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EXPERT PANEL ON EFFECTIVE WAYS OF INVESTING IN HEALTH

(EXPH)

Opinion on

European solidarity in public health emergencies

The EXPH adopted this Opinion at the .. plenary on …. 2021
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About the Expert Panel on effective ways of investing in Health (EXPH)

Sound and timely scientific advice is an essential requirement for the Commission to pursue modern, responsive and sustainable health systems. To this end, the Commission has set up a multidisciplinary and independent Expert Panel which provides advice on effective ways of investing in health (Commission Decision 2012/C 198/06).

The core element of the Expert Panel's mission is to provide the Commission with sound and independent advice in the form of opinions in response to questions (mandates) submitted by the Commission on matters related to health care modernisation, responsiveness, and sustainability. The advice does not bind the Commission.

The areas of competence of the Expert Panel include, and are not limited to, primary care, hospital care, pharmaceuticals, research and development, prevention and promotion, links with the social protection sector, cross-border issues, system financing, information systems and patient registers, health inequalities, etc.

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ABSTRACT

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EXECUTIVE SUMMARY

The current Opinion explores the concept of solidarity from both a broad theoretical and from an implementation perspective. Focusing on how the principle of solidarity is enshrined in European Union (EU) law, it critically examines relevant implemented and proposed actions of solidarity towards EU Member States and towards countries outside the EU borders. The focus being health emergencies, to respond to key questions on improving preparedness and responding and on strengthening cross-border collaboration, lessons learnt from the COVID-19 pandemic are captured, including in the context of limitations to EU level actions and avenues available to overcome them. Recognising the tremendous effort of EU bodies, Member States, and of every citizen of the EU, to overcome the COVID-19 challenges, this Opinion moves beyond the current state, highlighting key considerations to be urgently addressed for an EU-wide transformation. To comprehensively effect this transformation, national and regional actors and mechanisms also need to be considered and addressed, to effectively operationalise solidarity. The Expert Panel on effective ways of investing in Health (EXPH)recommendations have been developed to serve all abovementioned aspects, in the hope to initiate a transformation on how the EU tackles public health emergencies, how it develops its EU-wide public health priorities and, indeed, its global public health actions.

BACKGROUND

The COVID-19 pandemic has exposed many weaknesses in applying the principle of solidarity that should underpin the functioning of the European Union (EU) and how decisions are made regarding the relationship between the EU and its Member States in the event of major public health emergencies. Technically, the principle of solidarity is in place to have Member States show solidarity towards each other, for redistribution of resources towards those members of society in need.(1) It is a founding principle of the European Union. In accordance to Article (Art) 168(7) of the Treaty on the Functioning of the European Union (TFEU), the definition of health policy and the organisation and delivery of health measures are the competence of EU Member States. It is the responsibility of the national governments to decide on the implementation of health measures and the conditions under which this is done. Nevertheless, the Solidarity clause in Art. 222 of the TFEU provides among others the option for the EU and EU countries to act jointly, and to aid another EU country which is the victim of a natural or man-made disaster. Furthermore, there is an explicit mention to solidarity in Art. 80 of the TFEU, stipulating that the policies of the Union [in relation to border checks, asylum and

immigration'] and their implementation shall be governed by the principle of solidarity and fair sharing of responsibility, including its financial implications, between the Member States. [1] While there are many positive examples during the COVID-19 pandemic, overall, the EU and the Member States have not been able to act in concerted manner, so as to demonstrate European transnational solidarity to a degree that would allow for the timely provision of adequate support, and to the degree Europe's citizens may well have anticipated. This has led to calls for strengthened coordination at EU level, recognizing that the health of the population of any Member State is contingent on that of the population of all others and vice versa. Notably, in her 2020 State of the Union Address (2), the President of the Commission announced the need for a European Health Union (3) as a means to protect our way of living, our economies, and our societies, highlighting the importance of European solidarity as a European value, and the importance of demonstrating it in action towards Member States, beyond the EU, and to states and individuals alike.

As a first step towards a European Health Union, the European Commission (EC) presented three legislative proposals in November 2020:

A proposal for regulation on serious cross-border threats to health, with the aim to build on the existing health security framework by creating a more robust mandate for coordination by the EC and agencies of the EU; it repeals Decision No 1082/2013/EU (4) on serious cross-border health threats, introduced in the aftermath of the H1N1 pandemic; which provided the existing health security framework that was essential for the exchange of information on the coronavirus disease (COVID-19) pandemic and the coordination of national measures; and which, however, fell short in terms of a common EU-level response, and to ensure solidarity between Member States.

A proposal to reinforce the mandate of the European Centre for Disease Prevention and Control (ECDC) under the aforementioned strengthened EU health security framework;(5) and

a proposal on a reinforced role for the European Medicines Agency (EMA) regarding crisis preparedness and management for medicinal products, including vaccines, and medical devices.(6) In addition, the Commission also set out an outline of a Health Emergency Preparedness and Response Authority (HERA) (7). As a vanguard of HERA, the bio-defence preparedness plan, i.e., the "HERA Incubator", was launched in February 2021.(8)

[1] Indeed, vis-à-vis Art. 80 and the implementation thereof, TFEU reaffirmed the principle of solidarity, in comparison to Art. 10 EC, Art. 4(3) TEU introducing (a) the idea of 'mutual respect', implying institutions must not transgress upon the prerogatives of the other, and (b) the duty of cooperation applying to tasks that 'flow from the Treaties', thus establishing a more 'open-ended' notion of duty than that which arises from fulfilment of Treaty obligations under Art. 10 EC; The Implementation of Art. 80 TFEU - on the Principle of Solidarity and Fair Sharing of Responsibility, Including its Financial Implications, between the Member States in the Field of Border Checks, Asylum and Immigration. 2011. https://www.europarl.europa.eu/RegData/etudes/etudes/join/2011/453167/IPOL-LIBE_ET(2011)453167_EN.pdf

These proposals seek to strengthen the EU's health security framework and its resilience in the face of cross-border health threats. It includes, for example, [Leaving this here so you can see the comment, but delete after this point text highlighted in yellow and up to asterisk and replace with "a provision for the declaration of an EU emergency situation triggering increased coordination and allowing for the development, stockpiling and procurement of crisis-relevant products.]a strengthened joint procurement agreement (JPA) *[…]; the creation of an ECDC-EMA joint vaccine monitoring platform;[2] the development and implementation of both EU-wide and national preparedness and response plans; support to Member States to strengthen resilience, accessibility, and effectiveness of health systems through co-operation involving exchange of best practice, training schemes, technical support; resilience dashboards, and financing from EU programmes.(7) The clarity of the package's implementation ideas, funding, and mechanisms assuring governance and transparency is important.

In a recent statement, the Expert Panel provided feedback on the current plans of HERA.(9) Member States need support in order to strengthen their resilience and strategic preparedness for new challenges, such as the next pandemic. The European Health Union initiative for tackling health crises together, and HERA as currently proposed, may be a part of the solution leading to the creation of robust structures that support greater preparedness and increased resilience of health systems in Member States and regions.

The European Health Union proposals also link to the proposal for creating synergies and complementarities with the instruments and actions foreseen under the enhanced the Union Civil Protection Mechanism (UCPM) and its enhanced legislative framework adopted in May 2021.(10) A global initiative, the COVID-19 Vaccines Global Access (COVAX) aims to ensure fair and equitable access to vaccines, with a focus on low- and middle-income countries (LMICs). COVAX co-led by the Coalition for Epidemic Preparedness Innovations (CEPI), the Global Alliance for Vaccines and Immunisation (GAVI) and the World Health Organisation (WHO), alongside key delivery partner UNICEF, and Team Europe is one of the lead contributors. In May 2021, during the European Council, the EU Member States committed to donate at least 100 million doses of COVID-19 vaccines (which was updated in July 2021 to 200 million[3]) to countries in need before the end of 2021.(13) In July 2020, it also offered, via

[2] There is a joint ECDC/EMA COVID-19 vaccine monitoring platform under the new mandate of the two agencies to enhance collaboration in this respect. Under this initiative there will be substantial funding to conduct further monitoring with the launch of a 2- year vaccine safety monitoring study (as of April 2021), similar to the early study, to explore potential longer-term effects of the vaccines, and compare, for example, to non-vaccinated persons or other suitable comparator groups, as well as monitor special populations e.g. children, pregnant women. The study will include readiness & rapid signal assessment with pharmacoepidemiological analyses to characterise emerging safety concerns and support signal management. https://www.ema.europa.eu/en/documents/minutes/meeting-summary-european-medicines-agency-ema-patients-consumers-pcwp-healthcare-professionals-hcpwp_en.pdf and https://ec.europa.eu/health/sites/default/files/vaccination/docs/2020_strategies_deployment_en.pdf

[3] https://newseu.cgtn.com/news/2021-03-26/EU-is-world-s-biggest-vaccine-exporter-with-77m-doses-Von-der-Leyen-YVx9HX6tsA/index.html

the Emergency Support Instrument (ESI), funding for cross-border health operations (transfers of patients, medical teams and cargo).(14) The ESI also funded other things, such as masks (€10M), treatment (€70M), tests (€200M), and disinfection robots, which were donated to Member States free of charge or reimbursed via grants; or training of health professionals.

In an article published in March 2020, the EXPH's current and former members called for stronger European solidarity and an enhanced cooperation at pan-EU level to tackle both the current pandemic and future health emergencies.(15) In an Opinion on cross-border cooperation in 2015, the Expert Panel had considered areas that would potentially benefit from greater formal cross-border cooperation and collaboration in healthcare provision, focusing on service configuration in border regions.(16) They highlighted obstacles to successful cross-border cooperation in health care and suggested ways of overcoming those obstacles.

The Expert Panel has also identified elements of cross-border cooperation in its opinion on the organisation of resilient health and social care following the COVID-19 pandemic, published in December 2020.(17) In this opinion, the Expert Panel concluded that the creation of adaptive surge capacity, in particular, is important for preparing for and dealing with unexpected events in order to ensure sufficient and equitable access to health and social care services. Building on lessons learnt from the COVID-19 pandemic, as well as on existing instruments, guidelines and recommendations, the Commission is seeking expert advice on what EU solidarity would entail in practice in future health emergencies. Such advice ought to consider actions and initiatives that have already been undertaken or proposed to improve cross-border cooperation.

QUESTIONS FOR THE EXPERT PANEL

The Expert Panel is requested to provide a concise and meaningful document with analysis and practical recommendations on the following points:

1. How can we plan and prepare for EU solidarity in health emergencies? How can we strengthen cross-border cooperation in future public health emergencies?
2. What are the limitations to EU level actions, how can we overcome these limitations and what can be done to promote EU solidarity?
3. What transformation needs to take place at EU, national and regional level in order to operationalise EU solidarity in public health emergencies?

1. OPINION

1.1. EU solidarity in health emergencies: concept and values

1.1.1. The theoretical concept of solidarity

The word "solidarity" is derived from the Latin words "solidum", meaning "whole sum" and "solidus" meaning "solid". Its origin being in Roman law, the closest its meaning to its etymology is that of "Collective responsibility".[4] As a concept, it has been elaborated by the work of social scientists such as Emile Durkheim, who was among the first to define it in a broader context, drawing on ideas from the physical sciences,(18) although the concept has evolved substantially over time.

For the purposes of this Opinion, solidarity can be considered as "*a broad meaning of emotional and motivated readiness for mutual support*".(19) According to this view, Laitinen and Pessi (2014) define solidarity as a concept in a descriptive manner or a normative one. In the descriptive relational sense, solidarity denotes a connection with other people, or members of a group. From a normative perspective, solidarity involves a presumption of reciprocity and, thus, is different from the non-reciprocal ideas of altruism, sympathy, caring, or understanding of suffering. In addition, solidarity should be distinguished from equity, which implies a focus on differences and a "commitment" to "relate" to those most in need. Thus, solidarity requires "*a shared group-membership and behaviour according to the norms of a given group*".

In the wake of the refugee crisis in Europe, Agustín and Jørgensen (2018) attempted to broaden the concept of solidarity by expanding the notion of the sense of community in an organic process that rejects the logic of national borders.(20) Their analytical framework stresses the relational dimension of solidarity by stating that collective identities and political subjectivities emerge from practices promoting solidarity practices. Regarding the concept of "relations", the authors are looking for the kind of social relations, collective identities, and political subjectivities, while in regard to the concept of contention, they are asking "*to whom or what is solidarity opposed*". Regarding its spatial dimension, the authors contend that "*solidarities are shaped and shape spaces in which social relations are produced, and they can upscale and connect different spaces and geographies through trans-local networks and imaginaries*". Following from this and according to those authors, solidarity *"[…] entails alliance building*

[4] "Solidarity" originated in Sodalitates, which is the legal term in Roman law for the collective responsibility among family members. It stipulated that all members are held equally responsible for the payment of an indivisible debt contracted by any one individual member. (Sodalitates only became "solidarité" under the French Code Civil.) See J.E.S. Hayward, "Solidarity: The Social History of an Idea in Nineteenth Century France," International Review of Social History 4 (1959): 261-84; Segall, Shlomi. "In Solidarity with the Imprudent: A Defense of Luck Egalitarianism." Social Theory and Practice, vol. 33, no. 2, 2007, pp. 177–198. JSTOR, www.jstor.org/stable/23559105. Accessed 1 Sept. 2021.

among diverse actors; is inventive of new imaginaries; is situated in space and time and organized in multi-scalar relations". In other words, it emphasizes the normative dimension of the definition of solidarity proposed by Laitinen and Pessi.(19)

Solidarity, then, is conceptualized as macro-, meso- and micro-level phenomena. As a macro-level phenomenon, solidarity has been considered alongside group cohesion and integration, while, at the micro-level, attention concentrates on the individual, with more focus on behaviour, emotions, beliefs, and attitudes. Compassion may have a place here, and Rigoni (21) considers solidarity as *"[…] the first cousin of compassion manifest[ing] itself as brotherhood, or should I say a profound kinship of personal sensitivity, that goes beyond social, ideological or political connotations"*. As a meso-level phenomenon, it links these other two levels. The notion of "social capital", developed by Robert Putnam, can be considered to operate at the meso-level.(22) Putnam views social networks as delivering value for individuals, allowing participants to act more effectively when they work collectively to achieve shared goals. The work of Pierre Bourdieu on social structure supports this approach in reconciling the influences of both external social structures and subjective experience of the individual.(23, 24)

Different authors propose different groupings of concepts of solidarity. Agustín and Jørgensen propose three types of solidarity: autonomous solidarity, civic solidarity, and institutional solidarity.(20) The authors view autonomous solidarity as implying relations and practices that are produced in self-organized spaces, while civic solidarity refers to the ways in which such organization is produced. Institutional solidarity connects the civil society arena with that of policymaking. Scholz distinguishes between three varieties of solidarity and uses social solidarity to refer to group cohesion, civic solidarity to describe the relationship between the citizens and the political state with respect to organized solidarity efforts, and political solidarity.(25) Political solidarity aims to realise social change by uniting individuals in their response to particular situations of injustice, oppression, or tyranny. Other terms used include defensive solidarity, the reaction of a group to a common threat or enemy, redistributive solidarity, with an equity and 'social justice' dimension, goal-oriented solidarity, linked to an explicit strategy and the means of achieving it, and global solidarity, which brings in the wider ecological, planetary, and human rights viewpoint.

Independent of the type of solidarity, the reciprocity dimension is an important focus of engagement of European citizens and collective action. Our understanding of solidarity cannot be limited to the expression of support for those in need in a crisis. As Eschweiler and colleagues (26) argue, solidarity is about creating a different kind of relationship between the various collective entities (government, institutions, producers, sellers and buyers of goods and

services). The authors refer to solidarity "*embedded in institutional notions […] such as systems of preference and redistribution*". They conclude that "*it is also an argument for taking a broader look at just what are the different elements within the concept of institutionalised participatory democracy*", which coincides with Wilde's identified need to widen and deepen the concept of solidarity to give more attention to "*democratic participation and/or the articulation of our ethical obligations in various ways*".(27)

1.1.2. Solidarity in the European Union

The concept of solidarity has been included in a 2019 Opinion of the Expert Panel (Defining value in "value-based healthcare") and it has been perceived not only as a value per se, but also as a structuring principle for practices, regulations and institutions – the development and policies and institutions to increase social justice and help to create the political and economic circumstances that allow societies to operationalize the concept of solidarity. However, to facilitate the European understanding of solidarity within the EU context, the next section explores the place where all abovementioned fundamental dimensions of solidarity are assembled in existing Treaties.

Solidarity in the EU Treaties

The EU Treaties explicitly refer to solidarity in several provisions, including the values and objectives of the Union (solidarity 'between generations' and 'among Member States') and policies where the 'principle' or 'spirit' of solidarity is to be applied. This can be seen in the Treaty on the Functioning of the European Union (TFEU), based on the 2009 Lisbon Treaty, and the Treaty on European Union (TEU), based on the 1992 Maastricht Treaty. The TFEU sets out organizational and functional details of the European Union. The TEU lays out the general principles underlying the purpose of the EU, the governance of its central institutions (e.g., the Commission, Parliament, and Council), and rules on external, foreign and security policy. Solidarity also features in the Charter of Fundamental Rights of the European Union. Chapter IV of the Charter of Fundamental Rights (CFR) of the European Union includes rights at work, family life, welfare provision and health.

Enshrined in the TFEU is a broad solidarity clause, with Art. 222 providing the EU and its Member States shall act jointly to:

- to prevent the terrorist threat in the territory of an EU country, and
- to provide assistance to another EU country which is the victim of a natural or man-made disaster.

This clause was implemented following the terrorist attacks in Madrid in March 2004.

In June 2014, the EU adopted Council Decision 2014/415/EU, a decision laying down the rules and procedures for the operation of the solidarity clause.(29) It ensures that all the parties concerned at national and at EU levels work together to respond quickly, effectively, and consistently in the event of terrorist attacks or natural or other man-made disasters. Solidarity is thus approached as a key European value. The clause gives substance to 'solidarity', which is mentioned as one of the Union's values in Art. 1.2 of the TEU and of which the scope and implementation, including on the role of EU institutions, as well as to the relationship with other provisions in EU law which refer to the expression of solidarity between EU Member States, is expanded in TFEU Art. 222.(30)

The EU Treaties emphasise defensive solidarity (action as reaction to events) among Member States and public bodies, while there also is no easily discernible common interpretation of the limits and application of solidarity in legal terms. As mentioned in section 1.1.1, EU solidarity requires a shared common goal, a basis of reciprocity, to safeguard the wellbeing of all EU citizens – trying to achieve the good and the better for everyone. Moreover, extended EU solidarity to global solidarity, particularly in the context of global public health, is in the EU's common interest for making the planet a healthier place to live in, and can contribute as a guiding principle to develop a comprehensive EU Global Health Action Plan. Although there is no clear statement in the Treaties about demonstrating solidarity with the rest of the world, the relevance of a cohesive and well-defined approach, including in terms of EU's global health policy, became starkly clear, with contemporary relevance in relation to global vaccine supply. There is an explicit mention of solidarity in the economic and monetary policy of the Union, and the basis it can provide for establishing support as, notably, Art. 122 TFEU (ex Art. 100 TEC) states that "*the Council, on a proposal from the Commission, may decide, in a spirit of solidarity between Member States, upon the measures appropriate to the economic situation, in particular if severe difficulties arise in the supply of certain products, notably in the area of energy*". Additionally, there are concrete provisions for financial assistance for when a Member State "*is in difficulties or is seriously threatened with severe difficulties caused by natural disasters or exceptional occurrences beyond its control*". This was for instance the case in 2015 when the total number sea arrivals to Greece from Turkey amounted to 856,723, with the United Nations High Commissioner for Refugees (UNHCR) estimating that more than 210,000 migrants reached Greece in October 2015 alone, whereas another 155,989 crossed into Greece in the first months of 2016.(31) Given this situation in Greece, who was already suffering from the protracted economic and financial crisis, and with geopolitical instability in the region

(including a failed coup d'état in Turkey), it became starkly clear that there was need for imminent action towards efficient cooperation at EU-wide level. Regulation 2016/369 was enacted, primarily based on the principle of solidarity, as captured and specifically Art. 122 TFEU, para. 1. Although the Regulation 2016/369 has its *raison d'être* in the humanitarian refugee crisis, its scope is much broader, rendering it applicable to any natural or man-made disaster giving rise to "severe wide-ranging humanitarian consequences" (Art. 1, para. 1).(32) The question that naturally arises is whether solidarity is intrinsically and solely only linked to crisis situations and, indeed, whether circumstances surrounding such crises must directly or indirectly affect the whole Union or multiple Member States given economic and geopolitical interdependencies. Considerable scholarly effort has been dedicated to identifying the social justice principles for institutionalising mechanisms of transnational solidarity(33-36) and in terms of semiotics, to framing and ascribing concrete meaning to European solidarity in public discourse.(37, 38) A commonality across disciplines and analyses, is the congruent assessment that institutionalised expressions of transnational solidarity in the EU have both limited solidarity outreach and entrenched conditionality.(33) Supranational policies in the context of an EU-wide effort to exhibit transnational solidarity, as for example the European Stability Mechanism (ESM) and the failed refugee quota programme, illustrate these difficulties. Interestingly, the approach progressively put forth as more relevant and actionable to solidarity is that of security. This is partially understandable considering the difficulty in reaching consensus in terms of actionable policies or even relevant institutional set-up to address a crisis or other long-standing issues. The extent to which this represents a practical approach to forge ahead with cohesive policies or whether it actually detracts from a unified Europe in terms of societal cohesion and resilience ought to be carefully considered. In the EU context, policy makers also need to distinguish between solidarity among Member States (i.e., transfers to those governments in greatest need) and transnational solidarity (i.e., granting cross-border social rights to EU citizens).(39) Transnational solidarity extends well beyond showing mutual support and respect in diplomatic exchanges, and remains the most prevalent issue in terms of balancing national vs. EU-wide interests.

As mentioned in the introductory statements, we recall that solidarity "*....entails alliance building among diverse actors; is inventive of new imaginaries; is situated in space and time and organized in multi-scalar relations"* (19), while it reflects "*a broad meaning of emotional and motivated readiness for mutual support*".(19) These definitions help clarify the notion of solidarity vs. security and that of transnational solidarity.

Apart from the EU Treaties, several statements about solidarity have been made by EU Commissioners and political leaders, including the following examples.
In February, 2018, Angela Merkel, in comments to lawmakers in the Bundestag referring to those countries that oppose receiving asylum applicants, stated that*: "Solidarity isn't a one-way street. It's the obligation of all member states never to lose sight of the whole --and that includes respecting the values on which the European Union was built"*.(40)
In EU politics, solidarity is often conveyed in such a way as to demand 'responsibility' from Member States. In the words of Dimitris Avramopoulos, the former European Migration Commissioner, solidarity acquires the meaning of a 'rights and obligations' exchange. Such an understanding of solidarity has the potential to create certain expectations by different political or social movements. Just as presumptions are implicit in the normative dimension of individual solidarity, assumptions or expectations regarding political solidarity within the EU often only become evident when tension arises from efforts to realize social change among different communities or societies. This is especially the case when gaps between advantaged and non-advantaged groups are being addressed (41), as in the refugee crisis and/or during the COVID-19 pandemic. Thus, it is important for the concept of "relations" to be addressed and the notions of social relations, collective identities, and political subjectivities (19) to be re-visited.

1.1.3. The importance of EU solidarity in times of health emergencies

European solidarity is based on specific geopolitical, psychological, and legal foundations. For several decades, the unity of Europe has been seen as a strength, consolidating post-war peace, and addressing shared threats. However, new challenges are emerging. Looking ahead, globalization is likely to continue to generate social and political tensions within EU Member States. Europe is faced with various external threats that may encourage the solidarity and shared purpose needed to formulate more effective responses. These threats include climate change, financial uncertainty, and, most recently, the COVID-19 pandemic.(42) As an unfolding natural experiment, we have observed the importance of European solidarity to protect the health of the European citizen and European unification (social coherence) on a political and humanitarian level. The latest example was derived from August 2021, where immense forest fires broke out in various locations in Greece, including forests close to the city of Athens, on the Peloponnese, on Evia, Rhodes and Crete. Greece activated the EU Civil Protection Mechanism on 3 and 5 August. This was the start of one of the largest operations in the history of the Mechanism.[5]

[5] https://ec.europa.eu/echo/field-blogs/photos/eu-solidarity-action-fighting-forest-fires-greece_en

Solidarity in action during the COVID-19 pandemic

The way that the COVID-19 pandemic has impacted on all EU Member States, to varying degrees, may have facilitated solidarity within Europe.(42) It can be debated, however, to what extent solidarity was manifest at the EU level, beyond that seen in particular border regions and some countries. Some governments and commentators have argued that *"the European Union's crisis management had been inadequate, lacking solidarity"*.(43)

In the COVID-19 pandemic - given that health remained primarily a national competency - the EU's response has mostly been restricted to supporting and coordinating the implementation of health measures adopted by individual Member States. Examples of solidarity included the transfer of patients and the dispatch of medical equipment, masks, training support, plasma centres, disinfection robots, common procurement on vaccines, all facilitated by the European Commission's interventions; the loosening of border controls to allow the movement of medical staff, patients, and medical products; and the release of a reserve of medical equipment financed mostly by the European Union with small contributions by the Member States. The ESM has been activated to finance health-related spending and the European Central Bank has indicated that it could purchase national debt without respecting the principle of proportionality.(44)

Specific details on instances (the footnote[6] provides some examples) of pan-EU solidarity throughout the coronavirus crisis (through September 30, 2021) can be found on the European Council of Foreign Relations' Solidarity Tracker.(45)

Another area where solidarity issues have been observed during the COVID-19 pandemic is that of digital health data. Solidarity, when it comes to data, requires transparency on definitions used, ways of data collection, clarity on methods of analysis and conceptual frameworks used.(46) International collaborations and cross-border (pseudonymized personal) data sharing among researchers are essential for advancement of health research (e.g., for studying and

[6] Early in the pandemic, the need for medical equipment was paramount. In response, the EU established a joint reserve of emergency medical equipment to be quickly mobilized in emergencies. With the support of the EU, Germany, Romania, Denmark, Greece, Hungary, and Sweden became responsible for procurement, and the EU's emergency response coordination centre handles requests and coordinates the distribution of equipment to the countries which need it most. At different points in the pandemic, Spain and Italy received 316.000 FFP2 and FFP3 face masks and France received 500.000 pairs of gloves from rescEU stockpiles. ESI procurements were used before rescEU was able to arrange smaller supplies.

Some individual Member States demonstrated solidarity in other ways. When the initial outbreak hit Italy, Austria donated medical masks and ventilators, Denmark provided field hospital equipment, Czechia sent protective suits, and Germany sent 5 tonnes of medical supplies. German, Polish, and Romanian medical staff jointed frontline care efforts in other Member States. When Czechia experienced a surge in cases in October 2020, it received 30 ventilators on loan from the rescEU medical reserve, and Austria sent a further 15 and the Netherlands sent 105. As a result, the needs resulting from the surge in demand were fully met. Cross-border support was evident in this same month, in which Belgian patients were admitted to intensive care beds in Germany. During the first wave, Germany cared for more than 230 critical patients from Italy, France, and the Netherlands. Austria and Luxembourg cared for patients from France and Italy.

The EU has also demonstrated solidarity beyond its borders. For instance, rescEU delivered 148.000 face masks and 35.000 protective gowns to North Macedonia. The EU has increased international support, especially for vulnerable countries. It helps to coordinate and combine support from Member States and is referred to as the 'Team Europe' response. Contributions from the EU, Germany, Austria, Spain and Sweden worth over €26 million were sent to African countries in the form of 1.4 million COVID-19 test kits.

comparing genetic and epidemiological risk factors for the optimization of prevention or treatment) and a prerequisite for studies of rare diseases or subgroups of common diseases to obtain adequate statistical power. Legal obligations that protect an individual from the misuse of her/his personal data should be wisely incorporated in the activities to prevent damaging effects for citizens and patients. The recent report of the European scientific academies explains the consequences of stalled data transfers and addresses responsible solutions.(47) The EU is in a position to exert pressure on other countries to resolve statutory conflicts to enable reciprocity in privacy-enhanced data sharing.(48) Such actions may be realized in the context of the European Health Data Space, one of the Commission's priorities and whose aim is to promote better exchange and access to different types of health data in order to support healthcare delivery, health research, health policy making and regulatory activities in health. The initiative also aims to provide the right tools for citizens and patients to exercise their access and control rights over their own health data.

The pandemic has exposed important weaknesses in the EU's current ability to adequately respond to a health crisis. It has frequently been noted that the Member States have guarded their competences in the field of human health, in contrast to their willingness to concede powers to the EU in the areas of animal and environmental health.

Important exceptions such as antimicrobial resistance (AMR) should be identified and acted upon. The case of AMR is recognized by EU law as a serious cross-border threat to health, requiring concerted EU action, in addition to the clear Commission competence to act in veterinary issues, food safety, and research.(49)

Given that health has remained primarily a national competency, in the early days of the pandemic, competition between EU Member States and globally to obtain equipment, test kits and medicines needed to meet the COVID-19 public health emergency impeded the ability of the EU to mount a joint timely and effective response, while generating tensions about the perceived lack of solidarity. The result was inadequate supplies of Personal Protective Equipment (PPE) and COVID-19 testing in certain countries, adversely impacting on social cohesion across the EU. This situation has been exacerbated by the inability of Member States to respond adequately to the widespread disinformation that was being spread about COVID-19, treatments, vaccines, and responses. A report (Nov 2020) by researchers working on the Health Emergency Response in Interconnected Systems (HERoS) project, (50) that focuses on social dynamics of the outbreak and the related public health response, confirmed these deficiencies and made a series of recommendations on how Europe could be better prepared.

Many of the recommendations were in line with the Opinion of the Expert Panel on "Organisation of resilient health and social care following the COVID-19 pandemic".

Another key issue that has come to symbolise the European response to the pandemic is related to COVID-19 vaccinations. During a plenary debate on 19 January 2021 about the EU's strategy on COVID-19 vaccinations, most Members of the European Parliament expressed support in principle for the EU's common approach to vaccination policy, which ensured the rapid development and access to safe vaccines. However, they underlined that *"more solidarity when it comes to vaccinations and transparency regarding contracts with pharmaceutical companies"* is needed..(51) At the European Council in June 2020, the EU Member States mandated the Commission to organise the joint procurement of vaccines.

Implications for solidarity during the pandemic

The above-mentioned difficulties to ascertain solidarity in time of a public health crisis such as the pandemic has certain implications. Solidarity is a powerful means to mitigate the shock of the social crisis that has resulted from the pandemic. Solidarity can help to create a collective consciousness in a crisis that can reduce health risks.(52) It may also help to overcome social distance resulting from movement restrictions and exclusion of vulnerable populations.

Thompson and colleagues (2021) emphasize that the consequences of the COVID-19 pandemic correlated to our era's four main megatrends that increase vulnerability, i.e., demographic changes, power imbalances, technological innovations, and global environmental change. They have exacerbated existing inequities within countries, and these can be countered only through global solidarity and global leadership focusing on important determinants of health, offering an opportunity for Europe to lead.(53) Indeed, solidarity is identified not just as a fundamental principle, but as the key response strategy that can help both to protect citizens' rights and to control pandemics. In this context, the authors propose solidarity is enacted through universal preparedness for health across geographical and generational borders and socioeconomic groups. Underscoring such an effort would be a trans-sectoral prism to mitigate the structural drivers of health and social inequities, including poverty and discrimination.

Lastly, European solidarity in times of health emergencies has another important impact on the European population by enhancing the feeling of coherence and trust in the EU and reducing the uncertainty that often accompanies health and social crises. The COVID-19 pandemic has reminded us how interdependent we are. In addition, the pandemic revealed *"the vulnerabilities of Member States' infrastructures and supply chains, and the limited [health] competences of the EU in supporting Member States' management of public health emergencies. COVID-19*

tends to act as a threat multiplier and source of instability, particularly in low-income countries already affected by socio-economic imbalances and governance problems". (54) The pandemic has made pre-existing inequities apparent and exacerbated existing inequities both within and across borders. According to Cicchi and colleagues, European citizens seem to consider solidarity as *"a reciprocal benefit rather than a moral or identity-based obligation"*, while they prefer permanent arrangements for risk and burden sharing to ad hoc mutual assistance.(55)

1.1.4. Cross-country cooperation and solidarity

In the discussion of solidarity in practice, it is important to distinguish between cooperation and solidarity. More specifically, solidarity is just one of various different motives that promote cross-country cooperation. For that reason, we repeat again the definition of solidarity that has been mentioned in the introductory section as a reflection of "*a broad meaning of emotional and motivated readiness for mutual support" (16).* We therefore start by first discussing different forms of cooperation, and then relate it to solidarity.

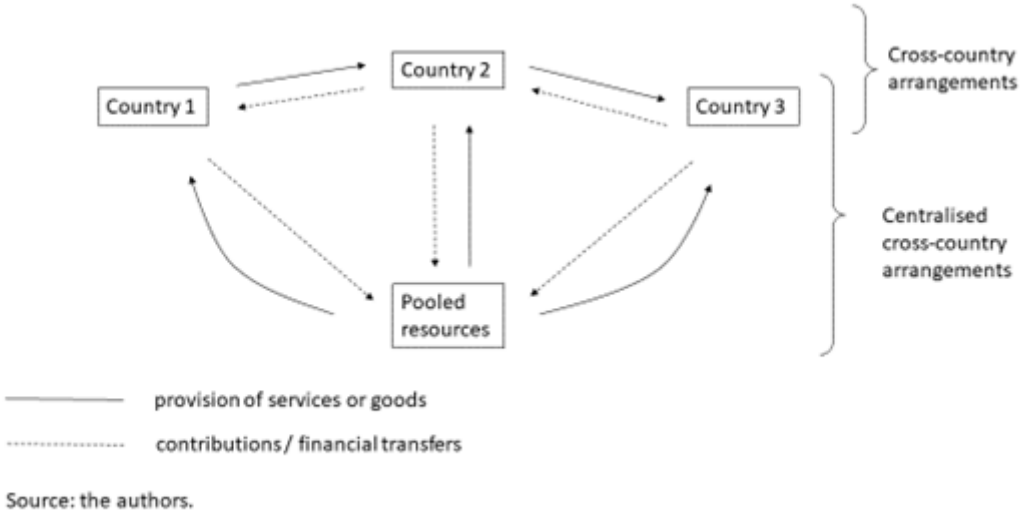
There are different ways for countries to cooperate or, as we have discussed, means "*embedded in institutional notions of solidarity such as systems of preference and redistribution (27).* Figure 1 illustrates two main scenarios. The first is where countries have a set of arrangements that facilitate one country helping another if the need arises. These arrangements describe when they apply, the services or aid provided, and possible financial transfers between countries. One example is the EU Directive on patients' rights in cross-border healthcare (Directive 2011/24/ EU)

EU citizens have the right to access healthcare in any EU country and to be (partially) reimbursed by their insurer for care abroad. In this example, citizens in one country can chose to receive a service in another country, and; the upfront costs get reimbursed at the national rate of the country where the patient is insured. Under the EU's Social Security Coordination Regulations, healthcare abroad requires a prior authorisation from the insurance body, however the citizen usually pays no costs upfront as the reimbursement is arranged directly between the insurance bodies involved. A second example is the European Reference Networks, which offer a means by which patients with rare and complex diseases can gain access to highly specialized knowledge from across the EU.(56) The main benefits arise from pooling of expertise and the pooling of patients. In these examples, the European Commission plays a key role in facilitating such arrangements and in encouraging cooperation.

The second scenario involves countries to contribute and pool resources at a centralized level to acquire goods or services, which are then redistributed across countries or have a public

goods nature (therefore benefitting all countries in a similar way). In this scenario, a supranational authority plays a more active role in setting up arrangements for the services and goods to be provided; and individual countries have delegated, at least to some extent, some authority at a higher level. One example with a public good nature is the investment in better centralized surveillance systems to detect possible future health threats.(17) Another example of the coordination, though not captured in Figure 1, is the public procurement of COVID-19 vaccines. The Advance Purchase Agreements were signed at the EU level, with the Member States purchasing the vaccines at the conditions specified in such agreements.(57)

Figure 1. Conceptualisation of cross-country cooperation



Source: the authors.

Countries may cooperate because of mutual benefit or solidarity, or both, as mutual benefit does not necessarily preclude solidarity. The benefits from cooperation may be many and varied. A country may help or support another country facing a health crisis by making health professionals available, or by accepting patients for treatment. The helping country may benefit from reciprocity should it, in turn, be affected. In this case, pursuing solidarity is aligned with self-interest, if countries adopt a long-term time horizon rather than a short-term one. Having a set of arrangements in place beforehand is necessary, as without these there are likely to be legal or other barriers (e.g., barrier to movement of health professionals if they are not legally allowed to practice across EU countries) that might prevent the implementation of solidary-driven actions, despite a given country's intent to help another. In other words, the delivery conditions must be in place. Possible financial transfers across countries can also be put in place for the helping country to cover the costs of providing additional services. In this way, countries

can still help each other without necessarily facing a financial loss. However, some countries can decide to help without asking for any financial compensation, therefore pursuing a form of redistributive solidarity, where they are willing to give up some resources to pursue a redistribution towards a country in higher need.

Mutual benefit and solidarity go hand in hand when countries face a common threat or pursue a common goal. By pursuing a common good, they can pool resources and exchange expertise and at the same time help for example smaller and less well-resourced countries in pursuing outcomes that they would not otherwise be able to achieve on their own.

In other instances, solidarity will not necessarily reflect an expectation of mutual benefit, or at least not for every country. For example, larger and well-endowed countries may be less willing to delegate authority to a supranational body if they perceive they could do better on their own. Yet, they could decide to cooperate with other countries if the group of countries as a whole benefit from the cooperation and may be willing to sacrifice some benefits to pursue a form of redistributive solidarity, with benefits of the group greatly outweighing the loss for an individual country. It is in agreement with the statement of Eschweiler and colleagues (26) who argue that solidarity is about creating a different kind of relationship between the various collective entities (government, institutions, producers, sellers and buyers of goods and services) such that, "*embedded in institutional notions of solidarity such as systems of preference and redistribution*", a new norm is created.

When acquisition or production of goods or services is centralised some tensions may arise in their distribution. Many health systems are based on a notion of provision based on need, not ability to pay, and this could be a criterion to distribute services across countries. Yet, some countries may feel that they should receive them in a manner proportionate to their contribution. A centralised approach can benefit all countries if there are economies of scale or if it strengthens bargaining power. When it comes to the distribution of acquired services, different approaches can be adopted. Less redistributive solutions will provide services based on the original contributions made. More redistribute solutions will allocate the services based on the need of the country, a form of more equitable solidarity where some countries may receive services in a less proportionate way relative to their contributions. These countries may still be willing to do so to pursue redistribution and an equitable allocation of resources. COVID-19 vaccination can be used as an illustrative example. Hypothetically, once purchased, vaccines could be allocated based on need, as for example related to demographics (proportion of elderly), individuals that are high-risk, number of infections/cases, etc. Given that need is multifaceted, agreeing on a common definition of need could however be a challenge. The

purchase and allocation in principle could be carried out by the individual country or the supranational authority. As mentioned above, the Advance Purchase Agreements for COVID-19 vaccines were signed at the EU level, but it was the Member States that actually purchased the vaccines and received, unless modified, their pro-rata allocation of doses. However, donation of vaccines could not be done without prior discussion with the companies.

Cooperation agreements that arise out of solidarity or other motivations can be mandatory or voluntary. Countries could agree that if specific circumstances or events arise, then each country will have to contribute based on pre-specified minimum criteria. Alternatively, they could put in place a mechanism which facilitates the use of resources that arise from voluntary funding or contributions without a commitment of having to contribute or participate. One example is the Union Civil Protection Mechanism (UCPM) which aims to strengthen cooperation in case of disasters in relation to prevention, preparedness, and response, and it is also supported by voluntary contributions in terms of capacities teams, equipment and assets available for the operational response to a disaster . Some countries are more likely to agree on voluntary schemes, as these require a lower degree of commitment and give more flexibility, but there is a risk that not enough resources will be generated if the scheme remains voluntary.

1.2. Citizen's support and political willingness for EU solidarity

The European principle and value of solidarity does not arise spontaneously and is rather functional than emotional. It derives mostly from the economic and human interdependence established between the Member States and their diplomatic commitments. These political processes have enabled the introduction of many tools shaping European solidarity, some of which are mentioned in the introduction of this opinion (42).

European solidarity can be seen as both a pre-condition and an outcome or by-product of agreements between EU Member States that are considered to be globally balanced and acceptable, and therefore legitimate. European solidarity can however also be approached with suspicion, especially if it leads to actions that challenge the distribution of competences between the European Union, national or regional levels or if transparency mechanisms are not in place. Since public health is largely a national competence, it is more challenging to create European solidarity in the area of public health (42). As stated in a 2019 Opinion of the Expert Panel ("Defining value in "value-based healthcare"), solidarity is not only a value, but also a structuring principle for practices, regulations and institutions to increase social justice and help

to create the political and economic circumstances that allow societies to operationalize its concept. It will require both public support and political willingness to invest in solidarity.

1.2.1 Public opinion on European solidarity in times of COVID-19

Information on public attitudes to solidarity early in the pandemic can be found in a survey commissioned by the European Parliament (April 23 – May 1, 2020)[7]. The sample was of 21,804 respondents in 21 member states, with Lithuania, Estonia, Latvia, Cyprus, Malta, and Luxembourg excluded[8].

Overall, 34% of respondents were satisfied (29%) or very satisfied (5%) with the solidarity shown between EU member states in fighting the pandemic, with over half (57%), not satisfied, including 22% who were not at all satisfied. Levels of satisfaction were highest in Ireland (59%), followed by Denmark and the Netherlands (47%), with the lowest levels in Italy (16%) and Spain (21%). These last two countries were the hardest hit at that time in the pandemic.

Younger people were more satisfied than older people with the solidarity shown during the pandemic, with 44% of 16-24-year-olds expressing satisfaction, but only 27% of 55- 64-year-olds (but note the limited sampling in this age group). There was little difference by level of education, but satisfaction was substantially higher among those who supported their national governments.

Respondents were asked if they had already heard, seen, or read about measures or actions initiated by the EU to respond to the pandemic. Overall, 33% were aware and knew what the measures or actions were. A subsample of respondents who had heard about EU measures was asked how satisfied they were with them. Overall, 42% were satisfied, including 5% who were very satisfied, but about half (52%) were not, including 14% who were not at all satisfied. The level of satisfaction was highest in Ireland (66%), followed by the Netherlands (61%), and lowest in Italy (23%) and Spain (26%).

There was considerable support for the statement that "the EU should have more competences to deal with crises such as the coronavirus pandemic", at 66% overall, including 23% who totally agree. Only 22% disagree, including 8% who totally disagree. More people agreed with the statement than disagreed with it in every country except Czechia (43% versus 44%),

[7] https://www.europarl.europa.eu/at-your-service/files/be-heard/eurobarometer/2020/public_opinion_in_the_eu_in_time_of_coronavirus_crisis/report/en-covid19-survey-report.pdf

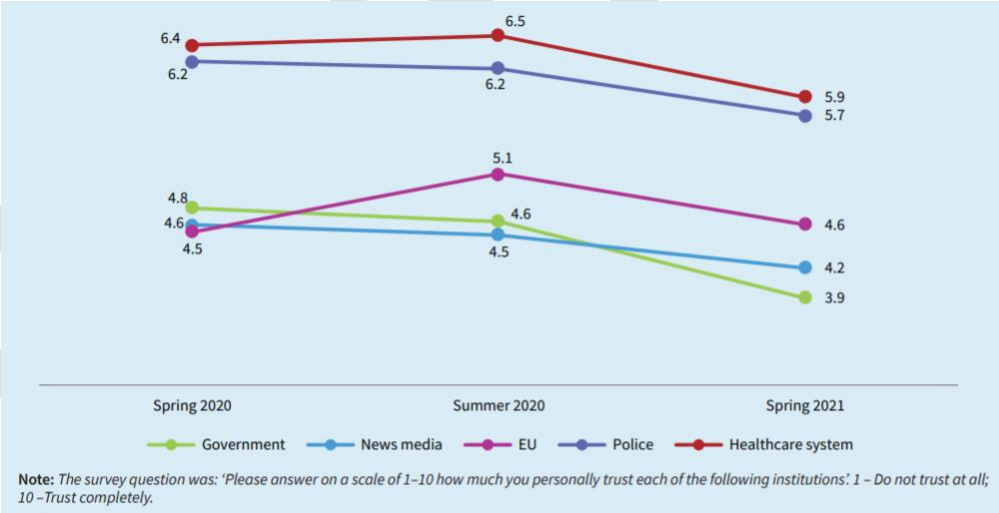
[8] Respondents were between ages 16 and 64. This was restricted further to those between 16 and 54 in Bulgaria, Czechia, Croatia, Greece, Hungary, Poland, Portugal, Romania, Slovenia, and Slovakia. Thus, the survey provides no information on views of children and young people or people in late middle-age or older. The survey was administered online to a panel maintained by the survey organization, with representativeness at national level sought by quotas on gender, age, and region. The EU total is weighted to the population of each country. The authors of the report on the survey caution that it was administered at a time when COVID-19 restrictions were in a state of flux, varying among countries and over time within them. This may have influenced the responses given.

although disagreement was also over 35% in Croatia, Austria, and Sweden. Support for a greater EU role was greater among younger people, at 74% among the 16-24 age group.

When asked about what the EU's top priorities should be, choosing three from a list of eight, the top priority (55% of all respondents) was to ensure sufficient medical supplies for all member states, followed by allocation of research funds for a vaccine (38%), and direct financial support to member states (33%). Support for financial support to member states was the most frequently stated priority in Italy and Greece, while joint the top priority and financial support had got the highest ranks in Bulgaria and Croatia.

Further insights come from a survey conducted in three waves, in April 2020, July 2020, and February/March 2021, commissioned by Eurofound.(58) Between the first and the second waves, trust in institutions remained relatively stable, and even increased in relation to the EU. However, by spring 2021, trust in all institutions had fallen, with the level of trust in the EU returning to what it had been in spring 2020. Trust in the EU was consistently greater than trust in national governments (figure 2).

Figure 2. Trust in institutions (mean scores), EU27 (%)



Source: Eurofound (65)

Another survey, conducted by the European Council on Foreign Relations in 12 Member States in April and May 2021,(59) documented a level of disappointment with the performance of the EU during the pandemic. This was especially so in the larger member states, such as Germany. However, there was widespread support for greater European cooperation, a view held by the majority in every country except Germany and France, though even in those countries it was the most held view (at 47% and 45% respectively). There was support for the EU playing an

enhanced role on the global stage, but also in developing economic sovereignty, for example through strengthening domestic supply chains. This was accompanied by higher expectations for what the EU should be able to deliver in a crisis.

In summary, several surveys have identified disappointment with the performance of the EU during the pandemic, although trust in the European institutions is consistently higher than in national institutions. There is a clear appetite for Europe to do more to promote health and security, including cross-border cooperation and strengthening of self-sufficiency. The performance of actions in future emergencies requires due consideration to address preparedness and responses issues, as to improve actions, and in turn public opinion, including by meeting expectations.

1.2.2 Political willingness for EU solidarity

The survey data reported by the European Parliament, as with previous studies of public opinion in the European Union, reveal a high level of support for the principle of solidarity in Europe, but rather less for the way in which it is operationalised in practice (60). For at least two decades, European leaders have recognized the importance of Europe delivering for its citizens. For example, in 2004, the EC President Romano Prodi welcomed the European health insurance card as “another piece of Europe in your pocket” (61). The European Union’s procurement of vaccines in the pandemic was an opportunity to demonstrate the value of Europe to ordinary people. The principle was clear. This was a means by which all Member States would be able to obtain access to scarce vaccine supplies. The alternative was for all larger Member States to negotiate separately or in smaller groups, what might have led to an unequal access to the market. For example, larger Member States might have had the possibility to negotiate their own contracts successfully, especially given their significant power in the market. However, by joining together, they ensured that no EU Member State independent of their market power would be excluded. Unfortunately, as is now apparent, this process has been highly complex (62). Much of the blame must lie with the vaccine manufacturers, and in particular, AstraZeneca, which had consistently overpromised and underdelivered, and which had undermined trust in its operations by a series of communication failures (63, 64). However, even if the responsibilities lie elsewhere, “Europe” has been held responsible, to a considerable extent, in the eyes of the public. This, unfortunately, risked undermining support for EU solidarity. Politicians, media commentators, and the public may argue that it might have been better if each Member State had followed its own processes. Obviously, this overlooks the

problems that would have been faced by small Member States, but it is an argument that is easily accepted by a sceptic public.

A commitment to solidarity is further undermined when individual governments, frustrated by slow supplies of vaccines, then go outside the advanced purchase process, whether to obtain vaccines that are not covered by it, as with Hungarian purchases of the Russian Sputnik vaccine (65), or German negotiations for additional supplies of Pfizer BioNTech (66). As this experience shows, national governments and the European institutions need to go beyond the rhetoric of solidarity. They must also show its practical value to the citizens of Europe, most of whom support the principle but have questions about how it will work in practice.

Solidarity also extends beyond the EU, as illustrated by how the Union Civil Protection Mechanism has facilitated a response to a request for assistance from India and Nepal when many Member States offered needed medical supplies (including oxygen and remdesivir)(67) or sharing of vaccines with Moldova.

1.3 EU Mechanisms to foster solidarity and its challenges

Given the "*limited [health] competences of the EU in supporting Member States' management of public health emergencies" (54),* existing EU mechanisms were used, and adapted in some cases, to assist Member States in their national actions to combat the COVID-19 pandemic.

1.3.1 The EU mechanisms in place

Several mechanisms have been used to strengthen mutual assistance during the COVID-19 pandemic; the two main ones were the UCPM and the Emergency Support Instrument (ESI). Several others have also been described in the background section and are briefly elaborated upon in this section.

A framework for cooperation of national civil protection authorities in emergencies was established in 2001. The cooperation consists of in-kind assistance, deployment of specially equipped teams, or experts assessing and coordinating support right in the field. Via the UCPM the EU complements, supports, coordinates national action, and promotes cross-border cooperation on these matters. Under the UCPM, Member States and participating countries regularly exchange information on disaster risks, run exercises together and pool rescue teams and equipment that can be rapidly mobilised.

The Emergency Response Coordination Centre (ERCC) is the heart of the UCPM. In terms of civil protection assistance, where the scale of an emergency overwhelmed the response

capabilities of a country, provisions had been made for governmental aid through a Union Mechanism, to be activated upon official request of that country or the United Nations and its agencies, as well as the International Federation of the Red Cross and Red Crescent (IFRC) or the Organization for the Prohibition of Chemical Weapons (OPCW). Upon such activation, the ERCC, operating from within the Directorate General for European Civil Protection and Humanitarian Aid Operations (DG ECHO), would operationally coordinate the delivery of assistance to countries stricken by a disaster. Indeed, said mechanism was activated in the years that followed for different disasters and crises within the EU and beyond its border[9].

Within the UCPM, the European Medical Corps (EMC) enables quick medical assistance and public health expertise from all EU Member States and Participating States to a health emergency inside and outside the EU. The EMC gathers all medical response capacities committed by Member States to the European Civil Protection Pool. Following a request for European assistance, medical capacities can be drawn from this Pool and from other Member States' response capacities.

To respond to emergencies inside and outside Europe the EMC could use Emergency Medical Teams (EMT) providing direct medical care to people affected by a disaster; mobile biosafety laboratories, which were developed and deployed during the 2014 Ebola crisis; and medical evacuation capacities, which are key to tackle mass casualty disasters requiring the evacuation of EU citizens and to retrieve humanitarian and medical workers from disaster areas. Work is also ongoing to facilitate the mobilisation and deployment of medical experts with specific profiles under the UCPM, such as epidemiologists with strong field expertise or burns assessment specialists to help assess the appropriate level of treatment of large numbers of patients.

As an additional safety net, during the COVID-19 pandemic, the EC created in 2019 a strategic rescEU medical reserve and distribution mechanism under the umbrella of the UCPM. The reserve enables the swift delivery of medical equipment such as ventilators and personal protective equipment by using the stockpile, currently (in July 2021) hosted by 9 EU Member States.

The Emergency Support Instrument (ESI) is separate from the UCPM and enables the European Union to support its Member States when a crisis reaches exceptional scale and impact, with wide-ranging consequences on the lives of citizens.(68) The ESI, based on solidarity as a

[9] Including in the context of the Ebola outbreak in West Africa (2014), the floods in the Western Balkans (2014), the Eastern Ukraine conflict (2015), the voluntary evacuation of EU citizens from Yemen (2015), and the ongoing refugee crisis (2015-16). The Union Mechanism could also be activated response to marine pollution emergencies, with the European Maritime Safety Agency (EMSA) supporting coordination.

fundamental EU value, was established in 2016 (Regulation 2016/369 and Regulation 2020/521) to provide fast and targeted actions to support Member States in extraordinary circumstances of man-made or natural disaster. It allows the European Union to rapidly address the human and economic consequences of a crisis and fund actions that make a difference on the ground through mobilising resources and deploying them across Member States based on needs. In April 2020, the ESI was re-activated to help EU countries address the coronavirus pandemic.(69) The activation procedure was completed on 14 April 2020 (Council Regulation 2020/521). Notably, although the contribution to this instrument is from the EU budget, the decision on its activation was taken by the Council alone, without any involvement of the Parliament. The establishment of such ad hoc mechanism involving EU budgetary contribution, but without full observance of the prerogatives of the European Parliament as co-legislator first came under strong scrutiny when it was created back in 2016, at the peak of the refugee crisis (650 million EUR over a 3-year period; EP resolution of 13 April 2016 on serious cross-border threats to health) (32). Interestingly, the activation of this emergency assistance was based on TFEU Art. 122 and required the adoption of the Council Regulation 2016/369, revisited with certain provisions amended in the context of the COVID-19 outbreak. Currently, ESI continues to provide fundamental assistance in the fight against COVID-19. The Instrument aims to enhance existing EU programmes and instruments, including rescEU, the Joint Procurement Procedure, and Advance Purchase Agreement of vaccines to complement ongoing efforts at national level.

In addition to UCPM and ESI, there are additional mechanisms in place to support EU solidarity. The EU Solidarity Fund (EUSF) can complement the efforts to provide emergency support to the affected countries. EUSF was established by Council Regulation (EC) No 2012/2002 to provide financial assistance to Member States following major disasters. Since the summer of 2002, it has been used for 80 different catastrophic events including floods, forest fires, earthquakes, storms, and drought. The EUSF can be mobilized on request of affected Member State or the country negotiating for joining the EU. EUSF funding will complement the efforts of the affected countries. It will cover part of their public expenditure on rapidly assisting people affected by a major public health emergency caused by COVID-19, including medical help, and on protecting the public against the attendant risks; this includes preventing, monitoring or controlling the spread of disease, and combating severe risks to public health or mitigating their impact.

Beyond these mechanisms, other EU Joint-Action instruments and pooled money aim to support transformations on national and regional levels. Unused funding from the European

Structural and Investment Funds (ESIF) was mobilized for the Coronavirus Response Investment Initiatives (CRIIs). On 23 December 2020, a step was taken towards the recovery phase by adoption of a Regulation for the 'Recovery Assistance for Cohesion and the Territories of Europe' (REACT-EU) under the new instrument NextGenerationEU. This temporary instrument has been designed to help repair the immediate economic and social damage inflicted upon the people in Europe by the COVID-19 pandemic. The aim is to boost the recovery, with €806.9 billion EUR (in current prices) earmarked for this instrument to emerge stronger from the pandemic, make Europe greener, more digital, and more resilient to better adapt to current and future challenges. With a budget of €50.6 billion, REACT-EU provides a top-up to the 2014-2020 ESIF, continues and extends the crisis response and repair measures of the CRIIs, supplementing the Cohesion Policy allocations of 2021-2027, thus, constituting a bridge to the long-term recovery plan.

In November 2020, the EC set out an outline for the establishment of a Health Emergency Preparedness and Response Authority (HERA) to support medical countermeasures during a health crisis. HERA's proposal will be put forth in 2021 and it is expected to be fully operational by early 2022. HERA will also be an important component of a strong European Health Union. HERA will help to anticipate serious cross-border threats to health and identify effective responses. This will enable the EU and its Member States to rapidly deploy the most advanced medical countermeasures in the event of a health emergency. The role and functions of HERA will be to coordinate and support development, procurement, and distribution of critical medical countermeasures at EU level.

HERA is intended to complement and create synergies with the work of existing EU Agencies, and in particular the ECDC and the EMA, including in the context of their extended mandates, as for example leveraging ECDC capacities and expertise in areas such as epidemic intelligence.(7) During the recent public consultations (2021, March-May), the majority of respondents confirmed they see EU added value with this initiative.(70)

The bio-defence preparedness plan "HERA Incubator" was launched in February 2021, which acts as a vanguard to the European Health Emergency Preparedness and Response Authority (HERA).(8)

1.3.2 Recent legislative developments and proposals on serious cross-border threats

The emerging public health problems in the past decades (e.g HIV/AIDS in the 1980s, new variant Creutzfeldt-Jakob disease in the 1990s, severe acute respiratory syndrome (SARS) in 2003, pandemic influenza (H1N1) in 2009, the Ebola virus outbreak in 2014/2015 and the Zika virus outbreak in 2016), as well as AMR, were deemed by policy makers to need a concerted EU-wide detection and early EU-wide response.

Decision 1082/2013 on serious cross-border threats to health was the first step towards establishing broad rules to support coordination and cooperation related to health in the name of EU solidarity.(4) It also formalised and strengthened the role of the Health Security Committee (HSC), initially established in 2001 at the requests of Ministers of Health as an advisory informal body, given a mandate to reinforce the coordination and sharing of best practice and information on national preparedness activities. The HSC was also established as the main committee where Member States consult with each other with a view to coordinate national responses to serious cross-border threats to health, including events declared a public health emergency of international concern by World Health Organisation in accordance with the International Health Regulations (IHR). The HSC further deliberates on communication messages to healthcare professionals and the public to provide consistent and coherent information adapted to Member States' needs and circumstances. The regulation also provided for the establishment of a rapid alert system for notifying at EU level alerts in relation to serious cross-border threats to health, an ‘Early Warning and Response System’ (EWRS) and provided for reporting requirements on national preparedness and response levels, starting in 2014, for every 3 years thereafter.

Proposal for a Regulation of the European Parliament and of the Council (COM(2020) 727 final 2020/0322) on serious cross-border threats to health repeals prior Decision No 1082/2013/EU, which was deemed insufficient given the lessons learned regarding cross-border collaboration in the COVID-19 pandemic. A cross-walk was conducted to identify additions to the decision to be repealed (see box).

Box. Identified additions to the decision to be repealed

Additions in the new regulation focus on:

- Establishing EU-level oversight, monitoring, network coordination, and decision-making bodies, including:
  - A new High-level working group and giving the Health Security Council (HSC; composed of representatives of the Member States) the legal basis to formally adopt guidance and opinions
  - A network of substances of human origin (national blood and transplant services/authorities) coordinated by the ECDC
  - An independent Advisory Committee to provide advice on the recognition and termination of a public health emergency at Union level
  - An EU Health Task Force within ECDC, to mobilise and deploy to assist local response to outbreaks of communicable diseases in Member States and third countries.
  - A network of EU reference laboratories for public health coordinated by the ECDC
    - Reference diagnostics and test protocols
    - Reference material resources
    - External quality assessments
    - Scientific advice and technical assistance
    - Collaboration and research
    - Monitoring, alter and support in outbreak response; and
    - Training
  - A network for epidemiological surveillance with specific aims coordinated by the ECDC who informs the HSC and the Commission
    - A digital platform through which data are managed and automatically exchanged to established integrated and interoperable real-time surveillance systems
- As part of the competence of Member States, creating national preparedness and response planning that is communicated to the Commission and audited by the ECDC every 3 years, including reviews/adjustment of legislation, training initiatives, and good practices
- As part of EU-level action, detailing the Union health crisis and pandemic preparedness plan to be established by the Commission and approved by the HSC, including:
  - Resilience ("stress") tests of Member States with in-action and after-action reviews
  - Skill-training for healthcare staff and public health staff, and knowledge exchange activities
  - Assessment of governance, capacities, and resource mobilization
  - Regular audits of these plans and their corrective actions every 2 years to ensure adequacy
  - Discussion of progress, gaps, and action plans between the Commission and the HSC
  - Recommendations report published on website of the Commission
- Report on information provided by Member States shared by Commission with European Parliament every 2 yearsUpdating to the Early Warning and Response System (EWRS) by the ECDC with respect to processing of personal and health data and notification alerts
- Inter-linking of the EWRS with contact tracing systems at the Union level and data compliance regulations

The practical steps to carry out a number of these proposed changes are part of the EU4HEALTH Work Programme 2021-2027. Mid-Term Evaluation of the Health Programme 2014-2020[10] suggested that EU added-value should focus on addressing cross-border health threats; improving economies of scale; and fostering the exchange and implementation of best practices. It also stressed a need to make more efforts to increase participation from poorer Member States and underrepresented organisations. The new EU4Health Programme 2021-

[10] https://ec.europa.eu/health/sites/default/files/programme/docs/2014-2020_evaluation_study_en.pdf

2027 with a budget of €5.3 billion (in current prices) approved in March 2021 will contribute to better preparedness for major cross border health threats through e.g. improved coordination, data gathering, information exchange and surveillance of health threats. It also intends to establish reserves of healthcare staff and essential crisis-relevant products to be mobilised in the event of health crises across the EU. Moreover, it could support development of collaborative networks which are an important precondition for mutual learning and strengthening solidarity in prevention for and timely response to emergencies. Recent EU-funded qualitative cross-national research on the locally based transnational solidarity organisations acting in different areas concluded that solidarity manifests itself primarily as cross-national cooperation between different local groups. In more practical way, the researchers (https://transsol.eu/project) emphasized that "translation is a vital political tool, digital and real-life meetings must be held together and sustained; regional specificity can act as a springboard for larger scale solidarities; and specific long-term partnerships yield the most fruitful results". (83)

However, given the limited health competences of the EU in supporting Member States' emergency responses, these additions in Proposed Regulation of the European Parliament and of the Council (COM(2020) 727 final 2020/0322) on serious cross-border threats to health (4) may not go far enough and/or be strong enough and detailed enough to address all of the issues regarding EU solidarity in practice that have been identified as a result of the COVID-19 pandemic.

As a case study, the next section examines primary health care and cross-border surge capacity as examples to illustrate potential as well as practical limitations of existing and proposed EU solidary measures keeping in mind that the definition of health policy and the organisation and delivery of health measures are the competence of EU Member States .

1.3.3 Two illustrative examples of solidarity within a resilient health system: (1) the strengthening of primary health care and (2) the deployment of sustainable surge capacities in response to future health emergencies.

In this section, we provide two illustrative examples of "lessons learnt from the pandemic" that were the subject of several analyses. At the population level, we highlight the importance of accessible, high quality primary health care, integrated with strong public health services. At the individual level, we highlight the importance of timely deployment of sustainable surge

capacities, e.g., Intensive care unit (ICU)-beds in hospitals. We illustrate both components based on first insights.

(*1) Strengthening of primary health care during the COVID-19 pandemic*

During the COVID-19 pandemic, several challenges for a resilient healthcare system and an effective and efficient primary health care have been reported. (71) Among them, the following issues have been documented:

- People with pre-existing conditions risk more severe COVID-19 outcomes.
- Overburdened health systems during the first wave of the pandemic have resulted in the delay, cancelation, or delivery of sub-optimal health care services for other conditions.
- Countries have seen significant reductions in out-patient care visits during the first wave of the pandemic.
- People with chronic conditions living in worse social economic circumstances are more likely to be affected by COVID-19 and to experience worse health outcomes.

In addition to the above, adherence to the protective measures, reduction of hesitancy towards vaccination programmes and increased vaccination administration rates could be enhanced with the contribution of primary health care.
Several policies to meet the above challenges have been proposed, including the following statements (71):

- Multi-disciplinary primary health care teams and strong links with community services support communities during the pandemic.
- Integration of primary health care with public health and social care helps to reduce the indirect health effects.
- Home-based programmes reduce the risk of COVID-19 transmission while maintaining care continuity for other patients, especially the elderly and other vulnerable people.

The OECD concludes on its report entitled “Strengthening the frontline: How primary health care helps health systems adapt during the COVID-19 pandemic” (10 February 2021) that *“Strong primary health care – organized in multi-disciplinary teams and with innovative roles for health professionals, integrated with community health services, equipped with digital technology, and working with well-designed incentives – helps deliver a successful health system response. The innovations introduced in response to the pandemic need to be maintained to make health systems more resilient and able to meet the challenges of ageing societies and*

the growing burden of chronic conditions".(71) This statement echoes one of the conclusions of the Expert Panel report "Organisation of resilient health and social care following the COVID-19 pandemic" that '*Strong primary care and mental health systems should form the foundation of any emergency and/or preparedness response. All Member states should re-assess their investments in primary care and mental health and strengthen the integration of these systems with public health at population level*.'(17)

On the 28 July 2021, in a Statement of WHO Director-General Tedros Adhanom Ghebreyesus delivered by Dr Mike Ryan, Executive Director, World Health Emergencies Programme on the Director-General's behalf, it was emphasised that: '*Pandemics start and end in communities. All our work to prevent future pandemics must start locally, by strengthening public health surveillance and systems that can detect and contain diseases at source, stronger primary health care systems that can save lives, and bolstering community engagement and participation through stronger social safety nets. That must be our first priority*.'(72)

Huston and colleagues described the early response to COVID-19 by primary care services in the Netherlands, USA, United Kingdom, Australia, Canada and New Zealand. (73) The authors conclude that *"the impact of COVID-19 has varied from country to country but, overall, the countries that have fared the best are the ones with universal health coverage, updated pandemic plans that include primary care, and good government and public support for the public health measures. In all countries, primary care physicians have been on the front line of the pandemic response, and non-COVID-19 primary care services have decreased. Not only are there signs of increased non-COVID-19 mortality but, in countries that rely on a fee-for-service payment model, there have also been closures of primary care offices and a loss of primary care capacity. In all countries, core components of primary care have been challenged in the effort to fight COVID-19. For those in continued lockdown, it has been difficult to provide person-centred care where patients struggle with the technology, and have increasing mental health issues. Inter-sectorial coordination of primary care with public health, secondary care, and community-based services has been key in mounting an effective pandemic response."*

The authors give the following answers to the question: "Why do we need sustainable primary care for a strong health system response to pandemics?":

- Primary care is where most health care takes place, and where most people have trusted health-related relationships.
- The primary care providers are the 'eyes and ears' of the health system: primary care can provide important data to public health; data in electronic medical records provide

real-time information on emerging symptoms, complications, patient responses to public health messaging, adaptive coping mechanisms.

- There is a need to protect our global health with more sustainable primary care within a well-coordinated health system that has strong government and public support for its policies.

Several examples of solidarity during the COVID-19 pandemic could be discussed and proposed to meet future public health emergencies, including the transfer of experiences from best practices in regards to a multidisciplinary approach towards vulnerable groups in the community, to the monitoring and management of mild cases of COVID-19 at home and the arrangement of home-based programmes to reduce the risk of transmission to the families, and to communicate effectively with the people in the community to reduce hesitancy to the vaccination programmes. A transfer of experts in primary care and public health could assist the efforts at the national level in certain settings. The box hereunder describes how primary care in the region of Flanders (Belgium) has contributed in different ways to addressing the challenges of COVID-19 pandemic.

Box: Strengthening primary health care makes health systems more resilient

The case of Flanders-region in Belgium.

Belgium addressed the pandemic with a combined approach: central federal governance to define the general strategic approach and decentral organization of the interventions in the 4 regions: Flanders, Wallonia, Brussels and the German-speaking Region. The political responsibility for the health-related issues was with the Inter-Ministerial Conference of the 5 ministers of health (1 federal and 4 regional). The federal government installed a Commissioner for Corona that was supported by different task-forces (e,g. testing, contact-tracing, vaccination). The federal taskforce Vaccination Strategy defined the strategy for the Covid-19 Vaccination, starting from the scientific evidence (when available), provided by the Superior Health Council (https://www.health.belgium.be/en/superior-health-council). In the Taskforce Vaccination Strategy, a Working Group "Vax Organisation" prepared the implementation of the decisions taken, providing a general framework that enabled the 4 regions to adapt the interventions to the local context. In the Working Group, apart from administration, social insurers and patient organizations, representatives of the primary care were represented: family physicians, nurses, and pharmacists.
An equitable vaccination-strategy: "Everybody counts, no one should be left behind" (WHO), was put into practice by starting with the most vulnerable people (elderly in nursing homes), then the health care workers, both in primary care and in hospitals, then the 65-plus. Based on scientifically underpinned criteria, people with co-morbidities in the age-group of 18-64 were GDPR-proof selected with search algorithms: centrally using data from the social insurers and de-centrally by the family physicians, based on their Global Medical Records (GMR). This resulted in over 1.5 million people with increased risk that were prioritized in the Vaccination Strategy.
In the region of Flanders, it was decided in 2017 to re-orientate and restructure the primary care system substantially. A major aim was to create mechanisms that support improvement in care integration over time and help organize services for larger groups of the population. Primary Care Zones (PCZ, taking care of 100,000 inhabitants) were set up at local level to support better coordination and improve planning. A new Flemish Institute for Primary Care was established in 2020 to provide a permanent source of expertise and stimulus. (WHO 2019 (74)

The governance of the PCZ was in the hands of a local "Care Council", integrating primary health care services, social services, organizations of patients and informal care givers and representatives of the local authorities from the cities and villages involved in the PCZ. When the PCZs started their activities in 2020, the first item on the agenda was organizing the primary care response to the pandemic. A "Covid-19 cell" coordinated the actions: early diagnosis of cases by family physicians and timely referral to hospitals when needed, support of chronically ill by nurses both in the community and the heavily affected nursing homes, starting with local contact-tracing and source-finding (complementary to the actions of central call-centers), outreach to vulnerable groups by social workers and community health workers, taking care of mental illness by psychologists, support of quarantine for people living in difficult conditions (e.g. poor, homeless, undocumented people).

A challenge in the first phase was the lack of PPE for the care providers and the limited availability of PCR-tests outside hospitals. Translating the federal strategy into concrete measures in relation to 'physical distancing', ventilation, and masks required an intensive interaction between social sector, health sector, civil society organizations and local authorities and pro-

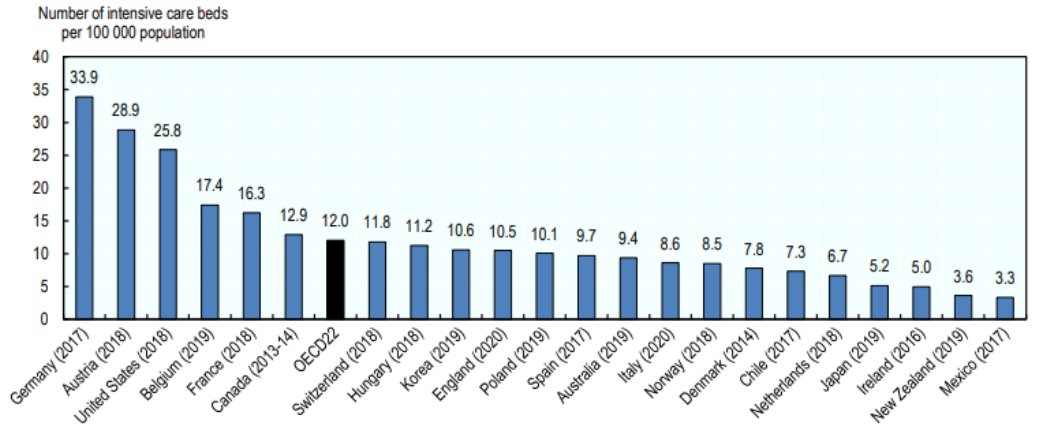
active communication with the population. The structured integration of all stakeholders in the PCZ facilitated the interdisciplinary cooperation, and enabled building bridges between organizations and actors that never had worked together before. When the vaccination campaign started in 2021, the Flemish government asked the PCZs to establish 95 Vaccination-centres that organized the vaccination according to the federal priorities. People that had difficulty to reach the vaccination centres could rely on 'vaccination at home' by their family physician or nurse, or by a 'mobile team'. Between 1st of January 2021 and the first week of August 2021, 70% of the total Flemish population (6.6 million inhabitants) has been fully vaccinated, and for the adults (18+), this percentage is 83% (for the 65-plus it is 94%). For comparison: in Belgium the percentage of adults fully vaccinated is 76% and in EU/EEA it is 60% (ECDC-figures on 07/08/2021). When looking at regional differences in Belgium, there is a remarkable correlation between the percentage of the total population fully vaccinated, and the percentage of the population, that has subscribed to GMR with a primary care practice (family physician) in the region: in Flanders, 70% of the total population is fully vaccinated, and 76% has a GMR; in Wallonia, 66% is vaccinated and 57% has a GMR, and in Brussels, 51% is vaccinated and 49% has a GMR. Of course, this correlation does not mean causality, but the figures give 'food-for-thought' and may lead to some hypotheses: e.g. 'Is there a relationship between citizens' participation in a vaccination-campaign and trust in the health system (e.g., documented by the subscription to a GMR with a family physician and a primary care team)? Does the cooperation between local authorities and stakeholders in health and social care in PCZs improve access to vaccination-campaigns? Comparative analysis from both qualitative and quantitative perspectives may clarify to what extent the strength of primary care systems plays a role in a resilient response to the pandemic. In the meantime, this experience adds to the international evidence on the importance of integration of primary care and public health, and health care and social care orientated towards the individual and towards the population. (Allen et al, 2018 (75)

(2) Deployment of sustainable surge capacities in response to future health emergencies

European preparedness to face future health emergencies (biological, chemical, radiological, nuclear, or natural disaster) is fundamental and relies on surge capacities. Surge capacity could be defined as "*a health care system's ability to rapidly expand beyond normal services to meet the increased demand for qualified personnel, medical care, and public health in the event of bioterrorism or other large-scale public health emergencies or disasters*".(76) The concept of surge capacity is a useful addition to the study of health systems' disaster and/or pandemic planning, mitigation, and response.(77) A major challenge during the COVID-19 outbreak was the sudden increase in ICU bed occupancy rate and the lack of trained staff. The EU-made ESI budget (2.5 million EUR) available to support training across EU countries,(78) and helped establish an intensive care medicine training programme together with the European Society of Intensive Care Medicine (ESICM), based in Brussels, for doctors in doctors and nurses working in EU and UK hospitals(79). The geographical access to intensive care beds varies significantly across European countries and low ICU accessibility was associated with a higher proportion of COVID-19 deaths.(80)

This variability of critical care bed numbers per 100,000 capita in Europe is known and Rhodes and colleagues (2012) had already stated that a better understanding of these numbers should facilitate an improved planning for critical care capacity.(81)

Figure 3. Capacity of intensive care beds in selected OECD countries, 2020 (or nearest year)



Note: There may be differences in the notion of intensive care affecting the comparability of the data. Data refers to adults only in Belgium, Ireland and Canada, to all ages in Germany, England and Spain. Data in France includes *"lits de réanimation adulte"* (except severe burns) and *"lits de soins intensifs"* (except neonatology) but excludes *"lits de surveillance continue adulte et enfants"* and *"lits de réanimation enfants"*.
Source: German Federal Statistical Office, Austrian Ministry of Health, USA: Tsai, Jacobsen and Jha (2020), Belgian Ministry of Health, French Ministry of Health, Canadian Institute for Health Information, Hungarian National Health Insurance Fund, Korea: Phua, Faruq, Kulkarni et al. (2020), NHS England, Polish Ministry of Health, Spanish Ministry of Health, Australia: Edward Litton et al. (2020), Italy: Remuzzi and Remuzzi (2020), Norwegian Health Ministry, Danish Society of Anesthesiology and Intensive Medicine, Chilean Society of Internal Medicine (2020), Dutch Intensive Care Society, Japanese Society of Intensive Care Medicine, Irish Department of Health, New Zealand Ministry of Health, Mexican Ministry of Health.

Source: OECD, 2020 (82)

Eight years later, Bauer and colleagues (2020) still report that the access to intensive care beds varies significantly across European countries and provide both a regional analysis and a hot spot analysis of accessibility indices (Figures 3), (80) Differences in hospital bed density can also be confirmed and visualised, for Europe and globally, through the WHO Global Health Observatory (https://www.who.int/data/gho/data/indicators/indicator-details/GHO/hospital-beds-(per-10-000-population).(83)

Therefore, the pandemic highlighted the importance of having an appropriate capacity of ICU beds and a capacity to respond by increasing it (ranging from 25% to more than 90% for the different European countries) or allocating available capacities in European countries.(84)

A Belgian study revealed some interesting findings in relation to 'additionally created ICU-beds'(85). In this study, of 13,612 hospitalised COVID-19 patients with admission and discharge forms registered in the surveillance period (March 1 to August 9, 2020), 1,903 (14.0%) required ICU admission, of whom 1,747 had available outcome data. A median of 38% of supplementary ICU beds, specifically created for the provision of intensive care in COVID-19 ICUs, above the total available beds was created in Belgium during the COVID-19 pandemic. ICU organizational characteristics, such as ICU overflow (all cohort) and a high proportion of additionally created ICU beds [patients on Invasive Mechanical Ventilation (IMV)] were independently associated with in-hospital mortality, together with older age,

comorbid diseases, a shorter time from the onset of symptoms to hospital admission and the severity of respiratory impairment, as indicated by the use of IMV and Extra-Corporeal Membrane Oxygenation (ECMO). This study suggests that mortality of critically ill COVID-19 patients could be influenced by organizational factors that different health care systems had to face during this first phase of the pandemic: the rapid creation of additional beds and the challenges of local overflow, sometimes exceeding trained available ICU staffing and resource capacity. The authors conclude that the COVID-19 pandemic has revealed the vulnerability of the organisation of the ICU healthcare system and that readdressing critically ill patients to other specialized ICUs (i.e. in the same country or towards closer international centres) might be more beneficial for patients than creating new ICU beds or taking care of a very high number of critically ill COVID-19 patients, that exceeds the usual ICU flow outside the pandemic.

Another element of evidence during the pandemic and of great help to reducing the overload of care in large hospitals during peaks of health emergencies is the capacity to develop flexible structures capable of absorbing the excess of patients when facing health crisis.(86) Such an approach can also identify potential locations suitable for temporary facilities or establishing logistical plans for moving severely ill patients to facilities with available beds. Beside the space and beds capacities, the training of staff on intensive care medicine skills is a key piece of the puzzle and the EU is taking action by funding a training programme for doctors and nurses, the SPACE course (https://www.esicm.org/covid-19-skills-preparation-course/).

The pandemic also highlighted the need for accessibility to data as well as data exchange and analysis to adjust capacities in a real time manner. Recent reports showed that informed simulation can be applied to a real time database on ICU to predict hospital capacity needs. This can be illustrated by a registry like the one from the ECDC and developed to monitor the ICU admission rates and current occupancy across Europe.(87) Real time data monitoring and treatment covering all hospital and ICU admission rates for public and private hospitals allows immediate access to the number of admitted patients, their clinical status and the situation of occupied and unoccupied beds, which are indicators of the level of pressure on European healthcare systems.(87) In another example, Patel and colleagues identify predictors of the need for intensive care and mechanical ventilation to help healthcare systems in planning for surge capacity.(88) Centralized data bases and artificial intelligence (AI) can also help authorities to establish logistical plans for moving severely ill patients to facilities with available beds. AI engines and modelling tools can inform preparations for capacity strain during the early days of a pandemic.(89)

The evidence in this illustrative example emphasises the importance of coordinating and standardizing surge capacity response within an EU framework. An EU framework can stimulate European leadership to develop a flexible and adaptable management strategy to stretch the system capacities during times of extreme need (90) and define the conditions to activate EU surge capacity response as well as its related resources, capacities, and functional components. Although evidence to support the potential advantages of a centralized approach over a decentralized one is currently lacking - and both centralized and decentralized approaches seem essential and complementary - the anecdotal evidence reviewed within this Opinion suggests that an EU framework is valuable and in line with EU Solidarity principles. Such an EU framework should stimulate the standardization of the key components related to surge capacity response with a focus on the four S's of health system surge capacity (Table 1) that can lead to surge capability: system, staff, stuff and structure and .(91)

Table 1. The four S's of health system surge capacity

System	• High priority tasks:
	  ○ Adjust the beds capacity and harmonize the number of ICU beds per 100.000 thousand inhabitants with a target of 15
	  ○ Coordinate and balance hospital support services, including community health care, primary care, pharmacy, laboratory, and radiology
	• Lower priority tasks:
	  ○ Recommend a travel time of 15 minutes to reach the closest hospital or surge capacity settings
	  ○ Facilitate the access to the frontline community and primary care workers for both early testing and diagnosis, and as well as for management of mild cases at home.

Staff	• High priority tasks:
	  ○ Harmonize education, training, competence, and procedure
	  ○ Engage and train all health care professionals and non-medical personnel to benefit from a flexible surge capacity
	• Ensure that regulation help to move professionals and/or patients across borders if the need arises
	Encourage solidarity between care providers through multidisciplinary training and responses.

Stuff	• High priority tasks: ○ Avoid shortage of equipment and reagents and EU will have to cooperate to define and allocate strategic stocks • Lower priority tasks:

	○ Ensure the supplies and testing response
Structure	• High priority tasks: ○ Standardize the definition of ICU bed ○ Standardize triage procedures of exposed vs non-exposed citizens and patients. • Lower priority tasks: ○ Coordinate and improve community health testing services and as well as the management of mild cases at the community level. ○ Standardize notification and communication procedures

Source: Adapted from Davidson et al., 2019 (91)

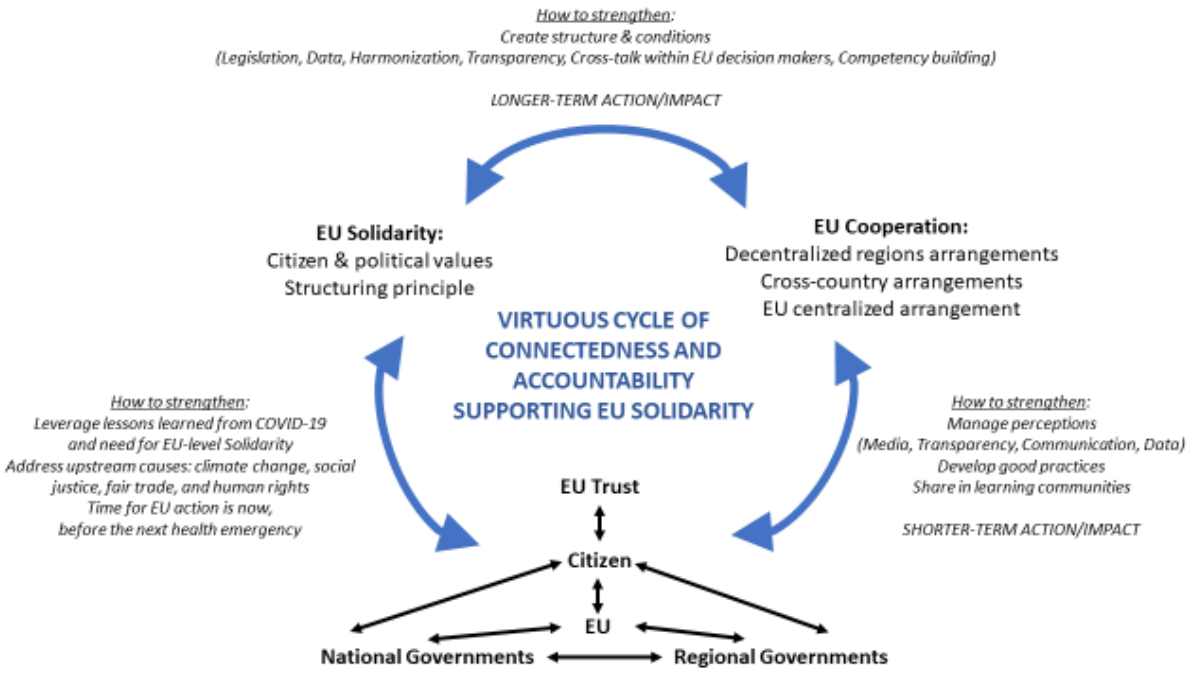
The illustrative example of surge capacity also identifies the need to visualize, anticipate, forecast and adapt through data sharing and data mining.(92) An intelligent and interactive notification and monitoring system could be developed to adjust and anticipate to short term and long-term needs. A dynamic and interactive EU Framework for surge capacity and response planning will rely on communication and data exchanges and must address related issues. Data management and sharing with AI can play a key role to complement the monitoring and mitigation efforts. The use of AI orchestrator and data science will add value to human resources. Data management and big data technologies offer new tools at the European level to provide alerts and system monitoring as well as AI based tools for deployment and route planning decision for resources and capacities. Joint research could be initiated to prepare deep learning-based triage algorithm and early warning to evaluate and improve their surge capacity, capability and response.

Further, the case study emphasises the importance of regulating and adopting incentives to increase interoperability and harmonization of the digital environment surrounding surge capacity responses based on recommendations of European standards for data exchange.(94) Solidarity, cooperation and joint efforts for sharing big data analytics capability and big data to support organizational capabilities are expected.(95) The EU framework also needs to address the technical IT requirements for sharing of personal health information.

1.4 Recommendations

This Opinion discusses EU Solidarity as both a value and a structuring principle for practices, regulations, and institutions. EU Solidarity, in this Opinion, is part of a virtuous cycle of connectedness and accountability that involves two additional key components: EU Cooperation and EU Trust. EU Cooperation describes ways in which EU Solidarity can be "put into practice" via cross-country and/or regional and centralized arrangements. EU Trust refers to the trust between EU citizens, and amongst national / Member State institutions, and EU institutions. EU Solidarity can be strengthened by addressing the linkages between these concepts. Figure 4 offers a visual representation of the three key concepts as a virtuous cycle connecting EU solidarity, cooperation, and trust. The blue arrows that connect the concepts serve as opportunities to offer practical steps to strengthen the relationships among the components by promoting responsibility and accountability. Some of the impacts of these recommended actions to strengthen EU Solidarity are often only apparent in the long-term, such as those tying EU Solidarity to EU Cooperation. Therefore, short-term actionable recommendations focus on fostering the relationship between EU Cooperation and EU Trust, which will have a later impact on EU Solidarity. Specific high-level recommendations will be further detailed later in this section. In general, increased EU Cooperation and EU Trust can be fostered by increasing transparency, managing perceptions, and improving communication and data. Increased EU Trust and EU Solidarity can be fostered by referring to solidarity in a more systematic way as a structuring principle of regulations, learning from the COVID-19 pandemic and from past mistakes, and monitoring the relationship between trust and solidarity to examine barriers and facilitators. Increased EU Cooperation and EU Solidarity should be based on principles of social justice and equity fostered by creating structural and delivery conditions that include legislation, cross-talk within EU-level decision makers, data initiatives, harmonization across Member States, and competency building activities. This visual representation is a schematic. Existing evidence suggests that there is a correlation between solidarity and the health and wellbeing of citizens. (96, 97)

Figure 4. Virtuous Cycle of Responsibility and Accountability Supporting EU Solidarity, Cooperation and Trust



The following recommendations of the Expert Panel are based on available literature, descriptive analysis of political statements and values of the Union. Our recommendations reflect the first-hand impressions and may be revised as further research and evidence become available, for instance with respect to success factors and failures in response to the COVID-19 pandemic.

1. The high level of trust of citizens in the EU provides an opportunity to broaden its competencies in the field of health and wellbeing. The EU can foster and further strengthen solidarity ensuring that vulnerable people are not left abandoned as resources shift to dealing with a pandemic nor are they forgotten in the context of the additional support they may require in the context of the pandemic. This asks for joint efforts in health emergencies to achieve common goals such as guaranteeing a minimum safety level for the citizens and for the European community as a whole. It also necessitates contextualising EU public health in the broader global health, as a crisis such as the COVID-19 pandemic necessitates global thinking to ensure a global public health threat is effectively and efficiently countered. There is an implicit need, also, for EU institutions to take measures to counter activities that seek to undermine European

solidarity, and to take actions that make the EU's contributions to solidarity more visible across the globe.

2. Strong primary health care, public health and mental health support systems form the foundation of any emergency and/or preparedness response. At the level of the population, the pandemic demonstrated the importance of investing in strong interprofessional primary health care, responsible for addressing early detection, testing, contact-tracing, support for isolation and quarantine, community-based care for mental health problems and implementation of vaccination-strategy, integrating public health services at the local level. Within primary health care, solidarity points at groups such as the elderly, those living in nursing homes, the homeless, the poor, and undocumented people, who may well require special attention and specific outreach strategies. The EU could work further on the establishment of integrated people-centred primary care including availability of interdisciplinary work, information and communication capacity and technology, prevention, health promotion and management of chronic care and vulnerability and as well as health care of socially isolated groups.
3. In order to address the global dimension of a crisis like the COVID-19 pandemic, the EU should extend its solidarity by taking a leading role in a new dialogue with LMICs, addressing populations not yet protected. This solidarity could be operationalised at the level of development aid (to strengthen health systems and improving access to vaccines e.g., through COVAX), in the multilateral dialogue in the context of the proposal for an international treaty on pandemics, first announced by the President of the European Council (Pandemic Treaty, https://www.consilium.europa.eu/en/policies/coronavirus/pandemic-treaty/) , at the research level and at the level of capacity building (e.g. human resources, vaccine production), and in a concerted effort to assess the global burden of the emerging infodemic by leading in scientific and evidence-informed approaches to combat misinformation and fake news.
4. Increased alignment, coordination and responsiveness are needed at the EU-level to improve health systems' ability to prepare for, and cope with, "surges" of need or demand. During the pandemic hospitals have reduced 10 to 15% inpatients surgical services, also for non-elective procedures, such as oncological ones. Coordinated responses should target the organisation of staff and supplies to create surge capacity when needed. The introduction of minimum standards could also be considered to guarantee minimum levels of access to health and social care to EU citizens, also at

times of crisis. For example, EU countries could determine a minimum number of ICU beds/ICU healthcare teams per 100.000 inhabitants (having in mind different structure of the population across countries), that ensures all people from a given catchment area to have access to an ICU care or can be safely transported. This should include care support to chronically non-COVID-19 patients, for instance by assuring safe transfers to other countries with the aim to relieve the pressure on hospitals and intensive care in places where the contagion rate is higher. This is a required reassurance to EU citizens, with an appropriate mix of operational cross-border cooperation, and of centralised and decentralised approaches, complementing one another.

5. The EU should take the lead in transforming and fostering transparent and accountable governance of public and private sector data (including e.g., data on socio-economic status and ethnicity) ensuring all safeguards to protect privacy are in place, as for example within the context of the European Health Data Space and per the 'Data Governance Act' (DGA) proposal[11] creating a common framework for the exchange of such data. It should also ensure commitment to public dialogue, and global cooperation. It can do so by harmonising data across health and social care sectors and making data systems more integrated and ready for secondary uses. Every EU citizen should be related to the health and social care system through an individual person record integrated in the local health system accessible and usable also across borders, in alignment with data protection principles. Moreover, the EU should initiate or enhance dialogue with other countries (also outside EU) to resolve statutory conflicts to enable reciprocity in privacy-enhanced data sharing improving data solidarity to enhance patient and citizen health and wellbeing. With the GDPR becoming the standard countries across the world seek to follow, the EU must lead the global discussion on privacy and data sharing in global public health and to counter global health threats. Researchers and academia must be allowed to cooperate, in an interdisciplinary manner, to allow cross-border data transfer when/where necessary to accelerate progress and innovation, whereas for LMICs lacking infostructure, this key aspect of generating high quality data and of maintaining data integrity ought to be safeguarded.
6. There needs to be sufficient room for strengthening the successful actions and planning related to preparedness plans to benefit from insights gained from what happened in cross-border settings, and, moving beyond lesson learned, to nurture bottom-up good

[11] https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52020PC0767&from=FR

practices. These actions related to preparedness plans should be facilitated to be regularly practiced making them readily available in crises.

7. Since trust at different levels relates to solidarity and vice versa, their interplay should be carefully monitored. This requires developing the methodology to assess the effect of implementation of solidarity mechanisms on trust at several levels; measurement to then identify those mechanisms/actions that strengthen solidarity and have the greatest impact on nurturing trust ought to be conducted. Such initiatives will also help to re-build any trust that has been affected by the COVID-19 pandemic response and, ultimately, contribute towards EU-wide societal cohesion.
8. Regulations, institutions, and practices should include solidarity as a guiding principle which will strengthen the relationship between EU Solidarity and EU Trust. This will require the development of guidance on how mechanisms to place solidarity in practice; the development of methodology to evaluate the inclusion of solidarity in regulations, institutions and practices; assessing the existing regulations on if and how solidarity is included, develop a plan to strengthen the presence of solidarity principle; and assessing the current institutions and practices, how they include/address solidarity, and develop a plan to introduce/reinforce the solidarity principle.

1379 **LIST OF ABBREVIATIONS**

AI	Artificial Intelligence
AMR	Antimicrobial resistance
CEPI	Coalition for Epidemic Preparedness Innovations
CFR	Charter of Fundamental Rights of the European Union
COVID-19	Coronavirus disease of 2019
COVAX	COVID-19 Vaccines Global Access
CRIIs	Coronavirus Response Investment Initiatives
DG	Directorate General
DG ECHO	Directorate General for European Civil Protection and Humanitarian Aid Operations
EC	European Commission
ECDC	European Centre for Disease Prevention and Control
EEA	European Economic Area
EMA	European Medicines Agency
EMC	European Medical Corps
EMT	Emergency Medical Teams
ERCC	Emergency Response Coordination Centre
ESI	Emergency Support Mechanism
ESIF	European Structural and Investment Funds
ESM	European Stability Mechanism
ECMO	Extra-Corporeal Membrane Oxygenation
EU	European Union
EUSF	European Union Solidarity Fund
EWRS	Early Warning and Response System
GAVI	Global Alliance for Vaccines and Immunization
GDPR	General Data Protection Regulation

GMR	Global Medical Records
HIV/AIDS	Human Immunodeficiency Virus/ Acquired Immunodeficiency Syndrome
HERA	Health Emergency Preparedness and Response Authority
HSC	Health Security Committee
ICU	Intensive Care Unit
IHR	International Health Regulations
IMV	Invasive Mechanical Ventilation
IT	Information technology
JPA	Joint Procurement Agreement
NATO	North Atlantic Treaty Organisation
OECD	Organisation for Economic Co-operation and Development
PCR	Polymerase Chain Reaction
PCZ	Primary care zone
PPE	Personal Protective Equipment
REACT-EU	Recovery Assistance for Cohesion and the Territories of Europe
SARS	Severe acute respiratory syndrome
TEU	Treaty on European Union
TFEU	Treaty on the Functioning of the European Union
UCPM	Union Civil Protection Mechanism
UNHCR	United Nations High Commissioner for Refugees
WHO	World Health Organization

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