²⁷ https://ec.europa.eu/info/research-and-innovation/strategy/support-policy-making/scientific-support-eu-policies/group-chief-scientific-advisors/cybersecurity_en

²⁸ <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52005DC0662:EN:HTML>

Resilience as a guiding concept in EU strategy

As shown in the summary below, the concept of 'resilience' features very prominently, for about 10 years now, in the EU strategies across different policies to guide crisis management.

'Resilience' as a guiding EU policy concept has first emerged in **development policy and humanitarian action**. The 2012 Communication 'The EU Approach to Resilience: **Learning from Food Security Crises**'²⁹ is the first major policy paper centred on resilience, defined as 'the ability of an individual, a household, a community, a country or a region to withstand, adapt and quickly recover from stresses and shocks'. **Council Conclusions on the EU approach to resilience (2013)**³⁰ lay out in further detail the EU's approach to resilience (in external action) as one which 'recognises the need to address the root causes of crises, especially recurrent crises, chronic poverty and vulnerability and to take a long-term perspective which is firmly embedded in local and national policies and linked to complementary action at regional level'. The Action Plan for Resilience in Crisis Prone Countries 2013-2020³¹ is an operational follow-up to the 2013 Council conclusions. Resilience and adaptability to change are among key concepts in **the European Consensus on Development (2017)**,³² which sets out the EU development strategy as a response to the UN 2030 Agenda for Sustainable Development, complemented by the Sendai Framework on Disaster Risk Reduction, and the Paris Agreement on Climate Change.

The Global Strategy for the European Union's Foreign and Security Policy (2016)³³ has taken the concept of resilience further, calling it a 'broad concept encompassing all individuals and the whole of society' which covers 'democracy, trust in institutions and sustainable development, and the capacity to reform'. It has extended the resilience-guided approach to all external action (including security), but also to fostering the EU's own prosperity and democratic values. The Joint Communication 'A Strategic Approach to Resilience in the EU's external action' (2017)³⁴ is a follow-up to the Strategy.

Since 2012, The EU has been implementing an integrated approach to **critical infrastructure resilience and protection**. In December 2020, the Commission adopted two legislative proposals to enhance physical and cyber resilience of critical entities and networks (i.e. the Directive on the resilience of critical entities and the Directive on measures for high common level of cybersecurity across the Union). In **security research**, Horizon Europe Strategic Plan for 2021-2024 related to crisis management includes the 'Disaster Resilient Societies' (DRS) area. The research will build on a large body of knowledge and technology developed under the Seventh Framework Programme and Horizon 2020.

In **food sustainability**, the Communication 'A Farm to Fork Strategy for a Fair, Healthy and Environmentally-friendly Food System' (2020)³⁵ is the current EU transition strategy,³⁶ described as being at the heart of the European Green Deal and as central to achieving the UN Sustainable Development Goals (SDGs). It underlines 'the importance of a robust and resilient food system that functions in all circumstances and is capable of ensuring access to a sufficient supply of affordable food for citizens'. The strategy includes a plan to propose a legislative framework for a sustainable food system (before the end of 2023), with the aim of 'promot[ing] policy coherence at EU and national level, mainstream[ing] sustainability in all food-related policies and strengthen[ing] the resilience of food systems'.

Ensuring **food security** (defined as 'sufficient and varied supply of safe, nutritious, affordable and sustainable food to people at all times, not least in times of crises') is among the pillars of the Strategy. Mitigating the socioeconomic consequences of crises impacting the food chain is emphasised, including ensuring that the European Pillar of Social Rights is respected, especially when it comes to precarious, seasonal and undeclared workers. The Strategy announces the plan to 'assess the resilience of the food system and develop a contingency plan for ensuring food supply and food security to be put in place in times of crisis' (for Q4 2021). Related policy plans include revamping agricultural crisis reserve, as well as setting up a food crisis response mechanism coordinated by the European Commission and involving Member States.

In **climate-change adaptation**, the Commission strategy sets out its new strategy in the communication 'Forging a climate-resilient Europe - the new EU Strategy on Adaptation to Climate Change' of 2021.^{37 38} The

²⁹https://ec.europa.eu/echo/files/policies/resilience/com_2012_586_resilience_en.pdf

³⁰https://www.consilium.europa.eu/uedocs/cms_Data/docs/pressdata/EN/foraff/137319.pdf

³¹https://ec.europa.eu/echo/files/policies/resilience/com_2013_227_ap_crisis_prone_countries_en.pdf

³²https://ec.europa.eu/international-partnerships/system/files/european-consensus-on-development-final-20170626_en.pdf

³³https://eeas.europa.eu/topics/eu-global-strategy/17304/global-strategy-european-unions-foreign-and-security-policy_en

³⁴<https://eur-lex.europa.eu/legal-content/en/TXT/?uri=celex:52017JC0021>

³⁵<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020DC0381>

³⁶ The scientific opinion of the Group of Chief Scientific Advisers, 'Toward a Sustainable Food System' (2020) has informed the strategy. <https://op.europa.eu/en/web/eu-law-and-publications/publication-detail/-/publication/ca8ffeda-99bb-11ea-aac4-01aa75ed71a1>

³⁷https://ec.europa.eu/clima/sites/clima/files/adaptation/what/docs/eu_strategy_2021.pdf

³⁸https://ec.europa.eu/clima/policies/adaptation/what_en

European Union should adapt to the unavoidable impacts of climate change and become climate resilient by 2050. The Strategy has four principal objectives: to make adaptation smarter, swifter and more systemic, and to step up international action on adaptation to climate change. To achieve this, it intends to (1) push the frontiers of knowledge on adaptation, (2) adapt faster by rolling out adaptation solutions to help reduce climate-related risk, increase climate protection and safeguard the availability of fresh water, (3) ensure that adaptations are systemic, with a focus on integrating adaptation into macro-fiscal policy, nature-based solutions for adaptation and local adaptation action and (4) scale up international finance and through stronger global engagement and exchanges.

In **energy policy**, energy security has come into focus with the Communication 'European Energy Security Strategy (2014)³⁹ as a reaction to the events in Ukraine at the time and the potential for disruption to energy supplies. The Communication 'A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy' (2015)⁴⁰ introduced the Energy Union package⁴¹, with the stated goal of 'giv[ing] EU consumers - households and businesses - secure, sustainable, competitive and affordable energy', and an ambitious **climate policy** declared to be at its core. The strategy is built on five 'closely related and mutually reinforcing' dimensions: (1) energy security, solidarity and trust; (2) a fully integrated European energy market; (3) improved energy efficiency to moderate demand, reduce dependence on imports, lower emissions, and drive jobs and growth; (4) decarbonising the economy, and (5) research, innovation and competitiveness.

The Communication 'Critical Raw Materials Resilience: Charting a Path towards greater Security and Sustainability' (2020)⁴² aims to 'ensur[e] resilience through a secure and sustainable supply of **critical raw materials**' and thus 'make a major contribution to the recovery and the long-term transformation of the economy. The Communication presents a plan for addressing 'challenges for a secure and sustainable supply of critical raw materials and actions to increase EU resilience and open strategic autonomy'.

In **mobility**, the Communication 'Sustainable and Smart Mobility Strategy – putting European transport on track for the future' (2020)⁴³ states: 'ensuring that our transport system is truly resilient against future crises must also be a key objective of the EU's transport policy going forward, and that in the context of the recovery from the severe crisis, 'public support should help mobility "build back better" and leap forward to a sustainable and smarter future'. The Action Plan annexed to the strategy includes preparing crisis contingency plan(s) for the transport sector, including health-safety and operational measures and setting out essential transport services, planned for 2021-2023.

B. Relevant EU sources of knowledge and evidence

Vice-President Šefčovič is mandated to lead the effort to embed **strategic foresight** into European Commission work by ensuring that it 'makes full use of the knowledge, information, and research to future-proof our policies', as well as 'strengthen[ing] our culture of preparedness and evidence-based anticipatory policy-making'.⁴⁴ The European Commission's Secretariat-General and the Joint Research Centre (JRC) lead the implementation work (the latter drawing on its Competence Centre on Foresight).⁴⁵ The EC Strategic Foresight Network is a coordination forum between all European Commission departments. The European Strategy and Policy Analysis System (ESPAS)⁴⁶ is the main forum for collaboration on foresight with other EU institutions.

The first annual **Strategic Foresight Report**, 'Charting the Course towards a More Resilient Europe' (2020)⁴⁷ asserts that resilience has become 'a new compass for EU policies' in the aftermath of the COVID-19 crisis. Resilience is defined as 'the ability not only to withstand and cope with challenges but also to undergo transitions in a sustainable, fair, and democratic manner'. The report outlines how 'foresight will inform policies with a view to strengthening the EU's resilience in four interrelated dimensions: social and economic, geopolitical, green, and digital'. It identifies capacities, vulnerabilities and opportunities for each of the four dimensions. The next annual foresight report (2021) is to focus on '**open strategic autonomy**' as an aspect of geopolitical resilience.

As a follow-up to the foresight report, the European Commission (led by the JRC) is working on '**resilience dashboards**' for the above-mentioned four dimensions. The stated goal is to assess the EU's and the Member States' ability to progress in terms of the transformations needed. The plan includes the involvement of external experts and other institutions, in order to bring in cross-disciplinary advice. Discussions with the Member States

³⁹ <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52014DC0330&from=EN>

⁴⁰ https://eur-lex.europa.eu/resource.html?uri=cellar:1bd46c90-bdd4-11e4-bbe1-01aa75ed71a1.0001.03/DOC_1&format=PDF

⁴¹ https://ec.europa.eu/energy/topics/energy-strategy/energy-union_en

⁴² <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020DC0474>

⁴³ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52020DC0789>

⁴⁴ https://ec.europa.eu/info/strategy/priorities-2019-2024/new-push-european-democracy/strategic-foresight_en

⁴⁵ https://knowledge4policy.ec.europa.eu/foresight_en

⁴⁶ <https://espas.secure.europarl.europa.eu/orbis/espas>

⁴⁷ https://ec.europa.eu/info/strategy/priorities-2019-2024/new-push-european-democracy/strategic-foresight/2020-strategic-foresight-report_en

are planned kicked off in April 2021. European Commission Vice-President Maroš Šefčovič has initiated an EU Foresight Network at a ministerial and sherpa level.

The JRC has done other significant work on resilience to inform policy:

- The report '**Building a Scientific Narrative: Towards a More Resilient EU Society. Part 1: a Conceptual Framework**' (2017)⁴⁸ has informed the 2020 Foresight Report. It traces the evolution of the concept of resilience in various disciplines and proposes a 'policy framework for societal resilience'.
- The report '**The resilience of EU Member States to the financial and economic crisis. What are the characteristics of resilient behaviour?**' (2018)⁴⁹ is based on the above framework, and presents an empirical analysis of the resilience of European countries to the financial and economic crisis that started in 2007.
- The report '**How resilient are the European regions? Evidence from the societal response to the 2008 financial crisis**' (2020)⁵⁰ proposes 'a new approach for measuring regional resilience that goes beyond the assessment of traditional economic dimensions'.
- The report '**Time for transformative resilience: the COVID-19 emergency**' (2020)⁵¹ also builds on the earlier conceptual work to recommend policy measures aimed at tackling the COVID-19 crisis.
- A forthcoming JRC technical report is to focus on individual resilience (i.e. how individual EU citizens cope in times of distress).⁵²

The European Parliamentary Research Service (EPRS) has published two studies focusing on post-COVID-19 resilience, under the theme '**Towards a more resilient Europe post-coronavirus**'; 'An initial mapping of structural risks facing the EU'⁵³ and 'Capabilities and gaps in the EU's capacity to address structural risks'.⁵⁴

The European Climate Adaptation Platform Climate-ADAPT⁵⁵ is a partnership between the European Commission and the European Environment Agency (EEA). It aims to support Europe in adapting to climate change by helping users to access and share data and information on expected climate change in Europe, current and future vulnerability of regions and sectors, adaptation strategies and actions, adaptation case studies and potential adaptation options, tools that support adaptation planning.

The **Disaster Risk Management Knowledge Centre (DRMKC)**,⁵⁶ which is a part of the JRC, works on 'integrat[ing] existing scientific multi-disciplinary knowledge and co-develops innovative solutions for existing needs [in Disaster Risk Management, DRM] and offers a range of knowledge tools to that end' and defines its activities as 'support[ing] the translation of complex scientific data and analyses into usable information and provides science-based advice for DRM policies. Among the most recent relevant publications of DRMKC are 'Science for Disaster Risk Management 2020'⁵⁷ and 'Recommendations for National Risk Assessment for Disaster Risk Management in EU'.⁵⁸

The Union Civil Protection Mechanism (UCPM) has its own **Union Civil Protection Knowledge Network**,⁵⁹ which aims to "[...] to aggregate, process and disseminate knowledge and information relevant to the Union Mechanism, following a multi-hazard approach and including relevant civil protection and disaster management actors [...]; [...] support coherence of planning and decision-making processes by facilitating continuous

⁴⁸ Manca, Anna Rita; Benczur, Peter; Giovannini, Enrico, 'Building a Scientific Narrative Towards a More Resilient EU Society, Part 1: a Conceptual Framework', JRC Science for policy report, 2017; https://publications.jrc.ec.europa.eu/repository/bitstream/JRC106265/jrc106265_100417_resilience_scienceforpolicyreport.pdf

⁴⁹ https://publications.jrc.ec.europa.eu/repository/bitstream/JRC111606/jrc111606_resilience_crisis_pilot_wit_hidentifiers.pdf

⁵⁰ https://publications.jrc.ec.europa.eu/repository/bitstream/JRC121554/jrc121554_regional_working_paper_2_020_registered.pdf

⁵¹ https://publications.jrc.ec.europa.eu/repository/bitstream/JRC120489/resilience_coronavirus_final.pdf

⁵² https://ec.europa.eu/jrc/sites/jrcsh/files/jrc-science-for-policy-brief_individual-resilience_0.pdf

⁵³ https://espas.secure.europarl.europa.eu/orbis/sites/default/files/generated/document/en/EPRS_STU%282020%29653208_EN%20%281%29.pdf

⁵⁴ https://espas.secure.europarl.europa.eu/orbis/sites/default/files/generated/document/en/EPRS_STU%282020%29652024_EN.pdf

⁵⁵ <https://climate-adapt.eea.europa.eu/>

⁵⁶ <https://drmkc.jrc.ec.europa.eu/>

⁵⁷ <https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/science-disaster-risk-management-2020>

⁵⁸ <https://drmkc.jrc.ec.europa.eu/Knowledge/Science-for-DRM/NRA>

⁵⁹ https://ec.europa.eu/echo/what/civil-protection/knowledge-network_en

exchange of knowledge and information between all areas of activity under the Union Mechanism [...]; [...] strengthen cooperation on training and promote the sharing of knowledge and experience between the Union Civil Protection Knowledge Network and international organisations and third countries [...]”⁶⁰ In addition, with its most recent revision the UCPM aims to work together with Member States to establish Union wide resilience goals and cross-sectoral disaster risk management planning for both natural and man-made disasters likely to have a transboundary effect. The goal is to allow a better a stronger evidence base to inform prevention and preparedness measures in the area of civil protection.

The **Copernicus Emergency Management Service (CEMS)** provides information for emergency response in relation to different types of disasters, including meteorological and geophysical hazards, humanitarian disasters, as well as prevention, preparedness, response and recovery activities. The **Copernicus service for security applications** aims to improve crisis prevention, preparedness and response in border surveillance, maritime surveillance, and in support of EU external action.

The EU Galileo programme of **satellite navigation** is relied upon heavily in crisis and emergency response. In the field of **satellite communication**, a new EU space programme component is to start in 2021, to provide secure satellite communication for governmental actors, based on pooling and sharing of existing satellites (GOVSATCOM). The European Commission is now also investigating setting up an EU satellite constellation for secure connectivity.

⁶⁰ Article 13 of Regulation of the European Parliament and of the Council amending Decision No 1313/2013/EU on a Union Civil Protection Mechanism (to enter into force in May 2021).