European Parliament

Collective intelligence at EU level
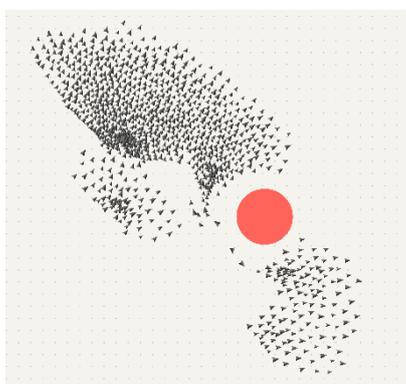## Social and democratic dimensions

SUMMARY

Humans are among the many living species capable of collaborative and imaginative thinking. While it is widely agreed among scholars that this capacity has contributed to making humans the dominant species, other crucial questions remain open to debate. Is it possible to encourage large groups of people to engage in collective thinking? Is it possible to coordinate citizens to find solutions to address global challenges? Some scholars claim that large groups of independent, motivated, and well-informed people can, collectively, make better decisions than isolated individuals can – what is known as 'collective intelligence.'

The social dimension of collective intelligence mainly relates to social aspects of the economy and of innovation. It shows that a holistic approach to innovation – one that includes not only technological but also social aspects – can greatly contribute to the EU's goal of promoting a just transition for everyone to a sustainable and green economy in the digital age. The EU has been taking concrete action to promote social innovation by supporting the development of its theory and practice. Mainly through funding programmes, it helps to seek new types of partners and build new capacity – and thus shape the future of local and national innovations aimed at societal needs.

The democratic dimension suggests that the power of the collective can be leveraged so as to improve public decision-making systems. Supported by technology, policy-makers can harness the 'civic surplus' of citizens – thus providing smarter solutions to regulatory challenges. This is particularly relevant at EU level in view of the planned Conference on the Future of Europe, aimed at engaging communities at large and making EU decision-making more inclusive and participatory.

The current coronavirus crisis is likely to change society and our economy in ways as yet too early to predict, but recovery after the crisis will require new ways of thinking and acting to overcome common challenges, and thus making use of our collective intelligence should be more urgent than ever. In the longer term, in order to mobilise collective intelligence across the EU and to fully exploit its innovative potential, the EU needs to strengthen its education policies and promote a shared understanding of a holistic approach to innovation and of collective intelligence – and thus become a 'global brain,' with a solid institutional set-up at the centre of a subsidised experimentation process that meets the challenges imposed by modern-day transformations.

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Anthropocene – why do humans dominate the world?

The [International Union of Geological Sciences](#) – the scientific organisation mandated with defining the Earth's time scale – calls the current geological era 'Holocene', the 'wholly recent geological period', and states that it began 11 700 years ago with the end of the last major ice age. Some scholars, however, prefer to name the current era '[Anthropocene](#)' – i.e., the age of humans. As Nobel laureate [Paul Crutzen](#) suggests, humanity has a major geological and geo-biological impact on the planet, given its population increase and the environmental consequences of its economic development.

Regardless of terminology, there is broad agreement on the fact that human dominance over the planet is relatively recent, if calculated in biological years. This has generated a lot of speculation among anthropologists over the causes that have made humans the dominant species on the planet in less than 10 000 years. Most of them, however, agree on the fact that the secret to human dominance does not reside in physical strength or self-sufficiency. Compared to similar species, human performance in various activities is normally lower, both individually and collectively. If taken as a group, humans are good at coordinating – an ability that is, however, not exclusive to them.[1]

Therefore, it seems that physical prevalence, self-sufficiency, and group coordination are not key requisites for becoming the 'dominant' form of life. What helped humans to surpass and dominate other living species is their particularly developed ability to flexibly and creatively organise in large communities. In his book [Sapiens](#), Israeli scholar Yuval Noah Harari exemplifies this claim by comparing humans to other species. Ants and bees, for instance, can work together in large numbers, as humans do. But they do so in a rigid manner. Unforeseeable events may have disastrous consequences for their colonies. Other species, such as wolves and chimpanzees, argues Harari, can cooperate in a far more flexible manner than insects. However, as Harari explained in a 2015 [TedTalk](#), these species cooperate efficiently only in small numbers and with individuals that they know intimately.

From swarm intelligence to collective intelligence

Animals, like algorithms, can engage in forms of [swarm intelligence](#) – i.e., they can collectively gather pieces of information and combine them through social interaction. Humans, on the other hand, are among those species that are particularly good at developing collaborative and imaginative capacity. Thanks to this capacity, humans have become the dominant species in the world. This, however, raises compelling questions. Is it possible to encourage large groups of people to engage in collective thinking? Is it possible to use this capacity to find solutions to common problems, make public decisions more inclusive, or even address global challenges?

Collective thinking that engages undefined crowds is commonly referred to as 'collective intelligence' or the 'wisdom of the crowd.' The first to observe this phenomenon was Sir Francis Galton, a statistician who, in 1907, described a carnival [game](#) in which participants had to guess the weight of an ox. As people made their guesses, Galton recorded them (787 in total) and observed that the median, which at the time he described as 'Vox Populi,' was remarkably close to the true weight, falling short by just one pound. Galton compared the average participant in his experiment to the average voter. The former, he claimed, is as well placed to guess the weight of the ox as the latter is to decide on political issues during an election.

Subsequent studies have analysed this issue at different levels of abstraction.[2] At the micro level, attention has been given to the factors that drive interaction among humans. In 2010, for instance, an [article](#) published in *Science* provided evidence of the link between the performance in assigned tasks of a group and the dynamics behind such performance. At the macro level, scholars have investigated the potential and the limits of collective intelligence. French philosopher Pierre Levy was among the first to speculate on the collaborative [potential](#) offered by technology (1997). In Levy's optimistic view, technology will foster the emergence of a 'meeting of minds' on the internet.

A few years later, American journalist James Surowiecki argued that large groups of independent, motivated, and well-informed people can, collectively, make better decisions than isolated individuals can. In 2010, a team of researchers in Zurich estimated that if a million individuals were to contribute towards answering a problem, they would have a 97.7 % likelihood of solving it correctly.

Crowdsourcing – a methodology for collective intelligence

According to think-tank Nesta, there are several tools and processes that could be employed to obtain information and ideas and to solicit contributions from large and anonymous groups of people. One of them is crowdsourcing, which some studies divide into four different types, according to the task that is being crowdsourced.[3] The first type is known as 'information generation' and is exemplified by Wiki-type forms of collaboration. The second type, known as 'service co-production,' has as its objective the production of services. The third and fourth types are called 'creation' and 'policy-making,' respectively.

Information generation and service co-production stem from the business sector. In a famous article published in *Wired* in 2006, Jeff Howe described crowdsourcing as a new business practice deriving from outsourcing. With outsourcing, business organisations would assign tasks to identified participants (e.g. through online surveys). Crowdsourcing allows firms to harness the labour of anonymous and unattached task contractors, who replace the employed workforce. A case in point is threadless, a website where people design t-shirts and then vote to decide which designs go on the market.

In recent years, crowdsourcing has expanded into non-commercial domains, more specifically politics and the public sector. Policy-making types of crowdsourcing are meant primarily to elicit ideas and skills for the design of policies in areas as diverse as anti-corruption, urban planning, transportation, and constitutional reforms.[4]

## Social and democratic dimensions of collective intelligence

The attention of policy-makers is currently taken up with dealing with the coronavirus crisis, and it is as yet much too early to predict the ways in which society and European economies may change as a result. However, there will be an urgent need to design and implement policies to foster and assist recovery, and thus making use of collective intelligence should be more attractive than ever. Moreover, the confinement measures currently being enforced in countries across Europe and beyond will have the side-effect of familiarising a wide range of citizens with tools which can facilitate collective discussion and working, and thus could also be of value for citizens to contribute to policy-making.

In this briefing, we analyse two inter-related dimensions of collective intelligence, both key to the European Union (EU) and whose potential, associated challenges, and state of implementation vary significantly. On the one hand, the two dimensions are inherently social, as they relate to civic participation and to the transformations that are triggered by new global risks and challenges, such as climate change, demographic trends, slow growth rates, shrinking tax bases, economic and financial internationalisation, and the digital transformation.

On the other hand, the two dimensions relate to different areas and aspects of policy making. The social dimension is mainly related to the social aspects of the economy, innovation, and change. It focuses on the practical application of collective intelligence and on concrete examples of its use in the area of social innovation activities – which is of primary interest to the EU. The democratic dimension is more closely related to democracy, governance, and public policy-making. It is primarily concerned with policy-making as a method and it focuses on how to promote collective intelligence in policy-making. Figure 1 (below) summarises the interdependence of the respective tools and actions that are at hand when collective intelligence is mobilised to solve societal

problems. In addition it shows how the democratic and social dimensions of collective intelligence are intertwined.

Figure 1: Representation of the main elements of collective intelligence for solving challenges in society
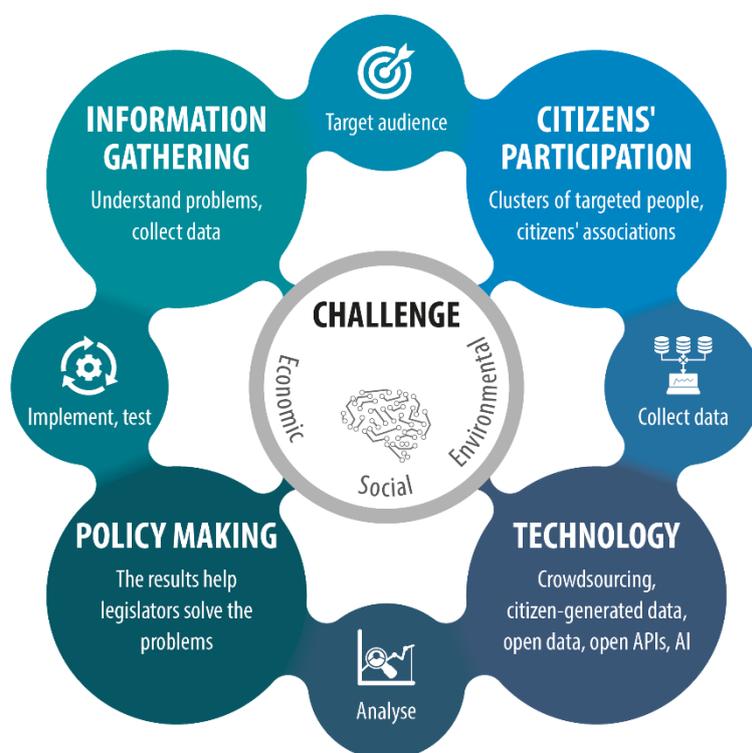
Source: EPRS.

The social dimension of collective intelligence – the case of social innovation

In this section, we will explain the rise in importance of social innovation within the EU's innovation paradigm and present some of the attempts to leverage social innovation through collective intelligence. This can be achieved through funding, regulation, procurement, or awareness-raising. This section will show the scattered nature of the initiatives related to the lack of an overarching social innovation policy framework, and the related evaluation and impact assessment methodology, as well as to still being in the early stages of understanding collective intelligence.

Social innovation and collective intelligence in the EU

The innovation paradigm has had different interpretations at different times in history. In the 20th century, it was increasingly reduced to technological innovation and linked to entrepreneurial activities.[5] Starting in the 1990s, a new innovation paradigm appeared which brought a deeper understanding of the many facets of innovation and the need for a broader concept of innovation in order to deal with societal challenges. Today, we understand that every innovation – including technological – is a social innovation process. This new understanding has an impact on the efficiency and effectiveness of an innovation and ultimately on its success or failure.

Currently, the EU's innovation concept is defined as the adoption of new products, processes, marketing, or organisational approaches that create a valuable outcome in terms of financial benefit, wellbeing, or efficiency. It is a holistic approach to innovation, as it incorporates the use of existing technologies in new applications as well as non-technological and social innovation.

Social innovation is a ubiquitous concept that entails new ideas (products, services, and models) that simultaneously meet social needs (more effectively than the alternatives) and create new social relationships or forms of collaboration. Its social aspect refers to both its content and process. In terms of content, it aims primarily to meet societal needs. In terms of process, it often entails broad participation, engagement, empowerment, co-design, and bottom-up sharing or grassroots initiatives. Social innovation implies new forms of collaboration among different actors and is often seen as a way to overcome the classic division between the public and private sectors. The term is most popular in Singapore and Canada, followed by Hong Kong, Denmark, Australia, the United States, the UK, India, and Italy. Currently, different sectors use it, from the welfare state to urban planning, and from local development to social entrepreneurship.[6] Its inherent principle of empowering people is clearly related to the idea of collective intelligence. With technological development, this empowerment becomes stronger, which makes it easier for citizens to participate in collective problem solving through co-creating, co-designing, and co-evaluating social goods and services.

Sectoral intervention through EU funding programmes

As social innovation and collective intelligence are relatively new fields of research, there is no guiding EU policy document on the subject yet. However, several sectoral interventions – mainly through programmes – promote the combination of technological and social innovation and collective intelligence. These include, in the current programming period (2014-2020), research programmes, the European programme for Employment and Social Innovation (EaSI), the European structural and investment funds (ESIF), and the European Fund for Strategic Investment (EFSI). ESIF focus on core areas where strong social innovation activities can be promoted, such as research and innovation, digital technologies, small businesses, low-carbon economy initiatives, and the sustainable management of natural resources. EaSI focuses on the development of adequate social protection systems and labour markets, with a particular focus on vulnerable groups and innovative financial tools, such as microfinance. EFSI focuses on sustainable investment projects, including physical infrastructure, strategic investments in social enterprises, and the broadening of the EU's social impact ecosystem – through the social impact accelerator, social business angels, and the payment-by result pilot.

The major difference between the programmes is whether they trigger breakthrough or incremental innovation and whether or not they prompt a change in the policy-making process itself. In the case of programmes that do, collective intelligence can play an important role. An analysis on mainstreaming innovation across the different funding programmes (2014-2020) shows that it is mainly projects within the research programmes that bring about radical change. In addition, it is important to take into account the extent to which a project envisages the redesign of policies. For example, research projects such as the ICT-enabled social innovation not only looked for practical solutions to political priorities of the European Union, but also sought to contribute to wider issues of social policy (re)design, thanks to its research design, theoretical framework, and terminology. Additionally, it aimed to support the implementation of the Social Investment Package and explored the extent to which ICT-enabled social innovation can contribute to the more efficient implementation of social policies and services as well as to the modernisation of the welfare state. For that purpose, it mapped 600 projects – 300 of them in depth. It also showed the strong transformative potential of ICT-enabled social innovation in terms of relationships and (re)allocations of public value. It brought to the fore the strong role of the third sector in facilitating deeper integration of services at the governance level. By contrast, the most recent evaluation of the EaSI programme, for example, did not look into the general change in behaviour of the system, which indicates that such a change was not a pre-defined outcome of the programme. It did however identify a positive result in the areas of building networks and partnerships, producing databases, contributing to capacity-building, and making financial and labour markets more accessible.

Social innovation and collective intelligence platforms

The EU is promoting social innovation through collective intelligence platforms.[7] Platforms can be designed to promote a particular view on an issue, to exchange knowledge, and to solve problems. Collective intelligence can be harnessed and directed through platforms. They can empower groups and impact collective behaviour if they are open, flexible, and dynamic. Their success depends greatly on self-organisation, transparency, trust, motivation, and a balance between participants' individual goals and community goals. They can also support the proactive shaping of digital technologies.

The Collective Awareness Platforms for Sustainability and Social Innovation (CAPS) started in 2012. They have pioneered new models aimed at raising awareness of emerging sustainability challenges and of the role of the individual in facing them through collective action. They have put great emphasis on leveraging open data, knowledge networks, open hardware, and the internet of things with the broad participation of citizens.

Almost all the CAPS projects have developed software, online platforms, and tools that offer different typologies and aims. One example is DebateHub, which provides an intuitive interface for large-scale argumentation, advanced analytics, visualisation – enhancing the sensory experience – attention mediation, and community moderation. Another example is Assembl, a software application that makes it easier for people to work in large groups and facilitates the emergence of new innovative ideas.[8]

By promoting the platform economy, the EU can foster social innovation and collective intelligence as well as contribute to innovating in the world of work. The Commission has launched several regulatory and policy strategies on the platform economy, including boosting investment in the digital single market, through the promotion of digital skills and social rights and through an action plan on and more recently a white paper on AI, which call for more investment and ethical guidance.

Enabling environments for digital social innovation

Technology can be an enabler of social innovation and collective intelligence. At the same time, social innovation can ensure that human factors are fully taken into account, thereby optimising the use of technology in tackling societal challenges. Digital social innovation offers digital solutions to social and environmental problems. Emerging technologies, such blockchain and open data, are empowering citizens to collaborate or co-create for social good. Some projects have explored the enabling environments of digital social innovation. One project in particular, the EDSII, created an index to map the most important ingredients of an enabling or supporting ecosystem. The index was developed in an open-ended participatory process. It looked into 32 indicators for 60 European cities and ranked them. The indicators were grouped under six categories, namely funding, skills, civil society, collaboration, infrastructure, and diversity and inclusion. The analysis showed a big gap between northern, western, and eastern European cities, with cities in northern and western Europe topping the ranking. It found a surprisingly weak correlation between the ecosystem and digital social innovation activity. According to the report, a possible explanation to this might be the fact that activity is strongest where there are real life problems and not where the ecosystems are the most advanced.

Empowering social innovation players through awareness-raising and networks

The social economy,[9] which has a big potential for social innovation, generates approximately 4 % of the EU's GDP. The EU is active in empowering social economy actors and thus their collective intelligence. The third edition of the European Social Economy Regions (ESER) initiative, for example, supports regional authorities in organising awareness-raising events that promote those activities of the social economy where stakeholders can build active networks. The work done within this

project can contribute to refining the social economy prototype developed by the European Commission. That, in turn, can help in the long-run improvement of the design, development, and scaling-up of socially and environmentally responsible economic activities. It can also help to identify weaknesses and to improve the performance of the social economy and social enterprises' ecosystems.

Cooperation between traditional and social economy actors is beneficial to both parties, and can lead to the creation of new business models. The Social Good Accelerator, for example, brings together tech companies and social economy actors, so as to connect technological and social innovators. The project aims to support a more inclusive digital transformation and economy. It currently includes more than 50 organisations from five countries. In the same vein, an analysis prepared as a follow-up to the Social Business Initiative[10] has shown that traditional enterprises can help social economy enterprises become more tech savvy, while at the same time learning from them how to become more socially responsible. The analysis highlighted that cooperation between social economy enterprises and traditional ones often takes place in a cross-sector context. It emphasised that the cooperation should help both sides to produce greater social impact.

The democratic dimension of collective intelligence – the case of public-sector innovation

This section analyses how public institutions crowdsource ideas, opinions, and skills from citizens in order to achieve more inclusive, well-informed, and effective policy-making. According to Clay Shirky, a 'cognitive surplus' is produced when citizens' collective efforts are pooled together and channelled towards specific goals via digital technology. New York University Professor Beth Noveck argues in her book, Smarter Citizens, Smarter State, that this surplus, which she calls 'civic surplus,' when applied to policy-making, can be used to oppose the widely held belief that only professional public servants possess the requisite knowledge and skills necessary to govern – the myth of spectator citizenship. According to Noveck, the democratic dimension of collective intelligence can counter the dominant culture in public decision-making[11] when crowdsourcing ideas from citizens and public administrations move away from top-down regulatory approaches and embrace bottom-up, experimental models of policy-making.

The 2000s saw a dramatic expansion of crowdsourcing initiatives in the public sector. Technological progress, the increased complexity of regulatory challenges, and demographics[12] – to name but a few reasons – have contributed to making crowdsourced policy-making ubiquitous at all levels of administration.[13] Despite differences in duration, type of citizen response, and final impact, crowdsourcing initiatives can be studied according to three major criteria – politicisation, structure, and output.

Politicisation of crowdsourced policy-making

It is to be expected that, to a certain extent, crowdsourcing initiatives run by a public body be political in nature. Some initiatives, however, become predominantly political, such as the We the People online platform – launched in 2011 by the US federal government – and the Grand Débat National – organised by the French government in 2019. Both initiatives were primarily aimed at legitimising the government and not at fostering legitimate public debate. In the case of We the People, there was not even a direct channel between the citizens' proposals and the US Congress – where ideally they would have been debated – given the fact that it is the US President who decides whether or not such a proposal is sent to Congress. In the case of the Grand Débat National, despite the fact that a large number of French citizens took part in the initiative, there has been no indication of whether or when the proposals will be implemented.

There are however crowdsourcing initiatives that are primarily aimed at engaging citizens in co-creating public policies.[14] A striking example of such an initiative is the **rewriting of the Icelandic Constitution**. In 2011, Iceland was still recovering from a financial crisis so serious that it

undermined trust in the financial sector and public institutions. In order to rebuild trust in democratic decision-making, the government decided to involve Icelanders in the constitutional reforms. The crowdsourcing process was therefore divided into four phases.[15] In the first phase, citizens were invited to participate in national assemblies where they shared their views and perspectives. The input provided by the nearly 1 000 participants was summarised in a conceptual map. The second phase consisted of the election of 25 representatives chosen from among ordinary citizens rather than career politicians. The elected representatives would then make up the Constitutional Reform Council. The third phase, lasting for two months after the election, consisted of the writing of the new drafts of the Constitution and their publication on a specific website and on the Facebook page of the Council, at regular intervals. Icelanders had the chance to comment on these drafts and to send an email or a letter to Council members. The fourth phase consisted of a referendum, which returned a positive result with two thirds of the votes in favour of the draft. In the end, however, the draft did not find the necessary majority in the newly elected Parliament.

Design of crowdsourced policy-making

The design of crowdsourced initiatives is crucial, as proven by the fact that, over the years, crowdsourced initiatives in the public sector have evolved from rudimentary to very elaborate. Three aspects must be taken into account when designing an initiative – structure, user-centricity, and fragility.

Structure consists of the procedural steps of each initiative. The Estonian Rahvakogu – meaning people's assembly – provides an interesting example. This is an online platform of crowdsourcing ideas and proposals created to amend the country's electoral and political party laws as well as to promote debate on issues relevant to the future of democracy in the country. Similarly to the Icelandic case, the initiative was organised in four steps. During the first phase, Estonians were encouraged to share ideas and comments about five issues that had been selected in advance. The second phase consisted of classifying the input provided by citizens into 59 categories. The third phase consisted of five subject-specific seminars organised for the authors of the proposals and experts. The fourth phase consisted of a gathering of more than 300 people in Tallinn for the 'Rahvakogu deliberation day' – a microcosm of Estonian society in which gender, age, local origin, and education were taken into account. In the end, 15 initiatives were selected by the Estonian parliament, three of which were made into laws and four of which were approved after amendment.

User-centricity is the availability, usability, and mobile friendliness of the design of crowdsourcing initiatives. Despite recent progress, several online participatory procedures remain time-consuming and rather disappointing for citizens. Best practices include the use of behavioural incentives to encourage citizens to participate, such as game design, which includes badges, points, levels, rankings, and challenges. At EU level, a participatory platform – Futurium – was created to facilitate the brainstorming of ideas aimed at helping to design future policies. Furthermore, crowdsourcing initiatives can have different aspects, depending on the target audience. Partecipa!, for example, the online consultation on constitutional reforms launched by the Italian Ministry of Constitutional Reforms under the government of Enrico Letta (2013-2014), gave citizens the choice between a short survey and a long one, which was more detailed and contained a number of technical questions. A total of 131 676 participants chose the short version, while 71 385 chose the long one.

Fragility is the design aspect of crowdsourced initiatives concerned with the interactions among participants and their distribution. As behavioural studies have shown, people can be easily influenced by the opinion of others or have their own opinion distorted by cognitive biases, for example when strong political views are shared in a group. According to a report by the Joint Research Centre of the European Commission, groupthink and polarisation are common among large groups of people. Proposed solutions include designing crowdsourcing initiatives in ways that promote 'decentralised' networks – where participants can communicate on an equal footing, sharing information and opinions – as opposed to 'centralised' ones – where the views of an opinion leader prevail. Decentralised networks are credited with fostering more innovative ideas. In the

Icelandic case, the issue of segregation based on genomics was included in the constitutional draft thanks to such a network.

Output of crowdsourced policy-making

The output of crowdsourced policy-making takes into account the final expectations of regulators, the achievability of the initiative, and the type of feedback given to participants. In other words, the output criterion tries to answer the question of what makes for a successful case of crowdsourced policy-making.

The issue of the output of crowdsourced policy-making is particularly relevant to the EU, given the ongoing debate on how to make it more democratic. Examples of the importance the EU attaches to crowdsourced policy-making are the Citizens' Dialogues and Citizens' Consultations during the Juncker Commission and the European Citizens' Initiative. More recently, the EU has been preparing to launch the 'Conference on the Future of Europe,' where citizens would be able to express their main concerns and ideas. Up to now, the debate seems to have been more focussed on structural and procedural aspects than on how to ensure the conference has an impact. Following Parliament's resolution of 15 January 2020 and a Commission communication, the Council has not yet agreed a position on the conference. Some academics have expressed concern about the actual impact of the initiative. While there had been an understanding that the conference should be launched on 9 May 2020, the ongoing coronavirus crisis is likely to change the parameters of the conference.

Outlook – towards collective thinking by the Union

Two of the main policy priorities set out by the new Commission, under Ursula von der Leyen – which received political backing from the European Parliament through its November confirmation vote – are a just transition for all to a green and sustainable economy in the digital age, and a more participatory and democratic Union. For both priorities, collective intelligence may help to understand the issues in greater granularity and to achieve better coordination and collaboration among stakeholders. It may also help EU decision-makers to make more precise predictions and evaluations. In short, collective intelligence may provide a valid solution to the future challenges of the Union.

In terms of a green and sustainable economy, the EU started in 2020 to monitor progress in the European Semester according to the United Nation's Sustainable Development Goals, in an effort to keep sustainability and citizens' well-being at the centre of the EU economy. The transformations needed to meet those goals across the EU require a shared framework that mobilises governments, business and civil society around targeted problem-solving initiatives. The Commissioner for Jobs and Social Rights, Nicolas Schmit, promised at the beginning of his mandate to 'match technological innovation with enhanced social innovation', so as to promote a more inclusive and just economy and to strengthen the social economy.

The Parliament and Commission both put great emphasis on increasing the participation of citizens in the decision-making process of the Union. In order to do so, the Commission has committed to organising a two-year conference on the Future of Europe for citizens of all ages across the EU and to follow-up on the agreed actions. The conference would represent a unique opportunity to engage large groups of citizens in collective thinking, so as to shape the future structural and procedural aspects of the Union.

In order to promote a better understanding and better use of collective intelligence, the EU must consider how to a) preserve and nourish innovative capital, b) optimally explore and shape the digital transformation without leaving anyone behind, c) strengthen local communities, d) find local tailor-made solutions, and e) design processes that guarantee equal representation. Therefore, three actions could be helpful:

1   The EU could strengthen its education policies by promoting smarter investment in education. It could further promote practical, digital, and entrepreneurial skills that

are required for planning, problem-solving, and collaboration. These could feature highly in the Digital Education Plan and the Skills Agenda for Europe, both to be updated in 2020.

2 The EU could strengthen social innovation and collective intelligence – possibly through a strategic policy document on the subject, establishing how they could contribute to addressing the transformations taking place in the world. This would help develop an ecosystem for subsidised experimentation at EU, national, regional, and local levels. Existing tools, such as the open method of coordination and other methods for mutual learning, would make it possible for the EU to become the 'global brain' with a solid institutional set-up at the centre of this experimentation process. For that, a more advanced culture of evaluation and impact assessment is necessary, which in turn could incentivise more public and private investment and more capacity-building in the public sector, NGOs, and civil society organisations. Inspiration for that could be found in the ongoing United Nations Development Programme Accelerator Lab, a learning network consisting of 60 laboratories in nearly one third of the UN member countries around the world. The Accelerator Lab can function as a peer-learning organisation, using collective intelligence to design experiments aimed to overcome cross-border challenges. Another source of inspiration could be the above-mentioned Conference on the Future of Europe, especially instances in which it gathers wide public attention.

3 The EU must use the opportunity offered by the next multiannual financial framework (for 2021-2027) to mainstream social innovation and better connect it to technological innovation, including exploiting AI and promoting collective intelligence.

ENDNOTES

[1] Primates can also act in a coordinated fashion. Chimpanzees, for instance, establish complex social relations, which look remarkably similar to those established by humans. In *Chimpanzee Politics*, a book that has become a classic, Frans de Waal details rivalries and coalitions among a group of chimps living in a zoo in Arnhem. His research shows that the actions of the group were governed by intelligence and strategy rather than instinct. Group coordination takes place among less-sophisticated species as well, such as ants and bees. For these species, community action is meant to compensate for individual deficiencies. Anthills or beehives are both physical and social structures hosting a variety of activities, from information-sharing to food storage and reproduction.

[2] The division into three levels of abstraction is proposed by J. Salminen in 'Collective intelligence in humans: a literature review', (1) *Proceedings*, CI2012, 2012.

[3] For a comprehensive summary of the literature on the use of crowdsourcing in the public sector, see: a) H.K. Liu, 'Crowdsourcing government: Lessons from multiple disciplines', 77 (5) *Public Administration Review*, 656-667, 2017, and b) D.C. Brabham, 'Crowdsourcing as a model for problem-solving: An introduction, and cases', 14 (1) *Convergence: The International Journal of Research into New Media Technologies*, 75-90, 2008.

[4] Some authors have explained this point further by focussing on the level of accessibility, crowd magnitude and specialisation, level of anonymity, and platform framework and interactions. See: A. Taeihagh, 'Crowdsourcing: a new tool for policy-making?', 50(4) *Policy Sciences Journal*, 629-64, 2017.

[5] On the history of the concept of innovation see: B. Godin, *Innovation Contested: The Idea of Innovation over the Centuries*, Routledge: London, 2015.

[6] For a more recent overview of the concept of social innovation with its theoretical background and reflections on policy implications see: G Mulgan, *Social innovation: How societies find the power to change*. Policy Press, 2019

[7] These platforms are generally virtual spaces, usually websites or mobile applications. Three main types are identified in a recent study: challenge grants, innovation communities, and open innovation platforms.

[8] The impact assessment report of the CAPS showed that the greatest impact of the projects was on the economy, followed by society, politics, and the environment. It also looked into different aspects of the CAPS project process, such as efficiency, effectiveness, sustainability, and fairness. It showed the least impact on behaviour and thinking, but a significant impact on products, processes, and organisational innovation within the ICT-enabled innovation field.

[9] The social economy, in the context of the EU, brings together a large and rich variety of organisational forms, shaped by diverse national and welfare contexts but having shared values, characteristics and goals, and combining sustainable economic activities with a positive social impact, while matching goods and services to customers' needs.

[10] A social business is an enterprise whose primary objective is to produce a social impact and not to generate profit for owners and shareholders. It operates in the market through the production of goods and services in an entrepreneurial and innovative way, using surpluses mainly to achieve social goals. It is managed by social entrepreneurs in an accountable and transparent way, in particular by involving workers, customers, and stakeholders.

[11] Several public lawyers have argued against the incremental, non-porous nature of public administrations. See, for instance, a) M. Weber, *Economy and Society*, University of California Press, 1978, b) E. Posner, 'Sources of institutional change: The supranational origins of Europe's new stock markets', 58 (1) *World Politics*, 1-40, 2005, and c) N. Taleb, *Antifragile: Things That Gain From Disorder*, Random House, 2012.

[12] For further details on this point, see G. Sgueo, Digital democracy – Is the future of civic engagement online?, European Parliamentary Research Service, 2020.

[13] According to Vili Lehdonvirta and Jonathan Bright (see V. Lehdonvirta, J. Bright, 'Crowdsourcing for public policy and government', 7 (3) *Policy and Internet*, 263-267, 2015), 'if elections were invented today, they would be called 'Crowdsourcing the Government.'

[14] On co-creating public policy, see G. Sgueo, Using technology to 'co-create' EU policies, European Parliamentary Research Service, 2020.

[15] For a comprehensive analysis of the process, see T. Aitamurto, Crowdsourcing for Democracy – A new era in policy-making, Parliament of Finland, Committee for the future, 1/2012.

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