

# **From the Sea to the Screen: Lessons from the First Fully Online ECSA Conference**

## **Keywords**

citizen science; conference; inclusiveness; online events

## Introduction

The third international conference of the European Citizen Science Association (ECSA) [1] was due to be held in the beautiful coastal city of Trieste, Italy. Unfortunately, the COVID-19 pandemic that shook the world in 2020 meant that we, along with many millions of others, had to change our plans dramatically.

The ECSA 2020 conference hosts, Sissa Medialab and the University of Trieste, took an early decision to move the conference from May to September – and to hold it fully online. While postponing the onsite conference to a later date was considered as an option, the decision was made, in light of the richness of the proposals submitted, to still hold the event in 2020 and allow participants to share their latest research findings from the field of citizen science. Section 2 of this meeting report highlights some of the many themes debated during the conference, with a particular focus on new directions in the field. A selection of the research presented at the conference will form a special issue of the *Journal Of Science Communication* [2].

Ahead of the shift to an online conference, ECSA had taken the decision to implement a 'safe space' policy (ECSA 2020) – for this and all its future events. In Section 3, we explain the reasons behind this decision, and how it was implemented in practice.

Understandably, moving to a fully online conference raised challenges. Many of these were technical, but there were also implications of a more human nature: how could we recreate the networking opportunities, the collaborations, the unexpected encounters – in other words, the 'conference buzz' – in online spaces? In Section 4, we share some of the key lessons learnt from this conference, which we hope will be useful to others organizing online events. We conclude by looking ahead to future

ECSA conferences (Section 5) which, for a number of reasons, are likely to incorporate both online and onsite elements.

## **How ECSA 2020 Advanced the Field of Citizen Science**

Delegates at ECSA 2020 debated a diverse range of subjects related to citizen science. Here, we discuss some of the most prominent themes.

### ***Sustainable Development Goals***

One major theme in the field of citizen science in 2020 was how citizen science can support the Sustainable Development Goals (SDGs). With ten years to go, and with many gaps in the data, citizen science has both an opportunity and a role to play within this important area.

Conference presenters and attendees discussed the potential contributions of citizen science to fulfilling the SDGs globally – while also zooming in to the local scale. Several talks focused on issues of inequality, in terms of the people involved in citizen science activities. Thus, discussions at the conference resonated with the motto of the SDG's second principle: to “leave no one behind”.

The potential of citizen science in this field partly lies in the data collection needed to monitor the achievement of the SDGs. However, citizen science reaches its full potential when it helps to define the challenges and set priorities that are closely linked to people's lives. Citizen science can provide high-quality data at high spatial and temporal resolutions, and facilitate the implementation of specific goals.

Underlining the political relevance of the topic, the European Commission supported the ‘Knowledge for Change: Citizen Science and the SDGs’ conference, held in Berlin and online in October 2020, shortly after ECSA 2020. A special issue of

*Sustainability* will further stimulate and develop scientific discussion around citizen science and the SDGs (Heigl et al. 2021), while an online survey conducted in 2020 provides valuable empirical data and information on European citizen science projects and their actual contributions to the SDGs (Moczek et al. 2020).

### ***Policy***

The ECSA 2020 conference aimed to bring together citizen scientists with practitioners, researchers and policy-makers. Citizen science as a research field has always been aware of its relevance not only to society and science, but also to policy. Therefore, one recurring topic of discussion was citizen science and environmental policy. In Europe, there is the European Environmental Protection Agencies Network and its Interest Group on Citizen Science, which is a forum working across European government agencies to engage in citizen science and environmental policy. The European Commission recently published guidelines on 'Best practices in citizen science for environmental monitoring' (European Commission 2020).

There are also initiatives being supported by agencies in the USA on this subject. ECSA's 'Policy, Strategy, Governance and Partnerships' working group and the US Citizen Science Association's 'Law & Policy' working group jointly co-hosted a workshop on citizen science and policy at ECSA 2020, discussing overarching issues of the impact of citizen science on policy, and providing insights into regional and global perspectives.

### ***Health***

The potential for citizen science in the field of health is another rapidly growing area of interest. This was reflected in the conference programme, with diverse

contributions related to this subject. One focused on the field of so-called 'patient science', a new citizen science approach for medical and health research where scientists and citizen scientists co-create, plan and implement research, for example a study on a chronic disease. At the other end of the engagement spectrum, a platform called 'Crowdience' crowdsources information about chronic pain, and reveals the potential for this to identify issues relevant to people's everyday lives.

Citizen science in health research also raises ethical questions, however, and these need thorough consideration. Discussions during the conference highlighted the potential, and need, for further developments in this relatively new area of investigation, both on the level of projects looking at health issues (e.g., opportunities and project design) and on the meta-level (e.g., wider ethical issues). This topic was one that participants wished to see debated further in future conferences and discussions, together with legal issues that are relevant to, but not limited to, health and citizen science.

### ***Citizen social science***

The ECSA 2020 conference saw many discussions that came under the umbrella term "citizen social science": research that provides an opportunity to focus on the social construction of social reality. This perspective requires interpretation and understanding of socio-cultural meaning, communication and social action. Consequently, citizen social science is well positioned to take citizens' social concerns and issues as its main thematic focal point, and consider citizens' participation as a key feature of all stages of the research process, from project design to co-evaluation of projects.

The differentiation of terminology between citizen science or citizen social science might not be relevant for all participants. However, it provides socially relevant perspectives to be debated by researchers, policy-makers and funders. Indeed, a survey of conference participants revealed the desire to discuss citizen social science further, including a greater focus on the connection of social movements and citizen science, and how artists contribute to citizen science.

### ***The growth of AI***

There is evidence of a growing interest in the role of artificial intelligence (AI) and machine learning in citizen science (e.g., Ceccaroni et al. 2019) and this was also apparent during different discussions at ECSA 2020. Citizen science is emerging as a suitable arena for considering fruitful collaborations between the growing abilities of computers (e.g., to classify and recognise specific pieces of information, such as images or sounds) and the abilities of humans (e.g., to understand and explore their environment, and to identify exceptions or cases that do not match patterns for which algorithms are trained). Among the many points raised during these discussions was the need for consideration of how to keep participants in these AI-related activities empowered and engaged, which requires the design of algorithms to take into account participants' motivations and processes of learning.

### ***Humanitarian aspects and conflict zones***

Another area that is beginning to adopt the ideas and practices of citizen science is humanitarian support. While OpenStreetMap, an open participatory mapping project, has been applied for humanitarian purposes for the past decade, only more recently has the disaster response community started to consider the opportunities of using

the term “citizen science” and linking it to other activities within this field (Hicks et al. 2019; Shanley et al. 2019).

At the ECSA 2020 conference, a number of sessions looked at citizen science and humanitarian efforts. This included a session dedicated to the use of citizen science in conflict zones, with presentations highlighting the role that citizen science is playing in post-conflict areas of Colombia and Palestine, among other regions. These discussions demonstrated the importance of considering the context within which a project is applied, and the need to think holistically about the implications for those participating in the project, as well as the implications of opening and sharing the data that emerges from it.

### **A Focus on Inclusiveness**

It was decided early on in the planning process that this third edition of the EVSA conference should work proactively to create a more inclusive event for citizen science communities. This commitment grew out of an awareness of difference, and how difference relates to power and the distribution of power in uneven ways. Under such premises, creating open, inclusive and safe spaces for exchange depends on dedicated work and agreed basic practices (Favaro et al. 2016).

For the ECSA community, this was especially important for two reasons. First, citizen science is an interdisciplinary and international field, one in which people from many different backgrounds interact without a well-established set of common principles. Citizen science also brings people together in new ways, creating links between holders of different types of expertise and skills. At ECSA conferences especially, people often come together in less hierarchical and more informal ways than are usually experienced at workplaces or in people’s home countries.

While this is welcomed, it also brings new challenges. Hierarchies and dependencies still exist in these new joint spaces, and people do not come in with equal positions. This means they do not enjoy the same degree of freedom to express themselves, including the freedom to say “no” to unwanted behaviour. But without an explicit organizational stance against harassment (i.e., from ECSA) and no infrastructure in place, reporting and responding to incidents in adequate ways is not possible. This needed to change.

Second, citizen science is on the rise, in Europe and internationally. This is a great opportunity to open up how science is done – and to do it in a more equitable way. Considering the structural inequities and racism operating in (citizen) science worldwide (Soleri et al. 2016), there is a lot of work to do if we are serious about wider participation and greater democratization of research. This work starts with how we build our associations.

### ***The importance of support: organization and individual***

To advance this line of work, the conference chairs sought out collaboration with the working group on ‘Empowerment, Inclusiveness and Equity in Citizen Science and Community-Based Research’ (EIE WG), which is jointly hosted by ECSA and the Living Knowledge Network [3]. To leverage its members’ expertise and contributions, a dedicated action group was established to set out proposals for measures and to regularly report to the working group as a whole. This action group became part of the conference committee in order to be involved in conference planning decisions, rather than just acting in an advisory role.

Many more people contributed to embedding inclusiveness within the ECSA 2020 conference. Eminent citizen science practitioners agreed to be volunteers in the safe



space support team (see below), provide valuable guidance and the team at ECSA Headquarters was a supportive backbone [4]. To ensure transparency and possibilities for participation, the whole process was openly documented and communicated regularly to the wider ECSA community.

### ***A range of inclusiveness measures***

To improve inclusiveness at the conference, a set of proposed measures was created in careful consultation with all parties involved in the event's organization. The aim was to learn about everyone's ideas and goals for inclusiveness and build on these, rather than create more work and pressure for the organizers. This participatory approach also helped to share learnings and resources, and build a joint commitment to inclusiveness among the conference organizers. Inclusiveness measures were proposed and carried out in three main areas.

1. Make the **conference programme** more diverse by creating more spaces for perspectives that are under-represented among the ECSA membership, and in discussions on citizen science in Europe, for example by:
  - a. having a topic stream dedicated to inclusiveness
  - b. making it a criterion in the selection of keynote speakers, sessions and contributions.
2. Support **participation** by more diverse groups than previously attended ECSA conferences, especially citizen scientists, volunteers and members of non-institutional citizen science activities, and civil society organizations, for example by:
  - a. reaching out to these groups and encouraging project leaders to do so
  - b. offering a reduced registration fee for these groups.

3. Facilitate more inclusive ways of **interacting during the conference**, for example by:
  - a. having co-keynote speeches and other interactive formats
  - b. addressing people in a more inclusive way
  - c. providing session facilitators with information and resources on inclusiveness and equity
  - d. having a code of conduct for the conference (the safe space policy)
  - e. offering ways to engage informally with ECSA representatives.

Other options considered, especially when planning for an onsite event in Trieste, included: childcare facilities; quiet spaces; scholarships for volunteers and civil society organizations; room sharing; hosting an 'unconference' [5]. In the end, these options had to be put aside for another time, due to the constraints of the pandemic and the additional workloads they would have generated. However, the online format of ECSA 2020 did in turn mean that options such as live streaming and remote participation –which at one stage seemed unrealistic – unexpectedly moved centre stage.

### ***A safe space policy at the heart of the conference***

A central measure to improve inclusiveness at the ECSA 2020 conference was the safe space policy (ECSA 2020), a minimum version of a code of conduct [6]. The adoption of this policy was a commitment by ECSA to take action against harassment during its 2020 international conference and all related activities, both online and offline. The policy stated ECSA's position – that harassment of any kind is not tolerated during the event – and listed behaviours considered as harassment. It also provided information on how to report harassment. The policy aimed to ensure that the conference was enjoyable and productive for all participants, where they

could come together and express themselves freely. A safe space support team was convened and worked together to implement the measures during the conference [7].

### ***Some steps forward – and many more to go***

What were the results of these activities? First, the online conference format proved appealing to attendees who, for various reasons, could not come to an ECSA onsite conference. This holds true for people who cannot leave work for five consecutive days, have family commitments, or cannot afford regular conference fees. It may also be the case for members of ECSA's 'sister' associations, who may be interested in the themes, but cannot justify travelling to another continent for a conference.

Many participants also found the online format inclusive during the event. For example, some participants noted (through the conference's feedback channels) that they found it easier to contribute to discussions through online chat features, as they were often too shy to speak up in onsite conferences. In this way, virtual chats can work as a way to make interactions more democratic than face-to-face ones, where traditional hierarchies of who gets to speak are – whether intentionally or unintentionally – often reinforced. However, there are naturally also many downsides of such interactions, such as the lack of face-to-face exchange and the exclusive reliance on technology.

Second, while the safe space policy was an important step and generally well received, it needs improvements. Many aspects of what it includes – and does not include, such as joint values and examples of what is considered unwanted behaviour – need to be discussed and developed further. If this commitment for inclusiveness is serious, ECSA's headquarters needs resources to take over this work from its voluntary roots and expand it for future events.

Third, building on the work on inclusiveness at the ECSA 2020 conference entails embedding it in a more systematic approach to inclusiveness, diversity and equity at the organization. This will include clarifying what is understood and aimed for in terms of inclusiveness and diversity: who is to be reached, why and how? Currently, the focus of activities has been on volunteers in citizen science projects and civil society organizations (Göbel et al. 2019). As recent discussions in the EIE WG show, many practitioners are interested in working on these issues, sharing experiences and questioning how they see things. However, such personal engagement is not enough. It needs to be accompanied by critical discussions, action and structural change at the organizational level, regarding such complex topics as privilege, racism, organizational commitments and resources.

### **Switching to an Online Conference Format: The Good, the Bad and the Recipes**

As mentioned, the ECSA 2020 conference was originally planned as an onsite event, but with the restrictions imposed in relation to the COVID-19 pandemic halting mass gatherings, ECSA had three options: to cancel, postpone or move the conference online. The conference committee opted for the online solution, as it wanted to give the citizen science community a common space to meet and share their knowledge and experiences. Switching from an onsite conference to an online event presented many opportunities, but also brought many challenges. In this section, we outline some of the lessons learned and insights gained during the organization of ECSA 2020, with recommendations on best practices, maintaining the human touch and pricing.

### ***A focus on quality***

It is essential to work with experts at all levels to deliver a **high-quality conference**. Technology, conference management and operational activities all need to be assigned to reliable partners and internal collaborators that share your vision, understand your goals – and have the ability to achieve them. The ECSA 2020 organizers suggest beginning by carefully deciding the scope and main features of your online event, and only then looking for technological partners. Do not opt for a ‘turnkey’ solution, but instead build your own framework based on the nature and expectations of the conference and its participants. For the 2020 conference, ECSA opted to combine two platforms, Vimeo and Streamyard, to meet its aims.

### ***Playing with time***

Timing for an online event is crucial, as the dynamics are very different from an onsite conference – not least the amount of time spent sitting down and staring into screens. ECSA 2020 was originally planned as a two-day event, but we spread the online version across five days.

Having more days and more hours can bring a double advantage. First, it can open the event up and make it less crammed; issues such as jet lag on the first day are overcome. Second, it allows participants to attend more sessions, as the number of parallel activities is reduced. This means participants get more out of the event, and the individual session organizers have more participants in attendance.

Also, consider the trade-off between making the conference recordings available online, and thus reaching an even larger potential audience, and the need to create a **unique** event in which those present feel they are attending something ‘live’ and want to interact with other attendees (e.g., through a dedicated live chat function). At

ECSA 2020, a compromise was reached by making the session recordings available a few weeks after the conference [8]. This increased the audience and inclusivity, but also ensured those present on the day felt they were an active part of an engaged community.

### ***People: the heart of any event***

The success of a conference depends largely on the individual **performance** of all presenters and facilitators involved on the one side, and the **experience** of the attendees on the other. To render the conference as user-friendly as possible, the conference hosts in Trieste organized trial sessions of the conference platform for almost 200 speakers and session chairs. The conference hosts, Sissa Medialab, also set up a help desk for the whole conference, and social rooms dedicated to helping attendees orient themselves with the conference platform.

It is important to acknowledge that for online events, longer preparation and trial times are needed, as more features need testing. Also, be aware that not all attendees may be tech-savvy, and some might need additional training to take full advantage of all an event's features.

### ***Engage the community***

From the start, the conference organizers focused on the needs of the audience. In this regard, we left space in the conference programme for the community to interact and strengthen their networks, while encouraging them to use the many online **social corners** available throughout all conference days, such as coffee breaks in Zoom rooms, breakout rooms to continue discussions from sessions, and the closing online disco party. Engagement was further enhanced by the sponsored lunches

made available for the entire ECSA community, where sponsors became content providers and offered yet another chance for attendees to connect.

Interaction is key not only for social aspects, of course, but for the academic track as well. Here, the use of interactive tools such as Mentimeter [9], Padlet [10], Slido [11] and Vimeo chat [12] was recommended to session organizers. Besides interaction, inclusion was another key area of work that benefited from holding the conference online, as discussed in Section 3.

### ***The human touch***

Another way to **take care of your audience** is emphasizing the 'human touch'. This can be more difficult at online events compared to onsite, however. At ECSA 2020, we introduced a series of elements to surprise our participants and make them feel part of the event.

- Conference bags were shipped to attendees ahead of the event, containing gadgets, traditional local biscuits, coffee and Trieste postcards.
- A virtual guided visit of Trieste was provided on the opening day.
- A daily menu, with local recipes, was posted on the conference website throughout the event.
- We also made sure to close the conference properly, with a Zoom disco party, complete with the famous Italian SISTERS CAP DJs.

These helped to retain the 'flavour' of Trieste at the event, even though it had moved online.

Other features, such as yoga and Pilates sessions, and links to the presentations' slides on the conference website, were introduced during the conference itself, as we responded to the suggestions of our participants immediately, rather than simply

noting them as ideas for future events. We made sure someone was always available to listen to participants' requests and concerns, and answered all emails and queries by signing them personally, not with a generic office address. This helped to build a relationship of trust with participants.

***It's online, so it's cheap – isn't it?***

No, not really. Just because a virtual event doesn't take place in a conference venue, it does not mean that it cannot add value – or that it is cheaper to host.

An event's value is determined by the value its participants gain from attending. This can come from learning, entertainment, contributing to a worthwhile cause, or feeling part of a community. However, it proved challenging to make attendees aware that it takes specialized human labour to organize all of this in an online setting, and that investments in technology and production tools are equivalent to those of hiring a venue. For this reason, we asked people who had already registered for the onsite event in Trieste if they could pay the same conference fees for the onsite event. We provided an explanation of the costs on the conference website, and acknowledged all those who paid the same rate by awarding them the 'conference supporter' status.

At the same time, online events provide an opportunity for a greater number of participants, and ECSA wanted to allow for wider inclusion and diversity among those attending the online conference. ECSA therefore opted for tiered pricing for the online ECSA 2020 conference. Besides the standard discounts for ECSA members, ECSA also offered a **supported** (i.e., discounted) rate to those that could not afford to pay the standard fee; this was supported by those who could afford to pay the supporter rate. Thus, one group contributed to the participation of another, which is in keeping with the spirit of citizen science.



## Conclusions

Moving the third international ECSA conference online was a decision largely forced upon us by events beyond our control. However, even if future ECSA events are not disrupted by global pandemics, it is possible that they will be held at least partly online. The advantages of online conferences are starting to be recognized (Achakulvisut et al. 2020) and ECSA 2020 demonstrated many of these, not least in terms of the flexibility, reduced travel costs and inclusivity they offer participants. As technology improves, such events should also become even more interactive.

Furthermore, many organizations and individuals are actively looking to reduce the amount they fly to reduce their carbon footprints [13]. For some academics, flying to conferences is often a major contributor to their own emissions (Desiere, 2016; Quinton, 2020) [14, 15]. The opportunity to take part online is therefore attractive to many.

However, it is important to note at this point that ECSA is not looking to move all future events fully online. From the feedback we received, both during the event and from our post-event survey, it was clear that many people still value the opportunities that onsite conferences provide: to network, to make new contacts, and indeed to see a new part of the world [16]. Our post-conference survey revealed that 66% of participants would prefer the next ECSA conference to be onsite, while just 34% would prefer an online event [17]. Reasons cited for this included distractions when working from home, and the relative lack of social interactions online; as one respondent put it, “nothing compares to meeting face to face”.

The trick, for ECSA and others, will be to blend these approaches in hybrid events that retain the advantages of both formats while minimizing the costs. This will also

help to address another drawback of the online event: the lack of participation by citizen scientists (as opposed to researchers in this field). The evaluation survey identified this as the main area for improvement in future ECSA conferences. Many citizen scientists are volunteers and lack the project budgets that support travel to conferences. Having the opportunity to attend online or in-person should increase the ways in which citizen scientists can participate.

To conclude, we offer some overarching questions to consider for people organizing and attending online and hybrid conferences, drawing on our experiences with ECSA 2020.

For organizers:

- **Think social.** For many people, networking is often as important as the academic side of a conference. How will you ensure there is enough time and sufficient space for people to network at your event, with both their existing contacts and new ones?
- **Think technical.** How can you make sure that participation in your conference is as cheap and simple for as many people as possible, and yet still meets their expectations in terms of interactivity, functionality and usability?
- **Think and become inclusive.** Don't just look at who is attending your conference. Take time, early on in the planning, to ask: who isn't attending? Why aren't they, and what can we do to change this?

For participants:

- **Think virtual networking.** Take note of people's contact information. It is much harder to have a friendly chat about someone's work on an online

platform, but people are usually happy to have a separate informal meeting if you contact them directly.

- **Put your name out there.** Ask questions on the chat, share your thoughts on social media, or maybe retweet some conference posts. As much as online events seem impersonal, there are many ways to engage and get something personal out of it.
- **Think about reducing your screen time.** Pick sessions in the programme that you are happy to watch later on video, or plan to leave your desk during some of the conference breaks. Maybe go for a walk, or simply pop into the garden or street. Try and do something that will leave you feeling refreshed for the next session.

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## Competing Interests Statement

The author(s) has/have no competing interests to declare

## Notes

[1] Previous ECSA conferences were held in Berlin (2016) and Geneva (2018).

[2] <https://jcom.sissa.it/>

[3] <https://ecsa.citizen-science.net/working-groups/empowerment-inclusiveness-equity/>

[4] We are grateful to Claudia Göbel (EIE WG co-chair), Daniel Dörler, Petra Benyei, Simona Cerrato, Soledad Luna and Tim Woods for their commitment as part of the safe space support team; Shannon Dosemagen and Jennifer Shirk for their valuable guidance; and Dorte Riemenschneider, Simone Rüfenacht, Marzia Mazzonetto, Margaret Gold, Barbara Carneiro and Giulia Melilli at ECSA HQ for their support.

[5] A conference without predefined topics, to allow participants to decide these during the event.

[6] Instead of a full code of conduct, a minimum set of principles to counter harassment was proposed for the 2020 conference due to the limitations of ECSA resources and the voluntary nature of the working group. A code of conduct would include joint values of the community, also regarding how to relate to each other, and therefore needs to come out of a participatory process among all ECSA members.

[7] This work built on codes of conduct, inclusiveness measures and resources from the Cos4Cloud project (<https://cos4cloud-eosc.eu/>), the CSA's Code of Conduct (CoC) and implementation measures (<https://www.citizenscience.org/events/conferences/citsci2019/code-of-conduct/>), Gathering of Open Science Hardware CoC (<http://openhardware.science/gosh->

2017/gosh-code-of-conduct/), International Marine Conservation Congress CoC (<https://conbio.org/mini-sites/imcc-2016/registration-participation/code-of-conduct/>), Public Lab's CoC (<https://publiclab.org/notes/Shannon/07-06-2016/public-lab-code-of-conduct/>), Geek Feminism Wiki ([https://geekfeminism.wikia.org/wiki/Conference\\_anti-harassment/Policy](https://geekfeminism.wikia.org/wiki/Conference_anti-harassment/Policy)) and the Ada Initiative (<https://adainitiative.org/continue-our-work/conference-policies/>). It was inspired by many more organizations that have started to position themselves for inclusiveness and justice, and are undertaking measures to change organizational culture, such as disciplinary collectives like BARC (<https://barcworkshop.org/resources/principled-space/>), Hackdays (<https://hackcodeofconduct.org/>), scientific societies (<https://conbio.org/mini-sites/imcc-2016/registration-participation/code-of-conduct/>) and technology-focused conferences and collectives ([https://geekfeminism.wikia.org/wiki/Conference\\_anti-harassment/Adoption](https://geekfeminism.wikia.org/wiki/Conference_anti-harassment/Adoption)).

[8] These can still be watched on YouTube: <http://shorturl.at/tOXZ4>

[9] [www.mentimeter.com](http://www.mentimeter.com)

[10] <https://padlet.com>

[11] [www.sli.do](http://www.sli.do)

[12] <https://vimeo.com>

[13] A number of ECSA members cited this as a factor in their decision to attend the conference. See also, among others, the Tyndall Centre's travel strategy: [www.tyndall.ac.uk/travel-strategy](http://www.tyndall.ac.uk/travel-strategy)

[14] Due to time and financial restraints, ECSA did not measure the carbon saved by participants not flying, nor the carbon emissions of the online event (e.g., data usage and storage). This is something we would like to do for future events, however.

[15] It should be noted that for many, this only applies to their work-related carbon emissions. For most individuals, it can be argued that having children is their biggest contribution to global emissions. See Wynes and Nicholas (2017).

[16] Several participants noted their regret that they did not have the chance to visit Trieste and/or Italy.

[17] n = 108 respondents, from a total of 507 conference participants who received the survey.

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