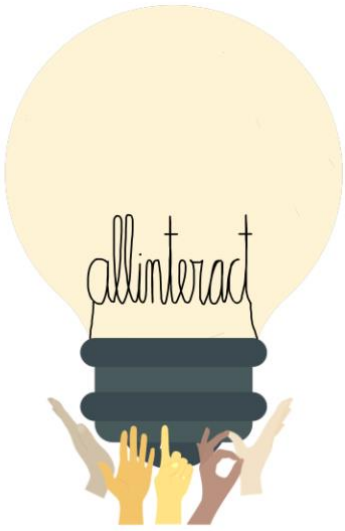
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement num. 872396

ALLINTERACT

Report 6 “Fostering citizen participation in science through awareness-raising action on the social impact of research: evidence for policy”

March 20223



Project Number: 872396

Project Acronym: ALLINTERACT

Project title: Widening and diversifying citizen engagement in science

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EXECUTIVE SUMMARY

1. Introduction

The report "Fostering citizen participation in science through awareness-raising action on the social impact of research: evidence for policy" gathers the social and political impact of the ALLINTERACT project and the actions implemented in the project's framework as of March 2023, as well as some of the expected impacts in the future. The report is particularly oriented towards policy in order to inform policymakers on successful actions which are promoting actual citizen engagement in scientific research with social impact. In particular, this report responds to O6: Inform policy by providing evidence to scale-up and replicate this active engagement within new social groups.

In the three years of the duration of the project's funding, ALLINTERACT has achieved diverse political and social impacts which are fostering a wider and more diverse participation of citizens in science on gender and education, particularly of people from vulnerable groups who have have traditionally been marginalized from science (including from low socioeconomic backgrounds, ethnic and religious minorities, women, LGBTQI, etc.). The dialogic approach which ALLINTERACT has implemented since the very beginning, even from its design, is contributing to democratizing citizens' active engagement in science, and will continue to do so even after the end of the project. With the focus on two Sustainable Development Goals (Gender equality and Quality Education), ALLINTERACT is promoting many citizens' increased awareness and engagement in scientific evidence of social impact, given that gender and education are two fields in which scientific evidence are often hidden for. This report collects some of those impacts in order to scale-up the already achieved citizen engagement in research with social impact beyond the end of the project, so that more citizens around the world can fulfil their right to science, directly engaging and benefitting from scientific evidence with social impact on gender and education.

A few examples of the political impact already achieved by ALLINTERACT are listed here. One of the main actions which ALLINTERACT has collaborated to co-create are the Sappho and Adhyayana scientific evidence platforms. In the two platforms any citizen, researcher, professional, is welcome to engage in an egalitarian dialogue to contribute to the distinction of scientific evidence and hoax on gender (Sappho) and education (Adhyayana). More than 8.704 people from 250 different countries have already used the platforms, which since their creation in 2020 have received 417.706 visits so far. In fact, one of the actions replicated by ALLINTERACT's 5th Workpackage into new contexts is the use of Adhyayana among vulnerable youth.

One of the political impacts of the platforms can be found in Spain. From 2015 to 2020, regional and national governments and women institutes in Spain promoted campaigns stating that love kills, a very harmful hoax, especially for youth. In September 2020 a post was co-created in Sappho with scientific evidence and personal experiences that showed that love does not kill. As a result, in 2023, through a Social Media Analytics of different official governments and women's institutes, no campaigns against love have been found. This impact on politics has strong implications on future policy measures and will save the life of many people through the prevention of violence, as scientific evidence shows that love can contribute to prevent gender violence.

Another impact is that the Society of Jesus (the Jesuits), in their decision to eliminate sexual abuse of children and adults in the Jesuits Global institution worldwide, have decided to do so through scientific evidence of social impact in the gender field. In this regard, Society of Jesus is making use of the Sappho platform as a key resource for their worldwide strategy. Moreover, the person in charge of providing this scientific evidence is a member of UB-CREA team from ALLINTERACT consortium.

In addition to organizations, the two platforms are also being widely used in different schools, many of which are located in low SES neighbourhoods. One of the ways in which these schools are using them is by engaging in a Dialogic Scientific Gathering (another action replicated by ALLINTERACT in WP5) around a post in Adhyayana which shows scientific evidence on the benefits of friendship. Dialogic Scientific Gatherings are one of the Successful Educational Actions which were identified by FP6 INCLUD-ED project, led by ALLINTERACT's PI, being the only SSH project selected by the European Commission to include it in its list of 10 most successful research projects. Dialogic Scientific Gatherings and other Successful Educational Actions have had a clear political (in addition to scientific and social) impact, with more than 20 identified policies at regional, national and international levels in Europe and Latin America to replicate them in new and diverse contexts.

Students in different schools, including those from vulnerable groups, are also using the platforms to do homework. Furthermore, many parents, especially from ethnic minorities or low SES backgrounds, are being informed by the platforms on the scientific evidence to improve their children's education and lives. Moreover, teachers are also being professionally trained based on the platforms.

Last, ALLINTERACT's PI and other members of the consortium have been commissioned two reports related to promoting scientific evidence of social impact and citizens' engagement in the dissemination and communication of science. On the other hand, the European Commission's Network of Experts working on the Social dimension of Education and Training (NESET) commissioned to Professor Ramón Flecha, ALLINTERACT's PI, and two more colleagues of UB-CREA team of the consortium the report "Achieving student well-being for all: educational contexts free of violence". The report presents scientific evidence on the negative effects of violence against children and scientific evidence of social impact at the basis of programs and actions which are contributing to overcome and prevent such violence. Last, along this line, Professor Ramon Flecha was commissioned the White Book of the Inclusive Communication of Science by the Spanish government (FECYT) due to his recognized career and huge impact on engaging vulnerable groups in science. The White Book presents initiatives and projects in which people from vulnerable communities, including the LGBTQI+ group or people with disabilities, have democratic and active roles and promote inclusion in science in different areas. The White Book contributes to the implementation of politics that include the bottom-up approach and that therefore boost the participation of citizens in science made not only for them but also with them (Flecha, 2022).

All these examples show the social and political impact that ALLINTERACT has already achieved and inform policymakers on how to continue promoting the engagement of all citizens, especially those from vulnerable groups, in scientific research of social impact.

2. Methodology

To conduct this report, data collected in previous workpackages have been analysed with a focus on already achieved and future potential political impact. Such data include a scientific literature review, a Social Media Analytics, a Social Media Communicative Observation, and focus groups. In order to conduct the literature review, 75 articles published in top-ranked journals indexed in JCR and Scopus have been reviewed in depth. Regarding the Social Media Analytics, after extracting almost 20.000 social media posts, more than 700 interactions among users on diverse social networks have been analysed quantitatively and qualitatively responding to O6. In addition, a Social Media Communicative Observation (SMCO) has been conducted to explore the impact that introducing scientific evidences in social media interactions has had on citizens' participation and awareness. Last, 12 Focus Groups (FG) (6 on gender/6 on education) have been conducted with women, including youth and vulnerable women, LGBTI+ individuals, students, parents and teachers. 6 of those focus groups have been implemented with citizens who have participated in the 6 actions implemented by ALLINTERACT partners from Italy, Spain, United Kingdom, Finland, Portugal, and the Netherlands. On the other hand, 6 focus groups have been conducted with the control group in order to study and compare the impact of participating in awareness raising actions to promote citizens' engagement in science.

3. Results

The results show diverse actual and expected social and political impacts of ALLINTERACT's actions to promote citizens' engagement and participation in scientific research with social impact. The egalitarian dialogue in which researchers and diverse stakeholders engage overcomes the often used top-down approach to involve citizens in science. On the contrary, the actions implemented by ALLINTERACT have engaged diverse citizens, especially and importantly those from the most vulnerable communities, in egalitarian dialogues around scientific evidence of social impact on gender and education through a co-creation process. Instead of telling citizens what is a scientific evidence and what is a hoax, the work conducted through ALLINTERACT relies on all humans' capacity for language to engage in dialogues around scientific evidence which contribute to improving their lives and the lives of the people in their contexts, especially in the fields of gender and education.

4. Conclusions

This report shows the wide and diverse social and political impacts that ALLINTERACT has achieved throughout its three years. These already achieved impacts will serve different communities, researchers and, especially (given the orientation of this report towards policy) policymakers to scale-up and continue replicating the successful actions which are fostering citizens' engagement in science and fulfilling their right to science. This report is especially directed towards future policies that aim at promoting the engagement of vulnerable communities in research with social impact, as groups such as young and vulnerable women or the LGBTQI+ community, among others, have already been excluded from science.

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The results from the focus groups on the elements that might facilitate and/or prevent the potential replicability of the identified actions into different contexts has been followed by the analysis of the actual or potential policy and social impact of the actions. In order to inform policymakers on those actions which promote and improve citizens' awareness and engagement in research with social impact, a threefold analysis of each action has been conducted: a) which of the aforementioned identified actions have been translated into

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1. Introduction

This document addresses ALLINTERACT'S O6: Inform policy by providing evidence to scale-up and replicate this active engagement within new social groups. The document integrates the relevant information from Report 5 corresponding to O6 with the data and analyses on the translation of the identified actions into policy/practice, social impact, and replicability. The document concludes with a summary of findings for policy makers and general conclusions on the social and political impacts which have already been achieved through ALLINTERACT's work.

2. Literature review

2.1 Overview

The aim of this literature review is to present the existing evidence on the current policies that have proven to promote awareness raising actions and citizen engagement in science. In this regard, a literature search has been conducted to present the most relevant and updated findings on the matter. First, the findings regarding policies that promote awareness-raising actions and citizen engagement in science in gender are presented, followed by the ones in education.

2.2 Policies that promote awareness-raising actions and citizen engagement in science in gender

2.2.1 Overview

According to the study protocol, the literature review for the ALLINTERACT project addresses the following topics:

a) How citizens' benefit from scientific research (ISCSP-ULisboa/RUG[1]).
b) Citizen awareness of the impact of scientific research (ISCSP-ULisboa/RUG).
c) Awareness-raising initiatives succeeding at engaging citizens in scientific participation, including the Open Access movement (UOXF/UH).
d) Awareness-raising actions that foster the recruitment of new talent in sciences (UNIMIB/UH).
e) Policies that promote awareness-raising actions and citizen engagement in science. (UOXF/UB).

The current section summarises the literature review on topic e) "Policies that promote awareness-raising actions and citizen engagement in science" with a focus on gender.

[1] Abbreviations of organisations responsible for the topics covered in this literature review (ISCSP – University of Lisbon; RUG - University of Groningen; UXOF – Oxford University; UH – University of Helsinki; UNIMB - University Milano-Bicocca). The partnership is led by CREA-Universitat de Barcelona and supported by the European Parents Association (EPA).

2.2.2 Methodology

Literature searches were trialled in both Web of Science and Scopus. Because Web of Science provided a wider coverage of conference abstracts, which were beyond the scope of the current literature review and a narrower coverage of Open Access journals, the final searchers were conducted in Scopus. The search period was set as 2010-2020, including articles in press and articles ahead of print. Only articles published in English were included.

The searches used the following keywords:

- Polic* AND awareness AND science AND technology AND gender
- Polic* AND awareness AND engagement AND science AND gender
- Polic* AND awareness AND involvement AND science AND gender
- Polic* AND awareness AND citizen science AND science AND gender
- Polic* AND awareness AND open science AND science AND gender
- Polic* AND awareness AND open access AND science AND gender

All eligible articles were initially screened by title and abstracts. Selected articles then were read in full to decide whether to include them. The searchers resulted in a total of 28 articles resulted after the searching on Web of Science database and Scopus and 12 books or grey literature reports, which all were out of scope. Namely, while the available literature discussed perceived problems in promoting awareness-raising actions and citizen engagement in science and offered potential policy solutions and recommendations, there was a lack of evidence-based literature evaluating such policies.

An accompanying Excel files summarises the results of the searchers by each keyword combination and the report on the included and excluded articles.

Below, a list of evidence included in analysis is summarised.

2.2.3 Results

a. Increasing research impact with citizen science: The influence of recruitment strategies on sample diversity

Brouwer S, Hessels LK. Increasing research impact with citizen science: The influence of recruitment strategies on sample diversity. Public Understanding of Science. 2019;28(5):606-621. https://doi.org/10.1177%2F0963662519840934

This paper aims (1) to provide more insight into the value and opportunities of engaging audiences that typically are not engaged with science, and (2) to explore the effect of a targeted recruitment strategy versus a generic recruitment strategy on the profile, motivation and retainment of citizen science volunteers. The empirical research is based on five citizen science projects in the domain of surface and drinking water research in the Netherlands. The three projects which used a targeted recruitment strategy (personally contacting a random sample of specific households, using the client database of the cooperating water company) managed to attract a significantly higher diversity in participation. This article concludes that by using a targeted recruitment strategy it is possible and worth to recruit a diverse sample of citizen science volunteers.

b. Inclusiveness and Diversity in Citizen Science

Paleco C., García Peter S., Salas Seoane N., Kaufmann J., Argyri P. (2021) Inclusiveness and Diversity in Citizen Science. In: Vohland K. et al. (eds) The Science of Citizen Science. Springer, Cham. https://doi.org/10.1007/978-3-030-58278-4_14

This book chapter address the question of inclusiveness in citizen science and how this is tackled. It analyses three case studies: 1) Multifaceted Inclusiveness in the Citizen Science COST Action CA15212, 2) Inclusive Engagement Model in the Distributed Network for Odour Sensing Empowerment and Sustainability (D-NOSES) H2020 project, and 3) Addressing Gender and Inclusiveness in H2020 Doing It Together Science (DITOs). Based on these case studies, the chapter offers recommendations for a possible plural participation in citizen science activities: 1) projects to explain citizen science to target audiences before they start a project or activity, 2) funding organisations to consider more inclusive citizen science approaches to ensure that organisations, projects, and activities take advantage of the broadened connection inclusiveness brings to stakeholders and a more diversified audience for project research, 3). The chapter demonstrates how research questions can be fine-tuned and how research impacts are enhanced through citizen participation, with a focus on gender representation.

c. The diversity of participants in environmental citizen science

Pateman, R., Dyke, A. and West, S. (2021). The Diversity of Participants in Environmental Citizen Science. Citizen Science: Theory and Practice, 6(1). 9. http://doi.org/10.5334/cstp.369

The study surveyed 8,220 people representing a cross section of the population in Great Britain to ask whether they had participated in environmental citizen science, allowing us to examine who is and who is not participating. Men were more likely to participate than women. People identifying as from white ethnic groups were more likely to participate than those identifying as from minority ethnic groups; participation by women from minority ethnic groups was particularly low. The study discusses potential mechanisms for widening participation, for example, engaging participants through third parties already embedded in communities and providing a variety of tasks for people with different amounts of time and types of skills to offer. The study encourages practitioners to document and publish participant demographics to monitor diversity in citizen science.

d. Learning Through Citizen Science: Enhancing Opportunities by Design

National Academies of Sciences, Engineering, and Medicine; Division of Behavioral and Social Sciences and Education; Board on Science Education; Committee on Designing Citizen Science to Support Science Learning; Dibner KA, Pandya R, editors. Learning Through Citizen Science: Enhancing Opportunities by Design. Washington (DC): National Academies Press (US); 2018 Nov 1. 7, Conclusions and Recommendations. https://www.ncbi.nlm.nih.gov/books/NBK535969/

This book by the US National Academies of Sciences, Engineering, and Medicine Committee on Designing Citizen Science to Support Science Learning attempts to synthesize the best available research on citizen science and science learning. The concluding chapter gives a set of evidence-based principles to guide the design of citizen science projects. In this chapter, the committee offers general principles that are relevant across citizen science and should be applied to the design and implementation of all projects:

- RECOMMENDATION 1: Given the potential of citizen science to engage traditionally underrepresented and underserved individuals and communities, the committee recommends that designers, researchers, participants, and other stakeholders in citizen science carefully consider and address issues of equity and power throughout all phases of project design and implementation.
- RECOMMENDATION 2: In order to maximize learning outcomes through participation in citizen science, the committee recommends that citizen science projects leverage partnerships among scientists, education researchers, and other individuals with expertise in education and designing for learning.
- RECOMMENDATION 3: In order to advance learning, project designers and practitioners should intentionally design for learning by defining intended learning outcomes, identifying a participant audience, integrating learning outcomes into project goals, and using evidence-based strategies to reach those outcomes.
- RECOMMENDATION 4: In designing or adapting projects to support learning, designers should use proven practices of design, including iteration and stakeholder engagement in design.
- RECOMMENDATION 5: The committee recommends that the educational research community perform regular analyses of the available evidence on learning in citizen science in order to identify and disseminate effective strategies.
- RECOMMENDATION 6: The committee recommends that relevant researchers perform longitudinal studies of participation and changes in individuals' and communities' scientific knowledge, skills, attitudes, and behaviours, both within individual projects and across projects.
- RECOMMENDATION 7: The committee recommends the citizen science community collaborate to identify, enhance, and develop shared tools and platforms that they can use to support science learning across a large number of citizen science projects.

e. Strategic advice for enhancing the gender dimension of Open Science and Innovation Policy

Puy, A., & Angelaki, M. (2019). *Report on strategic advice for enhancing the gender dimension of open science and innovation policy. GENDERACTION*. Prague: Institute of Sociology of the Czech Academy of Sciences. https://genderaction.eu/wp-content/uploads/2019/04/GENDERACTION_Report-5.1_D11_OSOI.pdf

This report of the H2020 GENDERACTION (GENDer equality in the ERA Community To Innovate policy implementatiON) reveals that most analyses and policy documents related to Open Science and Open Innovation (OS/OI) adopt a gender blind approach. The report argues that the consideration of gender issues in the development of OS/OI policies could have a positive impact on the promotion of gender equality goals and elimination of gender biases. The analysis of the existing literature and examples of promising practice has informed the formulation of the following sets of recommendations, clustered into five priorities for action, targeting a variety of stakeholders (European Commission, Member States, RFOs, RPOs, innovative firms as well as researchers):

A first priority for action focuses on gender mainstreaming and creating a policy synergy between the gender equality and OS/OI agenda in order to overcome the gender blindness of the current OS/OI policy making and lack of awareness of gender issues in OS/OI identified in this report:

1.1 European Commission and national policy-making must continue to address Priority 4 gender equality as a self-standing issue while mainstreaming gender concerns to other priority areas. Review of existing policy documents and studies on OS/OI, including those produced by the European Commission in recent years of ERA implementation, reveals zero attention to gender equality. Gender issues thus fail to be addressed as a matter of course in European policy making in OS/OI.

1.2 Awareness must be raised in the OS/OI policy and research community on the relevance of gender and ways OS/OI can mitigate against gender inequality and bias in the various aspects of OS/OI. Gender experts and scholars should be invited as members to relevant OS/ OI expert and advisory groups.

The second priority for action is advancing knowledge and awareness of gender issues in OS/OI:

2.1 In order to develop evidence-based, socially responsible policies, further studies are needed to examine gender issues in OS/OI, with special focus on open peer review, altmetrics, open software and open innovation. For example, studies on peer review (single/double blind and open peer review) should focus on examining how different peer review practices mitigate against gender bias.

2.2 The European Commission should support this effort and lead by example, by providing disaggregated data by sex on the adoption of open access practices in the next editions of She Figures. In particular, it would be useful to have information on both the sex of the author and whether the publication is open access or not.

2.3 European and national authorities collecting data on inventorship are encouraged to disaggregate data by sector, field and country in addition to sex-disaggregating data.

2.4 Research funding and research performing organisations are encouraged to examine the adoption of open access practices by men and women. The following three areas of action offer more specific recommendations and focus on evaluation and assessment practices, publication practices and innovation processes as key areas where gender issues have been previously established.

The third priority for action addresses evaluation and assessment practices in RFOs and RPOs:

3.1 The European Commission and its OSPP Expert Group, along with other stakeholders involved in research assessment (such as research performing and research funding organisations) are encouraged to explore how/ if the use of new metrics impacts men and women researchers at different career stages and disciplines differently.

3.2 Research performing and funding organisations are encouraged to adopt multi-dimensional evaluation criteria that enhance openness and transparency (including visibility and open access to those research outputs with a gender dimension), and contribute in mitigating against gender bias in research assessment/evaluation procedures.

3.3 Authorities and organisations at European and national level funding open innovation projects are encouraged to ensure that funded projects integrate sex/gender analysis where appropriate and that the teams respect gender diversity.

3.4 Research funding and research performing organisations are encouraged to examine the adoption of open access practices by men and women in order to identify whether OS/ OI may continue to perpetuate gender differences in publications and hence evaluation.

The fourth priority for action addresses publication practices of researchers and RPOs:

4.1 Research performing organisations should encourage the sharing of preprints presenting the results of research on gender (that is, gender as the main focus of the research content) and those with a gender dimension (that is, those integrating sex/gender analysis as a cross-cutting issue).

4.2 Researchers are encouraged to adopt the FAIR management of sex and gender data.

The fifth priority for action addresses innovative processes and firms:

5.1 Stakeholders engaged in setting up participatory innovation projects should ensure the involvement of diverse groups and gender diversity in line with the finding that diversity overall and gender diversity specifically contribute to identifying innovative solutions.

5.2 Stakeholders engaged in setting up participatory innovation projects should ensure the integration of sex/gender analysis in order to guarantee that innovative processes benefit all segments of population without bias.

2.2.4 Conclusions: Policies that promote awareness-raising actions and citizen engagement in science in gender

To characterise the current state on the evidence base, a subset of 3 articles, 1 book, and 1 grey literature report listed above was identified and analysed. The main conclusions for future research:

- There is a broad recognition that citizen engagement in science is conducive to maximising research impact and learning outcomes.
- Diversifying citizen participation in terms of gender, race/ethnicity, and education is necessary to take into account when designing and implementing recruitment strategies.
- Well-designed policy evaluations, experimental and quasi-experimental studies have a strong potential to contribute to the development of evidence-based policies.

2.2.5 References

Brouwer S, Hessels LK. Increasing research impact with citizen science: The influence of recruitment strategies on sample diversity. Public Understanding of Science. 2019;28(5):606-621. https://doi.org/10.1177%2F0963662519840934

National Academies of Sciences, Engineering, and Medicine; Division of Behavioral and Social Sciences and Education; Board on Science Education; Committee on Designing Citizen Science to Support Science Learning; Dibner KA, Pandya R, editors. Learning Through Citizen Science: Enhancing Opportunities by Design. Washington (DC): National Academies Press (US); 2018 Nov 1. 7, Conclusions and Recommendations. https://www.ncbi.nlm.nih.gov/books/NBK535969/

Paleco C., García Peter S., Salas Seoane N., Kaufmann J., Argyri P. (2021) Inclusiveness and Diversity in Citizen Science. In: Vohland K. et al. (eds) The Science of Citizen Science. Springer, Cham. https://doi.org/10.1007/978-3-030-58278-4_14

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Puy, A., & Angelaki, M. (2019). *Report on strategic advice for enhancing the gender dimension of open science and innovation policy. GENDERACTION*. Prague: Institute of Sociology of the Czech Academy of Sciences. https://genderaction.eu/wp-content/uploads/2019/04/GENDERACTION_Report-5.1_D11_OSOI.pdf

2.3 Policies that promote awareness-raising actions and citizen engagement in science in education

2.3.1 Overview

This literature review process has been performed with a focus on education both in formal and non-formal settings and also taking into special consideration those policies regarding vulnerable groups such as migrants, youth or people with disabilities among others, that have usually found themselves excluded from the scientific debates.

Policies can serve as a useful frame of reference for successful cases that represent a significant improvement in education and society. With these preceding cases in mind, it is clear that achievements like these reflect the urge to create new policies in order to reduce inequalities and generate new opportunities in education and science with a special focus on raising awareness and participation among the most vulnerable groups. Taking this into consideration, there is a clear need for a literature review to gather evidence on the subject of policies focused in promoting awareness raising actions and citizen engagement in science in educational settings.

2.3.2 Methodology

This literature review was conducted following the established international scientific criteria for the case (Xiao & Watson, 2019). Following these, a literature review protocol was designed by the ALLINTERACT's consortium including the following sections: topic of focus, sources to be explored, criteria of selection, searchable keywords, exclusion criteria and procedures to conduct the literature review. These will be covered in the following subsections:

Topic of focus:

Following the established criteria, the aim was identifying the worldwide scientific contributions describing or analysing existing policies in Education aimed at promoting awareness raising actions and citizen engagement in science. Thus, the topic stated for this literature review is as follows:

Policies that promote awareness raising actions and citizen engagement in science with a focus on Education.

Sources to be explored:

The different searches have been conducted in the established scientific databases Journal Citation Reports (JCR) and SCOPUS. Articles included were indexed in the top ranked scientific journals from different areas of knowledge (education, citizen science, environment and conservation, among others) the ranking of which had to be between Quartile 1 (Q1) and Quartile 2 (Q2) in Journal Citation Reports, or Quartile 1 (Q1) in SCOPUS.

Criteria of selection:

Publications had to meet the following criteria in order to be reviewed:

- Topic. As mentioned above, the focus of the articles provided evidence related to the research topic: *policies that promote awareness raising actions and citizen engagement in science* in the field of formal or non-formal education. Also, a particular consideration was given to those articles targeting youth and vulnerable groups.

- Impact factor. Articles included were highly ranked in international scientific journals, Quartile 1 (Q1) and Quartile 2 (Q2) in Journal Citation Reports (JCR), or Quartile 1 (Q1) in Scopus. For the case of the reports, the impact criterion was belonging to the European Commission or other public administrations and organizations whose research projects were linked to reference programmes.

- Year range. The year of publication, both for articles and for reports, was comprised within the last 10 years (2010-2020).

- Ensure the inclusion of all voices, even those that are usually excluded from the scientific debate such as vulnerable groups and young citizens.

Searchable keywords:

For the first search, the combination of keywords: *Polic* AND Awareness AND Science AND Education* was introduced. Due to the limited number of articles obtained and retrieved related to the topic, a second search was conducted on the following keywords: *Polic* AND Science AND Education.*

Keyword combination list				
Search	Policy	Actions	Science	Scope
1	Polic*	Awareness	Science	Education
2	Polic*	---	Science	Education

Table 1. Keyword combination list

Exclusion criteria:

For the following cases, publications that met one of these criteria were discarded.

- Articles, reports, or other European Commission documents that were not closely related to the topic of this literature review (i.e., policies promoting awareness-raising actions and citizen engagement in science) and did not have a focus on education.

- Articles not published in an impact journal, being indexed in scientific databases (Q1 or Q2 in Journal Citation Reports or Q1 in Scopus); or reports and other documents that did not belong to the European Commission or were not linked to other relevant programmes or projects in the international context.

- Articles, reports, or documents that were published prior to 2010.

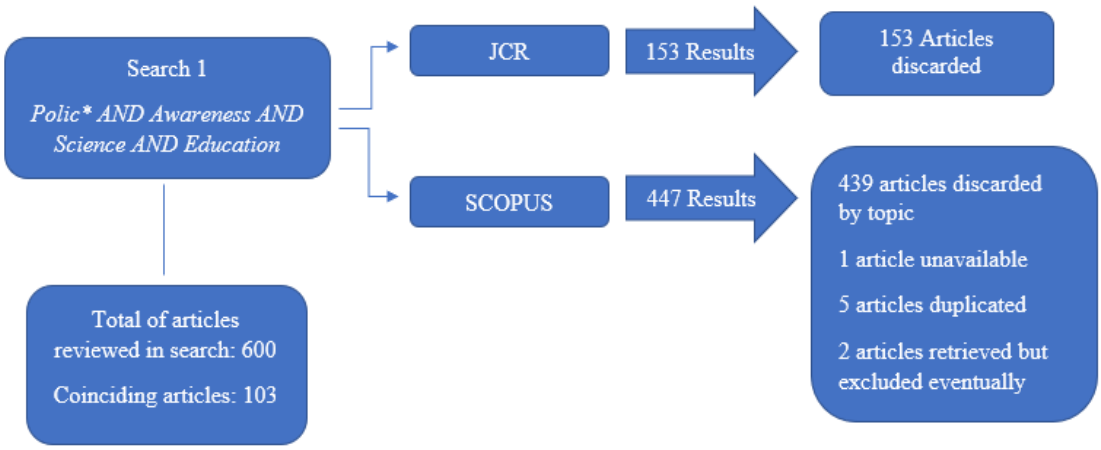
Procedures

Two searches were conducted in Web of Science and Scopus databases to cover the topic applied in this research: *Policies that promote awareness raising actions and citizen engagement in science* with a focus on Education.

Articles collected were verified to ensure they met all the established criteria mentioned above. A total of 12.826 articles were obtained from the two searches resulting from the combination

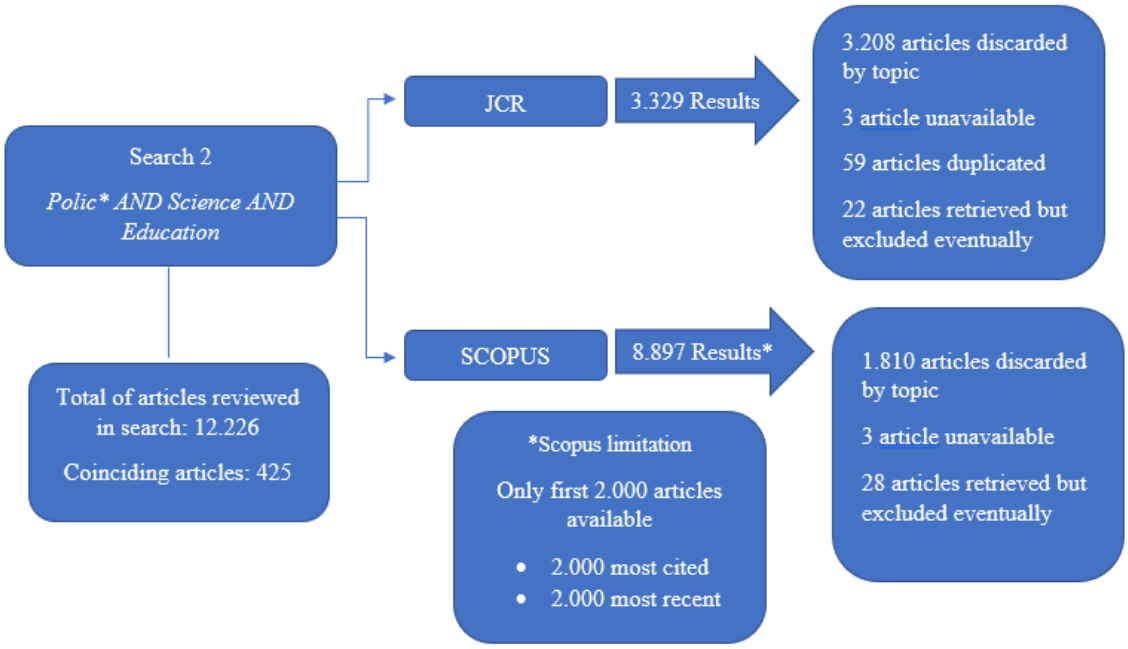
of keywords. Below, the systematic process of literature review carried out for each of the two searches resulting from the combination of keywords is described in detail.

1. From the search resulting from the first keyword combination (*Figure 1*): *Polic* AND Awareness AND Science AND Education,* 600 articles were obtained (153 in JCR and 447 in SCOPUS). The abstracts of these articles were reviewed and classified regarding their scope, impact, and year range.



- From results in JCR: 153 out of 153 articles were discarded because they did not meet the inclusion criteria. For most of the cases, this exclusion was due to the fact that, after a refined search, the abstracts of the articles were not related to the topic, that being policies promoting citizen engagement and scientific awareness or engagement with a focus on education.
- From results in SCOPUS: out of 447 articles obtained from the search, 439 were discarded by topic in the first place; 1 article was unavailable; and 5 of them were duplicated with other searches. Only 2 articles of this search were retrieved and therefore considered for a possible review, but eventually excluded after a thorough read as they did not meet all the inclusion criteria, for these two cases in particular not being aimed at policies.

103 articles (out of the 600) reviewed for these two searches were coinciding in the two databases (JCR and SCOPUS).



2. From the search resulting from the second keyword combination (*Figure 2*): *Polic* AND Science AND Education,* 12.226 articles were obtained (3.329 in JCR and 8.897 in SCOPUS). Abstracts of these articles were reviewed and classified regarding their scope, impact, and year range.

   - From results in JCR: 3.208 out of 3.329 articles were discarded in first place because they did not meet the inclusion criteria. For most of the cases, this exclusion was due to the fact that, after a refined search, these articles were not related to the topic; 3 articles were discarded because of unavailability, and 59 were duplicated with other searches and therefore, removed from these results. Finally, 22 articles from this JCR search were left for further analysis but eventually excluded.
   - From results in SCOPUS: with the search of SCOPUS 8.897 results were obtained of which, due to the limitations of the database, only to the 2.000 first were accessible. Aware of this limitation the first search was conducted considering the 2.000 most cited articles. Later, a second search was repeated with the 2.000 most recent articles. Among the results of these two searches, 3 articles were not available. 1.810 were discarded by topic. 28 articles were left for the final review but eventually excluded.

   From the same search in the two databases (JCR and SCOPUS), 425 (out of 12.226) articles were coinciding, and among these, 18 of the selected for the review. This implies that the final sample of articles potentially eligible for analysis resulting from the two searches in JCR and SCOPUS databases was 34.

In the case of the reports, a free search was conducted among documents and relevant reports that were considered related to the topic (*policies that promote awareness raising actions and citizen engagement in science)* with a focus on education and a special consideration for those policies involving vulnerable groups. The scrutinised documents were from different European project platforms and had to meet the criteria mentioned above for these specific documents. Based on these principles, 18 reports were identified to be related to the topic.

After removing the duplicate articles, the abstracts of the 34 articles were downloaded and read. Articles that were considered out of scope in terms of not covering the topic of interest after a more in depth read (i.e., not being about a policy or policies, promoting awareness raising or citizen engagement in science among the non-scientific public in the educational field); did not reach the scientific rank established (Q1 or Q2 in JCR and Q1 in SCOPUS); or were published prior 2010, were discarded.

After a thorough read of the 34 articles, 31 more were discarded: 20 of them because they were not from the topic, 5 more because the full document was not available, and 6 because their journal impact was lower than stated (Q1 or Q2 in JCR and Q1 in SCOPUS). 3 articles were finally selected as relevant for the literature review but excluded after an in-depth reading for not fulfilling all the criteria.

However, given the proximity of these three articles to the original topic, a snowball search on the basis of the references cited in the articles was conducted to make sure that the topic was covered. Thus, from these 3 articles, 58 more were extracted that initially appeared to meet the topic. Among these 58, 42 articles were out of the topic, 14 articles were unavailable, and 1 was below the established impact factor in order to be considered (the impact factor of its journal did not reach Q1 in Scopus or Q1/Q2 in JCR). 2 articles were selected for a further analysis and discarded afterwards for not fulfilling the topic.

In regard to the 18 reports, 9 were excluded after an in-depth reading: 5 of them because they were not from the topic, 3 because their impact did not meet the requirements (belonging to the European Commission or other relevant public administrations and organizations linked to impact programmes); and one more because the full report was not available. The remaining 9 were considered for analysis but after an in-depth reading all were discarded for not meeting the required criteria.

2.3.3 Results

No policies in education have been found aimed at fostering awareness raising actions and citizen engagement in science. Only in one case already existing policies aimed at promoting citizen participation in science have been found, but in that case, these were not applied to the educational field; it therefore felt out of scope. Nevertheless, after conducting this process the following conclusions can be extracted:

On the one hand, and regarding the topic, most articles examined that were not in line with the topic here explored had a focus on environmental and conservation issues. While some included educational actions through applications in institutions such as museums and primary or secondary schools, in no case did these were related to *policies that promote awareness raising actions and citizen engagement in science*.

On the other hand, in terms of policy, the most common cases collected by the literature review constituted actions aimed at impacting policies suggesting a concrete revision of the already existing ones. In this sense, citizen science processes were used to inform policies but not the opposite direction which constituted the focus of the present literature review.

Finally, regarding the scope of these actions, some manuscripts reviewed were aimed at fostering participation and engagement in science among collectives that have traditionally been excluded from the scientific debates such as youth and vulnerable groups. However, when this criterion was met, no other was.

It is only when citizens are able to take part directly in scientific processes that access to science and technology will be guaranteed from a fully egalitarian and democratic approach. Citizen Science policies that focus on generating awareness through educational settings are able to provide greater possibilities and engagement in science at the early stages and therefore, are proposed as the most suitable alternatives to narrow inequalities in both the educational and the scientific field.

2.3.4 Conclusions: Policies that promote awareness-raising actions and citizen engagement in science in education

No policies have been found within the field of education that aim at fostering awareness-raising actions and citizen engagement in science. The main findings from this literature review are summarized as follows:

- Most articles found were centred around environmental and conservation issues.
- Regarding policies, it was the most common to find actions directed at impacting policies through a revision of existing ones.
- Some of the articles focused on promoting vulnerable collectives' participation and engagement in science.

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3. Social Media Analytics

3.1 Overview

Coded messages extracted from social media that refer to Topic e) were analysed to respond to O6. This included a total of 8 messages in gender and 681 messages in education. From the 689 messages extracted, 575 messages (all in education) were excluded from the analysis as duplicates or empty messages (See TopicE_Annex.xlsx).

3.2 Methodology

3.2.1 Methodology for the Social Media Analysis

The Social Media Analytics (SMA) methodology allows researchers to reach a great variety and diversity of citizens' voices, particularly those from vulnerable groups and young citizens, which have traditionally not been taken into account in scientific research. In order to analyse citizens' interactions about Policies that promote awareness-raising actions and citizen engagement in science, citizens' posts in four social media platforms (Reddit, Instagram, Facebook and Twitter) were extracted and analysed. Table 2 contains all the posts analysed regarding topic e) in each platform.

The SMA has followed a twofold strategy. One called "Top-Down" and the other "Bottom-Up". The first, the top-down, is an approach that consists of defining keywords related to gender, education and project themes, with the objective of contrasting whether these same themes are expressed by citizens in their opinions, comments and posts on social media. This approach was used in the four platforms analysed. The bottom-up approach, on the other hand, was only used on Twitter, and it consists of identifying themes that emerge from those keywords and hashtags most used by citizens on Twitter. Then, those topics are contrasted with the topics defined by the project and examined to see whether they cover the aspects and features of the project and/or there are some additional issues that were not initially covered by the project.

Regarding the gender issue with the top-down strategy, the hashtags used in twitter were #Equality, #Gender, #GenderEquality, #WomenRights and #HeForShe, with a total of 5,464 tweets. For Facebook, the Never Alone, NOH8 Campaign, World Wide Women, Women Rights News and Equality Now pages were analysed. 139 messages, including posts and comments were analysed. In Instagram the hashtags #womenempowerment, #domesticviolence, #womenrights, #feminism and #genderequality were examined, finding a total of 386 posts. Finally, Reddit included five communities: r/PurplePill, r/bisexual, r/FEMRADebates, r/Feminism and r/Feminisms, with a total of 166 messages.

Regarding the gender issue with the bottom-up strategy, the hashtags #IStandWithLinda, #EqualPayDay, #WiMINConference21, #ReclaimTheStreets and #EnoughisEnough and a total number of 3,183 tweets were found.

In respect of education with the top-down strategy, the hashtags used in Twitter were #PublicEducation, #School, #Students, #Learning and #Education. A total of 4525 tweets were

included in the final analysis. For Facebook, the pages Teacher2Teacher, WeAreTeachers, Edutopia, MindShift, and Education Week were analysed. The final analysis contained 620 messages, including posts and comments. For Instragram, the hashtags #QualityEducation, #StopBullting, #ScienceEducation, #Learning and #Education were analysed. A total of 595 posts were included in the final analysis. Finally, Reddit included five communities: r/Teachers, r/Teaching, r/ApplyingToCollege, r/Science and r/Education. A total of 966 messages were analysed in this social network.

Finally, in terms of the education topic with the bottom-up strategy, the hashtags #books, #Wikipedia, #FutureOfEurope, #DigitalDecade and #Schools were used in Twitter. A total of 3,151 tweets were included in the final analysis.

Table 2. Social Media sample of posts for Topic e)

Topic	Social Media	TOTAL	Included	Excluded
Gender	Reddit	0	0	0
	Instagram	3	3	0
	Facebook	1	1	0
	Twitter (Bottom-Up)	4	4	0
Education	Reddit	3	3	0
	Instagram	10	10	0
	Facebook	6	6	0
	Twitter (Bottom-Up)	665	89	575
TOTAL		692	116	575

3.2.2. Methodology for the Social Media Communicative Observation

Within the line of SMA, the Social Media Communicative Observation (SMCO) methodology aims at exploding the impact of introducing scientific evidence in social media interactions.

The SMCO aims to explore awareness-raising initiatives that are successful in improving citizen participation in science in relation to the SDGs of quality education and gender equality, with gender also being considered in a crosscutting manner across all SDGs. To that end, different groups and messages were analysed in Facebook, Reddit, and the Sappho and Adhyayana Social Impact Platforms. First, within these three platforms, posts that mentioned successful

awareness-raising initiatives were analysed, reviewing them one by one and classifying them in these categories: Citizen awareness of the impact of scientific research, Awareness-raising initiatives succeeding at engaging citizens in scientific participation, including the Open Access movement, awareness-raising actions that foster the recruitment of new talent in the sciences, and policies that promote awareness-raising actions and citizen engagement in science. Then, the ways in which the content of those posts changed after introducing scientific evidence with the social impact in those debates were analysed.

Regarding gender, a total of 885 posts related to the research were found on Facebook, Reddit and the Sappho Platform. The members of those platforms and pages have interacted (reactions and sharings) 1882 times and have made 158 comments.

When it comes to education, a total of 498 posts related to the research were found on Facebook, Reddit, and Social Impact Science on Adhyayana. Of the 18,151 members who are part of the groups/pages or forums, they have interacted (reactions and sharings) 1,515 times and made 418 comments.

The final analysis included the first 5 posts on education and 5 on gender that were found to be related to scientific evidence. 76 comments were analysed, 20 related to gender and 56 related to education.

3.3 Results

3.3.1 SMA - Policies that promote awareness-raising actions and citizen engagement in science in gender

Of 8 messages on gender, 7 related to sharing news and citizens' reactions regarding parliamentary voting or signing of government decrees related to violence against women and gender equality measures in the United States and Germany, and 1 message related to expressing a commitment by a multi-national company to promote active gender equity policies in the workplace.

3.3.2 SMA - Policies that promote awareness-raising actions and citizen engagement in science in education

Of 108 messages on gender, 89 related to sharing news and citizens' reactions regarding the signing of the Joint Declaration on the Conference on the Future of Europe as well as 4 messages on news regarding parliamentary voting or government policies on education in the United States. The remaining 15 messages on education concerned the announcements and discussions regarding policies, programmes, and scholarships at the level of schools, districts, and charitable foundations. Of these, only 5 messages referred to supposed scientific evidence and 1 message contained a reference to certified scientific evidence.

3.3.3 Social Media Communicative Observation

One of the comments analysed talked about issues related to topic e). This particular message discussed the implementation of curricula that must be accompanied by public policies that support the education of people with disabilities. Therefore, it talks about the need to apply science together with educational policies.

3.4 SMA Conclusions - Policies that promote awareness-raising actions and citizen engagement in science

- Citizens predominantly used social media for sharing news and their reactions to policy announcements and parliamentary deliberations.

3.5 SMCO Conclusions - Policies that promote awareness-raising actions and citizen engagement in science

- One post was found related to topic e). This post discussed the relevance of promoting policies in education to support the learning of the more vulnerable students, such as students with disabilities

4. Focus Groups

4.1 Overview

The work that the whole consortium and all the partners have done has followed the premise that a Focus Group (FG) "is a group of individuals selected and assembled by researchers to discuss and comment on, from personal experience, the topic that is the subject of the research" (Powell & Single, 1996, p. 499)[2].

Different profiles of participants have been selected to be included in the development of Focus groups: Women from a women's group (also vulnerable women); Members of an LGBTQI group; Women (also Young women) from a women's group. As for the Focus groups related to education different profiles of participants are selected: Parents; Teachers; Students.

The following section has been distributed into three different parts: the first one concerns the methodology of the Focus group, explaining the main features of the process of implementing and analysing FG; the second section focusing on the results of the FG on gender and education; and the third section, presenting the conclusions drawn around the "Topic A) How citizens' benefit from scientific research" from the research.

[2] Powell, R. A., & Single, H. M. (1996). Focus groups. International journal for quality in health care, 8(5), 499-504.

4.2. Methodology: Focus Groups

UOXF, ISCSP-ULISBOA, UNIMIB, UB, UH, and RUG all conducted Focus Groups following the main orientations of in the project's Focus Group protocol. They also complied with the individual and collective protection measures according to each participating country regarding the COVID-19 pandemic.

Table 3. Distribution of the focus groups among partners of the Consortium:

Gender			Education		
Profile of participants	Partner	C/E	Profile of participants	Partner	C/E
Women (including vulnerable women) from women's group	UOXF	C/E	Parents	UB	C/E
Member of LGBTQI group	ISCSP-ULisboa	C/E	Teacher	UH	C/E
Women (including Young women) from a women's group	UNIMIB	C/E	Students	RUG	C/E

Written and oral information about the project was provided to all participants to take part in the project and they all signed a consent form in their own national language. Deliverable D9.1H. Procedures and Criteria to Identify and Recruit Research Participants set out the guidelines in terms of format, language, and time.

A methodological procedure was implemented with each of the population groups studied, which has been defined in detail here below:

4.2.1.1. Gender

- Women (including vulnerable women) from women's group

ALLINTERACT has joined forces to broaden and also diversify citizen engagement with science. To achieve this, we have relied on the recruitment of participants through the Public and Community Engagement, Engagement, and Participation officers at the NIHR Biomedical Research Centre in Oxford and the NIHR Applied Research Collaboration for Oxford and Thames Valley. The aim of this process has been to include citizens from diverse ethnic groups as participants. In the process of the development of the Focus Group there was one participant that required translation in the English language and this was facilitated by one member of the family. Besides, there were different participants identifying themselves as neurodiverse. There were 33 people in total who showed interest in participating in the FGs. According to the availability of the majority of the participants, there were 18 people who were invited to take part in 2 different FGs. From these, one person declined the invitation and another one did finally not attend, so that 16 people in the end took part in the FGs.

In the process of recruitment, it was asked to some of the participants whether they might be interested in potentially participating in different ways: 1) through an awareness raising action aimed at promoting and diversifying citizens engagement in science, and 2) in a follow-up focus group the persons who were interested in potentially participating in the intervention were assigned to the Experimental group. The ones who had not expressed their interest were assigned to the Control group.

Following the indications in Deliverable D9.1H. Procedures and Criteria to Identify and Recruit Research Participants, said potential participants were requested to sign a consent form in order to participate in the FG after they had been given the option to ask questions on that regard to researchers. Table 4. below informs of the socio-demographic characteristics of the participants as well as their pseudonyms.

Table 4. Socio-demographic characteristics and pseudonyms of participants, UOXF.

Focus Group number and type	Pseudonym	Age	Race/ethnicity
FG1 (Experimental)	P1	51-60	White (British, Irish, or any other White background)
FG1 (Experimental)	P2	51-60	Mixed (White and Black Caribbean, White and Black African, White and Asian, any other Mixed background)
FG1 (Experimental)	P3	61-70	White (British, Irish, or any other White background)
FG1 (Experimental)	P4	20-30	White (British, Irish, or any other White background)
FG1 (Experimental)	P5	51-60	Black or Black British (Caribbean, African, or any other Black background)
FG1 (Experimental)	P6	20-30	White (British, Irish, or any other White background)
FG1 (Experimental)	P7	51-60	Other
FG1 (Experimental)	P8	61-70	White (British, Irish, or any other White background)

FG1 (Experimental)	P9	70+	Asian or Asian British (Indian, Pakistani, Bangladeshi, any other Asian background)
FG1 (Experimental)	P10	20-30	Asian or Asian British (Indian, Pakistani, Bangladeshi, any other Asian background)
FG 2 (Control)	P11	70+	Asian or Asian British (Indian, Pakistani, Bangladeshi, any other Asian background)
FG 2 (Control)	P12	51-60	White (British, Irish, or any other White background)
FG 2 (Control)	P13	70+	White (British, Irish, or any other White background)
FG 2 (Control)	P14	61-70	White (British, Irish, or any other White background)
FG 2 (Control)	P15	51-60	White (British, Irish, or any other White background)
FG 2 (Control)	P16	20-30	Black or Black British (Caribbean, African, or any other Black background)

- Member of LGBTQI group

The two FG sessions were conducted by the Gender Team at the University of Lisbon, one for an Experimental Group and one for a Control Group. Seven volunteers took part in the session of the Experimental Group, and 8 did so in the Control Group.

The recommendations of Deliverable D9.1H. Procedures and Criteria to Identify and Recruit Research Participant were taken into consideration in WP2, based on high standard criteria: on the one hand to guarantee that participation was free and voluntary and on the other hand, to avoid any sort of coercion which could have a negative impact concerning their participation in the FG. Finally, WP2 researchers informed all participants that their participation was free and voluntary so that they were not to receive a reward for it; they were also informed of the confidentiality around the information provided and concerning the dissemination of the results.

Tables 5 and 6 provide the two FG's participants' details. The process was implemented according to the orientation given in the Deliverable D4.8. Anonymisation/pseudonymisation techniques

Table 5. Pseudonymous participant in Focus Group – Experimental Group conducted by ISCSP-ULisboa.

Focus Group	Pseudonym	Characteristics	Role
FG1 – EG	P1	Female, 20-29 y.o.	Participant
FG1 – EG	P2	Male, 30-39 y.o.	Participant
FG1 – EG	P3	Female, 30-39 y.o.	Participant
FG1 – EG	P4	Male, 20-29 y.o.	Participant
FG1 – EG	P5	Female, 20-29 y.o.	Participant
FG1 – EG	P6	Male, 40-49 y.o.	Participant
FG1 – EG	P7	Male, 30-39 y.o,	Participant
FG1 – EG	F1	Team member	Facilitator
FG1 – EG	F2	Team member	Facilitator

Table 6. Pseudonymous participant in Focus Group – Control Group conducted by ISCP-ULisboa.

Focus Group	Pseudonym	Characteristics	Role
FG1 – CG	P1	Male, 20-29 y.o.	Participant
FG1 – CG	P2	Female, 20-29 y.o	Participant
FG1 – CG	P3	Female, 20-29 y.o.	Participant
FG1 – CG	P4	Male, 20-29 y.o.	Participant
FG1 – CG	P5	Male, 20-29 y.o.	Participant
FG1 – CG	P6	Male, 20-29 y.o.	Participant
FG1 – CG	P7	Male, 30-39 y.o.	Participant
FG1 – CG	P8	Female, 30-39 y.o.	Participant
FG1 – CG	F1	Team member	Facilitator
FG1 – CG	F2	Team member	Facilitator

In order to define the topics that were dealt with in these two sessions, the objectives that ISCSP-ULisboa worked on in the project a) How citizens benefit from scientific research were taken into account, extracting the topics, therefore, from the list included in the Allinteract Protocol.

It is important to mention that all the participants knew before starting the sessions what the project is about. For this reason, the two facilitators welcomed them by explaining the project and, in particular, the phase in which the FG was taking place. Throughout the session, facilitator 1 (F1) led the conversation, with the main objective of encouraging participants to intervene and express their opinions on each topic discussed in the session. In this conversation, it is very important to emphasize that F1 encouraged equal participation of all participants by promoting open dialogue.

Another important aspect to take into account in these sessions is the language in which they were delivered. Following the focus group protocol, this should be the official language of the country, Portuguese in this case, thus ensuring that participants not only understand what is being said but can also intervene as naturally and comfortably as possible. It should be noted, however, that for the preparation of this report and as indicated by the Central Team, the participants' interventions have been translated into English. The CIEG-ISCSP team, for its part, and following the agreements of our ethics committee, has kept the transcripts of the focus groups of these two sessions.

- Women (including Young women) from a women's group

For the two focus groups with "women/including young women", the UNIMIB team made a careful analysis of Italian associations and selected "Casa delle donne" which deals precisely with feminist and gender issues. It has been working for more than 30 years on gender violence issues and, in particular, it is a "*social promotional association that looks without discrimination at the aspirations and needs of women of all ages and sexual orientations, who (…) live in our city* (Milan)*. The association is linked to other women's associations (…) that share our goals to fight gender-based violence, promote talents and enhance women's knowledge*"[3].

The selection of this association by UNIMIB team was made for two reasons. Firstly, because the women members of the association are of different ages and of different nationalities, educational levels, socio-economic status, work, etc. Secondly, to ensure geographical diversity as they are present in different Italian cities.

During the contact with the association, UNIMIB team explained the objectives of the project, the methodology, the expectations of the research, and, especially, the criteria for the selection of participants. According to the Protocol, participants had to be of different ages (with special attention to young women between 20 and 29 years old) and at different levels of education. Following the spirit of the project, UNIMIB team wanted to involve socially disadvantaged or traditionally non-scientific participants and not only people with a degree or a master's degree. For the same reason, people with STEM backgrounds and academics were excluded from the selection process.

Following these criteria, the team selected participants from three sites in northern and central Italy (the "Casa delle donne di Milano", the "Casa delle donne di Pisa" and the "Casa delle donne di Parma"). Still, it could not select anyone from the "Casa delle donne di Roma" because the profiles there did not match the characteristics we were looking for. The reason why they chose

[3] The quotation is taken from: https://www.casadonnemilano.it/chi-siamo/

"Casa delle donne" is present in different Italian cities.

these four cities is that they are representative of small, medium and large Italian cities, and each of them has a relevant history of feminist activism, as well as being different from each other. The work that has been carried out for the selection of people interested in participating has been long and meticulous because we have sought a balanced composition of groups. Finally, of the 17 people we initially selected, UNIMIB team composed 2 groups of 5 people, one for the first FG (the experimental group) and one for the second FG (the control group). Of the remaining 7 people not selected, 2 did not finally agree to participate for personal reasons, and 5 were excluded due to their profile. The characteristics of the women are summarised in the following table (Table 7).

Table 7. Characteristics of the participants in the focus groups.

Focus Group (n. 1/n. 2)	Participant's initial name	Characteristics (nationality, age, education)	Association (geographical area)	Group (experimental/ control)
Focus Group 1 (FG1)	L.	Italian; 20-29 years; graduate	Casa delle donne Pisa	EG
Focus Group 1 (FG1)	I	Italian; 20-29 years; high school diploma	Casa delle donne Parma	EG
Focus Group 1 (FG1)	T.	Italian; 20-29 years; graduate	Casa delle donne Pisa	EG
Focus Group 1 (FG1)	E.	Italian, but with foreign parents; 40-50 years; 8th grade diploma	Casa delle donne Milano	EG
Focus Group 1 (FG1)	P.	Italian; 60-70 years; high school diploma	Casa delle donne Milano	EG
Focus Group 2 (FG2)	G.	Italian; 20-29 years; high school diploma;	Casa delle donne Parma	CG
Focus Group 2 (FG2)	M.	Italian; 20-29 years; graduate	Casa delle donne Parma	CG
Focus Group 2 (FG2)	C.	Foreign origin; 40-50 years; graduate	Casa delle donne Milano	CG
Focus Group 2 (FG2)	S.	Italian, 50-60 years old; graduate	Casa delle donne Pisa	CG
Focus Group 2 (FG2)	A.	Italian; 50-50 years; graduate	Casa delle donne Pisa	CG

The finally selected participants were informed about the project by the UNIMIB team, both in written and oral form, and were told that they would not receive any kind of reward and that their participation would not entail any cost for them. They were also informed that they would be given information on the evolution of the ALLINTERACT project. After all participants signed the informed consent document, these were uploaded in a specific folder in the ALLINTERACT workspace. The two focus groups were conducted via the WEBEX platform and in Italian

following national collective safety directives. The specific information of each focus group is as follows:

- Focus Group 1: held on two different dates, a first meeting on Tuesday, 12 October 2021 from 10h to 11:30h (no break) and another one on Wednesday, 20 October, from 13:30h to 14h to finish discussing all the stimuli left pending from the first meeting.
- Focus Group 2: held on Thursday 14 October 2021 from 18:30h to 20h (no break).

The FGs were conducted in Italian to ensure, on the part of the UNIMIB team, the full implication and intervention of all participants. Researchers Prof. Carmen Leccardi and Dr. Zenia Simonella facilitated the discussion in all the FGs. They first introduced themselves and then one of the two briefly explained the objectives of the focus groups, the importance of each person feeling free to express their opinion and the privacy that anonymity afforded them following the ethical principles related to the data protection of the FG participants. Then the other researcher facilitator proposed the set of selected stimuli on the gender theme included in the protocol. Another very important task of the two facilitating researchers was to involve all participants in the FG, giving special priority to those who were less involved in the discussion.

All interviews and FGs were audio/video recorded and then transcribed literally. All these recordings have also been uploaded in the specific folder on the ALLINTERACT workspace.

4.2.1.2. Education

- Parents

Of the 15 mothers who, together with 3 accompanying teachers, took part in the Scientific Dialogic Gatherings, the University of Barcelona conducted in-depth interviews with 4. These are family members from vulnerable groups who do not usually participate in scientific activities and, therefore, will be the ones who will implement the scientific activities carried out by the project. Following the guidelines set out in the Deliverable D4.8. Anonymisation/pseudonymisation techniques, we see below the pseudonyms and roles of the participants in the FGs and in the interviews that have been conducted so far.

Table 8. Pseudonymous participant in focus groups and interviews undertaken by UB.

Focus Group/ Interview	Pseudonym	Rol
Interview 1 (I)	Maria	Family
Interview 2(I)	Sofia	Family
Interview 3 (I)	Cristina	Family
Interview 4(I)	Francisca	Family
Focus Group 3 (FG3)	Elena	Family

Focus Group 3 (FG3)	Laura	Family
Focus Group 3 (FG3)	Angela	Family
Focus Group 3 (FG3)	Laia	Family
Focus Group 3 (FG3)	Nerea	Family
Focus Group 3 (FG3)	Estefania	Family
Focus Group 3 (FG3)	Carolina	Family
Focus Group 3 (FG3)	Matilde	Family
Focus Group 3 (FG3)	Carmen	Teacher
Focus Group 3 (FG3)	Lucia	Teacher
Focus Group 4 (FG4)	Hayat	Family
Focus Group 4 (FG4)	Mariana	Family
Focus Group 4 (FG4)	Mariya	Family
Focus Group 4 (FG4)	Silvia	Family
Focus Group 4 (FG4)	Esther	Family
Focus Group 4 (FG4)	Victoria	Family
Focus Group 4 (FG4)	Josefa	Family
Focus Group 4 (FG4)	Diana	Teacher

For the dynamisation of the focus groups, one of the interviewers had the role of facilitator and therefore gave speaking slots to participants who wanted to intervene during the discussion. As a criterion, priority in having the floor was always given to those participants who have not had spoken or spoke less. This ensured a maximum of equal participation. On the other hand, the moderator encouraged all participants to join the conversation, and assured the contribution of arguments of validity and not of power in the debate, creating an equal dialogue.

- Teachers

In the case of teachers, two focus groups have been carried out by the UH team with educators/teachers, and two more with 17 teachers participating in Scientific Dialogue Gatherings.

The pseudonyms and roles of the participants in the focus groups with educators/teachers are listed below.

Table 9. Pseudonymous participant in focus groups undertaken by UB.

Focus Group/ Interview	Pseudonym	Rol
Focus Group 1 (FG1)	Antonia	Teacher
Focus Group 1 (FG1)	Dolores	Teacher
Focus Group 1 (FG1)	Sara	Teacher
Focus Group 1 (FG1)	Antonio	Teacher
Focus Group 1 (FG1)	Javier	Teacher
Focus Group 1 (FG1)	Miguel	Teacher
Focus Group 1 (FG1)	Elena	Teacher
Focus Group 1 (FG1)	Raquel	Teacher
Focus Group 1 (FG1)	Alejandro	Teacher
Focus Group 1 (FG1)	Lucia	Teacher
Focus Group 2 (FG2)	Juan	Teacher
Focus Group 2 (FG2)	Mateo	Teacher
Focus Group 2 (FG2)	Alba	Teacher
Focus Group 2 (FG2)	Mónica	Teacher
Focus Group 2 (FG2)	Laura	Teacher
Focus Group 2 (FG2)	Jesús	Teacher
Focus Group 2 (FG2)	Emilio	Teacher

- Students

On the topic of students, the team conducted 2 FGs with 12 university students at the University of Groningen. Following the recommendation provided by Deliverable D9.1H. Procedures and Criteria to Identify and Recruit Research Participant for the establishment of the criteria: the team looked for a place to hold the conversations between researchers and participants where

they felt confident and safe, free from any possible coercion to decide to participate or not in the focus group with absolute freedom. Similarly, this recruitment process was never directed by anyone who could unduly influence potential participants. Therefore, their participation was voluntary throughout the entire process. The researchers also informed the participants that they would not receive any reward and no participation cost. They were also informed about the potential risks and benefits of participating. Finally, the language used ensured participant understanding throughout the process.

Table 10. Pseudonymous participant in focus groups and interviews undertaken by RUG.

Focus Group/ Interview	Pseudonym	Rol
Focus Group 1 (FG1)	Lucas	Student
Focus Group 1 (FG1)	Julia	Student
Focus Group 1 (FG1)	Yara	Student
Focus Group 1 (FG1)	Kostas	Student
Focus Group 1 (FG1)	Kelly	Student
Focus Group 1 (FG1)	Liam	Student
Focus Group 2 (FG2)	Mary	Student
Focus Group 2 (FG2)	Mateo	Student
Focus Group 2 (FG2)	Sophie	Student
Focus Group 2 (FG2)	Eleni	Student
Focus Group 2 (FG2)	Anika	Student
Focus Group 2 (FG2)	Emma	Student

For the dynamisation of the focus groups, one of the interviewers had the role of facilitator and therefore gave speaking slots to participants who want to intervene during the discussion. As a criterion, priority in having the floor was always given to those participants who have not had spoken or spoke less. This ensured a maximum of equal participation. On the other hand, the moderator will encourage all participants to join the conversation, and assured the contribution of arguments of validity and not of power in the debate, creating an equal dialogue.

4.2.2. Data collection

The individual focus groups and interviews were audio-recorded and literally transcribed. In the transcripts, names are given with pseudonyms to be used scientifically for their analysis. These transcripts have been translated into English and stored by each partner who collected the data in the device approved by the ethics committee of their respective institutions.

4.2.3. Analysis

For the analysis of the collected data, the Allinteract team has taken into account the dimensions and initial categories that emerged from project topic e:

Table 11. Definitions of dimensions and categories for Focus Groups.

Dimensions	Transformative dimension includes those messages that evidence what facilitates the social/political/scientific impact mentioned.
	Exclusionary dimension includes those messages that show obstacles hindering the achievement of the targeted social/political/scientific impact.
Category	e) policies that promote awareness-raising actions and citizen engagement in science.

4.3. Results of the Focus Groups: TOPIC e) policies that promote awareness-raising actions and citizen engagement in science

4.3.1. Results on Gender

- Women (including vulnerable women) from women's group

Participants in the focus groups recollected only a few policies that promote awareness-raising actions and citizen engagement in science. These concerned government policies to diversify data science and promote citizen involvement in research in the National Health Service.

Table 12. Results of the TOPIC e) Policies that promote awareness-raising actions and citizen engagement in science

TOPIC e) Policies that promote awareness-raising actions and citizen engagement in science								
	Aim of the action targeting new talent for science	*Promoting organization*	*Level of intervention*	*Field of intervention*	*Participants*	*Type of participation*	*Level of access to scientific evidence*	*Social Impact*
TD*	"I think Health Data Research UK, they're part of the government and they're really trying their best, they're really doing, they're trying to recruit young scientists, getting BME people involved… So they're doing something. But it's not just well known. Things are being done underneath well, just to bring that awareness out there." P5 FG1	Government	National /Top-down	Scientific research in general	Citizens interested in science	Participant	High	Yes

	"I know that it's a principle of the NHS [National Health Service] Constitution that people should be allowed to be involved in research as citizens." P7 FG1	Government	National /Top-down	Scientific research in general	Citizens interested in science	Participant	High	Yes
ED*								

*TD = Transformative Dimension; ED= Exclusion Dimension

- Member of LGBTQI group

Participants in the focus groups did not talk about policies that promote awareness-rising actions and citizen engagement in science. However, a few of them in the experimental group did talk about the impact that science can have on politics, for instance on issues such as the use of feminine and masculine language. Moreover, participants found important and necessary to be part of studies in order to be more visible when it comes to public policies.

- Women (including Young women) from a women's group

There were no results about topic e) in the focus groups with participants from a women's group. In relation to the stimulus of the protocol linked to European policies, curiosity about this topic emerges on the part of one participant. Therefore, there is a lack of knowledge regarding EU policies that promote awareness-raising actions for engaging citizens in science.

4.3.2. Results on Education

- Parents

The implementation of scientific evidence in some schools has prompted the administration to support some of the teacher training activities, especially for new ones.

One person from the families who were not used to participating in scientific activities beforehand named R&D projects, this is because her husband works on such projects in his company.

Table 13. Results of the TOPIC e) Policies that promote awareness-raising actions and citizen engagement in science.

TOPIC e) Policies that promote awareness-raising actions and citizen engagement in science.								
	Aim of the action targeting new talent for science	*Promoting organization*	*Level of intervention*	*Field of intervention*	*Participants*	*Type of participation*	*Level of access to scientific evidence*	*Social Impact*
TD*	FG1 Lucia: At the beginning of the trimester we do	Self-	National	Teacher	Teacher	Participant	Medium	Yes

	many meetings for new teachers and always there we invite families and the truth is that when parents feel that they are doing training as teachers is that you are empowered and that gives them validity, that that connection is empathy lasts us for the whole course and then it is already word of mouth. (These meetings are organised with the education administration)	organization	/Bottom-up	Training				
	FG4 Victoria: R&D. Let's see in my husband's company, who works in databases for a Japanese company, they have very much implemented R&D . My eldest son has done a lot of things with the company, from robotics to technology. At the beginning it was very much focused on individuals for the children of the workers as an incentive and many times the children of the workers have obtained scholarships. They also work with high schools.	Family Association	Local	Family training	Family	Participant	Medium	Yes
ED*								

*TD = Transformative Dimension; ED= Exclusion Dimension

- Teachers

Participants in the focus groups did not discuss nor mention policies that promote awareness-raising actions and citizen engagement in science. However, they did talk about some issues related to politics and science. For instance, some of them discussed the need for politicians to work *with* citizens instead of working *on* them. A few participants also talked about the role of legislations and top-down approaches in promoting citizens' awareness and engagement in science.

- Students

Students who participated in the focus groups did not discuss much about issues related to topic e). Nonetheless, some of them talked about policies, about issues such as the need for policies to be directed at children and create equal opportunities for all.

Table 14. Results of the TOPIC e) Policies that promote awareness-raising actions and citizen engagement in science

TOPIC e) Policies that promote awareness-raising actions and citizen engagement in science							
	Aim of the awareness raising initiative	*Promoting organization*	*Level of intervention*	*Field of intervention*	*Audience (targeted and real)*	*Level of access to scientific evidence*	*Social impact*

TD*	KELLY Maybe something that I could think like if these policies could come from the governments etc., maybe researchers at the universities maybe they should be obliged to… how can I say it, to use the citizens in one way or another, I don't know how. For example, right now it's the focus group, I like the fact that as a citizen I participate and that I contribute somehow. Maybe with this way or another, scientists or researchers could make citizens participate and maybe they should show to the government that they use this policy like we use these participants. Maybe if it was regulated for example that every research or every department should engage citizens at research, something like that.	Public	National/ Top down	Society	Citizens	High	Yes
TD*	KELLY Yes, regarding that for example I agree I would not take part, I would not be interested to take part in let's say a physics research, but I think that I would be interested in things concerning me or my background. So, I think that depending on the subject of the research, there would be people that would be interested. Like future, like students now that love physics or those who want to study something about physics, or they work at this field, and they want to evolve their knowledge and their background. So I think not everybody is eligible for taking part in all kinds of research. I think people should be divided based on their background.	Public	National/ Top down	Education	Students	Medium	Yes
TD*	LUCAS I think the thing I am taking from most is that research is something that you can think okay its happening they found this and this, but I never thought that okay there are people involved and that I myself just by contributing in a study or a research can like help people or like help the society to move forward. So, like the importance of, hm, even though it might be sometimes inconvenient, you don't always get something out of it, to see like the bigger picture of participating in the study and to see like others can help on the long term.	Private	Local/ Bottom-up	Science	Students	High	Yes
TD*	KELLY I think that what I am taking from this session to process in the next days or time period, is how important citizens are in contributing and engaging in science. Maybe it's important to come up with ways how they can contribute even more, make them aware. I think that after this session I understood or started to think that people are not aware for the science taking place around them and how they can help, how they can engage more. And maybe this is for future society and policies to take into consideration. Maybe researchers as well.	Public	Internatio-nal/ Bottom-up	Science	Students	High	Yes
TD*	YARA I agree that it's interesting to think about it. And I have never really thought about engaging	Private	Local/ Bottom-up	Science	Students	High	Yes

	people in science as something to do but I think it's really important that we do that more often.						
ED*	KELLY Generally, I don't think there are enough policies to ensure that citizens participate in science. From my experience. I never heard or understood something that would make the citizens wanting to engage more.	Private	Local/ Bottom-up	Society	Citizens	Low	No
ED*	JULIA Yes, I have a question actually. because I was thinking that these policies when you make them for the social sciences, that it is a lot easier for them to include the people and maybe use focus groups or interviews, but I was wondering how can you for instance with physics, how can you… is it beneficial for them and the participants themselves to participate in that kind of research? Because I would not, I cannot think of a way that I can participate in such research.	Private	Local/ Bottom-up	Society	Citizens	Low	No
ED*	JULIA Yes, I agree with what you said. It's just that I didn't even think that all these possibilities were also participating, and I think that this is also one of the things why people might not be participating, because they, even I well I have a scientific education but even I did not even think of all these possibilities, so I don't think that for everyone is clear that this is possible with science, so yeah.	Private	Local/ Bottom-up	Society	Citizens	Low	No
ED*	JULIA Yes, I can think of one policy that actually does other things, does not promote the science and the participation. I think that because studying is so expensive now, you have to like take a loan and it's not really promoting the idea of being a scientist especially if you want to do a PhD you have to study for a way longer time and because a lot of people do not want to take the loan and maybe their parents might not have that much money, I think there is no policy that promotes for anyone to be in science. Even when you are from a lower economic status that is a really high threshold to even consider going to the university so… I think that's one policy that should be better.	Public	National/ Top down	Society	Students	Medium	Yes
ED*	SOPHIE Yeah, well at first I think it's okay. It's good that you have a group of diversity and different people. But I think that, I don't know how to say it in English but I think 'dat we aan het doorslaan zijn'. Maybe you can translate it. MODERATOR That sometimes it goes too far. SOPHIE Yeah. Well, sometimes I read things like, oh, we need 50% of a minority group, we need 50% of women. And when I think, for example, well in my study, well the most are women. And I think that women are more naturally interested in things like social work and caring. But I think from naturally men mostly are more interested in maths	Public	Internatio-nal/ Top down	Society	Citizens	Medium	Yes

	and physics. And I think that's okay. And I don't think that we need policy to make group very diversity and we need is so much percent of black people and so much percent of white and no, I do not agree with that. Because, yeah, well, you need the best people in the best places. And it's.. and I don't think that is matter if there's a black woman or a white lesbian, it doesn't matter who you are, it does matter if you good or bad, your work.						
ED*	SOPHIE Yeah, I think it's up to the person themselves, but well, I think we don't have to discriminate people. Not in a good way, but also not in a bad way. Of course. Yeah. I really think I'm really, for example for a anonymous sollicitation. So you don't see the name or the face of the people you only see where they worked and where they studied. I think that that it's more important than your gender or, or sexually oriëntation.	Public	Internatio-nal/ Top down	Society	Citizens	Medium	Yes
ED*	ANIKA Well, I think it's, especially with the patriarchy where we live in, it's really difficult to not take in consideration that a lot of things start at the bringing up of the younger children.	Public	Internatio-nal/ Top down	Society	Citizens	Medium	Yes
ED*	ANIKA Oh, yeah, exactly. But I think it's really important that there is the difference between all the kinds of the vision of what people have and that there's a healthy discussion within a company as well. And so when it comes down to policies and doing positive discrimination, I think it's important because otherwise some people don't even get the chance to get at the same place where I as a white woman with a Dutch name can have an option to do yeah [sollicitatie] ASSISTANT-MODERATOR Finding a job. MODERATOR A job interview. ANIKA Yeah, yeah job interview, that's what it is.Because some people are already discriminated by only their name. So I agree that it would be great if it was anonymous. But in the first place, I think it's important that before we can make it anonymous, we have to make it equal because now it isn't. But this is a really complicated discussion, especially at this time in the evening in not even your native language.	Public	Internatio-nal/ Top down	Society	Citizens	Medium	Yes
ED*	SOPHIE Yeah. I want to react to what assistant-moderator said, and I also attracted my attention. Because I also studied at like [unclear] for a few years, and I have learned that women and men are are different, and have different interests from naturally because, like, they're so is a very known study, that they try to raise girls like boy so they gave them toys, like cars and they gave boys like toys like dolls, and makeup. But at the end of the day, they weren't really interested in that kind of	Private	Local/ Bottom-up	Education	Students	Medium	Yes

	toys, and when they had a chance to choice their own toys, their choice, really, that was for their gender. So I think that it is also that like boys have more testosterone, and they have like different hormones. And their brains are different than girls. So I really think that from nature, girls are more interested in social things, and boys are like more interested in math and things. And I don't really understand what the problem is, if we have more girls in social things, and we have more boys in maths. What is the problem about that? Why? Why must everything be equal? Well, today, I don't get the point. Sorry, but I do not really agree with your opinion.						

*TD = Transformative Dimension; ED= Exclusion Dimension

4.4. Conclusions of the Focus Groups: TOPIC e) policies that promote awareness-raising actions and citizen engagement in science

4.4.1 Conclusions on Gender

- Women (including vulnerable women) from women's group

The participants recalled some policies that promote awareness-raising actions and citizen participation in science.

- One woman mentions Health Data Research UK, which is part of the government, and says that it is doing its best to recruit young scientists and involve people from ethnic minorities.
- Another woman also says she knows that it's a principle of the NHS [National Health Service] Constitution that people should be allowed to be involved in research as citizens."

- Member of LGBTQI group

Some of the participants mentioned the impact that science can have on policy:

- Some of the participants mentioned the impact that science can have on policy, for example on issues such as the use of feminine and masculine language.
- They stress the importance of participating in studies to achieve visibility in public policy.

- Women (including Young women) from a women's group

There is a lack of knowledge among participants about EU policies that promote awareness-raising actions to involve citizens in science.

4.4.2 Conclusion on Education

- Parents

- The implementation of scientific evidence in some schools has led the administration to support some of the teacher training activities.
- Participation in scientific events encourages a better understanding of science-related policies.
- The R&D policies of companies can have a social impact on the families of their employees and on the educational centres with which they collaborate.
- Parents feel that they are being trained as teachers and that empowers and validates them.

- Teachers

- Participants discussed some issues related to politics and science.
- Participants spoke about the need for politicians to work with citizens rather than work on them.
- Participants mentioned the role of legislation and top-down approaches in promoting citizen awareness and engagement with science.

- Students

- Students stressed the importance of involving people in research topics that interest them.
- Students think that people should be aware of the possibilities that exist to participate in research.
- Some students think that policies go too far, that it is more important to have the right person in the right place.
- Some student also indicated that policies should primarily target children and that they should avoid discrimination in science, creating equal opportunities for all.

5. Policy impact at enhancing citizens participation in scientific research with impact

ALLINTERACT has already achieved great political impact at fostering a wider and more diverse participation of citizens in science on issues related to gender and education, particularly of people from vulnerable groups.

One of the political impacts of the Sappho and Adhyayana platforms is that before the start of ALLINTERACT, regional and national governments and women's institutes in Spain promoted campaigns stating that love kills, a very harmful hoax, especially for youth. However, in September 2020 a post was published in Sappho, which provided scientific evidence and personal experiences that show that love does not kill. In 2023, no campaigns against love have been found in social media. This impact on politics has strong implications on future policy measures and will save the life of many people through the prevention of violence, as scientific evidence shows that love can contribute to prevent gender violence.

In addition, the Society of Jesus (the Jesuits) have decided to eliminate sexual abuse of children and adults in the Jesuits Global institution worldwide, and to undertake this action, they are basing their protocols, policies, and training programmes on scientific evidence of social impact in the gender field. In this regard, the Sappho platform is being used as a key resource for their worldwide trainings to this end.

Furthermore, due to ALLINTERACT's PI's already achieved scientific, political and social impact in engaging citizens (especially from vulnerable groups) in research with social impact, the European Commission's Network of Experts working on the Social dimension of Education and Training (NESET) commissioned him and two colleagues of UB-CREA team the report "Achieving student well-being for all: educational contexts free of violence". Along this line, ALLINTERACT's PI was commissioned the White Book of the Inclusive Communication of Science by the Spanish government (FECYT). The White Book presents initiatives and projects in which people from vulnerable communities, including the LGBTQI+ group or people with disabilities, have democratic and active roles and promote inclusion in science in different areas. The White Book contributes to the implementation of policies that include the bottom-up approach and that therefore boost the participation of citizens in science made not only for them but also with them (Flecha, 2022).

6. Identified awareness-raising actions which foster citizen participation in scientific research with impact. Analysis of the elements that enhance and prevent potential replicability based on the focus groups

6.1 Overview

After identifying six awareness-raising actions (three in gender and three in education) that foster citizens' participation in research with social impact, the six actions have been replicated in new contexts. Each partner has implemented one action with the same participants that have formed the experimental groups from the focus groups. After implementing the actions, post-test focus groups were implemented with the experimental and control groups from each target group. In this section, first the six actions are described. Then, an analysis of the elements that enhance and prevent the potential replicability of those actions has been conducted based on the focus groups conducted with the experimental groups after participating in the actions.

6.2 Replicated actions

6.2.1 Actions on Gender

- Women (including vulnerable women) from women's group

The action that UOXF selected to replicate was the Deliberative Exercise to Foster Public Engagement, which has been previously tested in the context of nanotechnology achieved an impact on citizen engagement in scientific research (Jones et al., 2014). The action consisted of a workshop on Equality, Diversity and Inclusion (EDI) in research. The workshop aimed to improve the quality and relevance of research to society.

The EDI workshop in the research had 25 participants, all of whom had signed and consented their participation. The workshop lasted four hours and consisted of an introduction, active learning in five small groups with five participants and one facilitator, and knowledge sharing with all participants. The workshop was face-to-face and took place in downtown Oxford, in a community venue (the old fire station).

In line with UK best practice on citizen involvement in research, FG participants received honoraria for their participation.

- Member of LGBTQI group

The action which ISCSP-ULISBOA designed was called “Citizens, gender and science: topics for the future”, a five-sessions program in which participants were able to discuss the importance of Gender Studies, also to get in touch with academic and scientific papers, and finally to learn how to use some academic and scientific resources to perform any search based on a topic of interest. All sessions were conducted under a hybrid mode (on-site and on-line).

Participants were able to interact and express their opinions on the topics covered in the sessions. The moderator, who was the responsible researcher, made sure to create a safe space for participants to ask questions, respond, and form and promote an equal and respectful participation and environment, prioritizing the participants who had not yet spoken, so that they would have the opportunity to do so.

After each session, the moderator briefly summarized the main topics discussed, opened a round of final questions and gave information for the following sessions, including confirmation of the date and time of the next sessions.

- Women (including Young women) from a women’s group

UNIMIB team designed the action plan on the basis of which experimental group (“Women, including young women”) was involved for the “intervention activity”. The name of the action was: “Science in the real life of citizens: an interactive dialogue”. It consisted of one interactive workshop during which our participants interacted with a women scientist about two main topics: “women and science” and “gender medicine”.

The main goal was to increase their knowledge and interest in science by engaging them in a debate. An interactive workshop was held with the scientist Flavia Zucco who presented scientific results on the topics "women and science" and "gender medicine". The target group consisted of women, including young women. The number of interventions was one and the workshop was online.

The content of the workshop was: Gender medicine: What is it? Why is it important for women (and men)? Prior to the workshop, participants were briefed on the theme of the workshop in

order to prepare some questions. The workshop included a brief presentation of the objective of the workshop, an interactive presentation of the topic by the scientist, a discussion and final conclusions. At the end of the workshop, participants were invited to read some articles linked to the topic.

6.2.2 Actions on Education

- Parents

UB replicated Dialogic Scientific Gatherings (DSG), in which participants read and engage in an egalitarian dialogue around scientific texts. Between 5 and 12 participants joined the DSG sessions, of whom 8 belonged to the experimental group and 4 were new participants. All participants gave and signed their consent to participate. The DSG intervention consisted of 11 sessions, with each section lasting 45-60 minutes.

Before each DSG session, the participants and the moderator read the agreed on pages and selected those paragraphs that were of their interest and that they would like to share. Each session began with a summary of the article. Then, the moderator opened the floor and the participants intervened. Each participant mentioned the page number and paragraph they had selected, read it and then shared their thoughts.

All DSG sessions were based on an egalitarian dialogue, prioritizing those who had not yet spoken. At the end of each DSG session, the participants themselves decided the next article to read and the number of pages.

- Teachers

The University of Helsinki implemented Equality Impact Assessments (EqIAs), which are a systematic, evidence-based consideration of the impact of practice, decisions, and actions on groups of people with protected characteristics.

The main objective was to collaborate with teachers in exploring different ways to study the impact of specific curricular areas on equality.

All participated voluntarily throughout the process and gave and signed their consent to participate.

For the replication phase, the focus shifted to building on key principles of pedagogy by working specifically with teachers on how to develop an EqIA in the curriculum they were teaching.

Teachers were asked to reflect on a number of issues. It was also found how consideration of equality and evidence-based assessment of equality impact are integral to quality assurance and improvement of academic programs, as well as to equality mainstreaming. There are at least four main aspects: curriculum design, curriculum delivery, assessment and feedback and student engagement.

- Students

The use of the Adhyayana Scientific Evidence Platform was the action selected by RUG to replicate. Adhyayana is an educational platform aimed at opening scientific debate to the public. All participants gave and signed their consent to participate.

Three sessions were conducted and each lasted 45-60 minutes and sessions took place online to ensure participants' health.

6.3 Analysis of the elements of the identified actions

6.3.1 Elements that enhance their potential replicability

6.3.1.1 Gender

- Women (including vulnerable women) from women's group

Discussing scientific evidence

In the post-test focus group, participants from the experimental group highlighted the importance of discussing scientific evidence to challenge their previously held assumptions and change their perspectives and opinions, opening up to new ones. They valued the fact that other workshops do not directly engage participants with scientific evidence.

Engaging in dialogues among diverse participants in small groups

Participants positively valued the fact that they could discuss and engage in dialogues about the research and concepts they were learning about in small groups with other participants. In their views, working in these small groups allowed them to better know and understand different perspectives on the same concepts and scientific evidence.

Sharing knowledge learned with all participants

Each group presented their learning to the other groups and discussed what was presented and asked questions and made comments for clarification.

- Member of LGBTQI group

Accessing scientific evidence

Participants in the post-test experimental focus groups acknowledged that the action allowed them to access scientific databases and articles, which they valued very positively. In addition, they positively valued the exchange and reflection based on individual experience in relation to scientific research.

Engaging in dialogues among diverse participants

In addition to having access to scientific texts, the fact that participants could then engage in dialogues and actively participate in reflecting on the topics of the articles together as a group was regarded as highly important. The action's horizontal structure in this regard was also highlighted by some participants.

Focus on the LGBTQI+ community

The fact that the action focused on the LGBTQI+ community was especially meaningful for participants.

- Women (including Young women) from a women's group

Engaging in dialogues among diverse participants

Participants very positively valued the opportunity that the action gave them to engage in dialogues and interactions with each other, exchanging ideas and perspectives with each other.

Using a colloquial language

The fact that in those dialogues the scientist did not use technicalities but, rather, a colloquial language to talk about issues based on scientific evidence was also highlighted as important, making science seem closer to them.

Reflecting towards taking action

Being able to not only talk about the specific issues the action deals with, but directing those interactions and dialogues towards taking action in different fields, such as education, the labour market or politics, made participants highly value the action, thus increasing their awareness of the impact of science in their own lives.

Increasing their confidence in the scientific community

In addition to increasing their interest, involvement and scientific knowledge, participants have increased their confidence and trust in the scientific community.

6.3.1.2. Education

- Parents

Encouraging connections between issues learned in the action and daily experiences

Participants expressed that the fact that the action encouraged them to make connections between what they were learning in the action and what they had learned elsewhere, as well as with issues present in their daily lives, was very positive.

Learning about social impact of scientific evidence

The action's focus on learning about the social impact of different scientific concepts and evidence was a key aspect highlighted by the participants. This focus on social impact increased their interest in learning more about scientific evidence.

Engaging in dialogues among diverse participants around scientific texts

Participants very positively valued being able to engage in dialogues around different issues with people who have different opinions and perspectives. The diversity of the participants was acknowledged as being beneficial for all. In addition, reading the scientific articles for the dialogues they engaged in during the action instead of individually made the reading and understanding of the scientific texts easier and more engaging.

Feeling important and recognized

Participants have felt valued and important during the sessions and feel that they have gained a lot of self-confidence. The fact that the participants feel more and more valued in the Dialogic Scientific Gatherings makes this successful educational action an opportunity to encourage citizens from vulnerable contexts to participate and learn about scientific evidence with social impact.

- Teachers

No reflections about the replicability of the action implemented with teachers were found in the post-test focus groups.

- Students

No reflections about the replicability of the action implemented with teachers were found in the post-test focus groups.

6.3.2 Elements that prevent their potential replicability

None of the focus groups conducted with the experimental groups after implementing the six actions talked about elements that prevent the replicability of the actions.

6.4. Conclusions on the potential replicability of the identified actions

Whereas no elements that prevent the potential replicability of the identified actions have been found in the focus groups, some common elements have been found which enhance their potential replicability according to individuals who participated in them. Some of these common elements are as follows:

- Having access to scientific evidence and articles.
- Being able to engage in dialogues around scientific texts with people from diverse backgrounds and diverse perspectives.
- Learning about the social impact of research and connecting it with participants' daily lives and experiences.
- Focusing on vulnerable communities.
- Carrying out actions from the bottom-up approach.
- Using an egalitarian dialogue among diverse people.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement num. 872396

7. Analysis of the identified awareness-raising actions: a) translation into policy and/or practice, b) social impact, and c) replicability

7.1 Overview

The results from the focus groups on the elements that might facilitate and/or prevent the potential replicability of the identified actions into different contexts has been followed by the analysis of the actual or potential policy and social impact of the actions. In order to inform policymakers on those actions which promote and improve citizens' awareness and engagement in research with social impact, a threefold analysis of each action has been conducted: a) which of the aforementioned identified actions have been translated into policies; b) which of these policies have been successful at enhancing citizens participation in scientific research with impact; c) which are those elements that enhance and prevent the potential replicability of the latter to new contexts? Do they share common features. This section presents the results of the analysis of the potential or actual translation into policy and/or practice, social impact, and the replicability of each of the six actions.

7.2 Actions on Gender

- Women (including vulnerable women) from women's group

Action: Workshop on Equality, Diversity and Inclusion (EDI) in Research

Translation into policy/ practice: *please describe whether your action has been translated into policy/ practice beyond its implementation in 2022, and if so how:*

The action has been included in the National Institute for Health and Care Research (NIHR) Oxford Biomedical Research Centre's (BRC) plan of work on broadening patient and public involvement and engagement in research. The materials and methods will be used for repeating the action in the next five years and for informing the development of other actions related to patient and public involvement and engagement in research with regards to 1) providing training to public contributors and 2) developing new interventions to broaden patient and public involvement and engagement in research. Namely, we are holding co-creation sessions with public contributors to develop new Patient/Public Research Ambassador roles. These roles will help research organisations build sustainable relationships with under-served communities and help more people from different backgrounds getting involved in health research.

a)which of the identified actions have been translated into policies/practice							
	Aim of the policy	*Level of intervention (i.e. local/national/international; bottom-up/top-down)*	*Field of intervention*	*Type of participation (including co-creation)*	*Participants (targeted and real)*	*Level of access to scientific evidence*	*Social Impact**

Transformative Dimension	Action: Workshop on Equality, Diversity and Inclusion (EDI) in Research Policy: to broaden patient and public involvement and engagement in research	Local/ bottom-up – National Institute for Health and Care Research (NIHR) Oxford Biomedical Research Centre (BRC) with potential for national spread and adoption via NIHR	Education & gender in biomedical research	Workshop participation including co-creation via sharing of relevant expertise and lived experiences	25 public contributors to biomedical research with an emphasis on women and under-represented minorities, including from the NIHR Oxford BRC Diversity in Research Group	First-hand: reading of scientific articles, plain English summaries, and facilitate discussions to increase the level of understanding and interpretation of scientific evidence	Yes: see achieved and anticipated social impact below
Exclusionary Dimension	Certain groups and communities are hard to reach and engage with research						

*** Social impact for grid a) – detailed description**

Achieved social impact: *please describe in detail how the action that you implemented has been successful at enhancing citizens participation in scientific research with impact, giving details of the target population (participants), their numbers, and the setting:*

Target population (participants), numbers, setting: 25 public contributors to biomedical research with an emphasis on women and under-represented minorities, NIHR Oxford Biomedical Research Centre

The focus group participants gave described the following impact of the action:

- Increased knowledge and confidence related to scientific research on EDI;
- Greater quality and extent of involvement and engagement in research;
- Improved quality and relevance of research to society as a whole

Anticipated social impact: *please describe in detail the anticipated impact of the translation of your action into policy/ practice in the future, giving details of the target population and their numbers:*

Over the next five years, it is expected that 75-100 public contributors will participate in activities resulting from the action. Their anticipated impact will be broadening patient and public involvement and engagement in research to groups and communities that are currently under-represented in research. One related activity that is currently under-way is 4 co-creation workshops with 20 public contributors in January-March 2023 to develop new Patient/Public Research Ambassador roles. These roles are envisaged to help research organisations build sustainable relationships with under-served communities and help more people from different backgrounds getting involved in health research. The workshops will be used to develop a grant application to the NIHR to fund 2-4 Patient/Public Research Ambassador roles.

Facilitators of translation: *please reflect on and describe the factors that facilitated the translation of your action into policy/ practice:*

- The action was developed and implemented thanks to ALLINTERACT: evidence of the action to replicate, protected time of the researchers, and funding were critical
- Establishing a partnership with the NIHR Oxford Biomedical Centre was important for embedding the action into the organizational policy/practice and recruiting participants
- Alignment of the action with national policies: because the NIHR that funds the Oxford Biomedical Research Centre has policies supporting public engagement and involvement in research and EDI, decision-makers and practitioners were interested in the implementation of the action and including it in their work plan
- Co-creation: we took input from public contributors during the first wave of focus groups and worked together with the NIHR Oxford BRC staff to develop and implement the action and to plan how to embed it into the organisation's policy and practice

Barriers to translation: *please reflect on and describe the factors that hindered the translation of your action into policy/ practice:*

- The current evidence base on the relevant actions is limited. There was no action that we could take and replicate in its entirety. We had do adapt the methodology of the identified action to our context and develop new training materials.
- The majority of the evidence that we used for teaching materials and discussion were not Open Access. We were able to access this evidence thanks to the institutional support, but otherwise the accessibility of the evidence this could have been a barrier.

If in addition to embedding your action into your organization's policy/practice, your action has led to other policies/practices, please complete grid b) below for each additional policy/practice. If not, leave grid b) blank.

b)which of these policies/practices have been successful at enhancing citizens participation in scientific research with impact							
	Aim of the policy	*Level of intervention (i.e. local/national/international; bottom-up/top-down)*	*Field of intervention*	*Type of participation (including co-creation)*	*Participants (targeted and real)*	*Level of access to scientific evidence*	*Social Impact**
Transformative Dimension	Developing new Patient/Public Research Ambassador roles	Local/ bottom-up – National Institute for Health and Care Research (NIHR) Oxford Biomedical Research Centre (BRC) with potential for national spread and adoption via NIHR	Education & gender in biomedical research	Workshop participation including co-creation via sharing of relevant expertise and lived experiences	20 public contributors to biomedical research with an emphasis on women and under-represented minorities, including from the NIHR Oxford BRC Diversity in	First-hand: facilitate discussions based on scientific evidence	Yes: see achieved and anticipated social impact below

					Research Group		
Exclusionary Dimension							

*** Social impact for grid b) – detailed description**

Achieved social impact: *please describe in detail how the action that you implemented has been successful at enhancing citizens participation in scientific research with impact, giving details of the target population (participants), their numbers, and the setting:*

Target population (participants), numbers, setting: 20 public contributors to biomedical research with an emphasis on women and under-represented minorities, NIHR Oxford Biomedical Research Centre

- Increased knowledge and confidence related to co-creation
- Participation in a grant application as co-applicants

Anticipated social impact: *please describe in detail the anticipated impact of the translation of your action into policy/ practice in the future, giving details of the target population and their numbers:*

- If the application is successful, the workshops will be used to develop a grant application to the NIHR to fund 2-4 Patient/Public Research Ambassador roles, which in turn will help to broaden patient and public involvement and engagement in research to groups and communities which are currently under-represented in research.

Facilitators of replicability: *Which elements of your action and related policies/practices enhance the potential replicability of your action and related policies/practices to new contexts?*

- Co-creation: we took input from public contributors during the first wave of focus groups and worked together with the NIHR Oxford BRC staff to develop and implement the action and to plan how to embed it into the organisation's policy and practice
- Discoverability of the action: we published a news item about our action and will disseminate it through conferences and publications, which will make it discoverable by those who are looking for similar actions
- The setting of our action (NIHR Oxford Biomedical Research Centre) is similar to 15 other NIHR-funded Biomedical Research Centre in the UK, and so our action can be potentially replicated by some of these centres
- Sharing of methods and materials: we openly share our methods and materials with all interested organisations
- Plain English summary: we produced plain English summaries of the scientific evidence for the workshop, which make them more accessible for public and practitioners

Barriers to replicability: *Which elements of your action and related policies/practices prevent the potential replicability of your action and related policies/practices to new contexts?*

- A lack of dedicated time and resources for public engagement and involvement in research – the action aimed at 25 public contributors required time commitments from 8 researchers and practitioners as well as resources to organise the workshop
- Implementation of the action to new contexts would require a certain degree of adaptation based on the number of participants, their background, and interests through engagement and co-creation
- A lack of skilled and experienced staff to plan the action and facilitate discussions with the public – a number of potential facilitators whom we approached cited a lack of skills and experience in facilitating discussions with the public as a reason for not getting involved and several participants stressed the importance of having experienced facilitators who could keep discussions focused on the given topic

- Member of LGBTQI group

Action: "Citizens, gender and science: topics for the future" program.

Translation into policy/ practice: *please describe whether your action has been translated into policy/ practice beyond its implementation in 2022, and if so how:*

"Citizens, gender and science: topics for the future" program has not been transformed into a specific policy at a large scale yet. However, it is important to highlight that due to the experience and the results of this action, the initiative will be integrated as CIEG's efforts and practices to create an ongoing process of knowledge transfer and promotion of scientific culture to broader audiences. At the same time, this action will positively impact on ISCSP/ULisboa gender equality Plan.

a)which of the identified actions have been translated into policies/practice							
	Aim of the policy	*Level of intervention (i.e. local/national/international; bottom-up/top-down)*	*Field of intervention*	*Type of participation (including co-creation)*	*Participants (targeted and real)*	*Level of access to scientific evidence*	*Social Impact**
Transformative Dimension	"Citizens, gender and science: topics for the future" is a program in which participants were able to discuss the importance of Gender Studies, also to get in touch with academic and scientific papers, and finally to learn how to	Local / Top Down	Gender Studies	Participants were able to interact, express their opinions and also co-create new knowledge on the topics covered in the sessions included in the program.	LGBTI+ people	Low/medium	Yes

	use some academic and scientific resources to perform any search based on a topic of interest.						
Exclusionary Dimension							

*** Social impact for grid a) – detailed description**

Achieved social impact: *please describe in detail how the action that you implemented has been successful at enhancing citizens participation in scientific research with impact, giving details of the target population (participants), their numbers, and the setting:*

Target population (participants), number, setting: 12 LGBTI+ participants with different academic and social backgrounds, hybrid mode (online and on-site).

Participants of the post-test focus group, who also participated in the program, described the following impact of the action:

- They acknowledged that the action allowed them to access scientific databases and articles, which they valued very positively.
- By having a better access to scientific content, they expressed a better preparation to differentiate evidence-based information from other kinds of sources.
- They highlighted the importance of the exchange of information among participants, which was very helpful to understand how Gender crosses every single aspect of people's lives.
- The fact that the action focused on the LGBTQI+ community was especially meaningful for participants.

In addition, as previously reported, this action will be integrated as part of CIEG's practices aiming to reinforce the efforts of knowledge transfer and promotion of scientific culture to broader and diverse audiences.

Anticipated social impact: *please describe in detail the anticipated impact of the translation of your action into policy/ practice in the future, giving details of the target population and their numbers:*

In the following five years, it is expected that a group between 80-100 people will participate in the following versions of the program. As a result, it is expected to

i) contribute in the process of bringing academy and scientific practices to new audiences,
ii) create spaces where people can reflect on the importance of Gender and Gender studies for our societies,
iii) to help strengthening the relationship between citizens and science,
iv) contribute in the creation of a stronger critical thinking in different audiences, and
v) contribute in the process of dismantling fake science.

Is expected to implement this initiative at least once a year as well as to adapt this action to more

specific or strategic groups.

Facilitators of translation: *please reflect on and describe the factors that facilitated the translation of your action into policy/ practice:*

- The design and implementation of this action in the context of the ALLINTERACT project was very important as it provided a scientific frame, which was well received by participants.
- CIEG's professional, academic and scientific experience, which helped to the proper design and implementation of the program.
- The possibility of working with LGBTI+ people, an element that was strongly highlighted by participants.
- The access to structural and technical resources, which allowed participants to be part of the program in a hybrid mode (online and on-site).

Barriers to translation: *please reflect on and describe the factors that hindered the translation of your action into policy/ practice:*

- Lack of time to extend the invitation to other LGBTI+ people and groups.

Facilitators of replicability: *Which elements of your action and related policies/practices enhance the potential replicability of your action and related policies/practices to new contexts?*

- A positive internal evaluation about the implementation of this program.
- CIEG's academic and scientific background and staff to facilitate this program.
- The existence of several other groups that may be interested in participating in this program.
- Access to structural and technical resources (rooms, computers, internet, scientific data bases, scientific articles) for people based in Lisbon.
- Potential alliances or partnerships with different stakeholders to implement this program in other contexts, with different audiences.

Barriers to replicability: *Which elements of your action and related policies/practices prevent the potential replicability of your action and related policies/practices to new contexts?*

- Lack of financial and technical resources to implement this program outside Lisbon.
- A potential bureaucracy (either internal or external) which may hinder the implementation of the program in other contexts.
- A potential difficulty of gathering different communities or individuals, as this program does not provide any academic degree.

- Women (including Young women) from a women's group

Action: Science in the daily life: an interactive dialogue on gender, science and medicine

Translation into policy/ practice: *please describe whether your action has been translated into policy/ practice beyond its implementation in 2022, and if so how:*

The replication of our action-intervention was recommended by the experimental group's members in order to enhance the participation of young women in science. For instance, this action could be implemented and replicated as part of the activities of the "Casa delle donne" Association (Milano, Pisa,

Parma), of which the participants are members, or it could be replicated in other contexts at local level. This is a recommendation for the future.

a)which of the identified actions have been translated into policies							
	Aim of the policy	*Level of intervention (i.e. local/national /international ; bottom-up/top-down)*	*Field of interventi on*	*Type of participatio n (including co-creation)*	*Participants (targeted and real)*	*Level of access to scientific evidence*	*Social Impact**
Transformative Dimension *	Our awareness-raising initiative (a workshop) on gender, science and medicine had these goals: a) To involve our experimental group in a discussion about some topics that are interesting for them and their daily lives. b) To increase their scientific literacy. c) To generate interest in science and its implications. d) To increase their trust in the scientific community. e) To increase their awareness about the impact of science on their lives.	Local	Gender, medicine and science	Participant/ Expert	Young women, member of the "Casa delle donne" association	Medium level	Yes
Exclusionary Dimension **	In Italy cultural resistances emerge when people have to participate to science engagement activities						

* Social impact for grid a) – detailed description

Achieved social impact: *please describe in detail how the action that you implemented has been successful at enhancing citizens participation in scientific research with impact, giving details of the target population (participants), their numbers, and the setting:*

The target of the action was our experimental group, composed of 5 women/young women, active members of "Casa delle donne" Association (Pisa, Milano, Parma). Because of the different geographical areas involved, we conducted the action on line.

The participants described the following impacts of the action:

- Increased knowledge on scientific research on medicine and gender.
- Increased knowledge of the condition of women in particular fields, where they were historically excluded and of the effects of this exclusion for the development of scientific results.

- Increased awareness of the relevance of research to society as a whole.

Anticipated social impact: *please describe in detail the anticipated impact of the translation of your action into policy/ practice in the future, giving details of the target population and their numbers:*

The action can be replicated by involving other women at the "Casa delle donne" Association (Milano, Pisa, Parma). The target group could be extended to other women and minorities. Since our focus groups' members revealed the intertwining of everyday life, science and participation, the intervention could be structured by focusing on other scientific topics relevant to the activists of the Association.
The social impacts of the action could be:

- the involvement of a wider community;
- the strengthening of dialogue between experts and non-experts;
- the co-construction of knowledge.

Facilitators of translation: *please reflect on and describe the factors that facilitated the translation of your action into policy/ practice:*

The factors that could favor the translation of action into a policy:

- co-designing the action with the institution(s)/association(s) involved;
- adapting the new action to the context in which it will be developed.

Barriers to translation: *please reflect on and describe the factors that hindered the translation of your action into policy/ practice:*

There is no evidence.

Facilitators of replicability: *Which elements of your action and related policies/practices enhance the potential replicability of your action and related policies/practices to new contexts?*

- Dissemination of the action through conferences and publications, which will make it discoverable by those who are looking for similar actions.
- Dissemination of the action through the *ad hoc* video that we have realized for ALLINTERACT.
- Sharing knowledge to interested organisations.

Barriers to replicability: *Which elements of your action and related policies/practices prevent the potential replicability of your action and related policies/practices to new contexts?*

According to some recent studies, the degree of trust in science by citizens has increased in recent years, and the number of people who would like to receive more scientific information has also increased too. However, the level of participation and involvement in scientific engagement activities in Europe remain low. This aspect emerges also in our experience of implementing the intervention-action. In fact, at the beginning some of the participants were reluctant to participate; but then they enjoy discussing scientific topics in an egalitarian context, after being created a "safe" space of interaction.
Considering the Italian context, the barriers to replicability are:

- cultural: the relationship between science and society in Italy; low graduate rate (below the European average); the importance of the humanistic disciplines over the natural ones, because of the importance of Italian cultural heritage;
- social: vulnerable people have fewer economic, social and cultural resources, which inhibits their active participation in the public space.

7.3 Actions on Education

- Parents

Action: Dialogic Scientific Gatherings

Translation into policy/ practice: *please describe whether your action has been translated into policy/ practice beyond its implementation in 2022, and if so how:*

Dialogic Scientific Gatherings are one of the Successful Educational Actions identified by the INCLUD-ED project (funded by the European Commission's 6th Framework Programme). INLCUD-ED is the only social sciences and humanities research project that was included in the European Commission's list of 10 successful projects. Successful Educational Actions identified by INCLUD-ED have wide scientific, political and social impact, including being translated into a variety of policies.

These policies have been implemented at different levels and have had different impacts. We have found 23 policies overall: 21 policies at local level, 2 at the Spanish national level, and 6 at the international level. These policies have involved different actors, among others, municipalities, different government bodies, universities, associations as well as NGOs, in more than ten different countries such as Spain, South Korea, Portugal, Ecuador, Brazil, Mexico, Argentina and United Kingdom.

The main objective of the aforementioned policies is to foster the replicability of the Successful Educational Actions to new contexts, often with vulnerable communities. Currently, there are more than 10,000 Successful Educational Actions worldwide. Dialogic Scientific Gatherings in particular are being implemented in a wide variety of contexts and with diverse individuals and communities. These include adult learners, children in primary and secondary education, parents of school-aged students, and university students and professors, among others. The following publications show some of the impacts that Dialogic Scientific Gatherings are achieving in some of those contexts:

Buslón, N., Gairal, R., León, S., Padrós, M., & Reale, E. (2020). The Scientific Self-Literacy of Ordinary People: Scientific Dialogic Gatherings. Qualitative Inquiry. https://doi.org/10.1177/1077800420938725

Díez-Palomar, J., Font Palomar, M., Aubert, A., & Garcia-Yeste, C. (2022). Dialogic Scientific Gatherings: The Promotion of Scientific Literacy Among Children. *SAGE Open*, *12*(4). https://doi.org/10.1177/21582440221121783

	a) Which of the identified actions have been translated into policies and b) which of these policies have been successful at enhancing citizens participation in scientific research with impact						
	Aim of the policy	*Level of intervention*	*Field of intervention*	*Type of participation*	*Participants*	*Level of access to scientific evidence*	*Social Impact*
Transformative Dimension*	Agreement with Rivas-Vaciamadrid City Council to implement SEA in schools (2010-2015)	Local, bottom-up	Schools	Teachers, families and students participate in the implementation of SEA	Students and families, especially from vulnerable communities	Training in Scientific Evidence is provided, being Scientific Dialogic Gatherings one of these SEA	Political support to SEA and SEA implementation. https://www.rivasciudad.es/servicio/educacion/2019/12/15/actuaciones-

							educativas-de-exito-includ-ed/860600112472/
Exclusionary Dimension**							

	a) Which of the identified actions have been translated into policies and b) which of these policies have been successful at enhancing citizens participation in scientific research with impact						
	Aim of the policy	*Level of intervention*	*Field of intervention*	*Type of participation*	*Participants*	*Level of access to scientific evidence*	*Social Impact*
Transformative Dimension*	Agreement with Albacete City Council to implement SEA in two neighbourhoods (2009-2014)	Local, bottom-up	Schools	Teachers, families, and students participate in the implementation of SEA	Students and families, especially from vulnerable communities	Training in Scientific Evidence is provided, being Scientific Dialogic Gatherings one of these SEA	
Exclusionary Dimension**							

	a) Which of the identified actions have been translated into policies and b) which of these policies have been successful at enhancing citizens participation in scientific research with impact						
	Aim of the policy	*Level of intervention*	*Field of intervention*	*Type of participation*	*Participants*	*Level of access to scientific evidence*	*Social Impact*
Transformative Dimension*	Agreement with La Salle University in Madrid to implement SEA at the University (2010-2020)	Local, bottom-up	Higher education	Professors and students participate in the implememntation of SEA	Professors, students	Training in Scientific Evidence is provided, being Scientific Dialogic Gatherings one of these SEA	
Exclusionary Dimension**							

a) Which of the identified actions have been translated into policies and b) which of these policies have been successful at enhancing citizens participation in scientific research with impact							
	Aim of the policy	*Level of intervention*	*Field of intervention*	*Type of participation*	*Participants*	*Level of access to scientific evidence*	*Social Impact*
Transformative Dimension*	Agreement with Kyungnam University in South Korea to train university faculty in INCLUD-ED results (2011-2016)	International, bottom-up	Higher education	Professors will receive training about SEA	Professors	Training based on Scientific Evidence	
Exclusionary Dimension**							

a) Which of the identified actions have been translated into policies and b) which of these policies have been successful at enhancing citizens participation in scientific research with impact							
	Aim of the policy	*Level of intervention*	*Field of intervention*	*Type of participation*	*Participants*	*Level of access to scientific evidence*	*Social Impact*
Transformative Dimension*	Agreement with FETE-UGT to train teachers in Spain in INCLUD-ED (2010 - present)	National, bottom-up	Higher education	Professors will receive training about SEA	Professors	Training based on Scientific Evidence	
Exclusionary Dimension**							

a) Which of the identified actions have been translated into policies and b) which of these policies have been successful at enhancing citizens participation in scientific research with impact							
	Aim of the policy	*Level of intervention*	*Field of intervention*	*Type of participation*	*Participants*	*Level of access to scientific evidence*	*Social Impact*
Transformative Dimension*	Agreement with USTEA (Merger of Trade Unions of Workers in Andalucia, Spain) to train professionals (2013-present)	Local, bottom-up	Higher education	Professors will receive training about SEA	Professors	Training based on Scientific Evidence	

Exclusionary Dimension**							

	a) Which of the identified actions have been translated into policies and b) which of these policies have been successful at enhancing citizens participation in scientific research with impact						
	Aim of the policy	*Level of intervention*	*Field of intervention*	*Type of participation*	*Participants*	*Level of access to scientific evidence*	*Social Impact*
Transformative Dimension*	Agreement with Social Pedagogy and Environmental Education Research Group (SEPA) of the University of Santiago de Compostela to train future teachers in SEA (2013-present)	Local, bottom-up	Higher education	Professors will receive training about SEA	Professors	Training based on Scientific Evidence	
Exclusionary Dimension**							

	a) Which of the identified actions have been translated into policies and b) which of these policies have been successful at enhancing citizens participation in scientific research with impact						
	Aim of the policy	*Level of intervention*	*Field of intervention*	*Type of participation*	*Participants*	*Level of access to scientific evidence*	*Social Impact*
Transformative Dimension*	Department of Education of the Generalitat de Catalunya. Agreement with 8 Catalan universities to promote a team of trainers in SEA in Catalonia (UIC, UB, UAB, UdG, URV, URL, UdL, UVic)	Local, bottom-up	Higher education and schools	University professors will be trained on how to train future trainers of SEA	Professors	Training based on Scientific Evidence	
Exclusionary Dimension**							

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement num. 872396

	a) Which of the identified actions have been translated into policies and b) which of these policies have been successful at enhancing citizens participation in scientific research with impact						
	Aim of the policy	*Level of intervention*	*Field of intervention*	*Type of participation*	*Participants*	*Level of access to scientific evidence*	*Social Impact*
Transformative Dimension*	Directorate General for Education of Portugal	International, bottom-up	Schools	Teachers, families, and students participate in the implementation of SEA	Students and families, especially from vulnerable communities	Training in Scientific Evidence is provided, being Scientific Dialogic Gatherings one of these SEA	Identify successful actions for any context, transferable to any school, influencing the direction of current education policy towards inclusion with school, family and community. https://www.dge.mec.pt/projeto
Exclusionary Dimension**							

	a) Which of the identified actions have been translated into policies and b) which of these policies have been successful at enhancing citizens participation in scientific research with impact						
	Aim of the policy	*Level of intervention*	*Field of intervention*	*Type of participation*	*Participants*	*Level of access to scientific evidence*	*Social Impact*
Transformative Dimension*	Agreement with FARO Group (2020-2023)	International	Higher education and schools	Voluntary and consensual participation of the community	Students, teachers, managers, universities and the community	At least three SEA are consolidated and then progressively more SEA are implemented systematically and autonomously, with the support and advice of foundations, universities and official organisations	Improvement of students' academic results and school coexistence as well as greater commitment from the ministry. https://grupofaro.org/publicaciones/comunidades-de-aprendizaje-retos-y-oportunidades-en-innovacion-educativa/
Exclusionary Dimension**							

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement num. 872396

a) Which of the identified actions have been translated into policies and b) which of these policies have been successful at enhancing citizens participation in scientific research with impact							
	Aim of the policy	*Level of intervention*	*Field of intervention*	*Type of participation*	*Participants*	*Level of access to scientific evidence*	*Social Impact*
Transformative Dimension*	Framework Agreement with NIASE research group. University of Sao Carlos in Brazil (until 2022)	International	Education	Teachers, families, and students participate in the implementation of SEA	Students and families, especially from vulnerable communities	Access to Successful Educational Actions such as Scientific Dialogic Gatherings	
Exclusionary Dimension**							

a) Which of the identified actions have been translated into policies and b) which of these policies have been successful at enhancing citizens participation in scientific research with impact							
	Aim of the policy	*Level of intervention*	*Field of intervention*	*Type of participation*	*Participants*	*Level of access to scientific evidence*	*Social Impact*
Transformative Dimension*	Agreement with the Government of Aragon	Local	Schools	Teachers, families, and students participate in the implementation of SEA	Students and families, especially from vulnerable communities	Scientific Dialogic Gatherings and other SEA in learning communities	Commitment to establish successful actions https://www.boa.aragon.es/cgi-bin/EBOA/BRSCGI?CMD=VEROBJ&MLKOB=862480363939
Exclusionary Dimension**							

a) Which of the identified actions have been translated into policies and b) which of these policies have been successful at enhancing citizens participation in scientific research with impact							
	Aim of the policy	*Level of intervention*	*Field of intervention*	*Type of participation*	*Participants*	*Level of access to scientific evidence*	*Social Impact*

Transformative Dimension*	Agreement with KAMIRA. Federation of Roma Women's Associations in Andalusia, Spain	Local	Schools	Teachers, families, and students participate in the implementation of SEA	Students and families, especially from vulnerable communities	Scientific Dialogic Gatherings and other SEA in learning communities	Increase in enrolment of new students, continuity of students, decrease in absenteeism. https://federacionkamira.com/educacion/
Exclusionary Dimension**							

a) Which of the identified actions have been translated into policies and b) which of these policies have been successful at enhancing citizens participation in scientific research with impact							
	Aim of the policy	*Level of intervention*	*Field of intervention*	*Type of participation*	*Participants*	*Level of access to scientific evidence*	*Social Impact*
Transformative Dimension*	Agreement with AIMFR. International Association of Family Movements for Rural Training (2015-2020)	International					
Exclusionary Dimension**							

a) Which of the identified actions have been translated into policies and b) which of these policies have been successful at enhancing citizens participation in scientific research with impact							
	Aim of the policy	*Level of intervention*	*Field of intervention*	*Type of participation*	*Participants*	*Level of access to scientific evidence*	*Social Impact*
Transformative Dimension*	Agreement with KOOPERA (2015-2020)	National					
Exclusionary Dimension**							

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	a) Which of the identified actions have been translated into policies and b) which of these policies have been successful at enhancing citizens participation in scientific research with impact						
	Aim of the policy	*Level of intervention*	*Field of intervention*	*Type of participation*	*Participants*	*Level of access to scientific evidence*	*Social Impact*
Transformative Dimension*	Agreement with UPES (SINALOA-MX) (2020-2023)	International					
Exclusionary Dimension**							

*Transformative dimension – what facilitates the implementation of the targeted successful policies)
**Exclusionary dimension – obstacles hindering the implementation of successful policies

Achieved social impact: *please describe in detail how the action that you implemented has been successful at enhancing citizens participation in scientific research with impact, giving details of the target population (participants), their numbers, and the setting:*

The action implemented by the CREA-UB team is Dialogic Scientific Gatherings (DSG), one of the Successful Educational Actions (SEA) which have been found to achieve successful results in both academic achievements and social cohesion in the very diverse contexts implemented. SEA are currently implemented in more than 10,000 educational environments worldwide, and there is a wide array of scientific evidence published on their improvement results in many of those contexts. In this section, we provide an analysis of the policies into which SEA have been translated.

Overall we have found 23 policies:

- At the local level, we have found a total of 15 policies, including two agreements with local city councils in Spain, one agreement with the governing body of an autonomous community, ten agreements with universities in different Spanish regions to train students, one agreement with a federation of education workers to train teachers, and one agreement with a federation of different associations.
- At the Spanish national level, there is a total of two policies, including one agreement with a merger of a workers trade union to train professionals, and one agreement with a group of NGOs.
- At the international level we have found six policies. These are two agreements with universities to train its faculty in Successful Educational Actions in South Korea and in Mexico, two agreements with research groups in Brazil and Ecuador, one agreement with an international association of families, and one agreement with a Directorate-General for Education from Portugal.

Successful Educational Actions have been successful at enhancing citizens participation in scientific research by engaging different people in a wide variety of contexts in an egalitarian dialogue around the scientific evidence in which such actions are based.

As specified in the policies analyzed, these have involved more than eleven different universities worldwide to train professors, researchers and future teachers on Successful Educational Actions, as well as several school communities involving teachers, family members and students. Moreover, members of different political bodies such as two team workers of city council, one governing body of an autonomous community, a Directorate-General for Education of a country as well as four political members have been involved in Successful Educational Actions. Furthermore, one international association, one group of NGOs, united workers of different professions, citizens of different ethnicities such as Roma communities as well as different countries in South America, Asia and Europe have been involved.

Anticipated social impact: *please describe in detail the anticipated impact of the translation of your action into policy/ practice in the future, giving details of the target population and their numbers:*

Based on the ample political and social impact of the Successful Educational Actions, and on the social impact of Dialogic Scientific Gatherings as gathered in scientific papers, it is anticipated that there may be an increase in the number of policies based on Dialogic Scientific Gatherings targeting diverse citizens and communities in different contexts to further increment citizen engagement in science.

Facilitators of translation: *please reflect on and describe the factors that facilitated the translation of your action into policy/ practice:*

We have analyzed several factors and characteristics of the Dialogic Scientific Gatherings which might facilitate their translation into policies.

- On the one hand, e*ncouraging connections between issues learned in the action and daily* experiences might facilitate the approach of the scientific evidence driven by policy actions to citizens, as well as emphasizing the transformation of these policy actions into real outcomes. The fact that the action encourages citizens to make connections between what they learn in the action and what they had learned elsewhere, as well as with issues present in their daily lives, might facilitate the action's further replication and policy impact.
- On the other hand, *learning about social impact of scientific evidence* might also facilitate the translation of Dialogic Scientific Gatherings into policies, as they provide participants with the meaning of putting these Successful Educational Actions into practice. The action's focus on learning about the social impact of different scientific concepts and evidence is a key aspect in their impact. This focus on social impact increases citizens' interest in learning more about scientific evidence.
- Furthermore, e*ngaging in dialogues among diverse participants around scientific texts* could broaden the impact of Dialogic Scientific Gatherings in a wide diversity of citizens. Citizens very positively value being able to engage in dialogues around different issues with people who have different opinions and perspectives. In addition, reading the scientific articles for the dialogues they engage in during the action instead of individually makes the reading and understanding of the scientific texts easier and more engaging.
- Finally, *feeling important and recognized* is also highlighted as a strong aspect. Citizens who participate in the action feel valued and important and that they have gained self-confidence. This concludes that Dialogic Scientific Gatherings have a strong impact on people and thus in the possibility to transform society through policy actions that involve them.

Barriers to translation: *please reflect on and describe the factors that hindered the translation of your action into policy/ practice:*

We have not found any barriers to the translation of the implemented action into policy.

Facilitators of replicability: *Which elements of your action and related policies/practices enhance the potential replicability of your action and related policies/practices to new contexts?*

Based on the work conducted in previous work packages of the ALLINTERACT project, we have found four main characteristics which might facilitate the replicability of Dialogic Scientific Gatherings into new contexts.

- *Encouraging connections between issues learned in the action and daily experiences* might facilitate the implementation of Dialogic Scientific Gatherings in a wide variety of contexts due to the fact that this Dialogic Scientific Gatherings foster participants to connect what they had learned in the action and what they learned in other situations of their daily lives. Thus, Dialogic Scientific Gatherings have an impact on participants that can be transferred to any of the contexts in which they are involved.
- Moreover, Dialogic Scientific Gatherings bring the opportunity to *learn about the social impact of different scientific evidence and concepts*, which might increase the interest of the participants to broaden their knowledge about scientific evidence. This makes participants learn about scientific evidence, and it allows them to translate such scientific evidence into the different situations that they experience in the diverse contexts of their daily lives.
- *Engaging in dialogues among diverse participants around scientific texts* is another of the highlighted keys that make Dialogic Scientific Gatherings an educational action that can be replicated into a wide diversity of contexts. Participants very positively valued being able to be involved in dialogues around different issues with people who have different opinions and perspectives. The diversity of the participants was acknowledged as being beneficial for all. In addition, reading the scientific articles for the dialogues they engaged in during the action instead of individually made the reading and understanding of the scientific texts easier and more engaging.
- Last, during Dialogic Scientific Gatherings, participants *feel important and recognized*, which increases their perception of self-confidence. The fact that participants feel increasingly valued in Dialogic Scientific Gatherings makes this successful educational action a possibility to promote citizens from vulnerable contexts to participate and learn scientific evidence with social impact.

To conclude, the aforementioned characteristics indicate that Dialogic Scientific Gatherings might be replicated in diverse contexts and enhance the engagement of diverse citizens in scientific research.

Barriers to replicability: *Which elements of your action and related policies/practices prevent the potential replicability of your action and related policies/practices to new contexts?*

We have not found any barriers to the replicability of the implemented action and related policies into new contexts.

Through the aforementioned policies, citizens from a wide range of social contexts have been trained on and participated in the implementation of diverse Successful Educational Actions, which includes learning about the scientific evidence that is at the basis of these actions. Although the target groups of all policies have not been found, here is a list of the ones on which there is information:

- The agreement with Rivas-Vaciamadrid City Council has involved fifteen educational centers including nursery schools, infant, primary, secondary and high schools, in addition to teachers, families and students.
- The agreement with Albacete City Council has involved two schools including teachers, families, and students.
- The agreement with La Salle University in Madrid has involved both professors and students of the university.

- The agreement with Kyungnam University in South Korea has involved professors of the university.
- The agreement with FETE-UGT has involved teachers from different educational levels and schools.
- The agreement with USTEA, the Merger of Trade Unions of Workers in Andalucia, has involved professors who are trained to work on Successful Educational Actions with pupils and other citizens.
- The agreement with Social Pedagogy and Environmental Education Research Group (SEPA) of the University of Santiago de Compostela has involved professors of the university to work on Successful Educational Actions.
- The agreement with eight Catalan Universities through the Department of Education of the Generalitat de Catalunya has involved university professors to work on Successful Educational Actions.
- The agreement with the General for Education of Portugal has involved eleven organisational units for education including teachers, students and families, especially from vulnerable communities.
- The agreement with FARO Group estimates that more than 16,025 people have benefited from Successful Educational Actions, with the participation of teachers, managers and volunteers, involving the transformation of thirteen schools and more than 200 certified trainers to implement them.
- The Framework Agreement with NIASE research group, of the University of Sao Carlos in Brazil, has involved teachers, students and families, especially from vulnerable communities.
- The agreement with the Government of Aragon has involved teachers, students and families, especially from vulnerable communities.
- The agreement with KAMIRA, Federation of Roma Women's Associations in Andalusia, Spain, has involved the transformation of one school by implementing Successful Educational Actions, involving in the implementation teachers, students and families from a vulnerable community.

Last, based on the definition of political impact of research as occurring when decision-makers and other social actors use and employ the research results as the basis for their policies and actions (Flecha, 2014, in Reale et al., 2018), in addition to the policies analysed, we have found other examples of the political impact of Successful Educational Actions. These include: at the local level, 7 policy documents that reflect the results related to Successful Educational Actions; at the national level, 5 policy documents that reflect the results related to Successful Educational Actions; and at the international level, the interest of 5 policymakers who visited schools that implement Successful Educational Actions, as well as 6 policy documents with the results related to Successful Educational Actions.

References:

Reale, E., Avramov, D., Canhial, K., Donovan, C., Flecha, R., … (2018). A review of literature on evaluating the scientific, social and political impact of social sciences and humanities research, *Research Evaluation*, *27*(4), 298–308. https://doi.org/10.1093/reseval/rvx025

- Teachers

Action: Equality Proofing the Curriculum

Translation into policy/ practice: *please describe whether your action has been translated into policy/ practice beyond its implementation in 2022, and if so how:*

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Equality Impact Assessments (EqIAs) are a systematic, evidence-based consideration of the impact of practice, decisions, and actions on groups of people with protected characteristics. Consideration of equality impact is integral to all development, change, enhancement and review processes and to mainstreaming equality.
Importantly the aim in this action was to explore possible impacts in the subject content for teachers in further and higher education. Critically, this replication activity seeks to explore the result (negative, neutral or positive) of the delivery of a decision, policy, procedure or practice on people with protected characteristics. Because of the novelty of the activity the main focus was on engaging with teachers on exploring different ways in which to explore the equality impact of certain curricula areas and how focused on developing and testing an EqIA for the curriculum. This can help identify any barriers to promoting equality and diversity in science and technology careers.

a)which of the identified actions have been translated into policies/practice							
	Aim of the policy	*Level of intervention (i.e. local/national/international; bottom-up/top-down)*	*Field of intervention*	*Type of participation (including co-creation)*	*Participants (targeted and real)*	*Level of access to scientific evidence*	*Social Impact**
Transformative Dimension	Action: workshop and one-to-one with teachers Policy: Equality proof the curriculum	Individual teachers working at the Faculty of Educational Sciences	Education and equality	workshop and one-to-one with teachers	Teachers	Second-hand review of issues from science	Yes: see below
Exclusionary Dimension							

* Social impact for grid a) – detailed description

Achieved social impact: *please describe in detail how the action that you implemented has been successful at enhancing citizens participation in scientific research with impact, giving details of the target population (participants), their numbers, and the setting:*

The participants became more aware of how their actions in designing a curriculum can impact of equality.

Anticipated social impact: *please describe in detail the anticipated impact of the translation of your action into policy/ practice in the future, giving details of the target population and their numbers:*

This action will be rolled out to teacher in the faculty of Educational Sciences and can include up to 100 teachers/year.

Facilitators of translation: *please reflect on and describe the factors that facilitated the translation of your action into policy/ practice:*

The action was developed and implemented thanks to ALLINTERACT and evidence of the action to replicate, protected time of the researchers, and funding were critical.

Barriers to translation: *please reflect on and describe the factors that hindered the translation of your action into policy/ practice:*

The timing of the programme does not neatly fit into school timetables.

Facilitators of replicability: *Which elements of your action and related policies/practices enhance the potential replicability of your action and related policies/practices to new contexts?*

New legislation and changes in the curriculum that promote multimodality.

Barriers to replicability: *Which elements of your action and related policies/practices prevent the potential replicability of your action and related policies/practices to new contexts?*

The main barrier is that intake of teachers still reflects a narrow demographic group of people (white women) and many faculty members and HR professionals are still unaware of unconscious bias in recruitment.

- Students

Action: Engaging citizens with the use of ADAYAYANA platform

Translation into policy/ practice: *please describe whether your action has been translated into policy/ practice beyond its implementation in 2022, and if so how:*

The ADAYAYANA platform will be used in the master course of science communication at the University of Groningen. We have decided that in the future semesters, one of the lectures will be devoted in familiarizing students with the ADAYHANA platform. Moreover, the ADAYAYANA platform will be on the list of the suggested topics/case studies for future assignments in the master course of science communication, that are related to engaging the public in scientific research.

a)which of the identified actions have been translated into policies/practice							
	Aim of the policy	*Level of intervention (i.e. local/national/international; bottom-up/top-down)*	*Field of intervention*	*Type of participation (including co-creation)*	*Participants (targeted and real)*	*Level of access to scientific evidence*	*Social Impact**

Transformative Dimension	Action: use the platform in the master course of science communication	Local, Bottom-up	Education, science communication	Co-creation As a part of assignment	Master Students of the University of Groningen	First hand	Yes
Exclusionary Dimension							

*** Social impact for grid a) – detailed description**

Achieved social impact: *please describe in detail how the action that you implemented has been successful at enhancing citizens participation in scientific research with impact, giving details of the target population (participants), their numbers, and the setting:*

- The participants were three citizens of Groningen (a man, a woman, and a non-binary person). All of them were students, immigrants from Mediterranean countries, two of them identifying as members of the LGBTQ community.
- The participants engaged in scientific research using the ADAYAYANA platform and read about/search for topics they had not being interested in the past.
- They participants felt motivated to use this platform again and they have already suggested it to friends who are educators.

Anticipated social impact: *please describe in detail the anticipated impact of the translation of your action into policy/ practice in the future, giving details of the target population and their numbers:*

The students of the master course are around 30 individuals per semester, including Dutch and international people, since the course is given in English. That means, over the next 5 years, 150 individuals will engage in scientific research through this platform, will familiarize themselves with the platform, and share their experience with others. Since many of them are science educators, this increases the chances of the ADAYAYANA platform to be used in a school context with the goal of engaging students in scientific research.

Facilitators of translation: *please reflect on and describe the factors that facilitated the translation of your action into policy/ practice:*

- The action was developed and implemented thanks to ALLINTERACT.
- Members of the RUG team, working for the ALLINTERACT are responsible for the curriculum of the master course science communication of the University of Groningen.
- The platform is free and available for everyone and easy to use.

Barriers to translation: *please reflect on and describe the factors that hindered the translation of your action into policy/ practice:*

The current evidence base on the relevant actions is limited. We replicated this action with a small number of people.

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Facilitators of replicability: *Which elements of your action and related policies/practices enhance the potential replicability of your action and related policies/practices to new contexts?*

N/A

Barriers to replicability: *Which elements of your action and related policies/practices prevent the potential replicability of your action and related policies/practices to new contexts?*

N/A

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8. Analysis a) Translation of the identified actions into policy and practice

8.1 Overview

According to the study protocol, ALLINTERACT partners identified and implemented six actions, including three actions focusing on gender and three actions focusing on education. The description of the actions, profiles of participants, and their numbers are given in the table below.

Table 7.1. Implemented actions and target populations

Gender			Education		
Partner/ Action	**Profile of participants**	**Number of participants**	**Partner: Action**	**Profile of participants**	**Number of participants**
UOXF: Workshop on Equality, Diversity and Inclusion (EDI) in Research	Women and under-represented minorities	25	UB: Dialogic Scientific Gatherings (DSG)	Parents	12
ISCSP-ULisboa: "Citizens, gender and science: topics for the future" program	Members of LGBTQI group	12	UH: Equality Proofing the Curriculum	Teachers	2
UNIMIB: Science in the daily life: an interactive dialogue on gender, science and medicine	Women (including Young women) from a women's group	5	RUG: Engaging citizens with the use of ADAYAYANA platform	Students	3

All of the identified actions have been successfully translated into organisational policies and practice at the local level. As evidenced by 23 agreements and policy documents, the action implemented by UB-CREA, Dialogic Scientific Gatherings (DSG), had been translated as part of the Successful Educational Actions at local, national, and international levels prior to the implementation of DSG as part of ALLINTERACT.

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8.2. Facilitators and barriers to successful translation of awareness-rising actions into policy and practice

Based on their experience of translating the identified actions into policy and practice, the partners reflected on and analysed barriers and facilitators to successful translation. A detailed account of facilitators and barriers by partner/action is given in the table below.

Table 8.1. Facilitators and barriers to successful translation of awareness-rising actions into policy and practice by partner/action

Partner/ Action	Facilitators	Barriers
UB: Dialogic Scientific Gatherings (DSG)	We have analyzed several factors and characteristics of the Dialogic Scientific Gatherings, which might facilitate their translation into policies. ● *Encouraging connections between issues learned in the action and daily experiences* might facilitate the approach of the scientific evidence driven by policy actions to citizens, as well as emphasizing the transformation of these policy actions into real outcomes. The fact that the action encourages citizens to make connections between what they learn in the action and what they had learned elsewhere, as well as with issues present in their daily lives, might facilitate the action's further replication and policy impact. ● *Learning about social impact of scientific evidence* might also facilitate the translation of Dialogic Scientific Gatherings into policies, as they provide participants with the meaning of putting these Successful Educational Actions into practice. The action's focus on learning about the social impact of different scientific concepts and evidence is a key aspect in their impact. This focus on social impact increases citizens' interest in learning more about scientific evidence. ● *Engaging in dialogues among diverse participants around scientific texts* could broaden the impact of Dialogic Scientific Gatherings in a wide diversity of citizens. Citizens very positively value being able to engage in dialogues around different	N/A

	issues with people who have different opinions and perspectives. In addition, reading the scientific articles for the dialogues they engage in during the action instead of individually makes the reading and understanding of the scientific texts easier and more engaging. ● *Feeling important and recognized* is also highlighted as a strong aspect. Citizens who participate in the action feel valued and important and that they have gained self-confidence. This concludes that Dialogic Scientific Gatherings have a strong impact on people and thus in the possibility to transform society through policy actions that involve them.	
UOXF: Workshop on Equality, Diversity and Inclusion (EDI) in Research	● The action was developed and implemented thanks to ALLINTERACT: evidence of the action to replicate, protected time of the researchers, and funding were critical ● Establishing a partnership with the NIHR Oxford Biomedical Centre was important for embedding the action into the organizational policy/practice and recruiting participants ● Alignment of the action with national policies: because the NIHR that funds the Oxford Biomedical Research Centre has policies supporting public engagement and involvement in research and EDI, decision-makers and practitioners were interested in the implementation of the action and including it in their work plan ● Co-creation: we took input from public contributors during the first wave of focus groups and worked together with the NIHR Oxford BRC staff to develop and implement the action and to plan how to embed it into the organisation's policy and practice	● The current evidence base on the relevant actions is limited. There was no action that we could take and replicate in its entirety. We had do adapt the methodology of the identified action to our context and develop new training materials. ● The majority of the evidence that we used for teaching materials and discussion were not Open Access. We were able to access this evidence thanks to the institutional support, but otherwise the accessibility of the evidence this could have been a barrier.
RUG: Engaging citizens with the use of ADAYAYAN A platform	● The action was developed and implemented thanks to ALLINTERACT. ● Members of the RUG team, working for the ALLINTERACT are responsible for the curriculum of the master course science communication of the University of Groningen. ● The platform is free and available for everyone and easy to use.	● The current evidence base on the relevant actions is limited. ● We replicated this action with a small number of people.
UNIMIB: Science in the daily life: an	The factors that could favor the translation of action into a policy: ● co-designing the action with the	N/A

interactive dialogue on gender, science and medicine	institution(s)/association(s) involved; ● adapting the new action to the context in which it will be developed.	
ISCSP-ULisboa: "Citizens, gender and science: topics for the future" program	● The design and implementation of this action in the context of the ALLINTERACT project was very important as it provided a scientific framework, which was well received by participants. ● CIEG's professional, academic and scientific experience, which helped to the proper design and implementation of the program. ● The possibility of working with LGBTI+ people, an element that was strongly highlighted by participants. ● The access to structural and technical resources, which allowed participants to be part of the program in a hybrid mode (online and on-site).	● Lack of time to extend the invitation to other LGBTI+ people and groups.
UH: Equality Proofing the Curriculum	● The action was developed and implemented thanks to ALLINTERACT and evidence of the action to replicate, protected time of the researchers, and funding were critical.	● The timing of the programme does not neatly fit into school timetables.

An analysis of the aggregated data highlighted several common facilitators and barriers to successful translation.

8.2.1. Facilitators

ALLINTERACT scientific framework and resources

Partners appreciated the critical role that the ALLINTERACT project played in facilitating the development and implementation of the implemented awareness-rising actions. The literature review carried out by ALLINTERACT helped to identify a range of possible actions, from which partners selected their actions, and then used a scientific framework developed by ALLINTERACT to design and implement their actions. Partners also stressed that designing and implementing their actions proved to be a resource-intensive process, which required staff with protected time and funding. Therefore, dedicated resources in terms of staff time and funding that were provided by AINTERACT played an important role in facilitating successful translation of the identified actions into policy and practice.

Partners' expertise and institutional support

Partners noted that the design and implementation of the identified actions required considerable professional, academic and scientific expertise and experience from partners. In

particular, the identified actions required adapting to the new contexts. The methods and contents of the identified actions required adapting to the needs of the participants and stakeholders. Partners also noted institutional support in terms of structural and technical resources to carry out identified actions, e.g. access to online and on-site facilities to implement actions in a hybrid mode.

Engagement and co-design with stakeholder

Partners acknowledged the importance of stakeholder engagement for the design and implementation of the identified actions and also for embedding the identified actions into policy and practice. Some of the actions were co-designed in partnership with stakeholders from research and non-governmental organisations that were interested in the implementation of the identified actions. Stakeholder engagement and co-design helped to ensure the relevance of the identified actions to policy and practice. Stakeholder engagement also appears to be important for ensuring the impact of the identified actions after the end of the project.

Co-creation with diverse groups of the public

Partners recognised that co-creating their actions with the public had positive effects on the actions' design and implementation. Namely, taking input into the design from the members of the public, such as women, LGBTI+ people, and other under-represented groups and promoting egalitarian dialogue as part of the action facilitated translation of the actions into policy and practice. Engaging in egalitarian dialogues with diverse participants and making participants feel important and recognised also enhanced the translational potential of the actions.

Embedding social impact into actions

The implemented actions were designed with the aim of achieving social impact, e.g. by encouraging connections between issues learned in the action and the daily experiences of the participants, or by discussing with the participants various examples of social impact of scientific evidence. In doing so, the actions encouraged the participants to seek ways to translate their knowledge and experiences gained as part of the actions into policy and practice.

Access to scientific evidence

One partner acknowledged that free access to the scientific evidence platform (ADAYAYANA) facilitated the implementation of their action. Other partners noted that they were able to access the scientific evidence that was required for training materials and discussions only thanks to the institutional subscription. Therefore, Open Access to scientific evidence and relevant platforms helps to facilitate translation of actions into policy and practice.

8.2.2. Barriers

Limited evidence base on potential actions

The current evidence base on the potential awareness-rising actions is limited. There is limited evidence on effective actions that can be translated into policy and practice without significant

adaptation or tailoring to the specific contexts. This presents a barrier to social actors wishing to implement awareness-rising actions without dedicated resources.

Small numbers of participants

Due to the timing and duration of the project as well as the need to adapt actions to particular contexts, the target audiences for each identified and implemented action typically involved relatively small numbers of participants, ranging between 2 and 25. Yet, partners detailed plans for scaling up their actions to larger audiences in future work after the end of the project.

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9. Analysis b) Social impact of the identified and implemented actions

9.1 Overview

Based on the results of the post-test focus groups and documentary analysis, all of the identified and implemented actions have been successful in achieving social impact on enhancing citizens' participation in scientific research in different target populations and settings. A detailed account of social impact by partner/action is given in the table below.

Table 9.1. Social impact by partner/action of the identified and implemented actions

Partner/ Action	**Impact on enhancing citizens' participation in scientific research**	
	Achieved impact, target populations, settings	**Anticipated impact, target populations, settings**
UB: Dialogic Scientific Gatherings (DSG)	Target population for the implemented action: 12 parents from a low-middle socioeconomic background, whose children attend the same neighbourhood school in Barcelona. The focus group results showed the following impact of the action: ● Participants gained more awareness related to scientific research and its impact ● Participants increased their involvement in science ● Participants showed greater awareness of the social impacts of scientific evidence in gender and education ● Participants reported more engagement in social issues	Based on the ample political and social impact of the Successful Educational Actions as gathered in the policies analyzed, and on the social impact of Dialogic Scientific Gatherings as gathered in scientific papers (Díez-Palomar et al., 2022), it is anticipated that there may be an increase in the number of policies based on Dialogic Scientific Gatherings targeting diverse citizens and communities in different contexts to further increment citizen engagement in science.
UOXF: Workshop on Equality, Diversity and Inclusion (EDI) in Research	Target population: 25 public contributors to biomedical research with an emphasis on women and under-represented minorities, NIHR Oxford Biomedical Research Centre. The focus group participants described the following impact of the action: ● Increased knowledge and confidence related to	Over the next five years, it is expected that 75-100 public contributors will participate in activities resulting from the action. Their anticipated impact will be broadening patient and public involvement and engagement in research to groups and communities that are currently under-represented in research. One related activity that is currently under-way is 4 co-creation workshops with 20 public

	scientific research on EDI; ● Greater quality and extent of involvement and engagement in research; ● Improved quality and relevance of research to society as a whole	contributors in January-March 2023 to develop new Patient/Public Research Ambassador roles. These roles are envisaged to help research organisations build sustainable relationships with under-served communities and help more people from different backgrounds getting involved in health research. The workshops will be used to develop a grant application to the NIHR to fund 2-4 Patient/Public Research Ambassador roles.
RUG: Engaging citizens with the use of ADAYAYANA platform	The participants were 3 citizens of Groningen (a man, a woman, and a non-binary person). All of them were students, immigrants from Mediterranean countries, two of them identifying as members of the LGBTQ community. ● The participants engaged in scientific research using the ADAYAYANA platform and read about/search for topics they had not being interested in the past. ● The participants felt motivated to use this platform again and they have already suggested it to friends who are educators.	The students of the master course are around 30 individuals per semester, including Dutch and international people, since the course is given in English. That means, over the next 5 years, 150 individuals will engage in scientific research through this platform, will familiarize themselves with the platform, and share their experience with others. Since many of them are science educators, this increases the chances of the ADAYAYANA platform to be used in a school context with the goal of engaging students in scientific research.
UNIMIB: Science in the daily life: an interactive dialogue on gender, science and medicine	The target of the action was our experimental group, composed of 5 women/young women, active members of "Casa delle donne" Association (Pisa, Milano, Parma). Because of the different geographical areas involved, we conducted the action on line. The participants described the following impacts of the action: ● Increased knowledge of scientific research on medicine and gender. ● Increased knowledge of the condition of women in particular fields, where they were historically excluded and of the effects of this exclusion for the development of scientific results. ● Increased awareness of the relevance of research to society as a whole.	The action can be replicated by involving other women at the "Casa delle donne" Association (Milano, Pisa, Parma). The target group could be extended to other women and minorities. Since our focus groups' members revealed the intertwining of everyday life, science and participation, the intervention could be structured by focusing on other scientific topics relevant to the activists of the Association. The social impacts of the action could be: ● the involvement of a wider community; ● the strengthening of dialogue between experts and non-experts; ● the co-construction of knowledge.

ISCSP-ULisboa: "Citizens, gender and science: topics for the future" program	Target population (participants), number, setting: 12 LGBTI+ participants with different academic and social backgrounds, hybrid mode (online and on-site). Participants of the post-test focus group, who also participated in the program, described the following impact of the action: ● They acknowledged that the action allowed them to access scientific databases and articles, which they valued very positively. ● By having a better access to scientific content, they expressed a better preparation to differentiate evidence-based information from other kinds of sources. ● They highlighted the importance of the exchange of information among participants, which was very helpful to understand how Gender crosses every single aspect of people's lives. ● The fact that the action focused on the LGBTQI+ community was especially meaningful for participants. In addition, as previously reported, this action will be integrated as part of CIEG's practices aiming to reinforce the efforts of knowledge transfer and promotion of scientific culture to broader and diverse audiences.	In the following five years, it is expected that a group between 80-100 people will participate in the following versions of the program. As a result, it is expected to: ● contribute in the process of bringing academy and scientific practices to new audiences, ● create spaces where people can reflect on the importance of Gender and Gender studies for our societies, ● to help strengthening the relationship between citizens and science, ● contribute in the creation of a stronger critical thinking in different audiences, and ● contribute in the process of dismantling fake science. It is expected to implement this initiative at least once a year as well as to adapt this action to more specific or strategic groups.
UH: Equality Proofing the Curriculum	● The participants (2 teachers) became more aware of how their actions in designing a curriculum can impact of equality.	● This action will be rolled out to teachers in the faculty of Educational Sciences and can include up to 100 teachers/year.

9.2. Achieved social impact

Overall, the implemented actions succeeded in engaging with new social groups, fostering citizen participation in science, and rising awareness about the social impact of scientific research on gender and education. An analysis of the aggregated data shows that, in total, the

implemented actions involved 59 participants from the target populations that included under-represented groups, such as women, LGBTQ people, young people, and ethnic minorities in 6 different settings. The number of participants in each implemented action ranged between 2 and 25. The social impact achieved by the implemented actions can be summarised as follows:

- Participants increased their awareness and knowledge of scientific research on a range of topics related to gender and education.
- Participants showed greater awareness of the social impact of scientific research, including in relation to their daily experiences and activities.
- Participants gained more confidence and motivation in using scientific research, differentiating scientific evidence from non-evidence-based information, and discussing scientific research with their colleagues and friends.
- Participants increased their awareness of the relevance of research to society as a whole, including in the areas where certain groups have been historically disadvantaged.
- Participants indicated greater extent and/or quality of involvement and engagement in scientific research.

Uniquely, the action implemented by UB-CREA, Dialogic Scientific Gatherings (DSG), has been associated with social impact as part of the Successful Educational Actions (SEA) prior to its implementation as part of ALLINTERACT. Evidence shows that SEA have been successful at enhancing citizens participation in scientific research by engaging different people in a wide variety of contexts in an egalitarian dialogue around the scientific evidence on which such actions are based. The evidence on the social impact of the policies derived from SEA shows:

- Engagement with stakeholders leading to their commitment to establishing successful actions, generating political support to SEA, and SEA implementation.
- Training professors, researchers, teachers, family members, and students on SEA.
- Identifying successful actions for any context, transferable to any school, influencing the direction of current education policy towards inclusion with school, family and community.
- Improvement of students' academic results and school coexistence as well as greater commitment from the ministry.
- Increase in the enrolment of new students, continuity of students, decrease in absenteeism.

The policies derived from SEA involved more than eleven different universities worldwide to train professors, researchers and future teachers on SEA, as well as several school communities involving teachers, family members and students. Moreover, members of different political bodies such as two team workers of city council, one governing body of an autonomous community, a Directorate-General for Education of a country as well as four political members

have been involved in SEA. Furthermore, one international association, one group of NGOs, united workers of different professions, citizens of different ethnicities such as Roma communities as well as different countries in South America, Asia and Europe have been involved.

Based on the definition of political impact of research as occurring when decision-makers and other social actors use and employ the research results as the basis for their policies and actions (Flecha, 2014, in Reale et al., 2018)[4], further examples of the political impact of SEA include:

- Local level: 7 policy documents that reflect the results related to SEA;
- National level: 5 policy documents that reflect the results related to SEA;
- International level: the interest of 5 policymakers who visited schools that implement SEA, as well as 6 policy documents with the results related to SEA.

9.3. Anticipated social impact

In addition to implementing the identified actions as part of the project, the majority of partners developed plans for embedding these actions into their organisational policies and practices, or detailed ways in which the implemented actions could lead to further social impact in the period of the next five years. These include rolling out the implemented actions to wider target groups within the given settings, adapting the implemented actions to new target groups based on their needs or interests, developing new actions with related objectives, and facilitating the spread and adoption of the actions in other settings. According to the data from the partners who could estimate involvement in the future activities resulting from the policy and practices associated with the implemented actions, up to 450 new participants are anticipated to benefit from such activities over the next five years. The social impact of such activities is anticipated in the following areas:

- Increasing policy engagement and adoption of policies based on the implemented actions to further promote citizen engagement in science among diverse groups and communities.

- Broadening patient and public involvement and engagement in research among groups and communities that are currently under-represented in research.

- Engaging students in scientific research through methods and platforms used in the action.

- Promoting equality and diversity in science and technology careers by training teachers and mainstreaming equality in curriculum.

[4] Reale, E., Avramov, D., Canhial, K., Donovan, C., Flecha, R., … (2018). A review of literature on evaluating the scientific, social and political impact of social sciences and humanities research, Research Evaluation, 27(4), 298–308. https://doi.org/10.1093/reseval/rvx025

- Strengthening the dialogue and co-construction of knowledge between experts and non-experts.
- Contributing to the creation of a stronger critical thinking in different audiences.
- Strengthening the relationship between citizens and science.

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10. Analysis c) Facilitators and barriers to the potential replicability of actions in new contexts

10.1 Overview

Based on their experience of implementing the identified actions, the partners reflected on and analysed facilitators and barriers to the potential replicability of their actions in new contexts. Replicability means the ability of given actions to be repeated using sufficiently similar methods and achieve sufficiently similar results. A detailed account of the partners' reflections and analysis is given in the table below.

Table 10.1. Facilitators and barriers to the potential replicability of actions in new contexts by partner/action

Partner/ Action	Facilitators	Barriers
UB: Dialogic Scientific Gatherings (DSG)	Based on the work conducted in previous work packages of the ALLINTERACT project, we have found 4 main characteristics which might facilitate the replicability of DSG into new contexts: ● *Encouraging connections between issues learned in the action and daily experiences* might facilitate the implementation of DSG in a wide variety of contexts due to the fact that this DSG foster participants to connect what they had learned in the action and what they learned in other situations of their daily lives. Thus, DSG have an impact on participants that can be transferred to any of the contexts in which they are involved. ● Moreover, DSG bring the opportunity *to learn about the social impact of different scientific evidence and concepts*, which might increase the interest of the participants to broaden their knowledge about scientific evidence. This makes participants learn about scientific evidence, and it allows them to translate such	N/A

	scientific evidence into the different situations that they experience in the diverse contexts of their daily lives. ● *Engaging in dialogues among diverse participants around scientific texts* is another of the highlighted keys that make DSG an educational action that can be replicated into a wide diversity of contexts. Participants very positively valued being able to be involved in dialogues around different issues with people who have different opinions and perspectives. The diversity of the participants was acknowledged as being beneficial for all. In addition, reading the scientific articles for the dialogues they engaged in during the action instead of individually made the reading and understanding of the scientific texts easier and more engaging. ● Last, during DSG, *participants feel important and recognized*, which increases their perception of self-confidence. The fact that participants feel increasingly valued in DSG makes this successful educational action a possibility to promote citizens from vulnerable contexts to participate and learn scientific evidence with social impact.	
UOXF: Workshop on Equality, Diversity and Inclusion (EDI) in Research	● Co-creation: we took input from public contributors during the first wave of focus groups and worked together with the NIHR Oxford BRC staff to develop and implement the action and to plan how to embed it into the organisation's policy and practice ● Discoverability of the action: we published a news item about our action and will disseminate it through conferences and publications, which will make it	● A lack of dedicated time and resources for public engagement and involvement in research – the action aimed at 25 public contributors required time commitments from 8 researchers and practitioners as well as resources to organise the workshop ● Implementation of the action to new contexts would require a certain degree of adaptation based on the number of participants, their background, and interests through engagement and co-creation

	discoverable by those who are looking for similar actions ● The setting of our action (NIHR Oxford Biomedical Research Centre) is similar to 15 other NIHR-funded Biomedical Research Centre in the UK, and so our action can be potentially replicated by some of these centres ● Sharing of methods and materials: we openly share our methods and materials with all interested organisations ● Plain English summary: we produced plain English summaries of the scientific evidence for the workshop, which make them more accessible for public and practitioners	● A lack of skilled and experienced staff to plan the action and facilitate discussions with the public – a number of potential facilitators whom we approached cited a lack of skills and experience in facilitating discussions with the public as a reason for not getting involved and several participants stressed the importance of having experienced facilitators who could keep discussions focused on the given topic
RUG: Engaging citizens with the use of ADAYAYAN A platform	● Participants conducted scientific investigations using the Adhyayana platform and searched for and worked on topics that had not previously interested them. ● Since the participants have felt comfortable and satisfied with the use of the platform Adhyayana, they have recommended it to friends who are educators, thus promoting replicability. ● The participants were very different from each other and diverse, which is a remarkable point.	N/A
UNIMIB: Science in the daily life: an interactive dialogue on gender, science and medicine	● Dissemination of the action through conferences and publications, which will make it discoverable by those who are looking for similar actions. ● Dissemination of the action through the *ad hoc* video that we have realized for ALLINTERACT. ● Sharing knowledge to interested organisations.	According to some recent studies, the degree of trust in science by citizens has increased in recent years, and the number of people who would like to receive more scientific information has also increased too. However, the level of participation and involvement in scientific engagement activities in Europe remain low. This aspect emerges also in our experience of implementing the intervention-action. In fact, at the beginning some of the participants were reluctant to participate; but then they enjoy discussing scientific

		topics in an egalitarian context, after being created a "safe" space of interaction. Considering the Italian context, the barriers to replicability are: ● cultural: the relationship between science and society in Italy; low graduate rate (below the European average); the importance of the humanistic disciplines over the natural ones, because of the importance of Italian cultural heritage; ● social: vulnerable people have fewer economic, social and cultural resources, which inhibits their active participation in the public space.
ISCSP-ULisboa: "Citizens, gender and science: topics for the future" program	● A positive internal evaluation about the implementation of this program. ● CIEG's academic and scientific background and staff to facilitate this program. ● The existence of several other groups that may be interested in participating in this program. ● Access to structural and technical resources (rooms, computers, internet, scientific data bases, scientific articles) for people based in Lisbon. ● Potential alliances or partnerships with different stakeholders to implement this program in other contexts, with different audiences.	● Lack of financial and technical resources to implement this program outside Lisbon. ● A potential bureaucracy (either internal or external) which may hinder the implementation of the program in other contexts. ● A potential difficulty of gathering different communities or individuals, as this program does not provide any academic degree.
UH: Equality Proofing the Curriculum	● New legislation and changes in the curriculum that promote multimodality.	● The main barrier is that intake of teachers still reflects a narrow demographic group of people (white women) and many faculty members and HR professionals are still unaware of unconscious bias in recruitment.

An analysis of the aggregated data highlighted several common facilitators and barriers to the potential replicability of actions in new contexts.

10.2. Facilitators

Participant-centred approach to the actions

While several actions were designed based on the methods described in the literature, their contents and implementation were centred around participants' interests, needs, and preferences. These were reflected in the selection of the scientific evidence for discussion and how actions were conducted. Several partners co-created and co-designed their actions together with future participants and partner organisations and made efforts to explain the scientific evidence in terms accessible to the lay members of the public. Pre-test focus groups allowed detecting participants' views and interests as well as facilitating an egalitarian dialogue. Other examples of the participant-centred approach to the action include encouraging connections between issues learned in the action and the daily experiences of the participants; learning about the social impact of different scientific evidence and concepts that are relevant to the participants; promoting dialogues and sharing of lived experiences among diverse participants; and making participants feel valued and recognised.

Demonstrable social impact of the actions

Given that organisations and policy-makers seek to maximise the impact of awareness-rising actions, demonstrating the social impact of such actions increases their potential to be replicated. All the partners evaluated their actions through focus groups using a common methodology. The results indicate that the implemented actions succeeded in engaging with new social groups, fostering citizen participation in science, and rising awareness about the social impact of scientific research on gender and education. The partners also developed plans for embedding the implemented actions into their organisational policies and practices, and assessed their anticipated social impact over the period of the next five years.

Discoverability of the actions

In order to identify potential actions for implementation, the partners conducted a literature review, a social media analysis, and focus groups. Overall, there was a paucity of evidence-based information in the public domain on successful awareness-rising actions. Therefore, increasing the discoverability of the implemented actions and making them visible in the public domain is important for enabling their potential replication. To do so, the partners suggest disseminating and sharing information about their implemented actions through the project's website, conferences, publications, social media, and video-capsules.

Engagement with stakeholders

Engagement with stakeholders in other organisations can enable replication in new contexts and different audiences. The partners suggested identifying groups and organisations that could be potentially interested in replicating their actions and forming agreements, alliances, or partnerships. For example, UB-CREA has been successfully using engagement and agreements with stakeholders from academia, government, and non-governmental organisations to promote the implementation of SDG as part of SEA as well as provide related training locally, nationally, and internationally.

Open sharing of data, methods, and materials

The identification, development, and implementation of the actions required considerable time and resources. It became possible thanks to the funding from Horizon 2020 supported by the

European taxpayers. Therefore, the open sharing of the relevant data, methods, and materials with interested organisations can enable potential replication and accelerate implementation. Therefore, in line with the requirements of Horizon 2020, the partners are committed to the open sharing with interested organisations of the relevant data, methods, and materials.

Staff expertise and skills in citizen engagement

The identification, development, and implementation of the actions also required from the partners considerable expertise and skills in citizen engagement, some of which where developed or improved during the implementation of the actions. Unlike the expertise and skills related to research and engagement with academic audiences, researchers are not routinely trained in engaging with lay citizens, especially from under-represented or vulnerable groups, and developing citizen-facing projects. For example, taking input from citizens into project design, communicating scientific concepts in an accessible manner without scientific jargon, facilitating discussions with citizens, learning from citizens' lived experiences. Therefore, developing staff expertise and skills in citizen engagement can enable potential replication of actions seeking to enhance citizen engagement in science.

Supportive policy environment

Several partners noted the importance of the supportive policy environment for the implementation of their actions, especially with regard to citizen engagement and equality. While such actions are supported at the European level, the supportive national and organisational policy environment can further enable replication of such action. For example, one partners acknowledged that thanks to the alignment of their action with national policies, local decision-makers and practitioners were interested in the implementation of the action. Another partner noted that national legislative changes and changes in the curriculum that promote multimodality would enhance the potential for their action to be replicated.

10.3. Barriers

Lack of dedicated time and resources for citizen engagement

The implemented actions proved to be time and resource intensive. Replication of the actions in new contexts would also require dedicated resources for citizen engagement, including adaptation of the actions to new contexts and staff training. Many research funding and research performing organisations have limited resources for citizen engagement, or do not provide sufficient incentives or recognition for citizen engagement.

Low interest and trust in science by citizens

Although in Europe trust in science by citizens has recently increased, in some countries, there remains relatively low interest and trust in science by citizens. Long standing cultural predispositions may preclude citizens from seeking scientific information and engaging in awareness-rising actions to promote citizen engagement in science.

Hard to engage with disadvantaged and vulnerable groups

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement num. 872396

People from disadvantaged and vulnerable groups often have fewer economic, social and cultural resources for active participation in the public space. They are often hard to reach and recruit for science engagement activities. Recruiting participants on the basis on their socio-demographic characteristics from groups that have been historically discriminated against can also be hard. Moreover, there could be unconscious bias in dominant socio-demographic groups against equality topics that benefit minoritised socio-demographic groups.

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11. Summary of findings for policy makers

11.1. Evidence base

The literature review, the Social Media Analytics and Social Media Communicative Observations, and the focus groups did not provide findings about policies that promote awareness-raising actions and citizen engagement in science. Therefore, from all the information and data reviewed and collected, we could not find evidence on policies that are successful at enhancing citizen participation in scientific research with impact on gender and education both in Europe and internationally. We found evidence on awareness-raising actions that foster citizens' participation in research with social impact for potential replication, but the current evidence base is rather limited. Namely, we have identified 33 awareness-raising actions for potential replication (14 in gender and 19 in education).

11.2. Implemented actions

Based on the conducted analyses and taking into account the feasibility of implementing the available actions in the partners' specific contexts, the partners identified and implemented six awareness-raising actions (three in gender and three in education):

- UB: Dialogic Scientific Gatherings (DSG)
- UOXF: Workshop on Equality, Diversity and Inclusion (EDI) in Research
- RUG: Engaging citizens with the use of ADAYAYANA platform
- UNIMIB: Science in the daily life: an interactive dialogue on gender, science and medicine
- ISCSP-ULisboa: "Citizens, gender and science: topics for the future" program
- UH: Equality Proofing the Curriculum

11.3. Achieved social impact

Overall, the implemented actions have succeeded in engaging with new social groups, fostering citizen participation in science, and rising awareness about the social impact of scientific research on gender and education. In total, the implemented actions involved 59 participants from the target populations that included under-represented groups, such as women, LGBTQ people, young people, and ethnic minorities. The implemented actions achieved the following demonstrable social impact:

- Participants increased their awareness and knowledge of scientific research on a range of topics related to gender and education.
- Participants showed greater awareness of the social impact of scientific research, including in relation to their daily experiences and activities.

- Participants gained more confidence and motivation in using scientific research, differentiating scientific evidence from non-evidence-based information, and discussing scientific research with their colleagues and friends.

- Participants increased their awareness of the relevance of research to society as a whole, including in the areas where certain groups have been historically disadvantaged.

- Participants indicated greater extent and/or quality of involvement and engagement in scientific research.

Uniquely, the action implemented by UB-CREA, Dialogic Scientific Gatherings (DSG), has been associated with social impact as part of the Successful Educational Actions (SEA) prior to its implementation as part of ALLINTERACT. Evidence shows that SEA have been successful at enhancing citizens participation in scientific research by engaging different people in a wide variety of contexts in an egalitarian dialogue around the scientific evidence on which such actions are based. The policies derived from SEA involved more than eleven different universities worldwide to train professors, researchers and future teachers on SEA, as well as several school communities involving teachers, family members and students. Moreover, members of different political bodies such as two team workers of city council, one governing body of an autonomous community, a Directorate-General for Education of a country as well as four political members have been involved in SEA. Furthermore, one international association, one group of NGOs, united workers of different professions, citizens of different ethnicities such as Roma communities as well as different countries in South America, Asia and Europe have been involved.

11.4. Anticipated social impact

In the process of implementation, the majority of partners developed plans for embedding their actions into their organisational policies and practices, or detailed ways in which the implemented actions could lead to further social impact in the period of the next five years. These included rolling out the implemented actions to wider target groups within the given settings, adapting the implemented actions to new target groups based on their needs or interests, developing new actions with related objectives, and facilitating the spread and adoption of the actions in other settings. According to the data from the partners who could estimate involvement in the future activities resulting from the policy and practices associated with the implemented actions, up to 450 new participants are anticipated to benefit from such activities over the next five years. The social impact of such activities is anticipated in the following areas:

- Increasing policy engagement and adoption of policies based on the implemented actions to further promote citizen engagement in science among diverse groups and communities.

- Broadening patient and public involvement and engagement in research among groups and communities that are currently under-represented in research.

- Engaging students in scientific research through methods and platforms used in the action.
- Promoting equality and diversity in science and technology careers by training teachers and mainstreaming equality in curriculum.
- Strengthening the dialogue and co-construction of knowledge between experts and non-experts.
- Contributing to the creation of a stronger critical thinking in different audiences.
- Strengthening the relationship between citizens and science.

11.5. Facilitators and barriers to the successful translation of awareness-rising actions into policy and practice

Based on their experience of translating the identified actions into policy and practice, the partners reflected on and analysed barriers and facilitators to successful translation.

11.5.1. Facilitators

ALLINTERACT scientific framework and resources

Partners appreciated the critical role that the ALLINTERACT project played in facilitating the development and implementation of the implemented awareness-rising actions. The literature review carried out by ALLINTERACT helped to identify a range of possible actions, from which partners selected their actions, and then used a scientific framework developed by ALLINTERACT to design and implement their actions. Partners also stressed that designing and implementing their actions proved to be a resource-intensive process, which required staff with protected time and funding. Therefore, dedicated resources in terms of staff time and funding that were provided by AINTERACT played an important role in facilitating successful translation of the identified actions into policy and practice.

Partners' expertise and institutional support

Partners noted that the design and implementation of the identified actions required considerable professional, academic and scientific expertise and experience from partners. In particular, the identified actions required adapting to the new contexts. The methods and contents of the identified actions required adapting to the needs of the participants and stakeholders. Partners also noted institutional support in terms of structural and technical resources to carry out identified actions, e.g. access to online and on-site facilities to implement actions in a hybrid mode.

Engagement and co-design with stakeholder

Partners acknowledged the importance of stakeholder engagement for the design and implementation of the identified actions and also for embedding the identified actions into policy and practice. Some of the actions were co-designed in partnership with stakeholders from research and non-governmental organisations that were interested in the implementation of the identified actions. Stakeholder engagement and co-design helped to ensure the relevance of the identified actions to policy and practice. Stakeholder engagement also appears to be important for ensuring the impact of the identified actions after the end of the project.

Co-creation with diverse groups of the public

Partners recognised that co-creating their actions with the public had positive effects on the actions' design and implementation. Namely, taking input into the design from the members of the public, such as women, LGBTI+ people, and other under-represented groups and promoting egalitarian dialogue as part of the action facilitated translation of the actions into policy and practice. Engaging in egalitarian dialogues with diverse participants and making participants feel important and recognised also enhanced the translational potential of the actions.

Embedding social impact into actions

The implemented actions were designed with the aim of achieving social impact, e.g. by encouraging connections between issues learned in the action and the daily experiences of the participants, or by discussing with the participants various examples of social impact of scientific evidence. In doing so, the actions encouraged the participants to seek ways to translate their knowledge and experiences gained as part of the actions into policy and practice.

Access to scientific evidence

One partner acknowledged that free access to the scientific evidence platform (ADAYAYANA) facilitated the implementation of their action. Other partners noted that they were able to access the scientific evidence that was required for training materials and discussions only thanks to the institutional subscription. Therefore, Open Access to scientific evidence and relevant platforms helps to facilitate translation of actions into policy and practice.

11.5.2. Barriers

Limited evidence base on potential actions

The current evidence base on the potential awareness-rising actions is limited. There is limited evidence on effective actions that can be translated into policy and practice without significant adaptation or tailoring to the specific contexts. This presents a barrier to social actors wishing to implement awareness-rising actions without dedicated resources.

Small numbers of participants

Due to the timing and duration of the project as well as the need to adapt actions to particular contexts, the target audiences for each identified and implemented action typically involved

relatively small numbers of participants, ranging between 2 and 25. Yet, partners detailed plans for scaling up their actions to larger audiences in future work after the end of the project.

11.6. Facilitators and barriers to the potential replicability of actions in new contexts

Based on their experience of implementing the identified actions, the partners reflected on and analysed facilitators and barriers to the potential replicability of their actions in new contexts. Replicability means the ability of given actions to be repeated using sufficiently similar methods and achieve sufficiently similar results.

11.6.1. Facilitators

Participant-centred approach to the actions

While several actions were designed based on the methods described in the literature, their contents and implementation were centred around participants' interests, needs, and preferences. These were reflected in the selection of the scientific evidence for discussion and how actions were conducted. Several partners co-created and co-designed their actions together with future participants and partner organisations and made efforts to explain the scientific evidence in terms accessible to the lay members of the public. Pre-test focus groups allowed detecting participants' views and interests as well as facilitating an egalitarian dialogue. Other examples of the participant-centred approach to the action include encouraging connections between issues learned in the action and the daily experiences of the participants; learning about the social impact of different scientific evidence and concepts that are relevant to the participants; promoting dialogues and sharing of lived experiences among diverse participants; and making participants feel valued and recognised.

Demonstrable social impact of the actions

Given that organisations and policy-makers seek to maximise the impact of awareness-rising actions, demonstrating the social impact of such actions increases their potential to be replicated. All the partners evaluated their actions through focus groups using a common methodology. The results indicate that the implemented actions succeeded in engaging with new social groups, fostering citizen participation in science, and rising awareness about the social impact of scientific research on gender and education. The partners also developed plans for embedding the implemented actions into their organisational policies and practices, and assessed their anticipated social impact over the period of the next five years.

Discoverability of the actions

In order to identify potential actions for implementation, the partners conducted a literature review, a social media analysis, and focus groups. Overall, there was a paucity of evidence-based information in the public domain on successful awareness-rising actions. Therefore, increasing the discoverability of the implemented actions and making them visible in the public domain is important for enabling their potential replication. To do so, the partners suggest disseminating

and sharing information about their implemented actions through the project's website, conferences, publications, social media, and video-capsules.

Engagement with stakeholders

Engagement with stakeholders in other organisations can enable replication in new contexts and different audiences. The partners suggested identifying groups and organisations that could be potentially interested in replicating their actions and forming agreements, alliances, or partnerships. For example, UB-CREA has been successfully using engagement and agreements with stakeholders from academia, government, and non-governmental organisations to promote the implementation of SDG as part of SEA as well as provide related training locally, nationally, and internationally.

Open sharing of data, methods, and materials

The identification, development, and implementation of the actions required considerable time and resources. It became possible thanks to the funding from Horizon 2020 supported by the European taxpayers. Therefore, the open sharing of the relevant data, methods, and materials with interested organisations can enable potential replication and accelerate implementation. Therefore, in line with the requirements of Horizon 2020, the partners are committed to the open sharing with interested organisations of the relevant data, methods, and materials.

Staff expertise and skills in citizen engagement

The identification, development, and implementation of the actions also required from the partners considerable expertise and skills in citizen engagement, some of which where developed or improved during the implementation of the actions. Unlike the expertise and skills related to research and engagement with academic audiences, researchers are not routinely trained in engaging with lay citizens, especially from under-represented or vulnerable groups, and developing citizen-facing projects. For example, taking input from citizens into project design, communicating scientific concepts in an accessible manner without scientific jargon, facilitating discussions with citizens, learning from citizens' lived experiences. Therefore, developing staff expertise and skills in citizen engagement can enable potential replication of actions seeking to enhance citizen engagement in science.

Supportive policy environment

Several partners noted the importance of the supportive policy environment for the implementation of their actions, especially with regard to citizen engagement and equality. While such actions are supported at the European level, the supportive national and organisational policy environment can further enable replication of such action. For example, one partners acknowledged that thanks to the alignment of their action with national policies, local decision-makers and practitioners were interested in the implementation of the action. Another partner noted that national legislative changes and changes in the curriculum that promote multimodality would enhance the potential for their action to be replicated.

11.6.2. Barriers

Lack of dedicated time and resources for citizen engagement

The implemented actions proved to be time and resource intensive. Replication of the actions in new contexts would also require dedicated resources for citizen engagement, including adaptation of the actions to new contexts and staff training. Many research funding and research performing organisations have limited resources for citizen engagement, or do not provide sufficient incentives or recognition for citizen engagement.

Low interest and trust in science by citizens

Although in Europe trust in science by citizens has recently increased, in some countries, there remains relatively low interest and trust in science by citizens. Long standing cultural predispositions may preclude citizens from seeking scientific information and engaging in awareness-rising actions to promote citizen engagement in science.

Hard to engage with disadvantaged and vulnerable groups

People from disadvantaged and vulnerable groups often have fewer economic, social and cultural resources for active participation in the public space. They are often hard to reach and recruit for science engagement activities. Recruiting participants on the basis on their socio-demographic characteristics from groups that have been historically discriminated against can also be hard. Moreover, there could be unconscious bias in dominant socio-demographic groups against equality topics that benefit minoritised socio-demographic groups.

11.7. Conclusions

Our findings highlight a number of factors to be taken into account when developing policies to enhance citizens' participation in science and the recruitment of new talent. First, the current evidence base on policies and awareness-rising actions that are successful at enhancing citizen participation in scientific research is limited and requires development. There is no evidence on policies that are successful at enhancing citizen participation in scientific research with impact on gender and education, both in Europe and internationally. There is only limited evidence on awareness-raising actions that foster citizens' participation in research with social impact.

Second, the six awareness-rising actions that were identified and implemented by the partners in new contexts make a valuable contribution to the current evidence base. Namely, the implemented actions succeeded in involving 59 participants from the target populations that included under-represented groups, such as women, LGBTQ people, young people, and ethnic minorities and led to demonstrable social impact. Moreover, the majority of partners developed plans for embedding their actions into their organisational policies and practices, or detailed ways in which the implemented actions could lead to further social impact in the period of the next five years. It is anticipated that up to 450 new participants could benefit from such activities over the next five years and that they could lead to broader social impact.

Third, the partners' experience of implementing and concurrently translating the identified actions into their organisational policy and practice highlights a number of important facilitators and barriers to the successful translation of awareness-rising actions into policy and practice. Facilitators include: ALLINTERACT scientific framework and resources; Partners' expertise and

institutional support; Engagement and co-design with stakeholder; Co-creation with diverse groups of the public; Embedding social impact into actions; Access to scientific evidence. Barriers include: Limited evidence base on potential actions; Small numbers of participants.

Fourth, the analysis of partners' experience of replicating awareness-rising actions to enhance citizen participation in scientific research reveals a number of important facilitators and barriers to the potential replicability of actions in new contexts. Facilitators include: Participant-centred approach to the actions; Demonstrable social impact of the actions; Discoverability of the actions; Engagement with stakeholders; Open sharing of data, methods, and materials; Staff expertise and skills in citizen engagement; Supportive policy environment. Barriers include: Lack of dedicated time and resources for citizen engagement; Low interest and trust in science by citizens; Hard to engage with disadvantaged and vulnerable groups.

Overall, the partners' experience demonstrates that despite the limitations of the current evidence base, it is possible to identify and implement in new contexts evidence-based actions enhancing citizen participation in scientific research with impact on gender and education. A major opportunity for future work lies in scaling up successful actions to larger populations over time by embedding them in organisational policies and practices. The six implemented actions appear to poses characteristics favourable for replication in other contexts.

GENERAL CONCLUSIONS

The goal of the report "Fostering citizen participation in science through awareness-raising action on the social impact of research: evidence for policy" is to collect the analysis of the work conducted through ALLINTERACT with a focus on informing policies on how to continue promoting citizens' participation in research with social impact. In particular, this report responds to O6: Inform policy by providing evidence to scale-up and replicate this active engagement within new social groups. The report has taken as the basis the social and political impacts already achieved by ALLINTERACT and part of the data collected throughout the duration of the project's funding which respond to O6.

The work conducted in ALLINTERACT based on scientific evidence of social impact and on engaging citizens, especially those from vulnerable groups, in an egalitarian dialogue, has been key in achieving great political and social impacts in different contexts. Those impacts particularly tackle two Sustainable Development Goals (Gender equality and Quality Education) on which, until recent years, much work, programs and trainings have not been based on scientific evidence, therefore harming all citizens. However, the work conducted through ALLINTERACT has had impacts at the policy and social level, as this report shows.

One of the main impacts has been achieved through the Sappho and Adhyayana platforms. More than 8.704 people from 250 different countries have already used the platforms, which since their creation in 2020 have received 417.706 visits so far. Their impacts have been both political and social. One of the political impacts of the platforms can be found in Spain. From 2015 to 2020, regional and national governments and women institutes in Spain promoted campaigns through their social media accounts stating that love kills, a very harmful hoax, especially for youth. In September 2020 several citizens and scientists engaged in an egalitarian dialogue in Sappho in a post that states "Love does not kill", which is supported by scientific evidence and personal experiences. In 2023, three years since the start of ALLINTERACT, no

campaigns against love have been found in social media. This impact on politics has strong implications on future policy measures and will save the life of many people through the prevention of violence, as scientific evidence shows that love can contribute to prevent gender violence.

Another impact is that the Society of Jesus (the Jesuits) have decided to eliminate sexual abuse of children and adults in the Jesuits Global institution worldwide based on scientific evidence of social impact in the gender field. One of the sources of scientific evidence of social impact they are already using in their worldwide trainings is the Sappho platform. Moreover, the person in charge of providing this scientific evidence is a member of UB-CREA team from ALLINTERACT consortium.

Furthermore, the two platforms are also being widely used in different schools, many of them located in low SES neighbourhoods. One of the ways in which these schools are using them is by engaging in a Dialogic Scientific Gathering (another action replicated by ALLINTERACT in WP5) around a post in Adhyayana which shows scientific evidence on the benefits of friendship. Dialogic Scientific Gatherings are one of the Successful Educational Actions which were identified by FP6 INCLUD-ED project, led by ALLINTERACT's PI, being the only SSH project selected by the European Commission to include it in its list of 10 most successful research projects. Dialogic Scientific Gatherings and other Successful Educational Actions have had a clear political (in addition to scientific and social) impact, with more than 20 identified policies at regional, national and international levels in Europe and Latin America to replicate them in new and diverse contexts.

Another way findings show schools are using the platforms is to do homework or to inform parents, especially from ethnic minorities or low SES backgrounds, on the scientific evidence to improve their children's education and lives, for instance on how to act in the face of violence or bullying against children. Moreover, teachers are also being professionally trained based on the platforms.

Finally, ALLINTERACT's PI's trajectory of scientific, political and social impact on gender and education has been highlighted by the commission of two reports from governments and organizations. On the other hand, the European Commission's Network of Experts working on the Social dimension of Education and Training (NESET) commissioned Professor Ramón Flecha, ALLINTERACT's PI, and two more colleagues of UB-CREA team of the consortium the report "Achieving student well-being for all: educational contexts free of violence". The report presents scientific evidence on the negative effects of violence against children and scientific evidence of social impact at the basis of programs and actions which are contributing to overcome and prevent such violence. Last, along this line, Professor Ramon Flecha was commissioned the White Book of the Inclusive Communication of Science by the Spanish government (FECYT) due to his recognized career and huge impact on engaging vulnerable groups in science. The White Book presents initiatives and projects in which people from vulnerable communities, including the LGBTQI+ group or people with disabilities, have democratic and active roles and promote inclusion in science in different areas.

All these examples and the analyses presented throughout the report show the social and political impact that ALLINTERACT has already achieved and inform policymakers on how to continue promoting the engagement of all citizens, especially those from vulnerable groups, in scientific research of social impact.