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Inclusive
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POLICY BRIEFING REPORT

Promoting Deliberative
Participation (Draft)



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ISEED Preliminary Policy Brief

Promoting deliberative participation in EU democracies Insights from ISEED

General Intro

ISEED Inclusive Science and European Democracies is funded by the Horizon 2020 Programme - GA 960366. This document offers some preliminary insights from our research, organised under key themes, aiming to reach out to politicians, civil society actors, educators and all of us who are in a position to promote inclusion and participation in democratic science-based deliberation. We follow this with a brief of our research by Work Package, for those interested in further detail.

The aim of ISEED is to bring **new knowledge about how to facilitate participation in decision making in democratic EU societies**. Although all EU societies, with the possible exception of Hungary, are democracies, there is a great variety in how democracy is practiced in Europe. A common worry, however, across different democratic practices is how to involve citizens in knowledge production and political decision-making. This policy brief addresses policy-makers and the public with some of the findings from our project, to facilitate a better understanding of the possibilities and limitations of citizen inclusion.

ISEED has studied a variety of ways to include and facilitate processes of inclusive science. Politicians and decision makers need to know how and why e.g., lay people get included, or not in science-based political debates like how to address the COVID-19 crisis. Some obvious reasons could be lack of procedures for including lay people in scientific knowledge production, lack of adequate venues for scientific knowledge production, lack of resources to establish a common language, or others. **For scientific knowledge to offer an adequate basis for political decision making, the public clearly needs to be included in the knowledge production at some point.** To make this happen, we need to know how to get people interested in such engagement.

ISEED has investigated various topics that are relevant for the question of how to engage people, as disengagement is a challenge. Some topics that have been studied in the project are science governance, public opinion and political decision-making, and citizen engagement and participation, relating to areas such as education, civic space and inclusion, data governance, health governance, citizen science. In this policy brief we want to highlight some main findings, although these are not yet conclusive, as the project is still running.

An underlying ideal is bottom-up initiatives to enable the participation of lay people, where public understanding of science and lay expertise are essential, particularly for political decision making. **Citizens are considered as providers of valuable knowledge.**

Preliminary Findings and Recommendations

Science Governance

- o Go beyond a naïve, and possibly elitist model of top-down, 'neutral' expertise as the best way to guide political decision-making, especially on controversial, science-relevant issues.
- o Create spaces and procedures for including citizens as skilled providers of valuable knowledge: as lay experts.
- o Support a more pluralistic public sphere and informed public opinion by cultivating citizens' scientific and digital literacy to facilitate transnational, global discussion.

A first area of work in ISEED is the governance of science (WP2). Our research has produced an analysis of the notions of the "public understanding of science", "lay expertise", "objectivity" and "public opinion" in the context of how science is used in (and is useful for) political decision making.

Our analyses argue in favour of an inclusive and participatory approach that takes into account the critical contribution of citizens as providers of valuable knowledge. The conclusions of our research emphasize the need to embrace a range of interests and inputs in the management of scientific research, which can only be achieved by overcoming a naïve model of neutral and top-down type of expertise.

We suggest that the notion of lay expertise offers a tool to criticize an elitist take on representative government: namely the view that understands representation (including the delegation of competence to experts) as institutional devices for empowering elites. ISEED analyses lay expertise to show the capacity of political representation to include and mediate diverse and sometimes conflicting understandings of specific types of public issues. Competence is very much an issue-specific skill, and as such a very diversified, context-affected, purpose-driven tool of decision making. Paying attention to such skill in the way we suggest should be mandatory when formulating policies and issuing political advice.

When scientific issues can rely on widespread scientific consensus (e.g. anthropogenic climate change, or vaccine safety) acquiring informed opinions on who and what to trust allows for a good use of the science in question. However, the same cannot be said when the issues at stake cannot count on scientific consensus and there are large areas of conflict and uncertainty (e.g. chemical risk evaluation, GMOs in agriculture). Here a better understanding of the origins of disagreement among experts, and attention to the different sources of evidence that enter specific debates would allow for a better understanding and use of the findings, for the purpose of reaching a well-informed view concerning a controversial debate.

Preliminary Findings and Recommendations

Citizen Science – Citizen Engagement

- o Increase an awareness of the Citizen Science model of knowledge-creation amongst the general public.
- o Enhance an understanding of data management practices amongst the active Citizen Science community.
- o Provide training for citizen scientists beyond standard data collection protocols, to include how data is managed and used.
- o Support and recognise the merit of scientific research based on Citizen Science.
- o Support a multi-directional communication regarding Citizen Science initiatives, targeting citizens and scientists to facilitate mutual learning, trust and consideration.

Citizen Science describes a suite of approaches for including people in doing science, for example as collectors of observations or data, or as active collaborators and leaders of research projects themselves. The ISEED survey of Citizen Scientists and the general public across Europe suggests that there is serious lack of awareness of the citizen science model amongst the public, and poor understanding of data practices amongst the (active) citizen science community. This situation needs to be remedied if the potential of both the community and citizen science in its diverse forms is to be fulfilled.

A challenge lies in low participation among citizens, stemming from various factors. These may encompass a diminished trust in politicians and local authorities, disinterest in the subject matter, or constraints related to time and resources. Scientists may also find citizen science problematic, however they also acknowledge its great potential. Scientists mention that their work in the field of citizen science is not adequately recognized or valued within the scientific community. The work of managing citizens requires effort and time that scientist do not often have, which adding to the lack of recognition demotivates them from pursuing such work.

There is often a disconnect between the citizen scientists working on the ground and those running the specific initiative. The benefits of enhancing communication across the group could go beyond transparency and accountability to building connections, community and continuous relationships across participants, thus facilitating the resilience and further growth of citizen science projects. A generic suite of training should be provided for citizen scientists regarding how their (collected) data is managed in term of storage, accessibility, and dissemination. Scientists can also be better informed and exposed to the benefits of citizen participation and citizen-led science.

Preliminary Findings and Recommendations

Citizen Science – Citizen Observatories

- Increase an awareness of criteria and tools for Responsible Research and Innovation (RRI) within Citizen Science initiatives like Citizen Observatories (COs)
- Better align COs with RRI – to achieve this we suggest the following steps
 - **Open Access:** All Citizen Observatories (COs) should have a documented policy for open access management, including, if necessary, a training plan for participating citizen scientists.
 - **Public Engagement:** COs should define the role of the public and how pathways to local democratic input and policy derivation are actively supported.
 - **Science Education:** COs should define the educational dimension of their mission and plan for its implementation.
 - **Gender Equality:** COs should define how gender mainstreaming will be accomplished.
 - **Ethics:** COs should seek ethical approval and establish guidelines as appropriate.
 - **Governance:** COs should apply a holistic approach to RRI by defining and implementing an appropriate governance model.

Citizen Science is a cross-cutting theme in Horizon Europe, being common to all 6 clusters. One popular approach to enabling the participation of citizen scientists and fostering bottom-up initiatives is that of the Citizen Observatory.

However, research conducted within ISEED suggest that Citizen Observatories are not fully aligned with Responsible Research & Innovation. Thus, for those who seek to incorporate the Citizen Observatory model, an increased awareness of RRI within the context of Citizen Observatories, and indeed, citizen science, is needed.

Responsible Research & Innovation (RRI) is characterized by six so-called keys - Ethics, Science Education, Gender Equality, Open Access, Governance, and Public Engagement. Any and all citizen science initiatives, especially within the context of citizen observatories should factor all of these keys when designing, implementing, and running their programmes. While 5 of these topics are self-explanatory, the topic of governance is problematic, often overlooked, and must be explicitly planned for.

Preliminary Findings and Recommendations

Data Governance – Data Cooperatives

- o Offer appropriate and firm financial support to collective data governance models such as Data Cooperatives to ensure the continuity and value of data
- o Demonstrate Data Cooperatives' trustworthiness by putting in place requirements for transparency, accountability and robust research ethics governance
- o Provide the deep and diverse scientific expertise needed to meet the data quality requirements of collective data management efforts.

Data Cooperatives (DCs) are one of the emerging models for ensuring the long-term, sustainable and democratic management and use of data belonging to communities or groups. ISEED is pursuing a case study focusing on health data cooperatives as they have been the most advanced and promising example of a data cooperative. In health data cooperatives, a constituency comes together to collectively manage health data in order to produce new knowledge about health in alignment with the membership's priorities.

Collective data governance models such as Data Cooperatives face high startup costs. Oftentimes expensive apps are needed for effective data collection which NGOs cannot afford. The status quo of small, uncertain, short-term funding is inadequate leading to wasted opportunities. Sufficient and appropriate financial support is thus key for DCs to provide benefits.

Further, in a climate of public diffidence towards the long-term custodianship of individual data, data governance initiatives need to ensure transparency, accountability and robust research ethics governance to demonstrate their trustworthiness. Scientific data governance is complicated, even when centralized, always requiring multiple kinds of expertise. This becomes more complicated in a data cooperative where there are many more decision makers. Data cooperatives thus need deep and diverse scientific expertise to be able to meet data quality requirements.

These results are of relevance to different stakeholders

- Members of parliament – Data cooperatives have potential to succeed and make a lasting mark on science-based policy making. But they need much deeper institutional support than currently given to them.
- Business stakeholders – There is clearly potential to engage SMEs with data cooperatives as DCs can help SMEs address local needs and create niche market solutions addressing them.
- Local municipalities – Local administrations have been fundamental in setting up a few of the most important examples of DCs and they can see in them a keyway to renew local governance and inform local policy making. Clearly more local administrations could benefit from experimenting with data cooperatives.
- International organisations and cooperations – Economies of scope and scale in the development of socio-technical infrastructure required for running data cooperatives could be enabled through the leadership of international organisations, with the potential outcome of lowering costs.

- Research administrators – Data cooperatives have been of interest to debates of research administration and governance but there is a lack of empirical research in what works and what does not. Research institutions might be attracted to experiment with collective data governance, as a data cooperative would enable.

Preliminary Findings and Recommendations

Science Education

- Examine European educational systems and the opportunities education offers for fostering scientific literacy among EU citizens
- Foster the autonomous, self-directed engagement of students from an early age with scientific questions
- Train science teachers to appreciate the benefits of citizen science and lay engagement in science projects

In our pursuit to uncover methods for enhancing citizen engagement and interest in science related matters, ISEED conducted an in-depth examination of Uruguay's distinctive Science Clubs initiative. This is an initiative whereby school-age children are involved in

Our inquiry delved into the primary motivations driving both educators and students, as well as the lasting impact of their involvement on students' skill development and their subsequent attitudes towards science. The Uruguayan case study unveiled that the appeal of science clubs to students lies in the opportunity to explore self-identified issues. It is noteworthy that the intrinsic motivation shared by teachers and students plays a pivotal role in driving the success of the program.

To cultivate an engaged citizenry that values factual information and scientific understanding, it becomes imperative to closely examine the educational system. A potential avenue for fostering future participation lies in the development of educational programs that empower children to not only learn about science but also to apply its principles to their daily challenges. This approach can render science and solutions derived from scientific inquiry more accessible and intriguing to the wider public. By integrating scientific thinking into practical problem-solving from an early age, we can lay the foundation for a populace that is not only informed but also enthusiastic about engaging with scientific concepts.

Reversely, scientists often lack sufficient training in effectively communicating with citizens, resulting in frequent difficulties in conveying their message in an engaging manner to the general public. A low level of trust towards citizens and the data they provide is reported. Interviewees expressed concerns about the difficulty of engaging citizens in more advanced forms of citizen science where they are required to analyze data and draw conclusions.

Detailed research outcomes by ISEED WPs follow.

Research Outcomes by Work Package

WP2

From participation to deliberation: Towards a new model of "public sphere" for knowledge societies

How can we build a public sphere that proves to be inclusive, actively participatory, and competent in addressing problems of common interest?

WP2 research examines this question in both conceptual and empirical terms. It analyses and evaluates key aspects of people's engagement - and willingness to engage - in deliberative processes and public argument by exploring the nature of citizens' participation in science in European knowledge societies. In other words, this research has been working towards a model of 'the' or of multiple public spheres that can account for - and can help maximize - the active participation of citizens in complex processes of decision-making where scientific and societal aspects are essentially interwoven.

We believe that a specific pragmatist view of the "public sphere" proves a suitable to answer our main question. According to this view the public sphere can be profitably conceived of as a community of inquirers, made up of both citizens and scientific experts, cooperating in view of solving specific public problems. The inquirers who take part in the process of problem-solving are, each in their own ways and capacities, engaged in 'epistemic' or knowledge-based problem solving, which is deemed successful if it is properly addressing all aspects of the problem situation at hand. Because of this, a community of inquirers so conceived is a flat structure to which citizens can partake from an equal position.

The challenge that arises from conceiving the public sphere as a community of inquirers of this sort is to single out those conditions that enable citizens to act as proper epistemic contributors within a public inquiry: Under what circumstances can citizens contribute to public enquiry on equal grounds as experts? To specify these conditions, we are launching an empirical investigation into the incentives and variables affecting citizens' participation in public debate. We aim to explore empirically how these incentives and variables affect how citizens choose what types of experts prove most suitable to collaborate with in view of building an effective extended expertise in public problem-solving and decision-making.

We are working with three key concepts in building this framework:

1. the idea of 'understanding science' on the part of citizens: we have explored what it means for non-professional scientists – and by comparison with professional scientists – 'to understand' specific knowledge products. We have also addressed the following two questions: a) to what extent is understanding a mutual outcome of scientist/citizen collaboration in scientific research? b) does this type of understanding rely on political types of assessment besides epistemological or knowledge-based ones?
2. the notion of 'lay expertise': Research questions here are: What are the epistemological features of lay knowledge? What are the conditions that allow integration of this type of knowledge into the field of science? What are the practical outputs of this integration?

3. the meaning of 'objectivity': What becomes of 'objectivity' when it is widened to include diverse forms of knowledge, coming from different sources and different epistemic experiences? How does inclusiveness affect the quality of scientific outcomes and the reliability of their use, both in scientific and social terms?

This framework aims to contribute to the conceptual formulation of an interactive, cooperative, "dialogical" relationship between scientists and citizens, leading to reliable forms of co-production of knowledge. It also informs whether enforcing a strategy of 'active participation' provides an answer to the growing mistrust towards institutional science and towards democratic institutions by and large.

Our perspective on the concept of a public sphere points to a deliberative and procedural complex space that anticipates and influences public decisions. Within this perspective, we became also particularly concerned with:

4. the concept of 'public opinion' and its role in the context of political decision-making: The conclusions here achieved offer a post-Habermasian rich and dynamic picture of interactions among multiple agents and stakeholders (citizens, experts, politicians, associations). Particular attention is paid to the effect of pluralistic views on decision making, to the opportunities offered by digitalization in allowing transnational, global discussion, and to the growing influence of science in public debate.

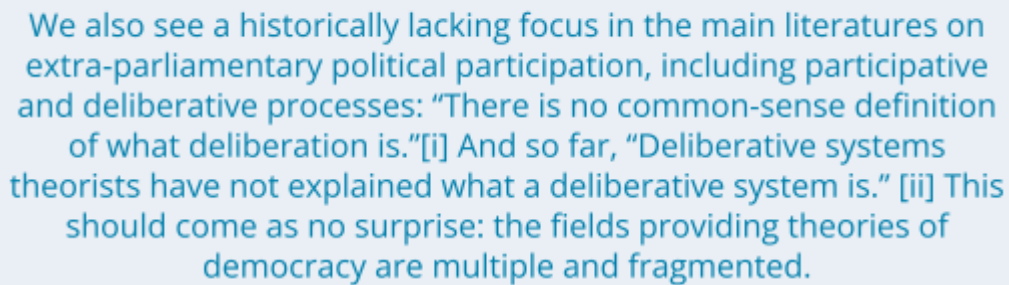
Our formalized assessment of citizen participation is based on the results of a purpose-made survey to study the functions of three key actors in public decision-making: citizens, experts, politicians. The survey, targeted on Italian institutions of local government, hypothesizes two forms of democratic process. In the first one, the political process includes experts as end-free scientific guides, the voting system as an umpire, and politicians as final decision-makers. In the second one, deliberation among alternative points of view is the core of the process. In this second version, the experts offer scientific knowledge to strike a balance among competing values and solutions, citizens shape choices by participating in pressure groups and by voting, and the politicians contribute to collective decision making by building consensus over the process.

We designed a Discrete Choice Experiment (DCE) that relies on a given set of research objectives, framework, and hypotheses, and which is developed according to purposely devised methods. The experiment aims to assess the preferences of citizens over several characteristics of democratic decision-making processes to be implemented in a hypothetical community. The objective is to estimate the relative importance of these characteristics. The aim is also to explore the characteristics of possible differences in preferences across subgroups of respondents. Preferences could regard, e.g., the propensity of these subgroups to participate in Citizen Science research projects. The structural framework of the experiment identifies three classes (attributes) of "players" involved in the democratic decision-making process and specifies their possible roles. The chosen players, as mentioned above, are citizens, experts, and politicians. The experiment is underway.

WP3

Our proposal for citizen engagement in politics: Bring in parliamentarism!

So far, our work in WP3 has surveyed modes of engagement of citizens within scientific



We also see a historically lacking focus in the main literatures on extra-parliamentary political participation, including participative and deliberative processes: “There is no common-sense definition of what deliberation is.”^[i] And so far, “Deliberative systems theorists have not explained what a deliberative system is.”^[ii] This should come as no surprise: the fields providing theories of democracy are multiple and fragmented.

knowledge-making but also theoretical work on the foundations of democratic organisation in *parliamentarism*.

Democratic theory is predominantly normative rather than descriptive. It fails to offer a coherent concept of political systems, a comprehensive theoretical exploration of the everyday practices of democracy. We thus lack a general theorization of democratic politics to use as a template for appreciating citizen engagement. We also see a historically lacking focus in the main literatures on extra-parliamentary political participation, including participative and deliberative processes: “There is no common-sense definition of what deliberation is.”^[i] And so far, “Deliberative systems theorists have not explained what a deliberative system is.”^[ii] This should come as no surprise: the fields providing theories of democracy are multiple and fragmented. This includes a confusion caused by an intellectual conflation of ideas of parliamentarism and democracy, which historically are to be viewed as separate debates.^[iii] “[P]arliamentarism [historically viewed] was manifestly not equivalent to constitutional democracy”^[vi]. The conflation of the concepts of parliamentarism and democracy is thus shrouded in political agendas spurred by significant but also convoluted processes in recent European history.^[v]

In fact, democratic theory generally failed to consider parliamentarism as part of their research agenda^[vi], something that causes some challenges for democratic theory when addressing inherently parliamentary issues such as the question of coupling public assemblies to parliament: The driver and arguments for such coupling may be addressed by democratic theory but the more technical aspects and implications to the understanding of the state requires the involvement of contemporary debates about parliamentarism.^[vii]

What can be argued, however, is that the broad notion of “democratic institutions” contains both elements, but that parliamentarism is mostly viewed as a key foundation of representative democracy. As William Selinger points out in this book, *Parliamentarism: From Burke to Weber*, “parliamentarism”, and not “democracy”, stood at the core of many canonical European liberal writers’ ambitions regarding freedom and liberty – from

Montesquieu to John Stuart Mill. ^[viii] Over the 20th century, the concept of democracy came to occupy the nodal point of the discussions of political regimes while “the parliamentary style of acting politically has never achieved an equally canonical status. ^[ix] Maybe this is because parliamentarism over time became viewed primarily as a matter of form, while democracy is viewed as content in the form of a political program and practices. In other words, parliamentarism was taken for granted, as a general regime form, and the disagreements focused on what to put in it – whereby the politics scholarship took on “democracy” as the pivotal issue. The 20th century battles about citizen rights and political participation were organized around the concept of democracy, not parliamentarism. Parliamentarism and democracy remain separate concepts and the tension between them has been the subject of fierce intellectual debate. ^[x]

Yet what is also clear is that, historically viewed, democratic politics as we understand the concept today emerged and matured in the permissible political environment of parliamentarism. And democratic politics anchors its regime in parliamentarism. Institutionally viewed, democratic politics stands on parliamentarism, and not the other way around: We can imagine parliamentarism without democracy; but not democracy without parliamentarism. At least, that would be a radical different form of democracy than its contemporary forms. Such regimes do not exist.

In conclusion, WP3 work proposes that engaging citizens in democratic deliberation needs to investigate parliamentarism, which continues to be the spine of liberal democratic politics and thus also the underlying template for citizen engagement and citizen panels.

^[i] Ryfe D., (2007) “Toward a Sociology of Deliberation”, *Journal of Public Deliberation* 3(1)

^[ii] Mark Bevir & Kai Yui Samuel Chan (XX): ‘What is a deliberative system? A tale of two ontologies’, *European Journal of Political Theory*

^[iv] William Selinger (2019): *Parliamentarism - From Burke to Weber*. Cambridge: Cambridge University Press, p. 6.

^[v] See Pasi Ihalainen (2021): ‘Parliaments as Meeting Places for Political Concepts’, 30 September 2021 <https://intellectualhistory.web.ox.ac.uk/article/parliaments-as-meeting-places-for-political-concepts>

^[vi] Kari Palonen & José María Rosales (2015): *Parliamentarism and Democratic Theory: Historical and Contemporary Perspectives*

^[vii] The historical intellectual “battle” of parliamentarism unfolded in the Weimar republic between Hans Kelsen and Carl Schmitt.

^[viii] William Selinger (2021): *Parliamentarism: from Burke to Weber*. Cambridge: Cambridge University Press.

^[ix] K. Palonen, *Parliamentary Thinking, Rhetoric, Politics and Society*, p. 225.

^[x] Marx Weber, Carl Schmitt

WP4 Understanding Citizen Engagement

In WP 4 we focus on the generation of grassroots knowledge. This entails encouraging citizen participation, fostering public engagement, and creating a civic space where individuals can collectively contribute to shaping local knowledge, which in turn informs policy-making.. It is our goal that local policy decisions are informed by knowledge and reflect the values, needs, and beliefs of the communities they serve. The utilization of citizen science initiatives, characterized by the systematic collection of data, can empower local governing bodies to tailor their decisions to the unique characteristics of their locale, thereby enabling well-informed choices.

Citizen science is a great example of how ordinary citizens under favorable circumstances, can engage in a non-profit endeavor on a mass scale that leads to the knowledge

production. Experience shows that knowledge created by joint efforts can have multiple applications, from the purely scientific to the political. In a sphere of public policy, such knowledge can be used to make informed decisions.

The concept of engaging citizens in the process of collecting data or analyzing existing data sets has existed before. What hasn't existed is the ability to engage participants worldwide. Today, thanks to the proliferation of technological solutions, such as smartphones equipped with photo cameras, voice recorders and widespread Internet as well as all sorts of applications, it has become possible to engage almost anyone and anywhere, at least in theory. This technology is a key aspect of citizen science.

In WP4 task regarding grassroots knowledge production, we investigate two main questions:

1. How many citizens are involved in knowledge production?
2. How civic and non-profit organizations use technology to engage citizens in order to create knowledge?

We categorize the technologies used and evaluate their usefulness and usability together with experts. By studying the dominant practices that have 'spontaneously' emerged in the field of nature conservation in Poland we aim to identify key enablers and obstacles on the way to citizen science.

In another task in WP4, Mosaic has been running experiments with citizen science projects. In specific, Mosaic is testing the added value of citizen science in political decision making on a city-scale. Mosaic launched a participatory platform at which citizens can explore their individual relation to darkness through an observation protocol. They can ask questions about public light impacts, and make recommendations on turning it off, based on the community shared experience. based on individual and collective experience (spot-libourne.org/ and spot-melesse.org/). The platform has been created to inform public administration in Libourne and Melesse, two French cities, about recommendations of the inhabitants on a new policy of turning off public lights at night that the two mentioned cities are considering implementing.

The new policy lies in line with ecological transition of the cities. ISEED's aim is to investigate how inhabitants as well as local public administration evaluate citizen science methods as possible tools for stimulating citizen participation and making informed decisions. Special consideration will be given to the issue of legitimacy of such approaches in public policy. We will inspect how information from the platform will be used in decision-making processes as well how citizens perceive the representativeness and reliability of data on the platform.

Participatedemocracy cannot be decoupled from evidence-driven decision-making. Thus, a sufficient understanding of data issues that impact participative decision-making is a prerequisite for citizen scientists' effective engagement, especially at the local government level. How best to enable such expertise in the citizen science community remains open. But acquiring such expertise is essential also for practices of inclusion and responsiveness envisioned within Responsible Research and Innovation (RRI).

A further task within WP4 is dedicated to study citizen observatories and data cooperatives. This actively seeks to establish several baselines so that remedial courses of action can be identified and implemented. Specifically, ISEED engages with experienced

participants in citizen science and data cooperatives and seeks to capture their understanding of norms in data management practices and principles.

Data quality is usually determined at the data collection stage and is often correlated with training. For example, dissemination of both data and the information derived from it demands competency in licensing and GDPR. Valorization of data is often accomplished through its alignment with other external data sources. Many such external repositories exist throughout the EU. An awareness by the participative science community of such repositories, how to access them, and how to effectively utilize them remain open questions. Thus, a snapshot of what affects awareness and usability for a small spectrum of repositories will further inform measures for enabling local participative democracy.

There is one more aspect of utilizing citizen science in deliberative democracies which WP4 is developing insights in: scientific experience as a baseline for better understanding what ensures equality, social justice, and representativeness in democratic process, but also attitudes towards science and knowledge-based deliberation itself. Therefore, one of WP4 tasks investigates the work of science clubs in Uruguay.

Uruguay has a great experience in the field as it has been running science clubs for kids and teenagers for more than 30 years. In science clubs, students are taught the research process by practice from selecting and formulating a research question to disseminating research results. The educational strategy adopted is that students learn by building knowledge and competencies as individuals and as active citizens of the 21st century. The topic of the investigation is chosen by the students and is often related to the challenges they face as a community. In this way, young people learn what science and the scientific process can offer to address the problems that are similar to those faced by public administration. Led by the ISEED partner, Uruguay's Ministry of Education, WP4 investigates the effect of participation in scientific research on young people's attitudes towards science, their trust in science and their trust in deliberative processes.

Overall our findings suggest that Citizen Science is still not as popular and well known as we could wish for.

- a. There are only a few NGOs in Poland that have conducted citizen science projects in the past.
- b. Citizen science projects require tailored applications that NGOs cannot afford.
- c. Local governments do not know how to deal with the results of citizen science projects conducted by NGOs, not scientists: A key issue is credibility.
- d. Scientists find citizen science problematic, but also recognize its great potential. Scientists mention that their work in the field of citizen science is not adequately recognized or valued within the scientific community. Managing citizen science requires effort and time that scientists often do not have.
- e. Scientists often lack sufficient training in effective communication with citizens, resulting in frequent difficulties in conveying their message in an engaging manner to the general public.
- f. Low level of trust towards citizens and the data they provide.
- g. The interviewees expressed concerns about the difficulty of engaging citizens in more advanced forms of citizen science where they are asked to analyze data and draw conclusions.

- h. Science clubs which are not obligatory can be used to learn how science can be used to understand everyday problems. These kinds of activities can help to build a positive attitude toward science and scientists.


WP5

Understanding deliberation online: Developing synergies across computational and discourse analysis

In WP5, the main data collection is currently undergoing. Therefore, we cannot produce any policy recommendations yet based on those data. We can summarise, however, our main findings from existing deliverables (D5.1, D5.2 and D5.3).

WP5 is developing and applying the tool of 'the argument extractor', a computational social science tool that is meant to support researchers in their understanding of online public opinion dynamics.

The possibility of collecting large quantities of data represents a challenge and an opportunity for social scientists: the use of computational methods is the answer that the community has thus far produced. The dynamics of online public opinion debates, and



Our work in WP5 suggests that policy regulation is a delicate matter in this context because there is always a risk that it gets interpreted as a form of censorship.

instances of polarization, are not simple to analyze and require sophisticated methods and studies. WP5 is contributing to this context with an analysis of what occurs in online debates about scientific issues that have generated controversies.

Our work in WP5 suggests that policy regulation is a delicate matter in this context because there is always a risk that it gets interpreted as a form of censorship. However, there is increasing evidence of the gap between people's understanding of online social spaces and their actual functioning. One of the most important messages from current research is that social media has sent false polarization into hyperdrive. Data from nationally representative surveys, as well as stories of individual social media users explain why extremists enjoy an outsized role in discussions about most topics but especially politics on social media.

The gap between perception and reality also causes widespread apathy or political disengagement among moderates. In 2016, a group of fourteen scholars examined the gap between perceived and actual polarization in ten countries. Though the researchers found mixed evidence about whether consuming information in legacy media (for example, television news, newspapers, and magazines) contributes to the perception gap, they discovered that online news consumption was the strongest predictor of false polarization in nearly every country. Social media also exacerbates mass media's contribution to false polarization. Journalists often use social media to monitor public opinion, and this distorts their reporting on polarization even further. It's a vicious cycle. Research indicates that becoming more aware of how your political views relate to those of others can have a depolarizing effect, no matter where you fall on the spectrum.

The use of arguments and counterarguments can also have a depolarizing effect. Large-scale studies using this approach are appearing and can be very informative for public policy interventions. A recent study by French and Dutch researchers tested the use of a chatbot to present arguments in an online debate about GMOs. The rationale was that discussion is more convincing than standard, unidirectional messaging, but its interactive nature makes it difficult to scale up, hence the introduction of the chatbot. Their results reveal that participants changed their minds more as they spent more time reading counterarguments and tended to spend more time when all the counterarguments were available (counterarguments condition) than when they were offered the possibility of only selecting the most relevant counterarguments (chatbot condition). Moreover, being exposed only to the counterarguments that participants had selected, by contrast with all the counterarguments, did not make the counterarguments more efficient.

In D5.1, we have conducted a proof-of-concept analysis of the large textual corpus from social media concerning the COVID-19 pandemic and climate change. We have applied the argument extractor and some additional standard NLP techniques to explore the evolution of the online debate about COVID-19, its origins, the health policies and the vaccines. Similarly, we have applied this new tool to a corpus of data about climate change, the recent debate about policy initiatives, social movements and related issues. Our findings suggest:

1. High tendency to fragment the debate in the analysed COVID-19 dataset.
2. Polarisation is mainly semantic, leading to multiple sub-debates and interpretations.
3. Platforms like Twitter favour this fragmentation process.
4. Equally significant to polarisation is the creation of insulated micro-debates.
5. The COVID-19 debate is newer, with less consolidated knowledge, leading to various 'lines of argumentation'.
6. The climate change debate is less fragmented due to years of ongoing discussion.
7. The polarisation of arguments might have a unique development pattern and is not equivalent to overall debate polarisation dynamics.

In addition to the above, WP5 is working to illuminate the mechanisms of decision making, persuasion and deliberation online from a philosophical point of view. As a key focus for our work package are the roles played by 'reason' and 'emotions' in online deliberation, we compiled a cross-disciplinary literature review that situates the dichotomy of reason versus emotion both in the history of ideas and in contemporary research.

The D5.2 report presents a range of possible approaches, such as the 'nudge' literature in behavioral economics, literature on deliberation as a material practice, online discourse-making as a set of social practices and literature on the politics of affect and emotion. The core messages of this review are:

1. A more multifaceted view of how 'reason and emotion' play out in democratic discourse is vital to work that strives to achieve greater inclusion in the face of complex societal challenges.

2. Facilitating informed debate and democratic participation relies on working with affective experiences and responses, not on excluding these from 'rational' debate.
3. While the bounded rationality framework has provided an effective way of tackling people's decision-making, see the widespread adoption of 'nudging' first and now the complementary approach of 'boosting'. It focuses on the individual level only and does not consider social and power relationships within society.
4. One temptation of the behavioral approach could be the technocratic solution, i.e., an argument along the lines of 'given the limited rationality of the citizen, policy decisions should be the exclusive preserve of experts. Such an argument would go in the direction of favoring technocratic solutions. The application of behavioral economics to public policy, according to the approach of nudges that help citizens make better choices, seems to take such an attitude, prompting criticism of paternalism from liberals and pastoralism. In reality, bounded rationality is a condition that affects everyone, even experts. There are cognitive limitations that are even specific to experts, such as the curse of knowledge.
5. An important alternative approach from social theory by Mercier, proposes that reason is deliberation and that sound reasoning is the product of a collective, collaborative effort. Hence it is inherently linked to the notion of democracy: democracy preserves the very conditions for reasoning.
6. Another mode to explore the interplay of reason and emotion and its role in inclusive science and democratic deliberation is through the work of feminist scholars and science and technology studies scholarship in public engagement.
7. Among the latter context, we propose that new approaches to inclusion, such as art-based engagements with social, ethical and political questions, can be characterised as facilitating 'material deliberation'.

Our last current deliverable D5.3 represents a case study of the dynamics of polarisations. In particular, it focused on the Polish debate about the European Green Transition polarised in the D5.3 represents a case study of the dynamics of polarisations. It focused on the Polish debate about the European Green Transition polarised in the social media communication channels and expert media outlets. Here are summarised into bullet points the main conclusions:

1. **Balanced Discourse:** The analysis depicts a balanced discourse on the green transition in Polish media, with no observed systematic or significant variations in sentiment or emotions across outlets and key terms.
2. **Public Interest and Context:** There is a strong public interest in energy transition, particularly nuclear power plant construction in Poland, but it should not be solely tied to the Russian invasion of Ukraine
3. **Moderate Politicisation:** The media discourse is moderately politicised, framed within national politics and linked to EU entities. politics and linked to EU entities. Both supporting and critical perspectives on decarbonisation and green initiatives are present without evident polarisation.
4. **Sentemo Analysis:** Utilizing Sentemo, a tool for exploring polarisation distribution,

some potential for polarisation was found, mainly due to negative emotions, although significantly less in media articles compared to social media.

5. Twitter Polarisation: Twitter exhibited a threefold increase in polarisation levels over traditional media
6. Nuclear Power Plant Discourse: On Twitter and in media outlets, constructing a nuclear power station is a highly polarising subject, accompanied by conflicting viewpoints.

WP5 findings contribute to understanding cases of real and false polarization in the context of science-informed debates online, which adds value as these phenomena have been studied mainly in the case of political debates.

WP6

From citizens and science to citizens and democracy: scaling up and policy recommendations

WP6 is a scaling-up work package, whose main objective is to draw systematic lessons from the deliverables produced by both the conceptual and experimental WPs in the project. It aims to identify the potential for the project's delivered results to inform a better understanding of deliberative and participatory democratic processes, and to be used fruitfully in wider context of democratic societies and their institutions.

In particular, this WP provides a better understanding of:

1. how practically to implement a participatory model of "public sphere", led by a community of autonomous and equal inquirers;
2. what methods and policy scenarios can appear most suitable to make possible for citizens to re-evaluate their involvement in public debate and;
3. how to identify arenas of public discussion where citizens can actively participate in a deliberative and inclusive manner.

The contribution of this WP in our policy briefs are crucial. The main objectives of the WP are closely related to taking the results of the project further, something that in turn is fully aligned with the objective of the policy brief. A good part of the results can be adapted to be included in recommendations. For example, the Multi Stakeholder Panel (MSP) constituted by WP6 have been advising project partners with a diversity of perspectives (industry, academia, policy and civil society) to ISEED work. Specific recommendations from each of these participatory processes will be integrated into proposals on translating ISEED project results in other contexts. Surely a good part of the recommendations of the Multi-Stakeholder Panel can also be incorporated into the project's policy brief.

Under WP6 we are developing Explorative Scenarios to explore key lessons learned from other ISEED WP findings. These scenarios result from a blend of variables, impact pathways, and expert dialogues with our consortium partners and stakeholders. Each scenario envisions the future of democracy, focusing on citizens, governments, science,

and technology. We carefully craft assumptions considering citizen participation, decision-making, institutions, key actors, tech advancements, regulations, and the role of knowledge. These scenarios present different ways to enhance democracy, including citizen engagement and governance models.

During the fall of 2023, the ISEED team will be conducting a series of National Workshops across multiple countries, including Poland, Italy, Spain, France, Uruguay, and Bulgaria. These workshops will serve as platforms for the collaborative co-creation of recommendations pertaining to the future of democracy and citizen participation in scientific endeavors. Engaging citizens, experts, and policy-makers, these workshops will facilitate the generation of global recommendations that will form a key part of our final policy brief.

Finally, WP6 will also assess the effectiveness of the “argument extractor tool” for public controversy resolution. The overall goal is to assess the potential of this tool to empower communities of participants to contribute in a knowledge-based manner to political debate. Our results will also be shared in the policy brief.

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