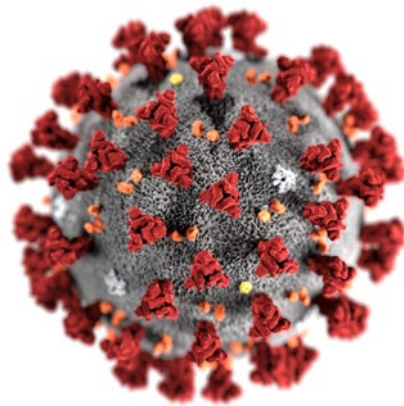


Bureau Council Sub Group on COVID-19 - (BCSGC19)

Final Draft Report



(FINAL DRAFT VERSION 6 @ 3rd September 2021)

COVID19 will be remembered as the virus that stopped the world.

The World Health Organization (WHO) estimate that globally, there have been 218 million cases on COVID19, with 4.53 million deaths and 5,289 million vaccines administered.

WHO – 3rd September 2021.

*“When patterns are broken,
new worlds emerge.”*

Tuli Kupferberg

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Summary

1. OBJECTIVE OF BCSGC19

The main objective of the Bureau Council Working Group on COVID19 (BCSGC19) was to provide ICES with clear recommendations on how to prepare for a post COVID19 era. The TOR 4 outputs provide 7 recommendations for consideration by the ICES Bureau and Council as the organisation prepares for the post pandemic era. The owner, implementer/implementation, resource requirements, and estimated costs are given for each recommendation.

2. Recommendation 1 - On a new Paradigm for Expert Group Work

- Operational Process Change - In order to reduce artificial logistical and time constraints imposed by packaging all information into a resolution, ICES should explore options for separating the resolution process and associated information management into modules along the following grouped elements: Terms of Reference; Approval of Chairs; Logistics of the work; Publicly communicate about the establishment of new groups and their outputs.
 - This operational process change would primarily affect national delegates, expert group chairs, and the Secretariat and should be implemented over a 1-2 year timeframe, starting as soon as possible.
 - Cultural Change - To refocus all aspects of Expert Groups towards a project approach that removes the paradigm of annual meetings being the sole central focus of work. Meetings will be a tool, not the sole element of an expert group. This reflects the organic change that is already happening across the network and will require adjustment of the procedures, reporting and overall management of expert groups.
 - This cultural change would primarily affect expert group members and chairs, SCICOM and ACOM, with implications also for the Secretariat in supporting this. A cultural shift would take affect over a defined period, and likely linked to a cycle of the ICES Strategic plan (3 years).
- **OWNER** – ACOM; SCICOM
 - **IMPLEMENTER/IMPLEMENTATION** – Secretariat
 - **RESOURCE REQUIREMENTS** - 1 Position over 3 years (2022 to 2024)
 - **ESTIMATED COSTS** – 0.5 position focused on Change Management +0.5 position focused on Implementation – Cost = 435,000 DKK per annum.
Additional Consultant Fees may be required = 350,000 DKK.

3. **Recommendation 2 - On a Digital Collaboration Strategy (DCS)**

- ICES should develop a digital strategy for collaboration (DCS) that outlines the key areas that the organisation needs to offer IT solutions/services in, and what services it needs to offer within each area.
- The digital strategy should be relatively high level and focussed on managing informed technology choices for the organisation rather than specific technology/software offerings per se. It would build on existing agreements, principles, and policies.
- While it would be preferable to assign this task to an existing expert group or Committee, due to its cross-cutting nature, it would be appropriate to form a dedicated workshop to establish the strategy and also define the forward process for governance and review of the digital collaboration strategy.
- This should be started as soon as possible and an outline available for ICES Council in the Autumn of 2022.
- Note strong links to TOR 3 – Training and to Recommendation 4 (Develop GADEI Digital Support)
- **OWNER** - SCICOM
- **IMPLEMENTER/IMPLEMENTATION** – Secretariat; Start with a series of Workshops with stakeholders – Formation of Core ICES DCS Team – Training Needs.
- **RESOURCE REQUIREMENTS** – 0.5 Person for 3 Years (2022 to 2024).
- **ESTIMATED COSTS** – 0.5 Person to support Workshop, Core Team – and Training. Cost = 220,000 DKK per annum.

4. **Recommendation 3 - On the Quality of the ICES Advice and TAF**

The COVID-19 pandemic has caused increase in work pressures at home laboratories and at the ICES Secretariat. This, along with other issues has impacted ICES workload.

- In response to the stalled uptake and application of the Transparent Assessment Framework (TAF) throughout the assessment process, and the results of the recent survey of TAF users; home institutes must make time available for TAF implementation and training, with key messaging that this is a priority for ICES as a quality assured advice provider. It is recognised that COVID19 has had a major impact on the TAF situation in that it has put severe pressure on the Secretariat and Member Countries.
- ACOM and WGTAFGOV will re-emphasise the role of TAF and prioritise guidance and online documentation and assistance/helpdesk which requires resourcing in the Secretariat).
- Secretariat to improve the functionality and technical set up (including to export directly into the Stock Assessment Graphs (SAG) database and implementation between years).

- **OWNER** - ACOM
- **IMPLEMENTER/IMPLEMENTATION** – ACOM; Secretariat; WGTAFF-GOV, Member Countries.
- **RESOURCE REQUIREMENTS** - 1 Person for 3 Years.
- **ESTIMATED COSTS** - 1 Person focused on training and implementation of TAF particularly within Member Countries. Cost = 435,000 DKK per annum

5. Recommendation 4 – On Gender Awareness, Diversity, Equity and Inclusion (GADEI)

- Gender Mainstreaming - Embed gender awareness, diversity, equity, and inclusion in the values and culture of ICES. Develop a Code of Ethics and Professional Conduct, revising and harmonizing the Code of Conduct and Meeting etiquette documents to foster a working culture that is respectful, diverse, and inclusive. Future work planning should account for diverse needs, with special attention to women, people with caring responsibilities, and other underrepresented groups
- Data Collection - Systematically collect gender disaggregated data to aid monitoring, evaluation, and to identify areas where strategic actions are needed to support equity of access and opportunities in ICES work
- Training - Provide training on gender and diversity, equity, and inclusion to the ICES community to foster a safer working environment, increased well-being, and equal opportunities

- **OWNER** - Council
- **IMPLEMENTER/IMPLEMENTATION** – Bureau can address the gender awareness, Diversity, Equity and Inclusion policy issue and drive this in all ICES work through the establishment of a ICES Gender Awareness, Diversity, Equity and Inclusion initiative (GADEI)
- **RESOURCE REQUIREMENTS** – 1 Position for 3 years (2022 to 2024).
- **ESTIMATED COSTS** – 0.5 Position focused on Gender Mainstreaming and Training and 0.5 position focused on business intelligence and data collection = 435,000 DKK per annum.

6. Recommendation 5 – On the Future of the Annual Science Conference (ASC)

- ICES will reflect on the future format of the ASC following the cancellation of the 2020 ASC due to the COVID19 pandemic.
- The existing SCICOM ASC subgroup will “think outside the box” to explore existing and new formats by actively collecting experiences from ASCs, other conferences, and other communities. The goal will be to maintain the ASC as a key ICES “flagship event” and ensure that the key characteristics of the ASC (e.g. networking, partnerships,

science exchange) are strengthened while at the same time increasing inclusiveness and reducing environmental impact.

- The lessons learned from the new formats at the upcoming ASC's in Copenhagen 2021, Dublin 2022, and from the joint ICES/PICES conference in the US in 2023 will critically inform the discussions on the future evolution of the ASC.
- Provide resource means to effectively coordinate this process in the Secretariat.

- **OWNER** - SCICOM

- **IMPLEMENTER/IMPLEMENTATION** – SCICOM; Secretariat; Member Countries.

- **RESOURCE REQUIREMENTS** – 1 position for two years (2022 to 2023).

ESTIMATED COSTS – 0.5 Position focused on lessons and new ASC formats. 0.5 position focused to support implementation of new formats at ASC 2022 = 435,000 DKK.

7. Recommendation 6 – The Secretariat Post COVID

- **Workload** - Given the increase in workload and new working norms resulting from the COVID-19 pandemic (i.e. increased use of virtual meetings and support), the Secretariat sees a need for additional human and technical resources both in terms of staff and equipment/tools. Secretariat resource gaps have been identified and additional investments will need to be approved by Council.
- **Meetings** - There is clear need to reconfigure office space, meeting rooms and working schedules to ensure that staff have the ability to support the network meetings without disrupting their colleagues. The move to the new headquarters should facilitate this.
- **Human contact** – the remote work period has led to reduced networking opportunities, for the ICES community, especially for early career scientists and new participants. Future planning should include a “hybrid” approach where both virtual and physical meetings form part of ICES meeting procedures.
- **Work-life balance** – Work/life balance has been significantly impacted by increased workload as well as meetings taking place outside normal working hours. Future planning in the Secretariat must factor in work/life balance and staff wellbeing.
- The COVID19 pandemic and the looming post COVID era presents an opportunity for the Secretariat to review the match between its resources and its current work programmes.
- **OWNER** - Secretariat and Bureau
- **IMPLEMENTER/IMPLEMENTATION** – Secretariat (with ACOM and SCICOM on how groups will operate).

- **RESOURCES** – Additional resources for the Secretariat, that address the COVID19 impacts outlined above, have been identified and costed in Recommendation 1, 2, and 3.
- **ESTIMATED COSTS** – No additional costs.

8. Recommendation 7 – On the Zero Carbon Initiative

- While not specifically in the BCSGC19 TOR's, an important element of it's work was to link with the Zero Carbon Initiative (Council Group on ZERO C Initiative).
- BCSGC19 has addressed some elements of the Zero Carbon Initiative TOR 2 (Travel and Remote meetings) and future work should build on this. The 13 actions in the Bill Turrell paper (2019), can also provide a useful starting point (foundation) for the Zero C Initiative. BCSGC19 has considered actions 7, 8 (remote meetings) and 9 (Science Conferences).
- The Group noted that many of its recommendations will have a positive impact on Net Carbon emissions (e.g. reduced air travel as a result of greater use of remote meetings).
- **ICES as a Responsible/Sustainable Organisation** - In the current marine policy landscape, ICES has a "moral responsibility" to minimise its energy usage while conducting its core business in the secretariat/science/advice/data domains. ICES should strive to minimise its energy usage and CO₂ footprint and "lead by example". This is a key component of being a "sustainable and a responsible organisation". Other elements of a responsible/sustainable organisation need to consider business health, employees, customers and impacts on nature.
- **Highlighting ICES Advice and Science Outputs** – ICES should highlight the elements of its advice/science that will help reduce CO₂ emissions and energy usage in key marine sectors (e.g. via advice on MSP (Marine Spatial Planning); ORE (Offshore Renewable Energy) and Shipping).
- Establish a Bureau Council Working Group that will revise the TOR's of the Zero Carbon initiative. The Group should work throughout 2022 and present their Draft Report to Council in 2022. The TOR's should consider if ICES work processes and support progress towards the UN Sustainable Development Goals and ICES as a "Responsible Organisation".
- It should be noted that flexible working practices, like working from home and remote meetings are also a way to reduce CO₂ emissions generated from local communities.
- **OWNER** - Council
- **IMPLEMENTER/IMPLEMENTATION** – Bureau Council Working Group
- **RESOURCES** – Working Group Members.
- **ESTIMATED COSTS** – from current ICES budget.

9. TOTAL ESTIMATED COSTS FOR IMPLEMENTATION The breakdown of the costs for each recommendation are shown on the table below in DKK. (Conversion Rate; 1 DKK = 0.13 €).

ITEM	2022 DKK	2023 DKK	2024 DKK	TOTAL DKK
Rec 1	785,000	785,000	785,000	2,355,000
Rec 2	222,000	222,000	222,000	666,000
Rec 3	435,000	435,000	435,000	1,305,000
Rec 4	435,000	435,000	435,000	1,350,000
Rec 5	435,000	435,000	435,000	1,350,000
Rec 6	0	0	0	0
Rec 7	0	0	0	0
TOTAL	2,312,000	2,312,000	2,312,000	6,636,000

The Total Estimates Costs for new staff and external consultancy for implementation of the 7 Recommendations is circa. 6,636,000 DKK (circa. € 901,680 over 3 years – circa. €300,560 per annum – circa. €15.028 per ICES Member Country per annum).

10. INTRODUCTION AND BACKGROUND

The Introduction to this report looks at the global impact of COVID19 on society and on organisations. It addressed 15 linked topics (a - o) that include the origin of the virus, the global crisis, how society has adapted, remote working, fatigue, impact on science and conferences, global fisheries, new technology, airlines, people, wellbeing, climate and the future (i.e. the post pandemic era). The key points from each topic are highlighted in bold. The Introduction is not intended to be a comprehensive review of the subject, but more to collate a broad range of information and expert opinion that was intended to prime discussion and ensured the Group address its TOR's in a comprehensive and insightful way.

11. KEY GLOBAL COVID19 MESSAGES FROM THE INTRODUCTION

Some key global messages from the introduction topics that informed the Groups discussions included;

- *Organizations have had to adapt and pivot their operations swiftly in response to the changes imposed by the health risks of COVID19, as well as the economic impact of the ongoing restrictions.*
- *Quarantines, lockdowns, and self-imposed isolation have pushed tens of millions around the world to work from home, accelerating a workplace experiment that had struggled to gain traction before COVID19 hit.*
- *During the pandemic virtual meetings have increased in orders of magnitude, with hundreds of millions happening daily, as social distancing protocols have kept people apart physically. The term*

“Zoom Fatigue” has become a popular expression to describe tiredness, worry or burnout associated with the overuse of virtual platforms of communication, particularly videoconferencing.

- *COVID19 has impacted science. In a 2020 survey, there were substantial differences between male and female respondents in how the pandemic had affected their work. Female scientists and scientists with young dependents reported that their ability to devote time to their research has been substantially affected, and these effects appear additive: the impact is most pronounced for female scientists with young dependents.*
- *The COVID19 pandemic leading to strictly enforced measures to stop the virus’s spread, resulted in an unprecedented number of scientific conferences cancelled in 2020 and 2021.*
- *Online meetings impose significant challenges concerning sustainable fisheries management, such as limited discussions and negotiations on important issues. Thus, to continue their work effectively, these organizations need to develop new decision-making procedures that are more resilient.*
- *According to a new McKinsey Global Survey of executives, companies have accelerated the digitization of their customer and supply-chain interactions and of their internal operations by **three to four years**. Additionally, the share of digital or digitally enabled products in their portfolios has **accelerated by seven years**.*
- *Business travel will take longer to recover, and even then, it is estimated that it will only likely recover to around 80% of pre-pandemic levels by 2024. Remote work and other flexible working arrangements are likely to remain in some form post-pandemic, resulting in fewer corporate trips.*
- *COVID19 has brought about an enormous sense of uncertainty for most people. In the workplace, team members are looking up to leadership to make sense of what is happening and what it means for their job security, livelihoods and their families; forcing leaders to step up into being open and honest. In the immediate term employees will be looking for their leaders to be flexible, open to changes in work patterns, empathetic to personal situations, and to really listen.*
- *The COVID19 pandemic has made it painfully clear that the well-being of the workforce is in jeopardy. Coaching and formal learning opportunities improve the ability of staff to problem solve, present, communicate, resolve conflict, and lead at work. In the same way, wellbeing should be treated as a business-critical skill that can be improved through training and development programs.*
- *It can be reasonably expected that the COVID19 pandemic will abate. However, much work remains to be done in terms of public-health measures to help control the pandemic, monitoring, potential revaccination and dealing with potential new variants.*

- *Government policies during the COVID19 pandemic have drastically altered patterns of energy demand around the world. Many international borders were closed and populations were confined to their homes, which reduced transport and changed consumption patterns. Daily global CO2 emissions decreased by –17% (–11 to –25% for $\pm 1\sigma$) by early April 2020 compared with the mean 2019 levels, just under half from changes in surface transport.*
- *The business landscape will likely look a lot different after COVID19. It would be a mistake to look for a one-size-fits-all plan. Every industry will face unique challenges. Some industries will be permanently damaged by what they have gone through. Other industries will benefit from changed conditions and attitudes. In any case, businesses that meet these changes with innovative thinking will have the best chance of prospering.*

12. ADDRESSING TOR 1

TOR 1 focused on the lessons learned by ICES during the pandemic. These are the key lessons learned from 2020 and 2021 when virtual meetings dominated the ICES landscape and had significant impacts on the ICES staff workload.

- Online meetings take longer to prepare and it is difficult to deal with complex, strategic, and contentious issues.
- Online meetings make it difficult to sense the mood of the network and lack the incentives of physical meetings.
- The shift to online meetings has allowed for more frequent meetings throughout the year, as opposed to concentrated work in short periods.
- Online meetings are shorter and more focussed and attract greater participation.
- The tendency to postpone decisions, or delay the closure of work/activities has become more common in all areas of ICES business, including advice production.
- ICES needs to maintain an initial list of meetings to be conducted physically, on-line and in physical/on-line format. Furthermore, ICES should develop guidance on how to identify the characteristics of meetings that are better online, physical or a combination of both (e.g. meetings that demand wide participation and are focused on one-way communication – like WGCHAIRS – are well suited to be facilitated completely online in future (with opportunistic physical meetings at the ASC). Meetings on sensitive or contentious issues may need physical meetings.
- Understanding and agreeing on the Secretariat support given to the different types of meetings, and the resource demands this creates, in the light of a potential increase of meetings is a critical consideration for the future (Secretariat resource needs).

- Potential future physical/online meetings need to ensure equal opportunity for remote participants to contribute and interact as those present in the room.
- Understanding the training needs for the different meeting formats, considering specific issues, and setting priorities - the audience for the training and the timing of that training should be decided based on challenges of specific meeting formats. ICES is moving its IT to the Cloud, the COVID19 pandemic has accelerated this move, which also implies more acute and variable demands on the IT/ICES budget, and on human resources to implement and adapt processes to the changes.

13. ADDRESSING TOR 2

The outputs from TOR 2 have provided information on the views of the Delegates of 10 ICES Member Countries in relation to COVID19. The following Member Countries provided feedback to the BCSGC19 – UK, Poland, Germany, Spain, Norway, Iceland, US, France Ireland and Latvia. This represents the Delegates views of 50% of the ICES Member States. A consolidated summary of this feedback is presented below.

VIEWS ON THE IMPACTS

- (1) There is a recognition that the pandemic will change the work practices of home institutes and their working processes with ICES.
- (2) In many ICES Member Countries (MC's) fieldwork (sampling and surveys) were severely disrupted or postponed. Laboratory work was less severely impacted. The impact of disrupted sampling on fisheries data will become apparent as ICES delivers advice for 2022 and 2023.
- (3) Fishery-dependent data collection activities were impacted differently at a regional level. There were also delays in responding to data calls in some MC's.
- (4) Some MC's increased their socio-economic data collection activity.
- (5) The pros and cons of virtual meetings were highlighted by all MC's. Virtual meetings are not effective in dealing with sensitive issues and participants from different time zones cause logistical problems. ICES scientists adapted quickly to the rapid move from physical to remote meetings. Staff fatigue (i.e. Teams and Zoom Fatigue) was a feature of some MC's responses.
- (6) Other areas negatively impacted in MC's were grant proposals, conferences (hosting and attendance - ASC) networking, teaching, mentoring, research (e.g. PhD's) and "in person meetings".
- (7) The negative impact of COVID-19 on career progression was also highlighted in some MC's responses.
- (8) The negative and positive impacts on working from home (remote working) featured in most Delegates responses. Issues related to home internet access and bandwidth were also highlighted.
- (9) The decline in mental health and wellbeing of staff was also highlighted.
- (10) The negative impacts of the COVID-19 response were most evident for women in full-time employment, and in scientists with disabilities.

VIEWS ON THE FUTURE

- (1) All MC have recognised the need for new work practices and clear guidelines for staff that embrace new workings norms around flexible working, mentoring, training, mental health, and wellbeing as we all enter an increasingly virtual workplace.

- (2) There is a need to find new ways of informal networking within the marine science and broader science communities
- (3) Ensure access to online conferences, seminars, meetings and continuous learning activities.
- (4) Ensure the impacts of COVID-19 do not negatively impact on career progression and recruitment.
- (5) Travel (both domestic and international) will be restricted having positive benefits in home laboratories travel budgets and general CO2 emissions.
- (6) The need for face to face meetings is necessary for key discussions.
- (7) IT will have a major role to support technology choices by Member Countries in the new virtual ICES workspace.
- (8) ICES meetings and intercessional work need to be “redesigned” (separate out intercessional work; discussion; sensitive decisions; incorporation of webinars; new IT tools to facilitate new ways of working).
- (9) Address some of the TOR’s of ICES Expert Groups through webinars.

ADDRESSING TOR 3

TRAINING REQUIRED TO SUPPORT THE BCSCC19 RECOMMENDATIONS

Supporting BCSGC19 Recommendation 1 - The suggested change of how a multi-year ICES Expert Groups will work in future, as well as the need to accommodate more online meetings, effectively balance meetings that will be a mix of physical and remote attendees, and the increasing use of different workflows and processes, requires specific tools, skills, and competences to ensure equitable participation, good cooperation, community building and efficiently working together while being considerate of human well-being. The remote nature of meetings and workflows might also exacerbate intercultural differences in working and communication style.

Supporting BCSGC19 Recommendation 2: General challenges are related to running meetings (online and mixed physical/online), organizing the work and workflows, and more broadly on onboarding new people, building community, driving innovation and making decisions. These challenges can be partly addressed by using tools and partly only through strengthening skills in how to lead a change in work culture, and organise dispersed groups and workflows. Training on intercultural competences will help to facilitate working in an international setting.

Supporting BCSGC19 Recommendation 3: The introduction of TAF was meant to support the work of Assessment groups and to open up resources for more science within the groups. To achieve this, the implementation needs to be supported by active training of stock assessors and stock coordinators.

Supporting BCSGC19 Recommendation 4: Gender mainstreaming, the active consideration of diversity, equity and inclusion and ensuring a respectful and open work culture requires awareness training for the community as well as special training for secretariat staff and community leaders to be able to handle cases of misbehaviour and harassment competently and confidently.

Supporting BCSGC19 Recommendation 5: Depending on the future formats of the ASC, training needs to be provided to session conveners to enable them to effectively run sessions in virtual settings, both in terms of technical skills for the use of tools as well as moderation skills and to secretariat staff to develop and implement new formats effectively.

Wellbeing

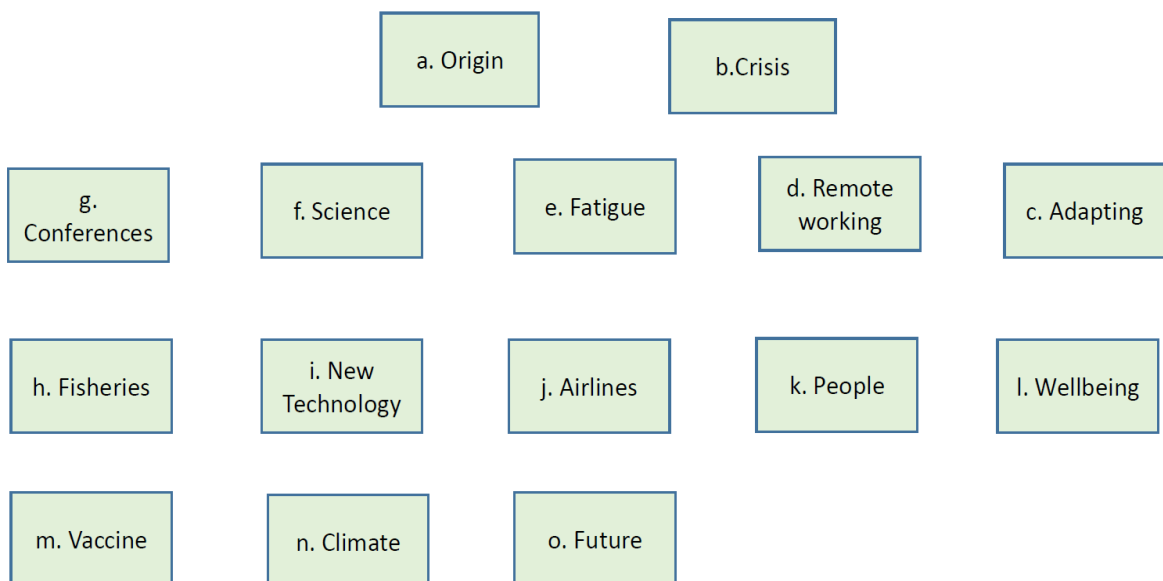
- Wellbeing aspects of work life need to be considered at all levels of the ICES community, fostering an equitable and inclusive working environment, that allows contributions regardless of different individual realities.
- Develop training material, in the form of in-person short courses and recorded materials to address key aspects ICES community wellbeing. Including effective leading of meetings, organization of workflows, as well as training on skills ensuring social interaction and community building.
- As with the recommendations on gender awareness, diversity, equity, and inclusion; wellbeing should be embedded in the values and culture of ICES.

1 Introduction and Background

At the ICES Council meeting in October 2020, a Bureau led Council Sub Group on COVID19 (BCSGC19) was established to examine how changes caused by the societal responses to the COVID19 pandemic will affect ICES work in the short and longer term. Council felt that ICES needs to prepare for a new working norm and consider a post COVID19 situation in which many scientists from Member Countries may have a very different work pattern (e.g. working from home; remote meetings). This will raise a series of issues for the current ICES way of doing business and may impact ICES work particularly in relation to science and advice.

The COVID19 pandemic has profoundly impacted society, organisations and individuals in many different ways. This introduction addresses a broad range of key topics that have been an integral part of the pandemic experience for all of us. Given the dynamic and evolving COVID19 landscape, the introduction draws on “recent” (2020 and 2021) published papers and consultant reports. It is not intended to be a comprehensive review of the subject but more to collate a broad range of information and expert opinion that will prime discussion and ensure the Group address its TOR in a comprehensive and insightful way.

The 15 topics addressed (identified as “a to o”) are presented in the schematic below and include the origin of the virus, the global crisis, how society has adapted, remote working, fatigue, impact on science, conferences, global fisheries, new technology, airlines, people, wellbeing, climate and the future (the post pandemic era). The key points from each topic are highlighted in bold and presented in the Summary (Page 6).



a. ORIGIN

In late 2019, a novel coronavirus, Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), was identified as the cause of an outbreak of an acute respiratory illness in Wuhan, China. In February 2020, the World Health Organisation (WHO) designated the disease as COVID-19, which stands for coronavirus disease 2019 which is the disease caused by the virus SARS-CoV-2. Since the first reports of COVID-19, the infection has spread worldwide, prompting the **WHO to declare a public health emergency of international concern in late January 2020 and characterize it as a pandemic in March 2020 (<https://www.who.int/>).**

The current COVID-19 pandemic has had a pervasive effect on society, including an unprecedented toll on health, the economy, science, research and education worldwide. **On 7th July 2021, The World Health Organisation (WHO) estimate there have been 184 million cases on COVID19 globally, with 3.99 million deaths and 3,032 million vaccines administered (<https://www.who.int/>).**

b. CRISIS

The COVID-19 pandemic is arguably one of the most defining crises society has experienced in the past 50 years. Its implications are far-reaching, with no society, organisation or individual unaffected. The pandemic has had massive implications for the nature of work and the role technology plays in the workplace

In particular, COVID-19 had an unprecedented impact on work and organisational practices. Millions of people worldwide have had to alter work patterns within organisations. Organisations have had to adopt new information technology (IT) systems during the pandemic. Many have been forced into rapid 'big bang' introduction of technology and 'tech-driven' practices in an unprecedented and time pressured manner. In many cases there has been little training or reflection on how the practices and associated technology should be introduced and integrated or adapted to suit the new workplace context (Carroll and Conboy 2020).

Many organisations have had to completely rethink their business model, moving to online services and products and engaging in new business channels to those eroded or removed by the pandemic. At the very least many are required to implement alternative workspaces in order to comply with social distancing requirements (Carroll and Conboy 2020).

COVID-19 represents one of the greatest ever shocks to our economies and, in consequence, to the business models of organisations and the way they do business. While many changes to business processes and operations were already taking place prior to the pandemic, COVID19 has given many added impetus and urgency. **Decision-makers must choose between adapting a wait-and-see approach or implementing more proactive strategies to safeguard and, if possible, grow their businesses.**

c. ADAPTING

National response measures to the COVID19 pandemic include mass gathering cancellations (for specific events or a ban on gatherings of a particular size); closure of public spaces (including restaurants, entertainment venues, non-essential shops, partial or full closure of public transport etc.); closure of

educational institutions (including day care or nursery, primary schools, and secondary schools and higher education); ‘stay-at-home’ recommendations for risk groups or vulnerable populations (such as the elderly, people with underlying health conditions, physically disabled people etc.); ‘stay-at-home’ recommendations for the general population (which are voluntary or not enforced); and ‘stay-at-home’ orders for the general population (these are enforced and also referred to as ‘lockdown’), use of protective masks in public spaces/on public transport (mutually exclusive voluntary recommendations and mandatory obligations shown separately) and also teleworking recommendations/closure of workplaces. There has been a substantial heterogeneity in these national policies and their implementation (McKinsey– March 2021).

Organizations have had to adapt and pivot their operations swiftly in response to the changes imposed by the health risks of COVID19, as well as the economic impact of the ongoing restrictions. As we enter what we hope will be the start of an era of recovery, leaders may find themselves asking how they should reimagine their organizations to become stronger and more resilient in the future. Human-resources executives are playing a central role in finding more agile solutions for their employees, transforming their organizations amid the COVID19 crisis, and leading many innovative efforts to speed up a return to work through a human-centric approach (Barker Mackenzie, 2020).

d. REMOTE WORKING

For many workers, COVID-19’s impact has depended greatly on one question: Can I work from home or am I tethered to my workplace? Quarantines, lockdowns, and self-imposed isolation have pushed tens of millions around the world to work from home, accelerating a workplace experiment that had struggled to gain traction before COVID19 hit.

Now, well into the pandemic, the limitations and the benefits of remote work are clearer. Although many people are returning to the workplace as economies reopen—the majority could not work remotely at all—executives have indicated in surveys that hybrid models of remote work for some employees are here to stay. **The virus has broken through cultural and technological barriers that prevented remote work in the past, setting in motion a structural shift in where work takes place, at least for some people.**

Now that vaccines have been approved and are being administered, the question looms: To what extent will remote work persist? **A McKinsey analysis found that the potential for remote work is highly concentrated among highly skilled, highly educated workers in a handful of industries, occupations, and geographies.** More than 20 percent of the workforce could work remotely three to five days a week as effectively as they could if working from an office. If remote work took hold at that level, that would mean three to four times as many people working from home than before the pandemic and would have a profound impact on urban economies, transportation, and consumer spending, among other things (<https://www.mckinsey.com/featured-insights/future-of-work/whats-next-for-consumers-workers-and-companies-in-the-post-covid-19-recovery>).

More than half the workforce, however, has little or no opportunity for remote work. Some of their jobs require collaborating with others or using specialized machinery, work in a laboratory; other jobs, such as conducting CT scans, must be done on location; and some, such as making deliveries, are performed while out and about. Many of such jobs are low wage and more at risk from broad trends such as automation and digitization. Remote work thus risks accentuating inequalities at a social level (McKinsey 2020)

Remote work raises a vast array of issues and challenges for employees and employers. Companies are pondering how best to deliver coaching remotely and how to configure workspaces to enhance employee safety, among a host of other thorny questions raised by COVID-19. For their part, employees are struggling to find the best home-work balance and equip themselves for working and collaborating remotely (McKinsey, 2020).

e. FATIGUE

Pandemic fatigue is plaguing organizations and employees. In 2020, people endured a global pandemic, a massive economic crisis, and widespread social unrest. Layer on top of that forces that are fundamentally reshaping societies — technological innovation, business-model disruption, societal inequality, and workforce automation—and it's clear that an epidemic of stress has been building, with the COVID19 crisis as the tipping point. In the US, 75% of employees and close to 33% in the Asia–Pacific region report symptoms of burnout. European nations are reporting increasing levels of pandemic fatigue in their populations. The number of those who rate their mental health as “very poor” is more than three times higher than before the crisis, and mental-health issues are still likely to rise. Organizations have an opportunity to do more than just “get through it,” restoring the performance and work life enjoyed before the crisis. Many employees already have a sense that we aren't likely to simply “bounce back” to how things were before the COVID-19 crisis. (Mc Kinsey – Nov 2020).

During the pandemic virtual meetings have skyrocketed, with hundreds of millions happening daily, as social distancing protocols have kept people apart physically. The, the term “Zoom Fatigue” has become a popular expression to describe tiredness, worry or burnout associated with the overuse of virtual platforms of communication, particularly videoconferencing. This fatigue arises because of 1) Excessive amounts of close-up eye contact is highly intense. 2) Seeing yourself during video chats constantly in real-time is fatiguing. 3) Video chats dramatically reduce our usual mobility. 4)The cognitive load is much higher in video chats. (Ramachandran, 2021).

f. SCIENCE

The COVID19 pandemic has undoubtedly disrupted the scientific enterprise. Policymakers and institutional leaders have already begun to respond to mitigate the impacts of the pandemic on researchers. For instance, many universities are making accommodations for their researchers, and the US government has allowed temporary flexibility in grant conditions. However, we lack evidence on the nature and magnitude of the disruptions scientists are experiencing. (Myers et al. 2020).

The pandemic appears to have affected scientists working in different disciplines unevenly. Scientists working in fields that tend to rely on physical laboratories and time-sensitive experiments—bench sciences such as biochemistry, biological sciences, chemistry and chemical engineering—reported the largest declines in research time, in the range of 30–40% below pre-pandemic levels. Conversely, fields that are less equipment-intensive—such as mathematics, statistics, computer science and economics—reported the lowest declines in research time. The difference between fields can be as large as fourfold (Myers et al. 2020).

In a recent survey conducted by Myers et al. (2020), **there were substantial differences between male and female respondents in how the pandemic had affected their work. Female scientists and scientists with young dependents reported that their ability to devote time to their research has been substantially affected, and these effects appear additive: the impact is most pronounced for female scientists with young dependents.**

The findings regarding the impact of childcare reveal a specific way in which the pandemic is impacting members of the scientific community differently. Indeed, ‘shelter at home’ is not the same as ‘work from home’ when dependents are also at

home and need care. Because childcare is often difficult to observe and rarely considered in institutional research policies (aside from parental leave related to birth or adoption), addressing this issue may be an uncharted—but important—new territory for institutional leaders.

Female respondents reported larger declines in the time they could devote to research than their male colleagues. Scientists with young children appear to have been particularly hard-hit, especially women, who remain primarily responsible for childcare. It is therefore important that institutions and funding bodies take into consideration the consequences of policies adopted to respond to the pandemic, as they may disproportionately disadvantage specific groups of scientists and worsen existing disparities (Myers et al 2020).

g. CONFERENCES

As the coronavirus pandemic marches around the world, leading to strictly enforced measures to stop the virus’s spread, the number of scientific conferences cancelled in 2020 and 2021 was unprecedented. Researchers were scrambling to find alternative ways to share their work and interact with collaborators. Some of these discussions are even pushing researchers to rethink the concept of conferences entirely. Many organizers and participants have turned to online platforms as a way to share work, creating virtual conferences that mimic at least some parts of a physical meeting. **Conversations about the point of a conference are happening in the science community. Although cultural changes happen slowly in the scientific world, change is in the air. The conference shift could help to address long-standing calls to make meetings more accessible to a wider set of researchers, for instance those from resource-poor universities and those with disabilities.** Furthermore, many researchers already complain about the relentless expectation of travel and

worry about the carbon footprints they create by taking international flights. The new conference norm could improve accessibility, cut down on researchers' carbon footprints and reach a wider audience than a conventional meeting could. Participants will watch recorded talks ahead of time and then join in online conversations on the day of the conference (Nature, 2020).

h. FISHERIES

Many fisheries and marine science organizations are working to determine how to meet their missions in the midst of the COVID19 outbreak. It is prudent to exchange ideas, share knowledge, and initiate a discussion around how to operate during the pandemic. The scientific leadership team for NOAA Fisheries, have offered some perspectives and explored the potential challenges posed by COVID-19 and to purposefully ascertain whether there are strategic opportunities for improving how we conduct our operations. This has allowed NOAA to find ways to mitigate the effects of COVID19 on their mission and also to glean information from their responses. The recommendations will not solve every problem, but the dialogue allowed teams and organisations to learn from each other and engage in dialogue to advance much-needed changes (Link et al 2020).

The COVID19 situation is unprecedented, at least in the context of the past 100 years of fisheries science and management. Certainly, there have also been temporary shocks to fisheries systems due to acute pulse events such as hurricanes, oil spills, etc. (McLaughlin 2008). But mostly those have been short-term and highly regional in nature, not impacting the entire national fisheries science and management system. The closest lessons one can learn would likely be from the influenza pandemic from circa 1918 (Reid et al. 2001; Niall et al. 2002; deValpine 2015), but the machinery to manage fisheries was not nearly as established then as it is today. Lessons one can learn from the 1918 situation, acute events, and the current COVID-19 situation include the need to uphold all the human health and epidemiological guidelines while (often creatively) maintaining our ability to monitor, measure, and manage fishes to provide seafood for the nation. **The salient point from our current and historical situation is that although what follows focuses on our mission, the health and safety of the many fisheries professionals working at NOAA Fisheries, of our partners, of our stakeholders, and of the communities in which we work remains a priority (Link et al, 2020).**

The global COVID19 pandemic is impacting on the fisheries sector and posing significant challenges for the management of transboundary fisheries. Due to travel bans and border closures, regional organizations are not able to hold face-to-face meetings. This commentary provides a summary of the meeting procedures of Regional Fisheries Management Organizations and Regional Organizations during the global pandemic. Most organizations have transitioned to online platforms and are holding virtual meetings. **These online meetings impose significant challenges concerning sustainable fisheries management, such as limited discussions and negotiations on important issues. Thus, to continue their work effectively, these organizations need to develop new decision-making procedures that are more resilient in the upcoming future (Haas, 2021).**

The COVID19 pandemic has significantly disrupted the management of global fisheries. **An analysis conducted by the Food and Agriculture Organization**

(FAO) revealed that 44% of Regional Fisheries Management Organisations (RFMOs) believe that the pandemic will negatively impact the sustainable management of fish stocks [1]. Reasons included, inter alia, the lack of physical meetings and the decline of inspections and observer coverage [1]. It is highly likely that travel bans and border closures will continue throughout 2021, further impacting on the ability of RFMOs to implement their conservation and management responsibilities. For example, the Australian government's budget forecast assumes that international travel will not resume until the end of 2021 [2]. This poses significant challenges to effective management, particularly in transboundary fisheries that require complex and regular negotiations to adopt, implement, and monitor conservation and management measures. This commentary summarizes the different responses of RFMOs and Regional Organizations towards the global COVID19 pandemic (Haas 2021).

i. NEW TECHNOLOGY

There is no question that the way we work has fundamentally changed due to the COVID19 pandemic. Organizations have had to find ways to quickly implement digital solutions to allow for productive and efficient remote working conditions. **According to a new McKinsey Global Survey of executives, companies have accelerated the digitization of their customer and supply-chain interactions and of their internal operations by three to four years. Additionally, the share of digital or digitally enabled products in their portfolios has accelerated by seven years.** COVID19 is taking place throughout the end-to-end supply chain, with faster and broader adoption of data and predictive analytics, cognitive automation and AI, application and infrastructure platforms, digital reality, digital supply networks, smart factories, and e-commerce. Providing at least a temporary infrastructure for connected digital technologies, has allowed for scientists to make revolutionary breakthroughs, and businesses to work more efficiently than ever during the COVID19 pandemic.

While the pandemic has caused an acute disruption in the world of digital transformation, the pay offs have proved to be a worthwhile investment and have therefore, accelerated many businesses' long-term digital strategies. The focus on creating a digitally connected laboratory environment to automate and accelerate science, remains a focus in the pharmaceutical industry. As we have learned, digital enablers such as AI, machine and deep learning, blockchain, digital analytics and delivery, and process automation are central to creating more agile research and development processes. These technologies all accelerate a specific component of the R&D process, but the real efficiency gains come from these technologies being connected (Thermo Fisher Scientific 2021).

j. AIRLINES

It is difficult to overstate just how much the COVID-19 pandemic has devastated airlines. In 2020, industry revenues totalled \$328 billion, around 40 percent of the previous year's. In nominal terms, that's the same as in 2000. The sector is expected to be smaller for years to come; we project traffic won't return to 2019 levels before 2024. Financial woes aside, the pandemic's longer-term effects on aviation are emerging. Some of these are obvious: hygiene and safety standards will be more stringent, and digitalization will continue to transform the travel

experience. Mobile apps will be used to store travellers' vaccine certificates and COVID19 test results.

Other effects, though, are more profound. Unlike the 2008 global financial crisis, which was purely economic and weakened spending power, COVID19 has changed consumer behaviour — and the airline sector — irrevocably.

Business travel will take longer to recover, and even then, we estimate it will only likely recover to around 80 percent of pre-pandemic levels by 2024. Remote work and other flexible working arrangements are likely to remain in some form post-pandemic and people will take fewer corporate trips.

When demand for air travel returns, it will likely outpace supply initially. There will be

a glut of latent demand of people eager to travel. It will take time for airlines to restore capacity, and bottlenecks such as delays in bringing aircraft back to service and crew retraining could lead to a supply–demand gap, resulting in higher short-term prices.

The impact of the COVID19 pandemic is far from over. There is some relief to be found in various parts of the world now that vaccinations have begun, but the road to recovery for air traffic will take several years. The shape of the post COVID19 airline sector is becoming clearer and holds lessons for airlines today. Multiple longer-running trends have been accelerated, such as digitization and the phasing out of less efficient aircraft. Burdened by debt, many carriers have depleted their cash reserves. But the forecast is not without bright spots. **Travel will become greener and more efficient, and people are itching to travel again for holidays. Taking steps now will help airlines thrive in this transformed sector (McKinsey – April 2021).**

k. PEOPLE

COVID19 has brought about an enormous sense of uncertainty for most people. In the workplace, team members are looking up to leadership to make sense of what is happening and what it means for their job security, livelihoods and their families; forcing leaders to step up into being open and honest. In the immediate term employees will be looking for their leaders to be flexible, open to changes in work patterns, empathetic to personal situations and to really listen. However, leaders who want to be effective and respected in the long run need to respond to the emerging movement of **employees who are looking for more meaning, happiness, and connectedness at work.** As a leader, sharing your values with your team in times of uncertainty can provide the team with a sense of security because they know what is important to you. Open and honest communication – even around difficult topics - during these times is crucial. Following up words with actions that are aligned will build trust, not only in the immediate term but also for the future. Coming out of this crisis our workforce will be looking for employers who have their backs, whom they can trust to lead them through difficult times authentically as and when they arise again; and who will be providing a sense of purpose throughout and after. **This could be the greatest chance yet to attract and retain the**

best talent by creating a sense of belonging and loyalty, even amongst our restless workforce (KPMG, 2020).

Emerging evidence on the impact of COVID19 suggests that women's economic and productive lives will be affected disproportionately and differently from men. COVID19 is not only a challenge for global health systems, but also a test of our human spirit. Recovery must lead to a more equal world that is more resilient to future crises. Fiscal stimulus packages and emergency measures to address public health gaps have been put in place in many countries to mitigate the impacts of COVID-19.¹ It is crucial that all national responses place women and girls - their inclusion, representation, rights, social and economic outcomes, equality and protection - at their centre if they are to have the necessary impacts. This is not just about rectifying long-standing inequalities but also about building a more just and resilient world. It is in the interests of not only women and girls but also boys and men. Women will be the hardest hit by this pandemic but they will also be the backbone of recovery in communities. Every policy response that recognizes this will be the more impactful for it (UN Report, 2020).

I. WELLBEING

The COVID-19 pandemic has made it painfully clear that the wellbeing of the workforce is in jeopardy. At a time when more than half of Americans say the pandemic has negatively affected their mental health, employees are needing and increasingly demanding additional support from their employers. A 2020 McKinsey report showed that 62 percent of employees globally consider mental-health issues to be a top challenge during the COVID-19 crisis, with higher reporting among diverse groups. The same report paints a picture of employers that are scrambling to meet the moment: 96 percent of companies globally provided additional mental-health resources to employees, but only one in six employees reported feeling supported (McKinsey – Jan. 2021).

Coaching and formal learning opportunities improve the ability of staff to problem solve, present, communicate, resolve conflict, and lead at work. In the same way, wellbeing should be treated as a business-critical skill that can be improved through training and development programs. It is crucial that leaders value their colleagues 'and peers' wellbeing just as much as their technical skills, and it is their responsibility to model positive behaviour and prioritize supporting their colleagues' own efforts. It could be as simple as building in wellbeing check-ins as part of team meetings and ensuring that key resources in an open way and backing it with significant action, leaders can eliminate a work culture that implies work should come before personal needs—and empower employees to invest in themselves so that they can be at their best for others (McKinsey – Jan 2021).

m. VACCINE

The speed of COVID-19 vaccine development has been an unqualified success. The approvals for vaccines made by Pfizer and BioNTech, Moderna, Oxford and AstraZeneca, Sinopharm, Serum Institute, Bharat Biotech, Gamaleya, and others within a year of viral sequencing smashed all records for development timelines. However, rollout is off to a slow start in many countries. While countries such as Israel have shown what is possible, many countries have fallen behind

their targets due to vaccine supply difficulties and public concerns about side effects (Mc Kinsey – 2021).

The transition toward normalcy will occur when COVID-19 mortality falls and the disease is de-exceptionalized in society. COVID-19 will not disappear during this transition, but will become a more normal part of the baseline disease burden in society (like flu, for example), rather than a special threat requiring exceptional societal response. During this transition, controlling the spread of SARS-CoV-2 will still require public-health measures (such as continued COVID19 testing and mask use in many settings), but mortality will fall significantly, allowing greater normalization of business and social activities. This will be driven by a combination of early vaccine rollout (which, being directed first at those at greatest risk, should reduce deaths faster than cases), seasonality, increasing natural immunity, and stronger public-health response (Mc Kinsey – 2021).

It can be reasonably expected that the COVID19 pandemic will abate. However, much work remains to be done. In the short term, public-health measures can help control the pandemic, but even when herd immunity is achieved, managing the risk of COVID-19 will require monitoring, potential revaccination, and treatment of isolated cases and new variants. Every country has its own COVID-19 story, but those stories will eventually reach some kind of ending (Mc Kinsey – Jan 2021).

n. CLIMATE

Government policies during the COVID19 pandemic have drastically altered patterns of energy demand around the world. Many international borders were closed and populations were confined to their homes, which reduced transport and changed consumption patterns. **Daily global CO₂ emissions decreased by –17% (–11 to –25% for $\pm 1\sigma$) by early April 2020 compared with the mean 2019 levels, just under half from changes in surface transport.** At their peak, emissions in individual countries decreased by –26% on average. The impact on 2020 annual emissions depends on the duration of the confinement, with a low estimate of –4% (–2 to –7%) if some restrictions remain worldwide until the end of 2020. Government actions and economic incentives post crisis will likely influence the global CO₂ emissions path for decades (Nature, 2020)

Five years after the adoption of the Paris Climate Agreement, growth in global CO₂ emissions has begun to falter. The pervasive disruptions from the COVID19 pandemic have radically altered the trajectory of global CO₂ emissions. Contradictory effects of the post-COVID19 investments in fossil fuel-based infrastructure and the recent strengthening of climate targets must be addressed with new policy choices to sustain a decline in global emissions in the post-COVID19 era.

The growing commitments by countries to reduce their emissions to net zero within decades provides a substantial strengthening of climate ambition. This is now backed by the three biggest emitters: China (by 2060 but with few details on scope), the United States (by 2050 as detailed in President Joe Biden’s electoral climate plan)[20](#) and the European Commission (by 2050 with strengthened ambition of at least 55% reduction by 2030). **The effective**

implementation of these ambitions, both within and beyond COVID19 recovery plans, will be essential to change global emissions trajectory. Most current COVID19 recovery plans are in direct contradiction with countries' climate commitments (Nature, March 2021).

o. The FUTURE

The business landscape will likely look a lot different after COVID19. It would be a mistake to look for a one-size-fits-all plan. Every industry will face unique challenges. Some industries will be permanently damaged by what they have gone through. Other industries will benefit from changed conditions and attitudes. In any case, businesses that meet these changes with innovative thinking will have the best chance of prospering. Artificial intelligence (AI) will get embedded everywhere. I think manufacturing is at the cusp of that transformation. The biggest thing in manufacturing post-COVID-19 is how the Internet of Things and AI can make manufacturing more efficient, effective, and automated. Primary and secondary education, having tried fully online and mixed models, will have experience in what does and doesn't work. For parents, there will still be a need for the in-person function of schools. Post-secondary education will change more radically post-COVID19.

Colleges have been selling "the college experience" for years, and it has become so expensive that many students will be attracted to online learning, especially if offered by established universities. And by transitioning to more online courses, colleges can move from classes taught by teaching assistants to allow more students to learn from professors. Health care is perhaps the field most directly impacted by COVID19. Telemedicine will be a boon not only for patients in remote areas but for everyone. Health care is perhaps the field most directly impacted by COVID19. Telemedicine will be a boon not only for patients in remote areas but for everyone. (Forbes – April 2021).

The lesson of COVID19 is that disruptions to your business will come, and you will not be able to predict the timing or form. There will no doubt be another pandemic. And we won't know until we're in it. But companies that build this scenario into their planning will come out ahead. More employees working off-site will not just mean an investment in new technology for remote work; the relationship between management and employees will change. Nobody really knows yet how that will unfold. But the strategy for riding out all of these disruptions is the same: Prioritize innovation. That is the key to surviving in the post-Covid-19 world. (Forbes – April 2021).

COVID19 will be remembered as the virus that stopped the world. We are all living through a period that can only be described as the greatest act of solidarity in history, as people give up civic freedoms to save lives. While we all agree that managing the health crisis is the overwhelming priority, the social and economic consequences are, and will be, dramatic in an already troubled world. Above all, technology now allows the demands of work to permeate our lives 24 hours a day, seven days a week. There is a clear case for businesses to build their employees' skills for wellbeing. The actions businesses take through this current global crisis will make us stronger in the future.

As we navigate the challenges of today, our capacity to foster wellbeing in the face of uncertainty will determine the strength of our leadership tomorrow.

FOOD FOR THOUGHT – POST COVID19 RECOVERY

There is growing hope that we will begin to see a recovery in both public health and the economy this year. What do you think the return to work is going to look like?

Leena Nair: I must say that we all must be hugely optimistic but have a sense of gritty optimism, which means it will be longer than we think it's going to be. Everything we're thinking about—return to office, return to travel, return to some semblance of normalcy—is going to take a little longer than we think when we look at some of the vaccine-efficacy rates, at the vaccine-deployment successes, at the challenges across the world to make all of this happen. So stay optimistic. But stay optimistic with a good dose of realism.

How are we thinking about this at Unilever? The office is important, but you don't need to be in the office five days a week. We've shown that. We think across the world, and it really depends on local context. People will come back to the office, whether it's two days, three days, four days. It's what we're calling a hybrid work arrangement, with a physical workspace and a digital workspace.

We're rethinking our physical workspace entirely to create more connections, more collaboration. We are also thinking about the digital workspace and how we can make that experience better—where we continue to work digitally but build in some of the social-capital rituals as well.

I know that we need flexibility based on the roles our people play, on the countries they come from, and on their own personal lifestyle and needs. I do think leaders have seen that a new way of work is possible. This moment has helped change the mindset of leaders, including our own, to believe that this is possible. We can reinvent work—or at least we can try. People have tasted something new, so they may be more keen to try and make new ways of working work.

McKinesy Interview with Leena Nair,
Chief Human Resources Officer, Unilever
March 2021

2 Approach to Addressing our TOR's

The four TOR for BCSGC19 are given in Appendix 1. The first TOR focuses on ICES and the impacts and lessons learned from the pandemic on work processes and outputs including measures put in place to mitigate these impacts and the impact on staff. The approach taken by the BCSGC19 draws on the lessons learned document presented to Council in October 2020. This has been further developed from the ICES experiences of 2021, published papers and reports and discussion by the Group. The outputs will reflect on the new norms that may emerge in the post pandemic era.

TOR 2 deals with the impact of the COVID19 pandemic on the ICES Member Countries and the future impacts on the marine science community. The Group felt that it would not be useful to conduct a survey of ICES Member Countries given the dynamic and variable situation in each country and the uncertainties around the future direction of the pandemic and post COVID recovery. Furthermore, "survey fatigue" could also lead to a poor response rate from Member Countries. It would also eat into the limited working time of the Group.

The Group would make use of existing survey information collected by ICES and other organisations (E.G. European Marine Board Survey). The TOR of BCSGC19 seeks a snapshot and the used the views of ICES delegates from a selection of Member Countries. Delegates were asked to provide a summary overview of the experiences and key considerations in relation to the COVID19 pandemic and the post pandemic landscape. The Member States contacted for their thoughts were UK, Ireland, France, Germany, Poland, Norway, Iceland, Spain, US and Latvia. This represents 50% of ICES Member Countries.

The TOR 3 deals with training for participants in remote working methods and approaches that address the nature and objectives of the different types of ICES meetings.

The TOR 4 provides 7 recommendations on how ICES might prepare for and adapt to new ways of working that will emerge in a post COVID19 landscape. These recommendations also give the owner; implementor/implementation, additional resources required and the estimated costs.

The list of BCSGC19 participants is given in Appendix 3. It was critical to the work of BCSGC19 to have the leaders of ACOM, SCICOM, Data and the Secretariat participating in the Group.

An important element of the work of BCSGC19 was to link with the work of the Council Group on the Zero Carbon Initiative. The approach was to examine the TOR of the Zero Carbon Group and identify common areas. TOR 2 of the Zero Carbon Group established the linkage with the work of BCSGC19. Furthermore, the Turrell (2019) paper, which was used to develop the thinking in the Zero C Group developed a series of 13 Actions, three of which are being addressed in

the work of the BCSCC19. Recommendation 6 offers some views on how the Zero Carbon initiative might progress.

A key approach by BCSGC19 was to use existing material (e.g. reports, published papers, surveys, data and information) in order to avoid duplication of effort with other initiatives and avoid the gathering of new information that will require a lot of additional work. BCSGC19 was sensitive to “survey response fatigue” and avoided new surveys of the ICES community. Furthermore, given the fast evolving and dynamic nature of the pandemic, survey information becomes outdated very quickly. Where specific key gap areas were identified, could be delivered with the resources available to the Group and within its work timeframe.

BCSGC19 operated in a flexible/agile manner as the COVID19 pandemic continued to evolve and caused great uncertainty in 2021. The Group operated at a strategic level and provide recommendations that aim to enhance ICES position in a post pandemic era.

BCSGC19 worked throughout 2021 via seven online Team meetings. Intercessional work (homework) and regularly update the ICES Bureau on progress were key elements of the work programme. The draft BCSGC19 report will be presented for approval to the Bureau meeting at the end of August. The list of BCSGC19 meetings and updates to Bureau are given in Appendix 3.

During September, the draft report will be circulated to the ICES community for comment and feedback. The BCSGC19 will incorporate relevant comments into the final report.

The Final Report of BCSGC19 will be considered by the ICES Council at their meeting in October 2021.

3 Addressing TOR 1 – ICES and the Lessons Learned

ICES COVID19 Response – Longer-term considerations – based on experience from on-line work. This document outlines the experience gained by ACOM, SCICOM and the Secretariat during the COVID-19 pandemic, and suggests ways to address these issues (DEL-DOC-22 ICES Council 2020)

3.1 Experience with Increased Levels of Online Work

Challenges

On-line meetings take longer time to prepare

The majority of the guidelines/processes have been developed for physical meetings. It thus takes time to make this into on-line practises. Shorter and more frequent meetings are time-consuming to prepare, especially for the chairs and the Secretariat. E.g. advance consideration and preparation of tools to gauge consensus/decisions; increase in the data-entry tasks required for registering additional meetings and participants in the Resource Coordination Tool and other administrative systems.

On-line meetings have difficulties to deal with strategic issues and complicated or contentious issues

Due to the limited personal interaction, and the difficulties in these circumstances to have in-depth discussion around more complicated issues, there has been a deferral of strategic and contentious issues.

On-line meetings have seen a tendency to centralize decision-making in a smaller pool of individuals

Due to the limited personal interaction there has been less activity on the fora, and less engagement by the members. This has resulted in an increased influence by centralised members (for example, ACOM leadership). Shorter meetings with increased participation may constrain potential for all perspectives to be heard.

While English is the working language of ICES, remote meetings can be more challenging for non-native English speakers, who may be less likely to speak in an online meeting; we have seen increased interaction/intervention through online messaging and this may favour, or be favourable to less confident speakers.

On-line meetings make it difficult to sense the mood of the network

The inability to informally chat, has resulted in an inability to read the mood of the network and science community; both for ICES meetings and for meetings outside the network. This has large implications in terms of inter-organisational relationships, preparing for ICES meetings and decisions, listening to feedback from stakeholders and requesters of advice, hearing of innovations and developments relevant to ICES advice.

Online meetings lack some of the incentives of physical meetings

It has been specifically difficult to attract benchmark reviewers.

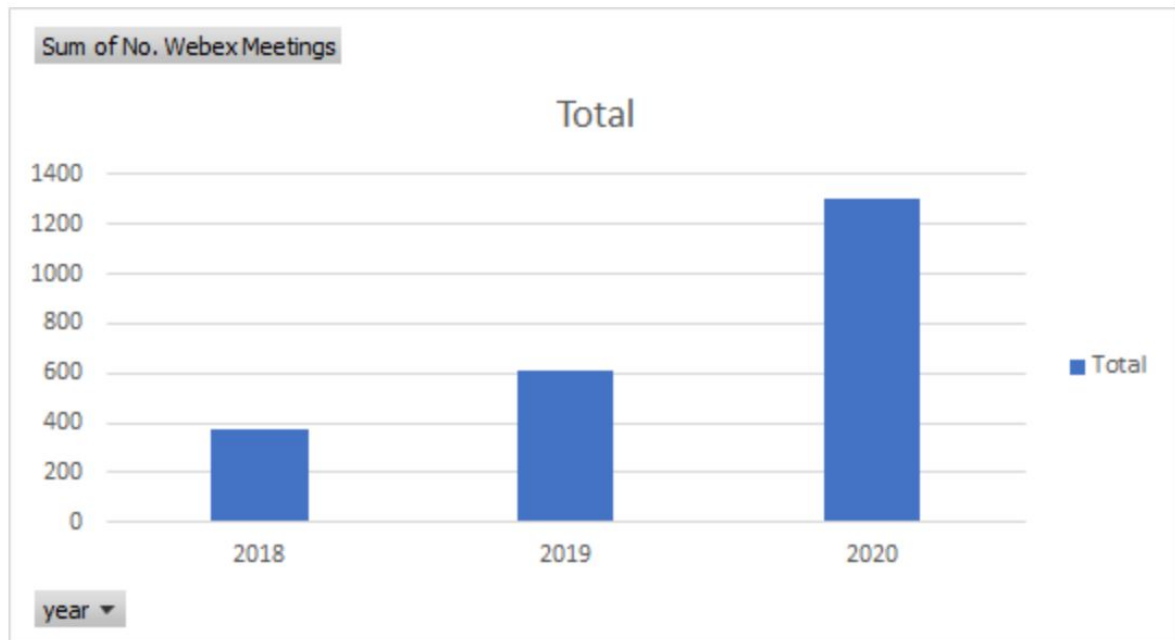


Figure 3.1 - The growth in the number of ICES Webex Meetings during 2018 to 2020 (Note this figure does not include data on TEAMS meetings).

In 2018, ICES was using remote meetings, via WEBEX mainly, to facilitate participation at physical meetings (about 8 meetings per week). In 2019 the number of WEBEX meetings increased to about 12 per week. The COVID19 pandemic in 2020 resulted in a further increase to circa. 25 meetings per week. In 2020 there were also a considerable number of TEAMS meetings. Supporting these large number of on-line meetings put a considerable strain on the ICES Secretariat in 2020.

Online meetings and the shift to remote work require a consideration of trade-offs in efficiencies.

The shift to online meetings has allowed for more frequent meetings throughout the year, as opposed to concentrated work in short periods. There has been an increase in remote meetings overall and expectation that people should be available, constant multi-tasking may not be an efficient/sustainable working strategy. Travelling to a meeting often means people are dedicated to a task/ICES work and are able to work in the margins of the meetings without home responsibilities. On the other hand, we also heard people appreciating more meetings as giving more continuation throughout the year. And being able to focus on one task per meeting being efficient.

Online meetings have led to a tendency to postpone decisions, or delay the closure of work/activities in advice production, leading to spread out consultations and delayed final approval of advice.

There is an increasing trend to use the opportunities to meet again at short notice, to delay final decisions, or suggest more consultations. This spreads out the production of advice, and requires more investment in expert, ACOM and secretariat time and effort. This also threatens the independence of the advice, as only the most tenacious engage with the longer process, leading to potential bias, and also challenges the quality assurance of advice, if last minute data/knowledge are brought into the process at the last minute.

Opportunities

Online meetings are shorter and more focussed

Due to different time zones, and the need to keep the focus and concentration of the participants, online meetings are shorter and focus on a limited number of ToRs that are achievable. There is therefore a need to balance expectations of what can be achieved during the meeting. Some groups have seen a greater uptake of 3rd party online tools to aid the work in the meeting i.e. online polls, mind-mapping which have been immediately available and useable in the EG outputs, as opposed to 'paper formats' which have not readily been translated into EG report contributions.

Online meetings attract greater participation

Compared to 2019 (2400) we have seen an increase in the number of participants (2900), which is reflecting similar increases from earlier years. Based on available data, it seems to be the existing network of experts participating in more meetings. However, we do not have an overview of how inclusive our meetings are, in terms of diversity, Early Career Professionals, and gender equality. (see Myers et al., 2020 - Unequal effects of the COVID-19 pandemic on scientists).

Potential Solutions and Way Forward

Differentiating between meetings needing physical, on-line only and Physical/online format

Based on issues discussed (e.g., updates/technical/formalities/strategic/contentious issues) there's a need to make an initial list of meetings to be conducted physically, on-line and in physical/on-line format.

Understanding and agreeing on the support given to the different types of meetings, and the resource demands this creates, in the light of a potential increase of meetings – resource needs

The amount of administrative and technical, as well as other support needed for the different kinds of meetings will be paramount in deciding on the needed resources, in both the Secretariat and the Member Countries. It will also be important to decide which tools are to be supported by the Secretariat. Figures will be compiled on number of meetings conducted during the COVID-19 restrictions, as compared to pre-COVID periods.

Potential future physical/online meetings need to ensure same ability for remote participants to contribute and interact as those present in the room

For the physical/online meetings (some participants online, some participants attending physically) there are special challenges, and it is very important to ensure equal opportunities to interact and participate for all participants.

Understanding the training needs for the different meeting formats, considering specific issues, and setting priorities

The audience for the training and the timing of that training should be decided based on challenges of specific meeting formats (especially physical/online meetings), and the specific needs for ICES meeting and group types. Some of the specific needs include: ADG’s (building consistency and formulating narrative; monitoring who is in, and who is active in the conversation, Benchmarks (innovation and consensus), EG’s using breakout groups, Symposia (unstructured interaction and social aspects), Training groups (for combinations of above issues), Secretariat.

A consultant should be engaged in developing training webinars.

IT infrastructure -resource and finance needs

ICES is moving its IT to the Cloud (to have less dependency on in-house hardware, more resilience to software upgrades, seamless changes to infrastructure, 24/7 availability of services and better integration within and between federated organisations). The COVID-19 pandemic has accelerated this move, which also implies more acute and variable demands on the IT/ICES budget, and on human resources to implement and adapt processes to the changes.

SWOT Analysis – ICES shift to remote meetings

Strengths	Weakness
<ul style="list-style-type: none"> - Improved access to ICES meetings potentially improving representation on some aspects of diversity - Meeting attendance is not constrained by travel time and costs - Reductions in CO₂ footprint of ICES Activities - Allows for more frequent meetings 	<ul style="list-style-type: none"> - Remote meetings may also restrict access for some (certain groups/ challenges) - Requires additional preparation time - Difficult to make progress on difficult/strategic/contentious issues - Requires new kinds of support from the Secretariat - Meeting across time-zones - Trade-off between in-person concentrated meetings in short periods and more frequent meetings over longer periods - Remote meeting fatigue - Differences among institutes about which platforms are allowed

Opportunities	Threats
<ul style="list-style-type: none"> - Broader participation in ICES meetings <ul style="list-style-type: none"> - Training - Consider new more inclusive strategies for decision-making - New capacities and skill development working in remote environments/meetings 	<ul style="list-style-type: none"> - Lack of incentive to Chair/lead initiatives/meetings – especially e.g. Benchmarks - Remote meeting fatigue – experts unwilling to participate in remote meetings - Reliance on internet connectivity - Privacy issues/unauthorized recordings of meetings

The Council document presented above was further updated by ICES following the additional experience gained by ACOM, SCICOM and the Secretariat as the pandemic continued throughout late 2020 and into 2021.

The document lists the needs identified if remote meetings are to continue up to 31 January 2021, and even beyond, including IT equipment, training, and additional human resources. It is important to state that issues such as language, gender, and culture are among factors influencing the effectiveness of remote meetings, and which are difficult to measure. These factors are important to consider in international science cooperation, and to explore tools available to help improve communication.

Based on the experience gained the following documents are in development:

Guidance for chairs of expert groups transitioning to online meetings during the COVID-19 pandemic (in preparation)

- an outline document on hybrid meetings (a mixture of online and in-room attendees), currently being commented on by SCICOM. Once finalized the document will serve as the basis for defining needs (IT, online resources and training), for which the 2019 Council meeting put aside a limited amount of equity funding. However, it is clear that a longer-term investment would be required to implement, sustain, and to ensure training and tools are accessible to the entire community.

Short-term considerations - On 9 August 2020 the President, First-Vice President, ACOM and SCICOM chairs, as well as the General Secretary communicated the following: groups will continue to operate through online meetings up to 31 January 2021. this decision will be evaluated in November, and only be adjusted if the situation of the pandemic, quarantine rules, and travel restrictions have changed substantially. this will impact WGCHAIRS and a shortened online meeting(s) will occur in January, with a physical meeting of WGCHAIRS being held later in 2021 when appropriate.

Longer-term considerations - Experience from meetings Focusing on operational delivery and not strategic issues. While ACOM has still fully engaged in the delivery of advice, there has been an increasing silence on the forum for strategic development and tactical decision-making. Likewise, it has been difficult within SCICOM to have longer, in-depth discussions and foster innovation. And in some

cases, this has been amplified with curtails on especially fieldwork and to some extent laboratory work. This makes the delivery of the science and advisory plans more challenging. Decision-making is being enacted by a smaller pool of individuals.

ACOM has been less active on the forum, resulting in the centralised members of ACOM (i.e. ACOM leadership) having an increased influence on the direction, and a corresponding reduction in influence of ACOM members (i.e. the network and member countries). There has been a similar reduction of activity on the SCICOM Forum, with less engagement from SCICOM members. Sensing the mood of the network. The inability to informally chat, has resulted in an inability to read the mood of the network and science community. This is true for both ICES meetings and those outside the network, such as Advisory Councils and Regional Fisheries Management Organizations meetings. This has large implications in terms of inter-organisational relationships, preparing for ICES meetings and decisions, listening to feedback from stakeholders and requesters of advice, hearing of innovations and developments relevant to ICES advice. Invitations to external experts. It is becoming difficult to attract experts to act as reviewers, especially for benchmarks. We must recognise that participation is not totally driven through altruism.

The added enticement of a trip to Copenhagen to engage with ICES is a strong motivation for those outside the ICES community. For many the prospect of multi-day remote meetings is not as positive as face-to-face meetings in Copenhagen. Diversity and nurturing talent, including supporting Early Career Scientists.

The ACOM leadership and the ICES secretariat is reverting to “the regulars” when reaching out for experts and potential Chairs of new expert groups. The lack of face-to-face contact thus reduces the diversity of the expert pool, tends to favour male experts and reduces the opportunity for new experts to take leadership roles in ICES.

There is a reduced equity of access to ICES organisational structures. There is a huge difference in the confidence required from an early career expert to have a brief coffee chat, compared to picking up the phone to cold call ACOM leadership. The current situation is particularly stressful for young families and Early Career scientists.

In addition to the challenges related with balancing personal life and work, also the lack of opportunities to present work at conferences and to grow personal networks is challenging.

Discrimination caused by operating across time zones. To some extent there has been an expectation that individuals are available beyond the standard work hours, their working week will be longer. This was accepted at the beginning of October 2020 the disruption, but is beginning to create problems as it becomes a modus operandi. This particularly discriminates against carers and people with disabilities. There is a growing evidence base being documented online to support this observation. Individuals are reporting that they have been expected to be available during their normal work hours for their normal work, and then working additional hours at antisocial times for ICES. ACOM will discuss the provision and format of advice during their September meeting.

The challenges caused by the pandemic has provided both opportunities for improvement and reductions in quality of the advice. These issues will be considered and the decision made before the end of 2020.

Guidance for on-line meetings

The document in preparation by the ICES Coordination Group will provide simple and clear guidance for how to best prepare and conduct on-line meetings. The guidance is based on cumulative experience from on-line meetings, as well as known best practices identified by the ICES Community and Secretariat. Resources:

Training and Capacity Building

On a general note, the rapid uptake of online tools coupled with the increasing updates/changes to these tools, has created pressure on the Secretariat and Community to follow the development. The rate of change will not slow significantly, and therefore the style and frequency of training to support the user base will need to be considered. A sub-group of the coordination group met in August to discuss the specific challenges on running/participating in hybrid meetings (some participants online, some participants sitting together in person). The tenet agreed by the group is: "Remote participants should have the same ability to contribute/interact as those present in the room" In brief, the group discussed the challenges of hybrid meetings, the specific needs for ICES meeting/group types, the audience for the training and the timing of that training. The group identified that a number of meeting types would need enhanced attention/training: - ADG's (building consistency and formulating narrative; monitoring who is in, and who is active in the conversation - Benchmarks (innovation and consensus) - EG's using breakout groups - Symposia (unstructured interaction and social aspects) - Training groups (for combinations of above issues) Expert Group chairs were deemed to be the first priority for training, as well as symposia chairs and training course convenors. A 2nd priority would be Committee and SG chairs,

ACOM/SCICOM leadership and the Secretariat.

It was clear that this training needs to be available all the time (when needed), and reusable. The aim is to use this information as a briefing to then contact external companies/consultants to deliver online training webinar(s) for ICES. There is a small budget that was allotted under the 2019 strategic investment by Council that can support this, however it is clear a longer-term investment would be required 4 | October 2020 to both sustain this, and to ensure training and tools are accessible to the entire community. SCICOM is currently commenting on the document on hybrid meetings. ACOM cannot form a consensus on hybrid meetings at the moment, as many divergent views have been stated. ACOM will return to the issue in December or January. Resources:

Human, financial and infrastructure

Given the need to run meetings across time zones, there could be an additional burden on all parts of the community, but especially those with caring responsibilities (often women). This could require additional resources for carrying out the same work remotely. The shift to entirely online processes and administration has also put additional pressure on Secretariat staff. Additional meetings, meetings across time zones, and facilitating and administrating all ICES work entirely online requires additional time and resources.

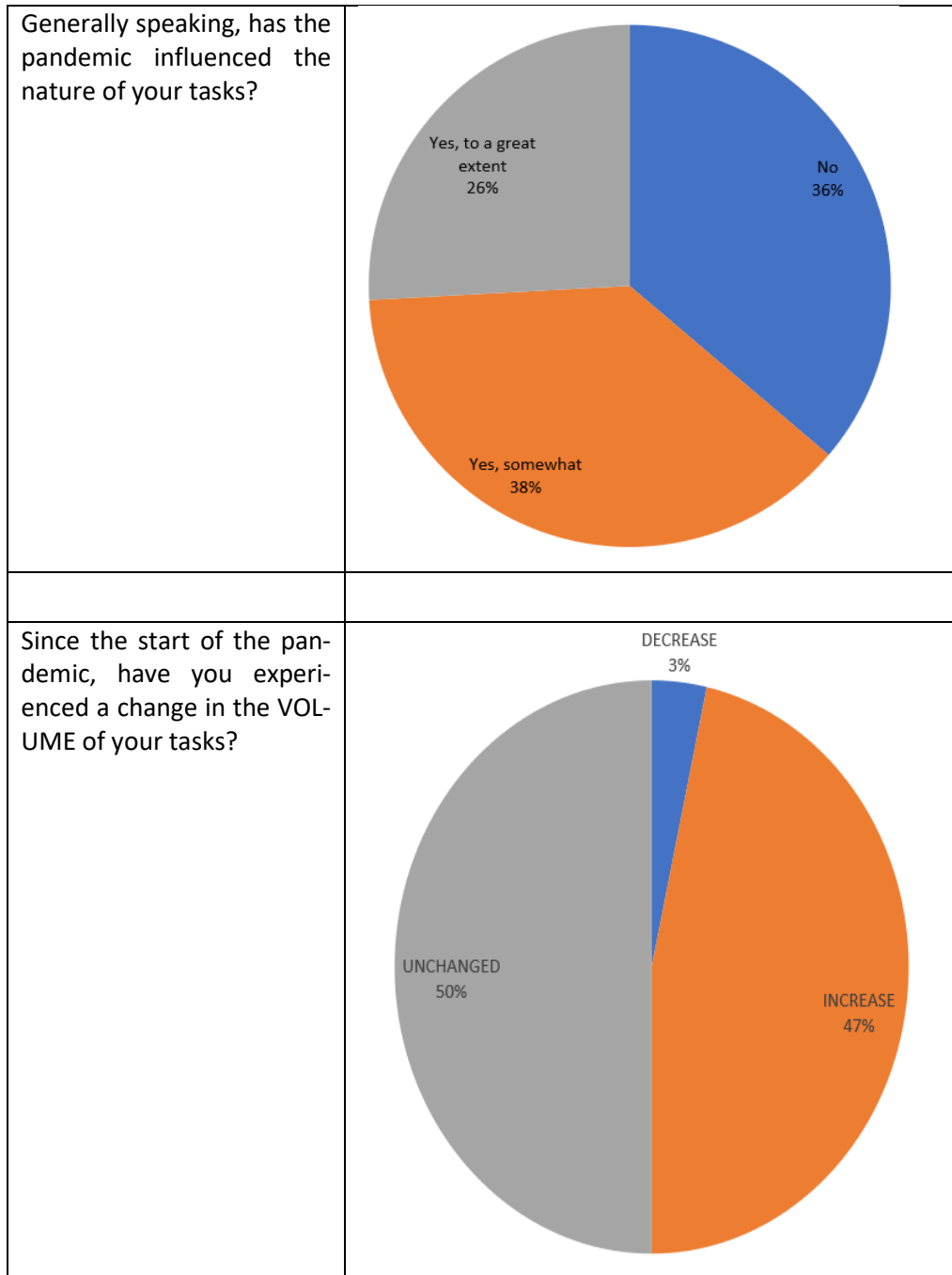
Overtime compensation will be required for supporting staff working outside core working hours if meetings across time zones continues in the long-term. For IT, we have been working towards a 4–5 year plan to move more services and infrastructure into the Cloud. There are clear benefits to working through the Cloud – less dependency on in-house hardware, more resilience to software upgrades, seamless changes to infrastructure, 24/7 availability of services and better integration within and between federated organisations. The timeline has been quite conservative for two reasons; the move of some services i.e. SharePoint are in themselves a grand challenge as they are so embedded in the way we work and need revising for full Cloud integration. Secondly, the cost of moving to the Cloud is still uncertain/variable in regards to our storage and user licence needs – which is at odds with the way that we plan budgets over a 2-3year timeframe in ICES. These considerations have been in focus in COVID-19, and we are now seeing an accelerated move to the Cloud environment, which also implies more acute and variable demands on the IT/ICES budget, and on human resources to implement these changes.

3.2 Survey of the Staff of the ICES Secretariat

In order to gauge the COVID-19 experiences of the ICES Secretariat, a short survey was circulated to staff who have joined after March 2020. 58 responses were received. The figures below present the main findings on COVID-19 related issues and provides some evidence for the need for additional resources for the Secretariat.

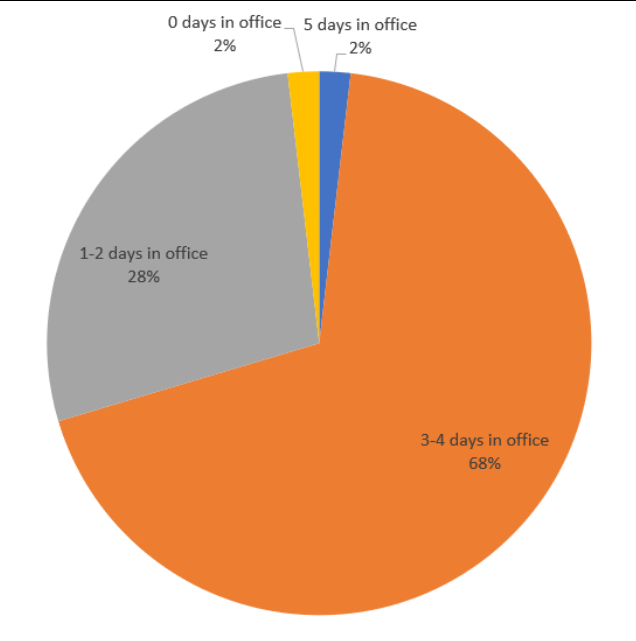
- Overall, more than 70% of Secretariat staff experienced changes in the nature of their tasks, 47% reporting an increase in volume of tasks.
- 47% reporting an increase in time needed to complete tasks.
- Questions around remote work echo the findings of the literature review and consultant reports, with more than 60% of staff wishing to continue to be able to work from home on a regular basis, with a majority of staff preferring 3-4 days of physical presence in the office.
- Questions related to work–life balance reveal major changes in working schedules, and 34% of staff reporting negative impacts from these changes.
- Critically, connection to the ICES network has also degraded with 33% of staff respondents noting this important connection has been made more difficult.

Figure 3.2.1 Secretariat staff responses to a survey on the experiences of working through the COVID-19 pandemic.

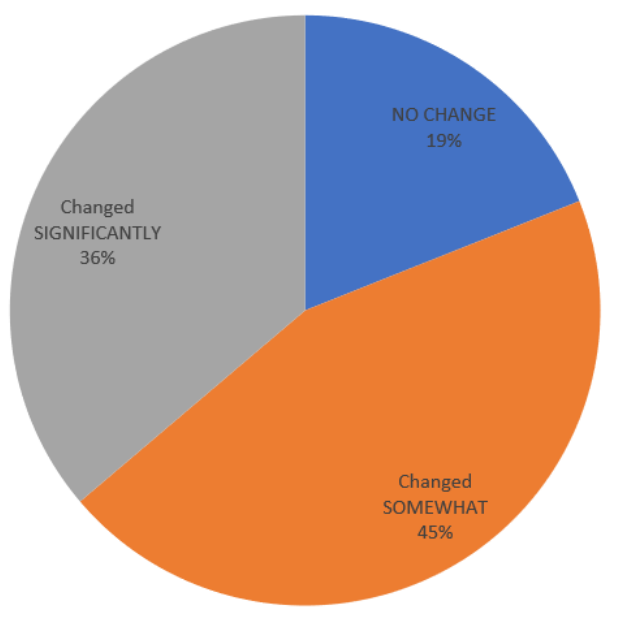


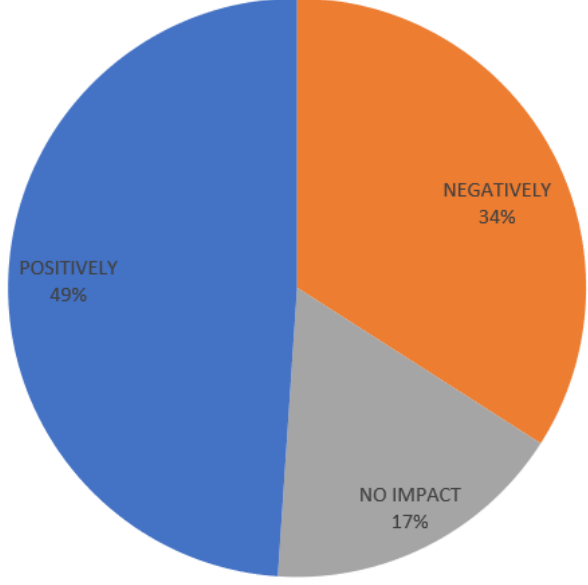
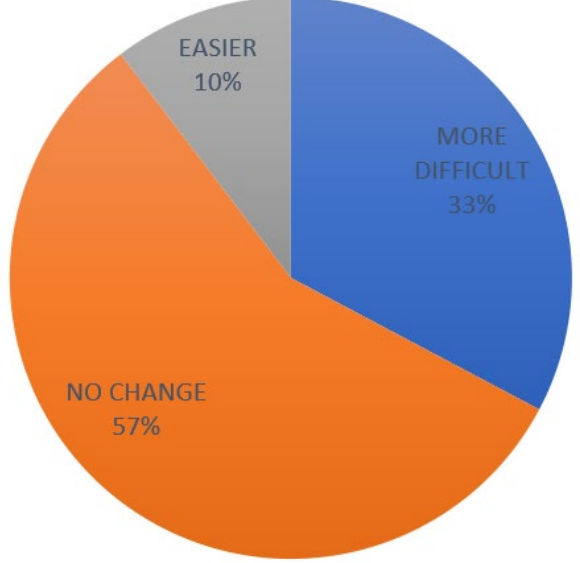
<p>Since the start of the pandemic, have you experienced a change in the TIME it takes you to complete tasks?</p>	<p>A pie chart illustrating the distribution of responses regarding time changes. The largest segment is 'MORE time' at 47% (orange), followed by 'NO CHANGE' at 43% (grey), and 'LESS time' at 10% (blue).</p> <table border="1"> <thead> <tr> <th>Response</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>LESS time</td> <td>10%</td> </tr> <tr> <td>NO CHANGE</td> <td>43%</td> </tr> <tr> <td>MORE time</td> <td>47%</td> </tr> </tbody> </table>	Response	Percentage	LESS time	10%	NO CHANGE	43%	MORE time	47%
Response	Percentage								
LESS time	10%								
NO CHANGE	43%								
MORE time	47%								
<p>Even after the recommendation to work from home has ended, would you like the option to work from home on a regular basis?</p>	<p>A pie chart illustrating the preference for working from home. The majority of respondents, 62% (grey), answered 'Yes'. 31% (orange) answered 'No', and 7% (blue) answered 'N/A'.</p> <table border="1"> <thead> <tr> <th>Response</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>N/A</td> <td>7%</td> </tr> <tr> <td>No</td> <td>31%</td> </tr> <tr> <td>Yes</td> <td>62%</td> </tr> </tbody> </table>	Response	Percentage	N/A	7%	No	31%	Yes	62%
Response	Percentage								
N/A	7%								
No	31%								
Yes	62%								

What is the preferred balance of home working to office working, in the course of a working week?



Has your average daily work schedule changed (i.e. start/end at different times) since the start of the pandemic?



<p>If your working schedule has changed, how has this affected your work/life balance? Select the answer which most often applies.</p>	 <table border="1"><thead><tr><th>Impact</th><th>Percentage</th></tr></thead><tbody><tr><td>POSITIVELY</td><td>49%</td></tr><tr><td>NEGATIVELY</td><td>34%</td></tr><tr><td>NO IMPACT</td><td>17%</td></tr></tbody></table>	Impact	Percentage	POSITIVELY	49%	NEGATIVELY	34%	NO IMPACT	17%
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POSITIVELY	49%								
NEGATIVELY	34%								
NO IMPACT	17%								
<p>Since the start of the pandemic, has your contact with the ICES network changed?</p>	 <table border="1"><thead><tr><th>Change</th><th>Percentage</th></tr></thead><tbody><tr><td>NO CHANGE</td><td>57%</td></tr><tr><td>MORE DIFFICULT</td><td>33%</td></tr><tr><td>EASIER</td><td>10%</td></tr></tbody></table>	Change	Percentage	NO CHANGE	57%	MORE DIFFICULT	33%	EASIER	10%
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NO CHANGE	57%								
MORE DIFFICULT	33%								
EASIER	10%								

FOOD FOR THOUGHT – COVID19 LESSONS LEARNED

What are some lessons you've learned or reinforced over the last year since the pandemic began?

Leena Nair: It's been a difficult year. This is my life's work, being with people. It's been personally very difficult to be alone in a room, day after day, look at a screen, and not have a chance to meet other human beings. Let me reflect on some of the lessons.

My first lesson is when you look after your people, they will look after the business. When you care for your people—put their health, safety, and well-being at the center of everything you do—you will watch them make the business a far better business.

My second lesson is the huge importance of mental well-being. Thinking of all employees and having something that responded to their concerns and needs was very important for me. Be responsive, understand the needs, and create programs that truly support people.

My third lesson is double down on purpose because it's very different when people realize, "Oh my God, I'm going to the factory because the world truly needs soap and sanitizers now" or "I'm going to the factory because everyone is struggling to make sure food is available everywhere." That gives a different meaning to your actions.

My fourth lesson is this is a moment of reinvention. Let's not waste it. Every leader—whether they're leading businesses, institutions, people, NGOs,³ governments—needs to be bold and to reimagine how things are done. So many of our assumptions about how things should be done and can be done have gotten challenged in the last few years. This is the time to advocate reinvention, reimagination, and rethinking work, workplace, workforce, where to work, and how to work.

And my last lesson is resilience, resilience, resilience. It is exhausting. It is relentless. Leaders tend to overestimate what people can do and can't: "of course everything is possible, and I have infinite capacity." You underestimate how hard or difficult it might be.

McKinsey Interview with Leena Nair,
Chief Human Resources Officer, Unilever
March 2021

4 Addressing TOR 2 – Snapshot of Member States Views

1. **The views of ICES Member Countries** – The outputs from TOR 2 have provided information on the views of the Delegates of 10 ICES Member Countries in relation to COVID19. The following Member Countries provided feedback to the BCSGC19 – UK, Poland, Germany, Spain, Norway, Iceland, US, France Ireland and Latvia. This represents the Delegates views of 50% of the ICES Member States. The feedback received is given for each Member Country together with a consolidated summary of the key points that emerged.

FIGURE 4.1 The schematic below shows the ICES Member Countries around the north Atlantic and adjacent seas in orange and yellow. Those Member Countries in yellow (UK, Ireland, France, Spain, Norway, Germany, Poland, Latvia, Iceland and the US) represent those that provided their ICES Delegates views on the impact on COVID-19 on their marine science communities (including fisheries) and their thoughts on the future of marine science in a post COVID pandemic.



4.1 VIEWS OF THE DELEGATES FROM THE UK

The 2020/21 COVID-19 pandemic has had a significant impact on the delivery of marine science, ways of working and wellbeing of marine scientists in the UK. Here we summarise the nature of the impacts, residual issues and future look as it relates to delivery of products to ICES and representation at ICES meetings.

Surveys at sea

Relatively early on in the crisis, activity on research vessels ceased while there was a review of safe working practices, a full review of all risk assessments to account for COVID-safe practices followed by a careful and measured reactivation with extensive staff consultation. This meant that a small number of surveys undertaking important data collection required to respond to ICES data calls in 2021 were cancelled – these specifics of these have been detailed elsewhere and reported to DGMARE and ACOM (notably SIAMISS, scallops).

The nature of the modified working procedures implemented mean that there are some residual issues also impacting on 2021 surveys at sea. Vessel crew and scientists must maintain social distancing whilst on board, wear face coverings, occupy shared spaces sparingly. This means that some deck operations are not possible, on some vessels where there is reliance on shared cabins and showers, reduced crewing is in effect, visitors are not allowed, half landings cancelled and on some vessels internal spaces are simply not sufficient to allow overnight operations meaning reduced range of operations and reliance on shore based accommodation for some staff.

Commercial COVID testing for crew and scientists is available in some UK administrations but not others, and some administrations are pursuing the possibility of prioritised vaccination of seagoing staff as an additional layer of protection rather than replacement of other COVID safe practice.

Currently the upshot of these residual issues means that surveys planned for small inshore vessels are still difficult/impossible (scallops / Nephrops) and charters are only possible on large pelagic vessels. The use of industry personnel on chartered vessels has also been explored but raises liability concerns.

The overall impact has been and will continue to be small due to effective adaptation (eg switching work planned on inshore vessels to larger vessels; switching to largely shore based /day trip operations). The effect on delivery for fisheries data collection has been well documented and communicated, but the impact on other areas of ICES business is less well examined such as environmental surveys, effects on time series for OSPAR assessments of datasets hosted by ICES DOME and may warrant further investigation.

Catch Sampling

There have been significant impacts on both observing for unwanted catch and market sampling of landed catch. Both data collection activities were temporarily suspended shortly after the crisis emerged in the UK to protect staff. Market sampling was reactivated after the loss of Quarter 2 data collection with heavily modified working practices, but minimal impact on data quality from 2020 Quarter 3. There remain some issues around access to some 3rd party sites (auction markets and processors in particular) with some processors still not accepting

external visitors (cold working environments with large quantities of biological material are considered high risk and several processors in the north of the UK have been subject to significant outbreaks). This has necessitated a change to receiving samples at laboratory facilities and on house processing with some increased resource costs. All shore-based fieldwork is now carried out by staff travelling individually in vehicles again with resource considerations.

Observing of unwanted catch on board commercial vessels has largely ceased now for 12 months. Some observed trips have been possible between lockdowns (autumn 2020) where undertaken by industry scientists able to access commercial testing and forming “bubbles” with skippers and crew. There has since been a move to more “industry co-sampling” with vessels providing samples of unwanted catch for quayside (or return to laboratory) sampling and processing by observers. These schemes are at different stages of development across the UK administrations and present a number of issues that have needed working through (legal & quality).

Reduction in travel and attendance of remote meetings

The change in working arrangements for representation at ICES meetings has generally been well received and brings a number of recognised benefits as well as disadvantages. Notably, meetings are seen as more time efficient, inclusive, better participated and often with more structured intersessional working. Within institutes a number of EG members have expressed views that they would prefer continued remote meetings, whilst others miss the physical meeting format and opportunities for networking and innovative collaboration that a shared physical space provide. The cost savings to institutes associated with reduced travel and subsistence costs has also been significant and welcome.

Looking forward there is a need to ensure technology works for mixed model meetings where the majority of participants are remote, while some share the same physical space. There is a need for long forward planning of eg travel budgets in institutes and participant expectations. There is therefore a continued leadership role for ICES in communicating well in advance remote meeting policy as well as implementation of technology and training.

Occupation of buildings / home working

Most government buildings were vacated as a precautionary measure at the start of the crisis. There has been some limited reoccupation for reactivation of marine science where this has been in accordance with well-defined business continuity plans and compatible with constantly evolving government guidelines (different across the UK administrations) on safe working practice. Currently, essential laboratory work has been reactivated and building re-occupancy of office spaces for essential staff engaged in lab and field work preparation (single occupancy only) is at about 15-20%. We do not expect a substantial increase on this for most of 2021. Achieving this level of reoccupation took a very significant effort in reviewing hundreds of risk assessments and ensuring consistency of approach with other parts of government. Most other government buildings with open plan office spaces remain unoccupied with home working the norm.

All desk-based work continues to be undertaken from the home and in some instances analytical work has been risk assessed to be safe to conduct in the home environment (eg microscopy of otoliths) to avoid unnecessary reoccupation of shared spaces.

Many of our scientists and support staff are relishing home working without the need for commuting and do not want to see a return to the office environment, some feel a need to return as soon as possible and others hope to see a more flexible model in the future (which seems likely).

Wellbeing

The wellbeing of scientists engaged in ICES work has been demonstrably affected during the course of this crisis. In Marine Scotland a recent survey found that 57% of respondents in Science said COVID-19 had fairly or significantly negative impact on caring responsibilities, 55% fairly or significantly negative impact on work and 39% fairly or significantly negative impact on productivity.

Anecdotally, members of our UK ICES science community who live alone, have caring responsibilities, separated from loved ones by geography or restrictions or who normally rely on public spaces and events for their social interaction have been disproportionately negatively affected. Organisations/institutes have responded with for example an acceptance of reduced productivity by individuals, increased non-work related remote social interactions and bolstering of mental health first aid provision.

Diversity issues

A number of diversity issues for the UK ICES community have emerged as a result of the COVID crisis. These include early career scientists being disadvantaged from career networking potential as a result of remote meetings. Female scientists have seen a disproportionate reduction in publication outputs (presumably related to reduced capacity and increased caring responsibilities). Many categories of ICES contributing scientists have also experienced a reduction in productivity compared to their peers, including parents, carers, partners of “key workers” etc.

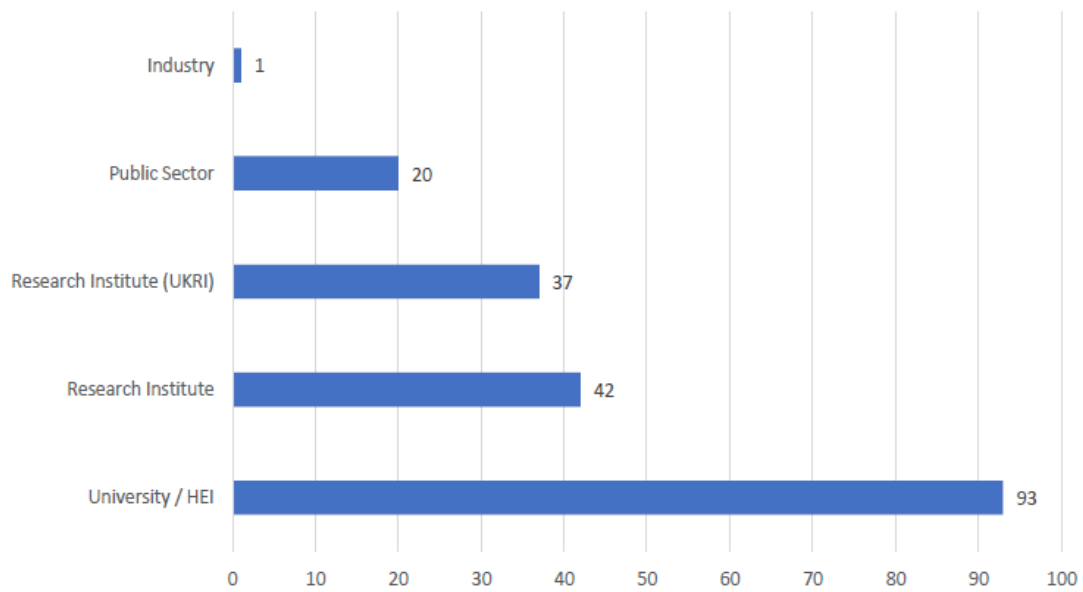
Some positive aspects have also emerged such as broader inclusivity in ICES remote meetings.

In addition, the wider UK Marine Science community conducted an impact survey. The summary findings are presented below.

UK Marine Science COVID-19 WORKING GROUP IMPACT SURVEY

In October 2020 representatives of the UK marine science community conducted a survey to assess the impact of COVID-19. The results from 193 responses are summarised below and include recommendations for science leaders, particularly with respect to Early Career Researchers (ECRs) and staff on fixed term appointments (FTAs), that may help to enhance the working environment for scientists in a post-pandemic world.

SURVEY RESPONDANTS BY SECTOR



SURVEY INSIGHTS

FIELDWORK



of planned marine fieldwork in UK cancelled or postponed.

LABWORK



of marine science labwork impacted either moderately or severely.



- ECRs & FTAs and their supervisors
- University sector
- Researchers with caring duties
- Researchers with a disability

GRANTS

> 50%

of those planning on writing a grant proposal were negatively impacted.

Most strongly impacted

Mid-career

University sector

Researchers with caring duties, and/or pastoral care duties for Postgraduate students.

NATIONAL CAPABILITY (NC)

~ 33%

of end-users found access negatively impacted.

CONFERENCES AND NETWORKING

> 50%

of respondents attended fewer conferences

TEACHING AND EDUCATION

> 35%

of those concerned about education reported cancelled/postponed field teaching

> 50%

reported that face-to-face teaching was cancelled/postponed

MENTORING

~ 50%

of ECRs reported a drop in mentoring and supervision

17%

ECRs don't feel they have a mentoring and supervising programme

CAREER PROGRESSION

> 33%

feel their career progression will be negatively impacted

~ 33%

don't know if career progression and promotion has been cancelled or postponed

OTHER

> 50%

find it hard to work from home

> 50%

feel more isolated

25%

have declined in mental health

40%

have increase in administrative workload

Negative impacts felt most strongly by

ECRs and FTAs

Scientists with disabilities

Women

Scientists in full-time employment

SURVEY RECOMMENDATIONS

RECOMMENDATIONS – FOCUS ON ECRs AND UNDER-REPRESENTED GROUPS

- The recommendations are focused on supporting marine scientists to transition to new ways of working post-COVID-19, and reassure them that the impacts of COVID-19 will be considered and addressed as part of standard recruitment, career planning and promotion(s).

RECOMMENDATIONS FOR HEIs AND INSTITUTES INVOLVED IN OCEAN SCIENCE*

- Provide mentoring schemes & mentoring training.
- Raise awareness of mental health issues and contact details for key support groups.
- Raise awareness of career progression mechanisms and ensure the long term impact of COVID-19 are addressed as standard within recruitment, career progression and promotion processes.
- Plan for changes in post-COVID-19 working practice including transition period, flexible working rules and implications for ECRs & FTAs in an increasingly virtual meeting space.
- Facilitate access to field samples, data, labwork for ECRs and FTAs who have been impacted by COVID-19, and support completion of key activities that have impacted science delivery and career progression, where possible.
- Work with NERC to enhance opportunities for informal networking to allow ECRs and FTAs to build partnerships and engage in sea-going activities.
- Maintain the ability to access online conferences, seminars, meetings and learning.
- Re-institute or replace internal small institutional funding opportunities/allocations.

RECOMMENDATION FOR THE CHALLENGER SOCIETY

- Set up a working group of ECRs and FTAs to generate ideas for networking in the future where there may be a reduction in face-to-face events or large meetings.
- Generate a best practice guide for flexible working or working from home.

RECOMMENDATION FOR NERC FACILITIES

- Raise awareness of NERC facilities including booking procedures.

Respondents were based at marine research institutes from across the UK. The COVID-19 Working Group was led by Dr Kate Hendry of the University of Bristol and supported by Jackie Pearson of the NOC Association of Marine Science National Capability Beneficiaries (NOCA).

*Many organisations may be implementing similar recommendations and best practice already, but sharing understanding and examples of best practice will benefit staff and students in terms of consistency, equality and equity. We believe all recommendations benefit staff, students and employers.

4.2 VIEWS OF DELEGATES FROM UNITED STATES

For a more complete discussion, see: *Link et al. 2021 A NOAA Fisheries science perspective on the conditions during and after COVID-19: challenges, observations, and some possible solutions, or why the future is upon us. Canadian Journal of Fisheries and Aquatic Sciences* <https://doi.org/10.1139/cjfas-2020-0346>

Data collection was severely limited in 2020 extending partially into 2021.

- Most fishery-independent, oceanographic, and ecosystem data collection activities were cancelled from late-March – November 2020. Activities started to resume in Fall 2020 and most activities are operating in 2021. The cost and logistics of operations, however, are substantially greater.
- Fishery-dependent data collection activities were impacted regionally. Catch reporting continued through the pandemic. Some regions of the country maintained fishery-dependent observer and biological sample data collection activities, while others suspended fishery-dependent data collection from late-March through mid-August. The cost and logistics of operations, however, are substantially greater.
- Recreational fishery data collection was also impacted regionally. The collection of effort data continued but the collection of catch data was interrupted and varied between States.
- Protected species data collection was cancelled from late-March – August 2020. Flight operations began in August and vessel operations began in early 2021. The cost and logistics of operations, however, are substantially greater.
- Socio-economic data collected increased as NOAA measured the impact of the COVID pandemic on the seafood sector ([link here](#)). The response activities and ongoing activities are continuing.

NOAA Fisheries assessment of a wide range of fisheries stocks, protected resources, habitats, and ecosystems are impacted by the decrease in data collection.

- An important standard in U.S. marine management legislation is “best scientific information available”. The missing data from 2020 will increase uncertainty in assessment products, but most products and processes are designed to be robust to some missing data.
- Another important standard in U.S. marine management is the “precautionary principle”, thus in general the increased uncertainty resulting from missing data in 2020 will be expressed as more protective management measures in 2021 and for a few years into the future.
- The collection of data in 2021 is critical to begin to reduce the uncertainty from the missing 2020 data

The situation in 2020 largely resulted in highly constrained travel and no in-person meetings

Within the U.S. federal government, travel was greatly restricted. This impacted data collection (above), management processes, and scientific exchange.

- Data collection related travel began late in 2020. Travel related to management and scientific meetings remains restricted (as of this writing, May 2021).
- Besides federal rules, different states, academic institutions, companies, and NGOs all have separate rules for travel that affect the ability to hold management and scientific meetings. The diversity of such travel rules makes holding meetings a challenge.
- For management processes, the use of online-meetings has been used with varying effect. While the inability to continue interactions outside of the official meeting venue can be a hindrance, the increase in the public's participation and the "leveling-of-the-playing-field" is a benefit of video-meetings. Access to online-meetings is a challenge for some participants related to internet access and bandwidth.
- For scientific meetings, the use of online-meetings has also had varying effects: more inclusive yet less interactive. The development of 100% remote scientific meeting and hybrid meetings will likely be a lasting legacy of the pandemic.

Most of the U.S. Federal Government has been operating in a mandatory or maximum telework status since April 2020

- Similar to online-meetings, conducting online-work has benefits and challenges.
- The primary challenge is the lack of unstructured and in-person interactions with co-workers and colleagues. There is also well documented online-interaction fatigue and a greater blurring of work and personal life.
- The primary benefit is reduced commuting time and more flexibility in work location and work times.
- In the future, it is likely that telework, and potentially remote work, will become more common. Planning around the specific needs for onsite-work is ongoing including the need for work-related, in-person interactions.

NOAA Fisheries distributed aid to fishing communities through the state with funds from COVID relief legislation.

- Relief was authorized by the U.S. Congress
- Each state developed a process for qualifying and applying for relief

Clarion Calls - Lessons Learned

- The pandemic was eye-opening and revealed strengths and weaknesses of the U.S marine science and management enterprise
- We can be effective using on-line tools, but need to develop tools, approaches, and guideline to improve effectiveness

- Increase use of cooperative research with industry, academic and research partners
- Increase use of unscrewed technologies such as active acoustics ([link](#)) and passive acoustics ([link](#))
- Increase use of management strategy evaluations, vulnerability assessments, scenario planning, and state of the ecosystem reports to evaluate and provide context for management decisions under increased uncertainty

Development and improvement of stock assessments including model-based and indicator-based assessments that are robust to data gaps and uncertainty.

4.3 VIEWS OF DELEGATES FROM SPAIN

The COVID19 pandemic affected Spain intensely during 2020. All human activities, including marine research, were affected. In relation to fishing activity and marine research, the situation in 2020 was as follows:

- The Spanish Government considered fishing an essential activity. Except for the first months of spring, fishing activity took place with relative normality in EU waters.
- Sampling of the fishing activity at fishing ports and by observers on board suffered important restrictions, but this was not so much because of the pandemic but because of the coincidence in time with an administrative problem of the companies that carry out the sampling.
- The response to data calls was fairly normal, except for those calls launched in the first months of the year (for example for WGDEEP and WGBIE), where there were significant delays in the provision of data.
- Regarding the oceanographic and fishing research surveys in the ICES area, there were serious difficulties during the spring and early summer months and several of them had to be suspended. However, those planned for the second half of the year were carried out, although the application of strong security measures to avoid pandemic problems meant that the number of participants was limited and this affected the number of tasks that could be carried out.
- All international and internal coordination meetings in relation to marine research were held by telematic means.
- The work in the science labs during the spring (the hardest time of the pandemic) was carried out by teleworking (or had to be postponed). Afterwards, teleworking was combined with physical presence in the labs.

Looking to the future, the experience of the pandemic has left us with some aspects that we consider very important:

- Teleworking, especially in its mixed format (i.e. combined with part-time presence in the science labs), has proven its worth and effectiveness in

- achieving the objectives set out in marine research. Its extensive application to all personnel belonging to institutes and organizations dedicated to marine research corroborates the validity of the method.
- Holding meetings by telematic means has worked reasonably well, including meetings with broad participation such as congresses and general committees. This suggests that in the future this will be an important method, avoiding unnecessary costs and CO2 emissions. This said, there were also challenges involved in these processes, for example in international meetings with participants in a wide range of time zones (which can make it very difficult to find sufficient meeting time in plenary sessions). In addition, the lack of informal and more relaxed discussion time, as often occurs e.g. during coffee breaks, was also strongly missed in the meetings by correspondence. All in all, the need for face-to-face meetings in key or special situations, or with some periodicity, is also recognized as important. Also the ease of connecting people through communication platforms on the Internet has produced a tendency to overload work time with some unnecessary telematic meetings.

4.4 VIEWS OF THE DELEGATES FROM GERMANY

The Covid-19 pandemic and measures to prevent a spreading of the disease had effects on multiple layers of the work related to ICES.

Most prominent was the **impact on regular data collection and delivery**, as the ability of ICES to deliver its annual advice largely depends on access to the national data. During the first year of the pandemic, Germany could fulfil almost all of its obligations to data delivery. It is not clear yet whether this will remain the same for the 2021 data collection, but until the end of the 1st quarter, there have been no major dropouts.

Survey data was impacted, but not a single survey delivering high-priority assessment data had to be cancelled. For some surveys, the number of stations or sampling intensity (e.g. number of fish analysed) had to be reduced, because the scientific crew had to be minimised to ensure sufficient distance onboard to comply with Covid-19 rules. In some cases, like the Baltic Sea cod larvae survey in May 2020, Germany was even able to cover parts of another international survey which had to be cancelled. However, there were significant drop-outs for cruises not delivering assessment data. Prominent examples are the biennial eel survey in the Sargasso Sea, planned for March and April 2020 (which had to be cancelled because scientists were not allowed immigration into the Bermudas, the vessel was already there ready to start the cruise after embarkation of the crew), and a cruise for testing selective gear in the Baltic Sea cod fishery. These cancellations do have longer-term effects on the availability of data to ICES EGs and policy development. Also, while so far (March 2021) not a single Covid-19 case has been detected on the

German research vessels, the situation might drastically change if it comes to an outbreak during one of the next infection waves.

Commercial fishery sampling has been largely conducted as planned prior to the pandemic. Harbour samples were reduced because of the reduced activity of the fishery during various lockdowns, access of observers to the vessels was more difficult, especially for the larger vessels, and some planned observer trips had to be cancelled to protect the scientific observers. Whether this will have a significant impact on the data collection and assessment is yet to be seen, it depends on the ability of other contributing nations to conduct their observer programs. It can be expected that for some metiers where only few nations fish (like Greenland Halibut in 14.b quarter 1) there will be insufficient data from commercial sampling.

Recreational fishery sampling was conducted as planned, however due to access restrictions for anglers during lockdowns angling effort was significantly reduced. The sampling schemes have been adapted to the new situation but data quality might have suffered.

Workup of samples in the laboratories needed more time because of access restrictions to the labs. The institutes rearranged working procedures to make sure that data was available in time for the assessment working groups. Slight delays have been noted when turnaround time was short, such as between the Baltic Sea International Trawl Survey 1st Quarter and the receiving ICES EGs.

Data evaluation and delivery was largely not impacted by the pandemic: The infrastructure proved to be sufficient to allow for validation and raising of the data from home office, using remote access to central servers. To our knowledge, there might have been slight delays in meeting data call's deadlines, but all data was finally delivered.

The second layer is related to **participation in ICES Expert Groups** (EGs). As for all other member states, the measures have made physical meetings impossible until today. EG members adapted quickly to the new situation, and most of the work could be conducted sufficiently during remote meetings. The virtual format allowed to include a wider group of staff to participate, also for only a fraction of the meeting, without generating much travel cost. This also helped introducing new member of staff to ICES work, which is a clear benefit of the remote format. However, attendees of virtual EGs mentioned that agreeing on outcomes is much more difficult in a remote format, sometimes even impossible. IT looks like side conversations at coffee breaks are necessary to progress with controversial issues. In many cases, controversial issues had to be postponed to a future physical meeting, which might be possible for a year or so, but not for much longer. Also, virtual meeting seem to favour experienced, long-term participants with a good standing and not afraid of contributing, which limits the contributions in EGs to a much smaller group. That balances the benefit of participation of newcomers. Finally, the important element of social interaction during physical meetings is missing in a purely

virtual meeting setting, which makes building up personal relations and trust impossible and thus participation in virtual EG meetings less attractive in the longer term.

The third layer **regards staffing and soft skills**. This issue is only indirectly connected to ICES work, but it does have impact. Acquiring new staff or replacements for departing employees proved to be more difficult under the rules of the pandemic. Also their introduction to standing working habits in the institutes or in ICES EGs is more demanding, and there are examples where this went wrong. The number of new staff which has left us within the first year has increased. Now, at the end of the first year of the pandemic, there are signs of exhaustion and fatigue in many of the highly productive members of staff. Part of the reason is that the new working conditions require much longer and much more frequent virtual meetings, often many during the day. This makes it more difficult to focus on one specific topic at a time. Finally, we observe that the generation of new ideas and the production of project proposals suffers from the present working conditions. This includes the acquisition of new partners to proposals. It seems we're working in "freezing mode", which again might be a good strategy for a restricted period of time, but can't be continued without significant decline in productivity for many years.

It seems clear that the pandemic will change the work of national institutes and the cooperation with ICES also in the future, but at present it is almost impossible how this will happen, beyond the obvious "more virtual meetings".

4.5 VIEWS OF THE DELEGATES FROM POLAND

- Big effort was allocated to secure data collection and provision to ICES according to the COVID restrictions – analyses on logistics and safety rules for the Institute staff including our vessel cruises as well as sampling on the fishing boats and at the harbours e.g. isolation of those planning to join the cruises and separation of teams collecting data and carrying out analyses in labs.
- Organising the job at the institute that allows remote work for significant part of the staff. Most of the lab analyses were not possible remotely.
- Switching to the remote expert groups meetings at ICES:
- Saving time and budget for travelling (a clear advantage for some of the staff).
- Sometimes those remote meetings are very "silent" (low personal engagement of numerous participants).
- Meetings over various time-zones.
- Distraction is easier and more common during long-lasting remote meetings.
- Lack of free discussions during coffee breaks or evening dinners.

The Future

- In majority of cases, data collection and provision is possible but more effort is needed.

- Lab analyses are possible only at the Institute facilities or some of them at the harbours.
- Remote meetings are possible but creative thinking is necessary i.e. short plenary sessions, breaks for homework, working in subgroups etc.
- Many including myself are suffering from the lack of personal contacts.

4.6 VIEWS OF THE DELEGATES OF ICELAND

- In general, the effects of COVID on marine science in Iceland have at least in the short term been relatively minor.
- All cruises have to date been conducted according to plan and work at the institute has not suffered significantly. However, if the current situation continues some cracks might start to appear.
- We have had problems obtaining samples from commercial catches and international cooperation has suffered in some ways due to lack of physical meetings.
- As in most countries, workers have increasingly worked at home which some find positive and others not so. The challenge has mostly been the lack of overview and greatly reduced interactions in teams, though technology such as Teams has helped.
- There is increased interest in homeworking and the trend will most likely continue post COVID-19. The challenge is mostly to find balance between this new working culture and the need for personal interaction which is one of the fundamental things when it comes to collaboration between people.
- It has become increasingly difficult to access fish markets and processing plants because of hard measures to reduce the risk of infection. Many entities are reluctant to allow access again, even after official measures have been revoked.
- When it comes to Iceland's involvement in ICES, the pandemic has had negative and positive impacts. People are generally not as keen to attend virtual meetings as physical meetings and the quality of the discussion/debate inside the working groups has suffered.
- The importance of meeting in person can't be dismissed and in the long run the effectiveness of the ICES procedure will suffer if meetings continue to be virtual.
- The positive thing is that more people can now attend meetings as travel cost is not an issue. Over the year and half the virtual meetings have become more focused and efficient, specially the ADGs, but at the same time less time is spent on scrutinizing text which is not always a bad thing.
- Having virtual meetings over weekends should not happen and in many cases, it might be helpful to have shorter sessions each day but go on for more days. When physical meetings resume in some form or another it might be worth looking into the possibility that the first part be virtual and then the physical meeting would maybe last 2-3 days rather than the 5-7 days in the past. Furthermore, it might be possible to run some annual EG-meetings virtually every

second year or so. This would reduce travelling cost but still maintain the personal connections needed.

- The same applies to conferences as to meetings. Even more so people want to go to them in person for the same reasons, meet other scientists and discuss their work.
- Running the ASC virtual would eventually kill it we fear. One obvious challenge with attending a virtual conference is that it is much more difficult to set a side time to watch talks even though they are pre-recorded.

4.7 VIEWS of the DELEGATES OF NORWAY

- DoF collect and synthesize aggregate catch statistics for all Norwegian fisheries, we monitor our fisheries by VMS and Electronic logbooks and we control landings, and on a risk-based level inspect and control landings. We also cooperate with the Norwegian Coast Guard. Finally we participate as members of Norwegian delegations in fisheries negotiations.
- Covid-19 has not interfered with the production of aggregate catch statistics, as these go electronically from the buyers of fish via our sales organisation into the DoF. Neither has there been any disruption in terms of VMS signals from the vessels or deliverance of electronic logbooks.
- At the outset of the pandemic (spring 2020) we cancelled all our control and inspection activities for some weeks until we procedures for our control personnel to carry out their work with acceptable (low) risk of either receiving or passing on the virus.
- Anecdotal evidence (stories in the newspapers) signaled that this lack of control increased the amount of unreported landings in the cod fishery, but the magnitude of this is unknown. To my knowledge the Norwegian Coast Guard did not reduce their inspection activity due to Covid-19.
- We have cancelled a joint research cruise with Russia both in 2020 and 2021 where the aim was measuring conversion factors for shrimp (frozen weight relative to live weight etc).
- All fisheries negotiations have been conducted as videoconferences.
- The Institute of Marine Research has an extensive annual data and samples collection in support of various advisory processes in ICES. Covid-19 has led to many changes in how we work and most importantly the majority of our staff has been working from home and a high number of meetings taking place online.
- However, we have been able to run our survey programme and lab work pretty much as normal. This has been possible due to the measures that has been put in force with home quarantines prior to surveys and spacing out in labs to mention two important measures.

- The only monitoring survey we cancelled due to the pandemic was the blue whiting survey. Most of the other participating countries also cancelled and the survey was consequently not carried out.
- We also had restricted catch sampling of ground fish during March and April of 2020. But this was not considered critical to the stock assessment and the programme has been running as normal since then.

4.8 VIEWS OF THE DELEGATES OF FRANCE

- Work has never stopped. Rules have been set, which have evolved depending on the pandemic situation. The management has dedicated much time to organize regular online interactions with the team leaders and ensure they kept interactions alive within the teams.
- During the 1st containment, work was from home for all except for those on duty because of equipments, experiments or (reduced) coastal monitoring. Then procedures evolved. Presence gauges and behavioural rules were established for working in the office. Currently, the personnel works from home for certain days and in the institute for others. There are exceptions for duty work in laboratories and for personnel who cannot work from home.
- Travelling is allowed when the working conditions are at least as secure as in the institute.
- Psychological follow-up and training have been proposed to the personnel to help adapt to working remotely. Overall, fatigue certainly has accumulated about the situation. Yet, there is no sign of disruption in the work or of less science production in terms of papers or deliverables, and new projects have been submitted.

Students

- Students live away from their families often and alone in small apartments. They are more prone than others to suffer from isolation during containments. They have been allowed to work remotely 100% from their family homes or work in the office 100% depending on situations and their wishes. Many doctoral thesis works have been delayed and extensions permitted or subjects modified, depending on situations. Scientists mastering students (including interns) come in the office to meet them at least one day per week.

Work at sea

- In 2020 one survey only was cancelled during the 1st containment, the other surveys could be shifted in time and took place with secured health protocols. The 2021 surveys have not been affected so far. Health conditions have been defined for embarking on research vessels and protocols set for living and working on board.
- Working on fishing vessels is restricted depending on the protocols applying onboard. Conditions must be at least as secure as that on

research vessels. A certain number of operations have been cancelled or delayed when working on fishing vessels.

COVID-19-related projects

- The impacts of covid-19 on fishing activity, sales and markets could be monitored (with several weeks delay only), thanks to automated operational systems. This was possible for boats that are located with VMS. The small-scale fisheries were difficult to monitor during the 1st containment. Special protocols were designed by phone but some data is expected to be missing for 2020 (but production was low anyhow).
- The data required for justifying access to UK waters since Brexit have similarities because they are about the activity of vessels. VMS for small scale fisheries is becoming an issue because this would secure objectivity, quality and precision.
- Research projects have been started in marine socio-economics and epidemiology. Disruption in value-chains and changes in consumers' behaviours during the different containments are being analyzed. A monitoring has been started to assess covid-19 virus levels in waste waters, coastal waters and molluscs.

Working changes expected to last

- The good aspects of remote meetings are beneficial. An open electronic agenda coupled with a visio platform allows to set meetings easily and discuss subjects with all concerned and not just those present at the coffee break. Some meetings are now hybrid because of the presence gauge in the office. We have more and shorter online meetings for managing, informing and reporting. There are more working interactions yet less human interactions.
- Working Interactions between colleagues make use of online tools such as chats and pads and shared documents on clouds. This makes the management less vertical and more horizontal.
- The different dimensionalities in a meeting can be segregated: presenting, discussing, producing joint documents, brainstorming, interacting socially, etc. Time and tools for each can be organized in differed mode. Meetings can thus be re-designed as well as inter-sessionnal work. Linking meetings with webinars allows to open the meetings and increase opportunities with new colleagues.
- Another aspect that will stay is teleworking. Probably 2 days per week. This will impact the teams, increase the need for online interaction tools, webinars and shared documents.

ICES work

- Working groups. Work of working groups has been carried out remotely with no sign of disruption. Yet, the simple switch from physical to online meetings cannot be continued in the long run. It is paramount to rethink how to organize meetings and work before, after and during meetings.

- Tight deadlines are more difficult to comply with when working remotely. Online meetings have important limitations. In particular, when consensus is difficult to reach within a group. Also, It is less easy for incomers to a working group to integrate its community as human interactions are difficult online when scientists don't know each others well before hand. Tools for informal and ludic interactions would be helpful. Thus, hybrid meetings where part of the participants meet physically while others are online ist not thought to be a good setup because of asymetry between participants.
- ASC and webinars. A benefit of online meetings is the opportunity to open working groups worldwide and undertake some of their ToRs as webinars. Online conferences lack obviously the ability to meet new colleagues and exchange informally. Scicom has discussed repeatedly the interest of an online tool during the ASC allowing conference participants to get in touch with each others, a sort of Tinder but based on competence and professional interests. It is perhaps timely for ICES to invest in online interaction tools (+ staff?), beyond the simple switch from physical to online meetings.

4.9 VIEWS OF THE DELEGATES FROM IRELAND

CURRENT COVID ISSUES

SOCIETY

1. In Ireland, as in most other countries, the COVID-19 crisis catapulted hundreds of thousands of employees and their employers into a work pattern and routine vastly different to their normal daily work experience. This radical change happened suddenly and for the vast majority the change effectively occurred overnight
2. A survey of Irish employees working remotely during 2020 indicated that the top three challenges of working remotely at present are: 1. not being able to switch off from work 2. collaboration and communication with colleagues and co-workers is harder 3. poor physical workspace.
3. The top three advantages of working remotely were 1. no traffic and no commute 2. reduced costs of going to work and commuting 3. greater flexibility as to how to manage the working day.
4. The experience with remote meetings is very mixed. A lot depends on what the meeting is trying to achieve. Meetings with task-oriented ToR's, and a small workload were more efficient, because they reflect the reduced attention span with virtual meetings. So reducing the ToR's at meetings as a blunt approach helps.
5. A general observation is that it is much more difficult for a new participant to get engaged with remote meetings because relationship building is much more difficult. Traditionally much of the discussions happen over coffee, on the roof terrace, and out to dinner
6. A general observation is that it is much more difficult for a new participant to get engaged with remote meetings because relationship building is much more difficult. Traditionally much of the discussions happen over coffee, on the roof terrace, and out to dinner.

7. Another general observation is that because meetings are “easier” to arrange, the number of meetings has proliferated to the degree that many are suffering from “meeting burnout”. This is exacerbated by many meetings being poorly disciplined, such that there is an exhaustive amount of discussion and inefficient decision making.

MARINE SCIENCE

8. The suspension of the at sea observer programme was mitigated in part by instigating a vessel self-sampling scheme. Although the self-sampling programme had to be funded, the cost of this was only 6% of the total cost of sending commercial samplers or the FATS (Fisheries Assessment Technicians) to sea on commercial fishing vessels. Results from the data are showing that whilst this is a very useful supplement to observer coverage its not a replacement. The workload is shifted to the shore where samples must be processed sometimes leading to bottlenecks in resources.
9. The commercial observer’s costs decreased by 87% and the suspension of MI staff on commercial vessels caused a 100% decrease in the FATS at sea allowance costs. There was a 47% decrease in T&S (Travel and Subsistence) associated with sampling, but the cost of fish purchases for sampling increased by 21%.
10. Research vessel survey programme continued despite new COVID restrictions on the vessel work activities and processes.
11. In sharp contrast to the impact of Covid-19 on the sampling and survey programme, the outputs from the assessment and advice programme were less impacted. After lockdown in March 2020, all ICES meetings for assessments and advice generation were conducted remotely. This had a significant impact on the Marine Institute travel costs and carbon footprint associated with assessment & advice work which was reduced by 99% and 100% respectively.
12. In Ireland, travel restrictions were introduced in February 2020. In March 2020 the Marine Institute introduced a complete ban on international travel for business meetings. As participation in international meetings is feasible through remote means, International work travel is still prohibited at the Marine Institute and this may remain the case for the remainder of 2021 unless government guidelines change.
13. There was a reduction in Ireland’s carbon footprint in relation to the ICES advisory/science participation.
14. The reduced networking activity within ICES also reduced “sensing the mood” of the ICES community, scientists, managers, policy makers and partner organisations
15. There has been limited impact on marine research funding.

THE FUTURE FOR ICES

16. While a global pandemic has been a looming risk for decades, COVID-19 has come as a shock to society, health systems, economies, governments, leaders and decision makers worldwide. In the midst of extraordinary challenges and uncertainty, and countless personal tragedies, leaders are under pressure to make decisions on managing the immediate impact of the pandemic and its future consequences. These decisions will shape the state of the world and the format of work many years to come.
17. COVID-19 has catalysed a deep discussion in society on the future of work and has focused attention on the quality of life, wellbeing, working from home, the benefits of remote meetings, reducing travel, reducing climate impacts of travel, and the enormous savings that have been made in travel budgets. COVID-19 is a unique phenomenon in that it has impacted all of the ICES community across the globe, albeit to different levels of severity. The post COVID-19 landscape will change the way most organisations accomplish their goals and will certainly introduce new perspectives to ICES on the way its community of scientists will need to work and interact.
18. COVID-19 presents ICES with some strategic opportunities. There is a need to explore new ways of working for the ICES network that are aligned with a new way of thinking about work in society, particularly in relation to reduced appetite for travel, increased demand to address human wellbeing and the benefits of remote working.
19. A change agenda to reflect the broader changes in society and the new needs of old and new clients is a great opportunity for ICES.
20. One of the greatest threats to ICES is to adopt the mindset of a return to business as usual. ICES needs to plan for the change that is coming.
21. There is likely to be an economic downturn over the next 3 years and there is great uncertainty on what the post COVID-19 era will look like for the international scientific community.

THE FUTURE AND THE MARINE INSTITUTE

22. Subject to public health guidelines, the Marine Institute expects a phased return to on site working from 1 September 2021 onwards. The pattern of work will be led by business requirements and a process will shortly start with teams to identify the demands for space, resources, IT support, laboratories, training etc.
23. A 2021 Q1 Survey of Marine Institute Staff returned a strong response with 90% (of 206 people) seeking a blend of remote and onsite working post pandemic (7% wish to continue fully remotely and 3% exclusively onsite). The wishes of individuals will need to be balanced with the business needs of teams, and it appears that whilst it was relatively “easy” to get the workforce out of the office under the emergency, returning to the desired “hybrid” model will be considerably less straightforward. This is

- because at an individual level the specific arrangement of hybrid working is very heterogeneous.
24. Our corporate services and IT teams in particular are participating in various training and networking initiatives to seek to learn best practice and apply it in the Marine Institute. Any return on site is in the planning stage for most employers and public health guidance and State employer guidance is awaited
 25. Depending on plans in each area and for each individual and on public health guidance, we are likely to have facility changes – change in office sharing, hot-desking and other arrangements. Depending on the public health guidance in place and our own risk assessments, these may have an impact on plans for each team.
 26. In July 2020, the European Council, made up of the Heads of State and Government of each EU Member State, adopted a historic €750 billion recovery package for Europe. This package, Next Generation EU, is Europe's shared response to the severe health and economic crisis caused by COVID-19. Next Generation EU is an ambitious and common recovery package which will complement and support each country's own national response to the crisis.
 27. Ireland has developed a National Recovery and Resilience Plan to contribute to a sustainable, equitable, green and digital recovery effort, in a manner that complements and supports the Government's broader recovery efforts.
 28. While there are strong grounds for optimism regarding our recovery prospects, the scale of disruption as a result of the pandemic across our economy and society has been considerable and asymmetric.
 29. Key priority policy issues for Ireland include Climate Change, BREXIT, Biodiversity, and Post COVID recovery. The scale and nature of the challenge to meet Ireland's ambitious greenhouse gas emissions targets and lay the foundations for achieving carbon neutral economy by 2050 is profound. However, the Government's climate policy approach and a more digital future also presents significant opportunities for sectors, jobs and local communities. Marine science and collaborations with the ICES community will have a key role to play in these policy areas.
 30. The Irish Government have stated that supportive policies can ensure a just transition across the regions of Ireland as we reshape how we live and work, and balance economic growth with environmental sustainability. Innovation, research, and education and skills will be crucial in positioning Ireland in an increasing competitive global landscape through a time of significant change. This will be reflected in the Marine Institutes future modus operandi.

**4.10 AWAIT VIEWS OF THE DELEGATES OF LATVIA
XXXXX**

SUMMARY OF THE VIEWS OF SOME ICES DELEGATES ON THE IMPACTS OF COVID -19

VIEWS ON THE IMPACTS

- (1) There is a recognition that the pandemic will change the work practices of home institutes and their working processes with ICES.
- (2) In many ICES Member Countries (MC's) fieldwork (sampling and surveys) were severely disrupted or postponed. Laboratory work was less severely impacted. The impact of disrupted sampling on fisheries data will become apparent as ICES delivers advice for 2022 and 2023.
- (3) Fishery-dependent data collection activities were impacted differently at a regional level. There were also delays in responding to data calls in some MC's.
- (4) Some MC's increased their socio-economic data collection activity.
- (5) The pro's and con's of virtual meetings were highlighted by all MC's. Virtual meetings are not effective in dealing with sensitive issues and participants from different time zones cause logistical problems. ICES scientists adapted quickly to the rapid move from physical to remote meetings. Staff fatigue (i.e. Teams and Zoom Fatigue) was a feature of some MC's responses.
- (6) Other areas negatively impacted in MC's were grant proposals, conferences (hosting and attendance - ASC) networking, teaching, mentoring, research (e.g. PhD's) and "in person meetings".
- (7) The negative impact of COVID-19 on career progression was also highlighted in some MC's.
- (8) The negative and positive impacts on working from home (remote working) featured in most Delegates responses. Issues related to home internet access and bandwidth were also highlighted.
- (9) The decline in mental health and wellbeing of staff was also highlighted.
- (10) The negative impacts of COVID-19 were most evident in scientists with disabilities and in women in full time employment.

VIEWS ON THE FUTURE

- (1) All MC have recognised the need for new work practices and clear guidelines for staff that embrace new working norms around flexible working, mentoring, training, mental health, and wellbeing as we all enter an increasingly virtual workplace.
- (2) There is a need to find new ways of informal networking within the marine science and broader science communities
- (3) Ensure access to online conferences, seminars, meetings and continuous learning activities.
- (4) Ensure the impacts of COVID-19 do not negatively impact on career progression and recruitment.
- (5) Travel (both domestic and international) will be restricted having positive benefits in home laboratories travel budgets and general CO2 emissions.
- (6) The need for face to face meetings is necessary for key discussions.
- (7) IT will have a major role to support technology choices by Member Countries in the new virtual ICES workspace.
- (8) ICES meetings and intercessional work need to be "redesigned" (separate out intercessional work; discussion; sensitive decisions; incorporation of webinars; new IT tools to facilitate new ways of working).
- (9) Address some of the TOR's of ICES Expert Groups through webinars.
- (10) The ASC is a flagship for ICES and the future format needs to be reviewed.

4.11 European Marine Board (EMB) Survey of the Marine Science Community

One of the key principles of the BCSGC19 was to use existing published reports on the impact of COVID19 on the marine science community. A useful survey published by the European Marine Board in 2021 examined the impacts on the European science community. The results presented below are of relevance to the outputs of the BCSGC19.

With the global COVID-19 pandemic driving large-scale lockdowns in Europe in 2020, the EMB Secretariat was keen to understand the impacts these had on EMB member organizations, and their research and teaching activities. With lockdown conditions continuing across most of Europe in early 2021, the EMB Secretariat re-launched the 2020 survey to gain more insight into the impacts of COVID-19 on EMB member organization and their research and teaching activities 6 months on.

An updated survey was conducted in February 2021. The survey repeated the questions in the original survey from summer 2020 which asked about both the negative and positive impacts that EMB member organizations had experienced, as well as the implications they foresaw for their future activities. It also asked members about inequalities in the impacts experienced by different groups of staff in their organizations. The updated survey also asked some additional questions about how the situation in February 2021 compared to that in summer 2020, about their expectations for the future and about whether longer-term measures had already been taken within institutes.

Further details can be found on <https://www.marineboard.eu/publications/covid-and-marine-science-update>.

10 key points from the EMB survey are listed below. The points in bold are very much in line with the outputs from the survey of the views of some ICES Delegates.

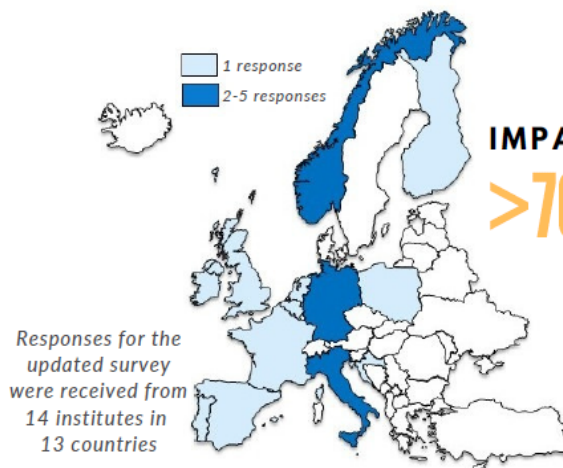
Some Key Findings from the EMB Survey

- (1) **70% of respondents have had to cancel or postpone research cruises, field work, laboratory work, conferences and workshops.**
- (2) **50% have experienced impacts on data availability,**
- (3) 89% have had increased ability to attend events online and 50% noted increased audiences from this move.
- (4) 50% said they had been motivated to try new virtual initiatives.
- (5) **44% were not aware of disparity in the impacts of COVID-19 based on gender, race or age. 50% were aware and 6% didn't know.**
- (6) 33% of respondents noted that their institutes had already established additional procedures or resources to tackle inequality in impact from COVID-19.
- (7) **61% expect further reductions in travel funding and 33% have already experienced examples of this.**
- (8) **83% expect there to be less international travel for meetings in the future and 39% expect there to be less travel for field work.**

- (9) **56% expect to see movement of some teaching and training to online.**
- (10) 22% expect there to be reductions in funding in marine science.

COVID AND MARINE SCIENCE - FEBRUARY 2021 UPDATE

In this infographic we explore the impact of the COVID-19 pandemic on EMB member organizations, their research and teaching activities. The numbers show the percentage of respondents with a given response to a question in the updated survey.



NEGATIVE IMPACTS

IMPACTS ON RESEARCH

>70% have had to cancel or postpone:

- Research cruises
- Field work
- Laboratory work
- Conferences
- Workshops or interviews

TEACHING & INTERNS

~ 60% felt there has been a negative impact on teaching and on ability to take on interns or students

IMPACTS ON DATA

~ 50% have experienced impacts on data availability, including from long-term monitoring

POSITIVE IMPACTS

SUPPORTING THE COVID-19 RESPONSE EFFORT

56% of institutes donated protective equipment to front line workers and care givers

17% of institutes assisted with laboratory work, research work, and/or by providing homeschooling materials

MOVING ONLINE

89% agreed that they have had an increased ability to attend events now that they were online, and 50% noted increased audiences from this move

50% said they have been motivated to try new virtual initiatives such as webinars or podcasts, and 44% said they had already launched their webinar or podcast



COVID AND MARINE SCIENCE - UPDATE

In this infographic we explore the impact of the COVID-19 pandemic on EMB member organizations, their research and teaching activities. The numbers show the percentage of respondents with a given response to a question in the updated survey.

IMPACT INEQUALITY

INEQUALITY AWARENESS

44% were **NOT** aware of disparity in impact of COVID-19 based on gender, race or age, 50% was aware and 6% didn't know

The impact on different people depends on their situations and this is hard to generalize.

MONITORING INEQUALITY

33% of respondents noted that their institute is **NOT** testing / monitoring for impact disparity among their staff, 22% are and 45% didn't know

ADDRESSING INEQUALITY

33% of respondents noted that their institute has already established additional procedures or resources to tackle inequality in impact from COVID-19

EXPECTED IMPACTS

STAFFING

28% expect future reductions in ability to employ new staff and around 20% said they or their colleagues had already experienced this

TRAVEL

61% expect future reductions in travel funding and 33% had already experienced examples of this

RESEARCH FUNDING

72% have experienced impacts on funded projects, including receiving no-cost extensions

50% expect future reductions in or redirection of research funding, and 17% said they or their colleagues had already experienced this

POSITIVE OUTCOMES

50% foresee increased support and resources for online interaction, and around 45% said they or their colleagues had already experienced this

23% said that their institute had been able to, or had plans to undertake COVID-19 specific marine research



COVID AND MARINE SCIENCE - UPDATE

In this infographic we explore the impact of the COVID-19 pandemic on EMB member organizations, their research and teaching activities. The numbers show the percentage of respondents with a given response to a question in the updated survey.

LOOKING TO THE FUTURE

TRAVEL

83% expect there to be less international travel for meetings in the future, and 39% expect there to be less travel for field work

PLANNING

>30% said that their institute has already released a policy for future events, or has engaged in discussions with staff regarding future operations

TEACHING

56% expect to see movement of some teaching and/or training online in the future

RESEARCH FUNDING

22% expect there to be re-direction of funding away from marine science in future

COMPARING THE SITUATION IN AUGUST 2020 TO FEBRUARY 2021

6% of respondents said that research activities had returned fully to pre-COVID levels

44% said that some research activities had resumed but the situation was not yet at pre-COVID levels

17% said that only a few research activities had been able to resume

11% said that the research activity situation was still the same as in August 2020

Nine respondents/institutes completed both surveys. Overall, the responses to the questions were consistent between the two surveys, with only minor changes in the outcomes, except for a notable increase in awareness of impact inequality from 22% in 2020 to 44% in 2021.

5 Addressing TOR 3 – Training and Wellbeing

5.1 Supporting the Implementation of the BCSGC19 Recommendations

BCSGC19 - TOR 3 - To make recommendations on training for participants (particularly the chairs) in remote working methods and approaches that address the nature and objectives of the different types of ICES meetings.

Recommendations under ToR 4 highlight specific training needs for secretariat staff and ICES community. Training needs to be provided for EG chairs, Committee chairs, SG chairs, Secretariat, Symposia chairs, ICES training course convenors.

All training should be developed in a sustainable way that allows it to be available and accessible to the above target audiences, who operate across time-zones and on different terms of service with a high-rotation in these roles.

The format of the training can include:

- Text-based documents, in fact-sheet format with infographics
- Online (interactive) training sessions performed by an external expert
- Recorded webinars (non-interactive)
- Smaller online/in-house workshop/webinars aimed at a subset of ICES community

Supporting BCSGC19 Recommendation 1 - The suggested change of how a multi-year ICES Expert Groups will work in future, as well as the need to accommodate more online meetings, effectively balance meetings that will be a mix of physical and remote attendees, and the increasing use of different workflows and processes, requires specific tools, skills, and competences to ensure equitable participation, good cooperation, community building and efficiently working together while being considerate of human well-being. The remote nature of meetings and workflows might also exacerbate intercultural differences in working and communication style.

The work in ICES is organized through specialised groups and processes, which have specific needs:

- ADG's: building consistency and formulating narrative; monitoring who is in, and who is active in the conversation, this requires sensitive moderation that is mindful of inclusion;
- Benchmark groups: innovation and agreeing applied methods;
- Stock Assessment Groups: use of the Transparent Assessment Framework, timely delivery;
- Expert groups: science synthesis and innovation, uptake of emerging science areas;
- Symposia: exchange of science and networking, identification of emerging science areas;
- Training Groups: organising remote learning;

- Committees: Collaboration on strategic priorities, identification of emerging science areas;

Supporting BCSGC19 Recommendation 2: General challenges are related to running meetings (online and mixed physical/online), organizing the work and workflows, and more broadly on onboarding new people, building community, driving innovation and making decisions. These challenges can be partly addressed by using tools and partly only through strengthening skills in how to lead a change in work culture, and organise dispersed groups and workflows. Training on intercultural competences will help to facilitate working in an international setting.

Supporting BCSGC19 Recommendation 3: The introduction of TAF was meant to support the work of Assessment groups and to open up resources for more science within the groups. To achieve this, the implementation needs to be supported by active training of stock assessors and stock coordinators.

Supporting BCSGC19 Recommendation 4: Gender mainstreaming, the active consideration of diversity, equity and inclusion and ensuring a respectful and open work culture requires awareness training for the community as well as special training for secretariat staff and community leaders to be able to handle cases of misbehaviour and harassment in competently and confidently.

Supporting BCSGC19 Recommendation 5: Depending on the future formats of the ASC, training need to be provided to session conveners to enable them to effectively run sessions in virtual settings, both in terms of technical skills for the use of tools as well as moderation skills and to secretariat staff to develop and implement new formats effectively.

5.2 Wellbeing

One aspect that has not be explicitly in focus in ICES work in the past, but becomes increasingly important and increasingly difficult due to the remote work environment, is the aspect of human wellbeing.

As the population fully vaccinated against COVID-19 grows, more employers are asking employees to come back into the office. With a workforce already suffering from a notable rise in mental distress from the pandemic a real risk exists that millions of people will encounter yet another wave of stress and anxiety as they return to the workplace. Issues that may emerge include;

- Recognising how different employees anticipate and experience on-site work differently;
- Communicating how positive and negative mental health impacts are valid
- Caring for the health and safety of employees and their families through specific COVID-19 practices (for example, certain spaces closed to help with social distancing, easy access to COVID-19 testing)
- Supporting flexible and hybrid/remote work options and allowing employees to adjust their schedules and hybrid/remote arrangements after trial periods

- Addressing stigma head on by replacing negative attitudes and discriminatory policies with healthier attitudes

How can we change working culture to ensure that returning to physical meetings and continued remote work is balanced? The challenge within a network organisation like ICES is that in the work settings, people often only have informal leadership roles and the work and home-life realities of the participants in groups is wide ranging, Thus, the expectations on how much consideration an EG chair can give to individuals in a group and how much leverage the chair has in supporting group members needs to be realistic.

Active awareness of different situations and the flexibility to react to different ways individuals can contribute to a given work flow and group, needs to be communicated, and leadership (SCICOM and ACOM Chairs, SG chairs, ACOM Vice Chairs) needs to keep an open dialogue to provide support when needed. The needs of the ICES community and the support to be provided by secretariat also need to reflect the current capacity of the secretariat.

As with the recommendations on gender awareness, diversity, equity, and inclusion; wellbeing should be embedded in the values and culture of ICES.

TRAINING REQUIRED TO SUPPORT BCSCC19 RECOMMENDATIONS

Supporting BCSGC19 Recommendation 1 - The suggested change of how a multi-year ICES Expert Groups will work in future, as well as the need to accommodate more online meetings, effectively balance meetings that will be a mix of physical and remote attendees, and the increasing use of different workflows and processes, requires specific tools, skills, and competences to ensure equitable participation, good cooperation, community building and efficiently working together while being considerate of human well-being. The remote nature of meetings and workflows might also exacerbate intercultural differences in working and communication style.

Supporting BCSGC19 Recommendation 2: General challenges are related to running meetings (online and mixed physical/online), organizing the work and workflows, and more broadly on onboarding new people, building community, driving innovation and making decisions. These challenges can be partly addressed by using tools and partly only through strengthening skills in how to lead a change in work culture, and organise dispersed groups and workflows. Training on intercultural competences will help to facilitate working in an international setting.

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Wellbeing

Wellbeing aspects of work life need to be considered at all levels of the ICES community, fostering an equitable and inclusive working environment, that allows contributions regardless of different individual realities.

Develop training material, in the form of in-person short courses and recorded materials to address key aspects ICES community wellbeing. Including effective leading of meetings, organization of workflows, as well as training on skills ensuring social interaction and community building. As with the recommendations on gender awareness, diversity, equity, and inclusion; wellbeing should be embedded in the values and culture of ICES.

FOOD FOR THOUGHT – A HEALTHY WORKFORCE

How can you sustain the speed of change brought about by the pandemic and still retain a healthy workforce?

Without a doubt, I don't think that this speed is sustainable. It's one thing to work during a crisis, when everyone's on board and kind of on adrenaline—working long hours, week after week. But over the long term, it's not a sustainable way to work. As many of us have tried to home school young children, look after vulnerable people in our families, and have endless meetings, even after dinner, I think every single one of us has spent at least some time asking, "Do we have to keep working the way we were before? Do we need to keep traveling the way we were previously? Do we need to really go back to what we thought was normal?"

McKinsey Interview with Leena Nair,
Chief Human Resources Officer, Unilever
March 2021

6 Addressing TOR 4 – Recommendations

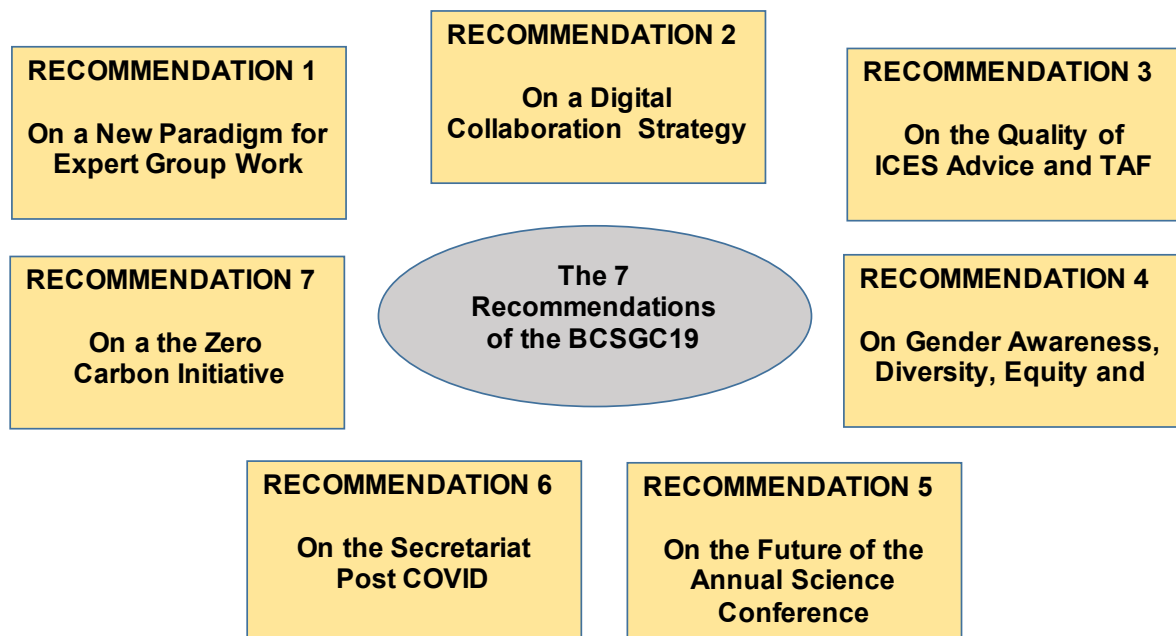
The seven recommendations of the BCSGC19 are shown in the schematic below. These recommendations focus on a 7 broad but interlinked areas. They address a the need for ICES to focus on;

- (1) A new paradigm for expert group work;
- (2) A digital collaboration strategy;
- (3) The quality of ICES advice and TAF
- (4) Gender awareness, Diversity, Equity and Inclusion;
- (5) The Future of the ASC;
- (6) The Secretariat Post COVID;
- (7) The Zero Carbon Initiative.

They all represent key areas that ICES should focus on as the ICES community begins to operates in the new post COVID era.

Figure 6.1

Schematic summarising the 7 Recommendations of BCSGC19.



Recommendation 1 – New Paradigm for Expert Group Work

Even before the pandemic, ICES expert groups were moving towards remote meetings, occurring a few times throughout the year and focusing on deliverables. The move to 100% remote meetings has provided opportunities and challenges, and has led to a number of “ICES norms” to be waived.

The shift to 3-year resolutions for science oriented expert groups (working groups) was introduced around 2011, and less formalised annual cycles were already occurring prior to March 2020.

Resolutions of Council, and the devolved resolutions of the Committees, are the basic governance mechanism of ICES, as mentioned in the [Rules of Procedure](#). They set objectives and direction for all groups in ICES. The Expert Group resolutions contain the objectives for the group, the terms of reference (work tasks and deliverables) and scientific justification for the work of the group. They also list the name of Chairs, the dates and location of the meeting. The current system describes Expert Groups as mainly focused around the concept of one annual meeting in a fixed location leading to a final report at the end of the 3-year term (Box 1, taken from [Guidelines for ICES Groups](#)).

EXPERT GROUPS

Expert groups are groups of scientists who collaborate during scheduled meetings, and often intersessionally, to advance understanding of marine systems by tackling fundamental and applied scientific questions and developing analyses that underpin state-of-the-art advice on meeting conservation, management, and sustainability goals. The questions they address are defined by terms of reference that are reviewed and signed off by the Science Committee and/ or Advisory Committee. Expert groups publish their work in the series “ICES Scientific Reports”

Currently the expert groups perform a number of roles from developing science and innovation, providing and synthesising evidence for advice, offering a safe space for scientific debate and collaboration, quality assurance and data management, and governance of network processes.

The idea that this is done through an annual meeting is anachronistic and does not reflect current working practices.

Various objectives and requirements are delivered by the current resolution system [*decision and data management processes shown in brackets*]:

1. Approval of the group’s resolution, including the work plan, the chairs and the proposed meetings. [*Approval through resolution forum or formal meetings, and the information managed through the Resource Coordination Tool (RCT)*]
2. The resolution itself provides [*Information to be managed through resolution database*]
 - a. background information, including dates, times and locations of meetings, and describes needs for logistical support usually by

the secretariat, and sometimes by host institutes. *[Information managed through RCT and logistical support information is not being included in the new database approach]*

- b. a listing of the expected work plan of the groups as terms of reference, which also provides a mechanism to collate metrics on outputs, and evaluate and review the groups' performance.
[Information to be managed through resolution database and fulfilment through e-evaluation and final report]
 - c. a reporting route and mechanism for the groups, with expected dates, leading to public output/profiling of the expert groups.
[Information to be managed through resolution database]
3. Offering the opportunity to publicise the group prior to the group meeting.
[Actions through correspondence within the secretariat, and no information management system at present]
 4. Nomination of experts to the group, either through the Council delegates or through invitations of the chair(s).
[Nomination through email to nominations@ices.dk, viewed on delegates dashboard, or email from expert group Chair, and information managed through RCT]

While subtle nuances exist between the different expert groups (e.g. science development, synthesise into advice, governance groups), all are initiated using this resolution format. The current form steers groups to try setting up their work around one physical meeting per year.

The consequences of the move away from 100% physical meetings are described elsewhere in this report. ICES procedures have generally withstood the challenges of a system under stress from the pandemic disruption. However, many weaknesses have been identified, and now may well be an opportune time to adapt the system after this stress test.

In particular, the system has been challenged by the:

- evolution to other various forms of group working (e.g. to a series of online meetings in preparation for a larger synthesis session)
- invitation to a wider online community to “join in” i.e. the traditional budget/travel restrictions no longer being a determining factor in participation, as discussed at Council 2020
- requests to expert groups to present their work remotely in wider external fora
- redefining of a participant, and the monitoring of observers
- redefining of engagement of a participant

- challenge to the secretariat to support and manage the expert groups, maintaining good governance, metrics and transparency of operations
- challenge to develop a single information system to efficiently manage, and quality assure the data flows.
- change in focus from a synthesis report (what we did and how) delivered on a timetable related to one physical meeting per year, to a focus on specific outputs related to different ToR delivered over a period of time
- use of meeting, reporting and collaboration tools that are not currently ‘recognised’ in the ICES portfolio

There are examples of process-based approaches, rather than meeting based approaches in operation. A number of groups already adopted workflows that include a series of shorter meetings, focussed on single ToR and continue work over the SharePoint side (e.g. WGBESEO) or have adopted new tools like GitHub and work task based continuously on this platform, supported by shorter remote meetings and if needed a longer physical or remote meeting (e.g. WGS-FDGOV).

Another example is the ICES [advice processes](#), e.g for bycatch advice, although the steps are still linked to events, rather than deliverables or approval points.

[#] [icesrct_requesttopic](#) :
2021 Advice on bycatch

2021 Advice on bycatch	...	AdviceBYC 2021	AR	Release of bycatch advice	02-12-2021 04:00	02-12-2021 04:00	313470007	Advice release	
2021 Advice on bycatch	...	WCBYC 2021	ACOM	ACOM web conference to finalize advice on bycatch	22-11-2021 06:00	22-11-2021 08:00	313470003	Web conference	Henn Ojaveer
2021 Advice on bycatch	...	ADGBYC 2021	ADGBYC	Bycatch Advice Drafting Group	08-11-2021 01:00	10-11-2021 10:00	313470002	By correspondence / WebEx	Henn Ojaveer -
2021 Advice on bycatch	...	WGBYC 2021	WGBYC	Working Group on Bycatch of Protected Species	28-09-2021 02:00	01-10-2021 10:00	313470000	La Rochelle, France	Gudjon Sigurdsson - Allen Kingston -

Any adapted process must ensure coherent documentation in the relevant information management systems to ensure good governance of the expert groups and enable tracking the implementation of Strategic, Science and Advice plans. It must show decision flow for approvals and be transparent on dashboards. The system must be efficient, with only single entry of information an element and a clear primacy in veracity of data storage. Consideration of the utility of remote working should be included. The RCT and incoming Resolution Database can be used to this end, if developed in a modular manner. A decision is required swiftly, as the resolution database is in its final beta testing stage. There is also currently an ongoing review of the nominations system, this will link to the RCT. There is no plan currently on information management of the publicity for expert groups around advertising existing/new groups and disseminating the outputs of Groups (e.g. advertising their scientific reports).

Recommendations to SCICOM, ACOM and facilitating/supporting role of the secretariat

1. Operational process change

In order to reduce artificial logistical and time constraints imposed by packaging all information into a resolution, explore options for separating the resolution process and associated information management into modules along the following grouped elements:

- a) The terms of reference (the overall direction, tasks and deliverables, monitoring and evaluations)
- b) The approval of Chairs and, if necessary, reviewers (such as for benchmarks)
- c) The logistics of the work (working and reporting procedures, if necessary the meetings dates, the utility of remote working, frequency and location, nominations to expert groups)
- d) Publicity pre and post expert group

This would primarily affect national delegates, expert group chairs and the Secretariat and be implemented over a 1–2 year timeframe starting as soon as possible.

2. Cultural change

To refocus all aspects of Expert Groups towards a project approach that removes the paradigm of annual meetings being the sole central focus of work. Meetings will be a tool, not the sole element of an expert group. This reflects the organic change that is already happening across the network and will require adjustment of the procedures, reporting and overall management of expert groups.

The notion that an expert group is synonymous with a meeting should be removed from guidance documents and reporting. Expert groups would be linked to start and end dates, and deliverables. The potential for remote working should be considered. The operational changes listed above will help this refocus and maintain information flow and management.

This would primarily affect expert group members and chairs, SCICOM and ACOM, with implications also for the Secretariat in supporting this. A cultural shift would take effect over a defined period, and likely linked to a cycle of the ICES Strategic plan.

SCICOM, ACOM and the supporting departments of the secretariat should swiftly report on potential opportunities and challenges of the refocus in approach. This should be before the end of 2021.

Recommendation 1 - On a new Paradigm for Expert Group Work

- Operational Process Change - In order to reduce artificial logistical and time constraints imposed by packaging all information into a resolution, ICES should explore options for separating the resolution process and associated information management into modules along the following grouped elements: Terms of Reference; Approval of Chairs; Logistics of the work; Publicly communicate about the establishment of new groups and their outputs.
- This operational process change would primarily affect national delegates, expert group chairs, and the Secretariat and should be implemented over a 1–2 year timeframe, starting as soon as possible.
- Cultural Change - To refocus all aspects of Expert Groups towards a project approach that removes the paradigm of annual meetings being the sole central focus of work. Meetings will be a tool, not the sole element of an expert group. This reflects the organic change that is already happening across the network and will require adjustment of the procedures, reporting and overall management of expert groups.
- This cultural change would primarily affect expert group members and chairs, SCICOM and ACOM, with implications also for the Secretariat in supporting this. A cultural shift would take affect over a defined period, and likely linked to a cycle of the ICES Strategic plan (3 years).
- **OWNER** – ACOM; SCICOM
- **IMPLEMENTER/IMPLEMENTATION** – Secretariat
- **RESOURCE REQUIREMENTS** - 1 Position over 3 years (2022 to 2024)
- **ESTIMATED COSTS** – 0.5 position focused on Change Management + 0.5 position focused on Implementation – Cost = 435,000 DKK per annum. Additional Consultant Fees may be required = 350,000 DKK.

Recommendation 2 - Digital Collaboration Strategy

The change in working habits and meeting formats precipitated by COVID-19 has greatly affected the information technology landscape that supports the way in which the ICES community collaborates. We are exposed to a greater number of software tools in our daily work, and a greater choice of software (and hardware) solutions to any given task that we need to perform.

The ICES community, and the ICES Secretariat, is challenged in both adopting and learning these new tools, as well as ensuring adequate training and support for their use. There is a risk that without a clear strategy, different tools may be used in parallel, which may result in outputs that are not compatible; and tools adopted into the core business areas where not all participants have equal and fair access and training to the resource.

For the ICES community to work effectively and in harmony in a distributed network of people in time and space, ICES should develop a digital strategy for collaboration that outlines the key **areas** that the organisation needs to offer **IT solutions/services** in, and what services it needs to offer within each area.

Furthermore, ICES needs to define the core supported services from the ICES Secretariat, and to also outline additional services from the ICES Community that could be used in place, or in addition to the core services – and under what criteria. Finally, ICES need to outline any security and retention policies in these areas.

The digital strategy should be relatively high level and focussed on managing informed technology choices for the organisation rather than specific technology/software offerings per se. It would build on existing agreements, principles and policies.

*A key area would be **Online meetings**, the services within this area might include web conferencing, online polling, online whiteboards etc. Within this, an accepted criteria could be that all online conferencing platforms allow up to 250 regular attendees, and all attendants can speak, raise hand, message and phone dial in.*

The digital strategy would need substantial input from the practitioners that are using these tools on a daily basis. Chairs of expert groups (via WGCHAIRS) would need to be core to this, as well as members of the ICES Secretariat that are tasked with administering or supporting these tools.

This should be started as soon as possible and an outline available for ICES Council in the Autumn of 2022.

Recommendation 2 - On a Digital Collaboration Strategy (DCS)

- ICES should develop a digital strategy for collaboration (DCS) that outlines the key areas that the organisation needs to offer IT solutions/services in, and what services it needs to offer within each area.
- The digital strategy should be relatively high level and focussed on managing informed technology choices for the organisation rather than specific technology/software offerings per se. It would build on existing agreements, principles, and policies.
- While it would be preferable to assign this task to an existing expert group or Committee, due to its cross-cutting nature, it would be appropriate to form a dedicated workshop to establish the strategy and also define the forward process for governance and review of the digital collaboration strategy.
- This should be started as soon as possible and an outline available for ICES Council in the Autumn of 2022.
- Note strong links to TOR 3 – Training and to Recommendation 4 (Develop GADEI Digital Support)
- **OWNER** - SCICOM
- **IMPLEMENTER/IMPLEMENTATION** – Secretariat; Start with a series of Workshops with stakeholders – Formation of Core ICES DCS Team – Training Needs.
- **RESOURCE REQUIREMENTS** – 0.5 Person for 3 Years (2022 to 2024).
- **ESTIMATED COSTS** – 0.5 Person to support Workshop, Core Team – and Training. Cost = 220,000 DKK per annum.

Recommendation 3 – On Quality of the ICES Advice and TAF

Deterioration in TAF adoption coincides with pandemic, impacting schedule for quality assurance of stock assessments.

The pandemic and change in working practices has coincided with a reduction in the use of the Transparent Assessment Framework (TAF, Figure 1). This was unforeseen, especially as take up was good in 2019, and it was hoped that momentum would continue. A big driver in 2019 were the localised training courses in TAF. These did not continue in 2020. The importance of skill development, training, and capacity building are important for quality of the advice and for the expertise in the institutes. It is expected that with increased use, TAF will improve the effectiveness and efficiency of the advice.

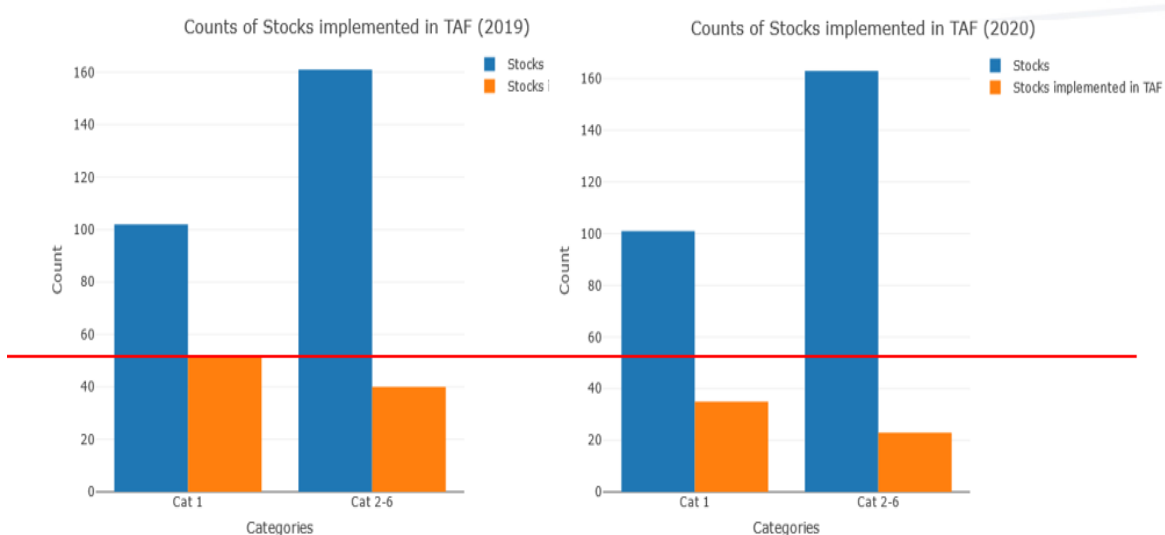


Figure 6.2 Number of stocks implemented in TAF in 2019 and 2020.

A survey of TAF users and potential users (n= 42) was conducted in June-July 2021 to understand in more detail the perceived barriers to its use, the benefits of its adoption from the user perspective and the potential improvements that would lead to increased use. Over 60% of respondents were stock assessors or stock coordinators running assessments that lead to ICES advice. A large proportion saw many benefits in using TAF (Figure 2). These included clear documentation of code and data, robust scripting, version control and automation. The issues of sharing of workload was not so highly rated, potentially suggesting that as yet, TAF is not seen as a routine tool for assessment and forecast.

4. What are the main advantages for you in using TAF in its current form?

[More Details](#)

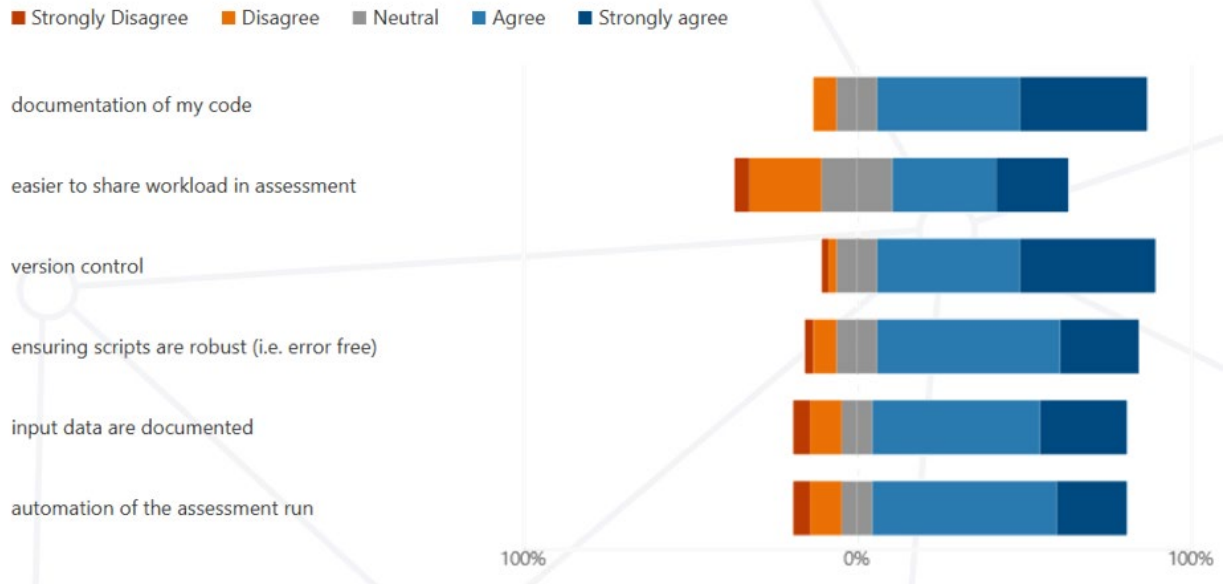


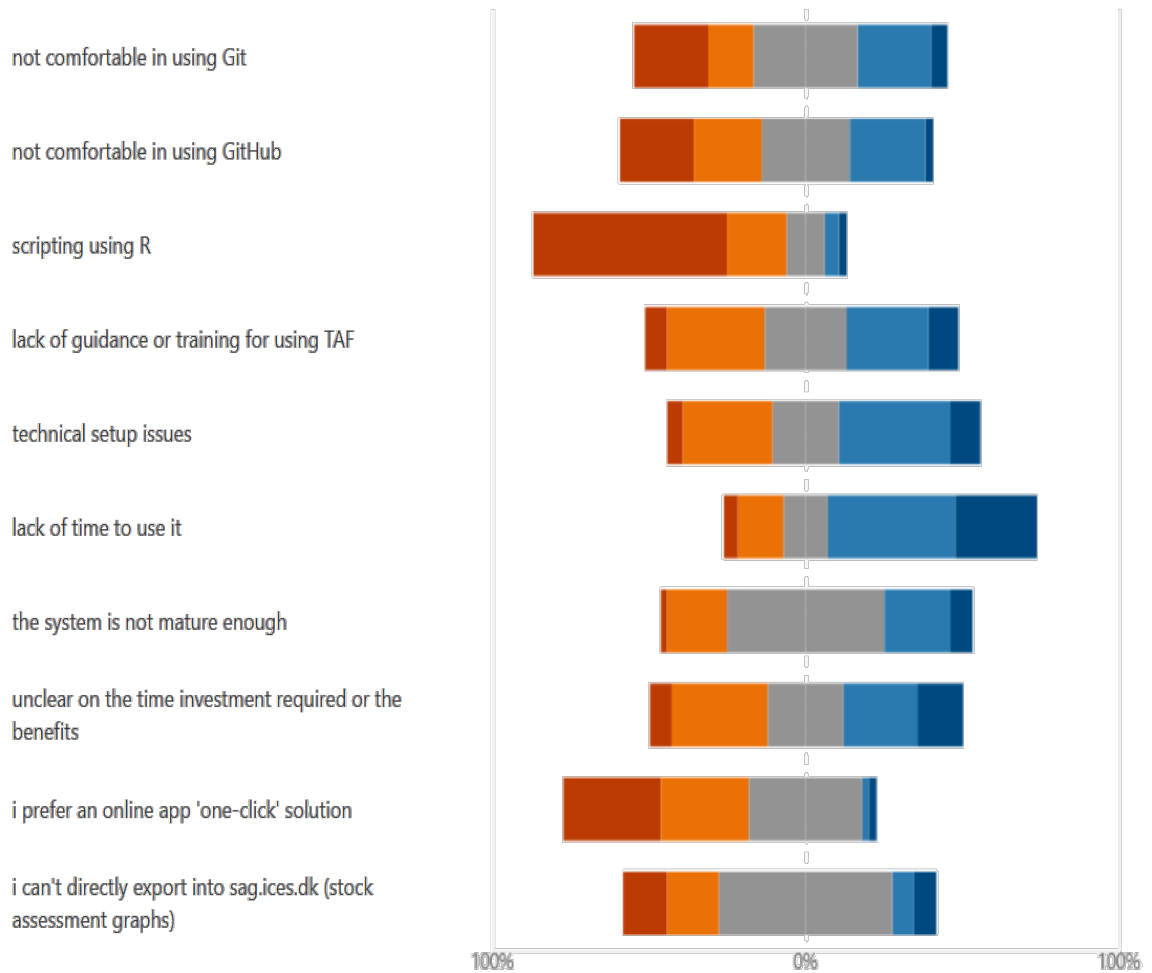
Figure 6.3. Survey responses on the potential benefits of TAF.

The respondents were quite clear about the potential barriers to implementation (Figure 3). Time investment is required but not being made available. This enables dedicated time to learn/use TAF in regular assessment cycle. There are still some technical issues, such as users experiencing challenging setup issues in configuring their software environment to use the scripts/repositories. More guidance and training is needed with supporting online documentation. Competence in R scripting or GIT was not seen as a barrier to use of TAF.

3. What are the main barriers for you in using TAF?

[More Details](#)

■ Strongly Disagree
 ■ Disagree
 ■ Neutral
 ■ Agree
 ■ Strongly agree



Figures 6.4. Barriers to using TAF.

Recommendation 3 - On the Quality of the ICES Advice and TAF

The COVID-19 pandemic has caused increase in work pressures at home laboratories and at the ICES Secretariat. This, along with other issues has impacted ICES workload.

- In response to the stalled uptake and application of the Transparent Assessment Framework (TAF) throughout the assessment process, and the results of the recent survey of TAF users; home institutes must make time available for TAF implementation and training, with key messaging that this is a priority for ICES as a quality assured advice provider. It is recognised that COVID19 has had a major impact on the TAF situation in that it has put severe pressure on the Secretariat and Member Countries.
- ACOM and WGTAFGOV will re-emphasise the role of TAF and prioritise guidance and online documentation and assistance/helpdesk which requires resourcing in the Secretariat).
- Secretariat to improve the functionality and technical set up (including to export directly into the Stock Assessment Graphs (SAG) database and implementation between years).

- **OWNER** - ACOM

- **IMPLEMENTER/IMPLEMENTATION** – ACOM; Secretariat; WGTAFGOV, Member Countries.

- **RESOURCE REQUIREMENTS** - 1 Person for 3 Years.

ESTIMATED COSTS - 1 Person focused on training and implementation of TAF particularly within Member Countries. Cost = 435,000 DKK per annum

Recommendation 4 - Gender Awareness, Diversity, Equity and Inclusion

With evidence mounting of differential gendered impacts from restrictions and responses related to the COVID-19 pandemic, the ICES community must ensure that the gender perspective is considered as we transition to new ways of working.

Given the persistent gender bias in marine science (Giakoumi et al., 2021), and the under-representation of women in the decision-making levels of ICES, critical gender awareness is needed at individual, community, and institutional levels to ensure that new ways of working have specifically considered how to foster diversity, equity, and inclusion (DEI) in ICES work and meetings.

Evidence/indicators of gendered impacts

As early as April 2020, the evidence of the differential gendered impacts from the response to COVID-19 pandemic started to emerge with evidence of fewer women submitting papers to peer-reviewed publications, while male contributions increased¹².

Recent gains towards gender equality in workplaces are threatened by the impacts of COVID-19. McKinsey reports that for the first time, there are indications of higher proportions of women than men considering leaving the workforce, and that women have been feeling more pressure at work³.

While lockdowns ease, children return to school, and freedoms return, in academia, there are calls for specific actions to prevent further inequities that will the under-representation of women without specific actions to correct for periods where researchers were unable to publish or start on research, caused by additional home and caring responsibilities^{4 5}.

In a survey⁶ of institutions conducted by the European Marine Board, they report that 57% of respondents "...were not aware of disparity in impact of COVID-19 based on gender, race or age." Highlighting the importance of raising the profile of these issues within ICES, as well as at the institute level.

Myers et al. (2020) surveyed 4 535 faculty or principal investigators in the USA and Europe, primarily. All else being equal, female scientists reported a 5% larger decline in research time than their male peers during the Covid-19 pandemic. For scientists with at least one child five years old

¹ <https://www.thelily.com/women-academics-seem-to-be-submitting-fewer-papers-during-coronavirus-never-seen-anything-like-it-says-one-editor/>

² <https://voxeu.org/article/who-doing-new-research-time-covid-19-not-female-economists>

³ <https://www.mckinsey.com/featured-insights/diversity-and-inclusion/seven-charts-that-show-covid-19s-impact-on-womens-employment>

⁴ <https://www.pnas.org/content/117/27/15378>

⁵ <https://www.labmanager.com/news/covid-19-shines-spotlight-on-gender-inequity-in-academia-23216>

⁶ https://www.marineboard.eu/sites/marineboard.eu/files/public/publication/EMB%20Members%2C%20Marine%20Research%20and%20COVID_Final_1.pdf

or younger, the decline in research time was even 17%. The authors recalled that women tended to be the primary care-givers of young children.

Initial analyses also suggest that women's publishing rate has fallen relative to men's amid the pandemic and that women are posting fewer pre-prints and starting fewer research projects than their male peers (Viglione, 2020).⁷

Online meetings

The increased accessibility to ICES meetings during the remote work period via online meetings has increased the diversity of participants, and has been a benefit to the organization, with greater numbers of experts willing and able to contribute. Remote participation has also provided more convenient access to meeting participants with caring responsibilities, some who may not otherwise be able to participate when international travel is required. Remote participation options should continue to be part of ICES meetings even as physical options become possible again.

While the shift to online meetings may provide greater access, that may not directly translate into more inclusive working practices. Remote meetings may continue to widen the gap and create deeper divides between genders. While remote meetings have improved access and may be preferential for some with caring responsibilities, given the avoidance of travel and being away from home. The format of remote meetings may in fact make it worse for women to be heard in meetings⁸. Specific training is needed to ensure remote participation in meetings is handled in an inclusive manner.

Flexible working arrangements are important to Millennials and women⁹, and will be part of the "new normal". However, policies need to be implemented mindfully to prevent unintended consequences for women's careers¹⁰.

If female professionals become scarcer at the office, more women will feel as though they don't belong and opt to work remotely. So women will be even scarcer. This is a potentially dangerous cycle that threatens the strides in gender equity at the office that have been made in the past several decades. Women will miss out on the connections, networking and mentorship that lead to advancement. Meanwhile, they will experience increased loneliness and the stress that comes from feeling that the division between their work and their home life has eroded.¹¹

Employees who are less often in the office may suffer negative impacts to their careers, employers should focus on avoiding creating two-tiers of employees,

⁷ <https://en.unesco.org/news/covid-19-pandemic-disproportionately-affecting-women-science-and-engineering>

⁸ <https://www.nytimes.com/2020/04/14/us/zoom-meetings-gender.html>

⁹ <https://www.forbes.com/sites/joyburnford/2019/05/28/flexible-working-the-way-of-the-future/?sh=3a874e4b4874>

¹⁰ https://www.thelily.com/parents-want-to-work-from-home-for-good-for-moms-the-effects-could-be-dire/?tid=recommended_by_lily

¹¹ <https://www.washingtonpost.com/opinions/2021/03/03/remote-work-women-office-equity/>

and ensure evaluation and opportunities are based on output¹². Output should be measured in a way that is proportional to hours worked, recognizing that women, and/or those with caring responsibilities may work part-time and should not be expected to produce at the same level as those who work full-time.

References

Giakoumi, S., Pita, C., Coll, M., Frascchetti, S., Gissi, E., Katara, I., Lloret-Lloret, E., Rossi, F., Portman, M., Stelzenmüller, V., Micheli, F. 2021. Persistent gender bias in marine science and conservation calls for action to achieve equity, *Biological Conservation*, Volume 257, 109134 <https://doi.org/10.1016/j.biocon.2021.109134>.

Recommendation 4 – On Gender Awareness, Diversity, Equity and Inclusion (GADEI)

- Gender Mainstreaming - Embed gender awareness, diversity, equity, and inclusion in the values and culture of ICES. Develop a Code of Ethics and Professional Conduct, revising and harmonizing the Code of Conduct and Meeting etiquette documents to foster a working culture that is respectful, diverse, and inclusive. Future work planning should account for diverse needs, with special attention to women, people with caring responsibilities, and other underrepresented groups
- Data Collection - Systematically collect gender disaggregated data to aid monitoring, evaluation, and to identify areas where strategic actions are needed to support equity of access and opportunities in ICES work
- Training - Provide training on gender and diversity, equity, and inclusion to the ICES community to foster a safer working environment, increased well-being, and equal opportunities
- **OWNER** - Council
- **IMPLEMENTER/IMPLEMENTATION** – Bureau can address the gender awareness, Diversity, Equity and Inclusion policy issue and drive this in all ICES work through the establishment of a ICES Gender Awareness, Diversity, Equity and Inclusion initiative (GADEI)
- **RESOURCE REQUIREMENTS** – 1 Position for 3 years (2022 to 2024).
- **ESTIMATED COSTS** – 0.5 Position focused on Gender Mainstreaming and Training and 0.5 position focused on business intelligence and data collection = 435,000 DKK per annum.

¹² <https://hbr.org/2020/07/why-wfh-isnt-necessarily-good-for-women>

Recommendation 5 – Future of ASC

The Future of the ICES Annual Science Conference (ICES ASC)

A SCICOM subgroup on the ASC is in place to consider the implications and discuss changes to the ASC format, ensuring the key characteristics, networking, science exchange and the ASC as the ICES community event are strengthened and at the same time increasing inclusiveness and reducing environmental impact.

The ASC is the flagship event of ICES. It provides opportunities for marine scientists to present and discuss the latest marine science, develop new ideas, and establish partnerships. The ASC provides opportunities to develop networks of collaborators, to get feedback on research and to learn about new tools and techniques. While focused on the ICES community, the ASC facilitates interaction between ICES and the marine science community at large by providing a welcoming, resourceful, diverse, inclusive, and gender balanced, as well as a respectful working environment. Attending the ASC allows exchange within each respective field as well as linking to other fields, creating an innovative and creative atmosphere.

Due to the COVID-19 pandemic measures, the ASC 2020 was postponed to 2021 and will run in 2021 as a fully virtual event. This presents challenges in providing the same atmosphere and opportunities as a fully physical conference, but also provides opportunities to think beyond the physical conference and allowing for an even wider participation and inclusivity. However, this also affects the way we will run future Annual Science Conferences.

Although the baseline might still be the physical conference, ways to ensure remote participation as well as adding online only components to help increasing the reach of the conference and support networking, science presentations and other core aspects of the ASC need to be explored. This can include thinking about different formats and possibly shifting to alternating physical and online events. The online components also need to stand out from other online formats to be attractive and add value for the participants.

Will the ASC stay as one single annual event or do the online opportunities open up ways to allow a more continued exchange on science that is adding to the work of expert groups and opening up to the larger marine science community?

Networking, especially bringing in new people, is assumed to be more difficult or even impossible in a fully virtual setting. However, there are differences across generations and other communities, like online gamers, are successfully connecting through virtual means only and can serve as role models. Thus, including Early Career Scientists into the discussion is important.

We are operating in unknown territory, thus learning from experience and observing conferences which will take place in the next months, including the first online ASC in September, will be as crucial as testing different formats of online components at physical conferences, especially at the ASC 2022 in Dublin and the joint ICES/PICES conference in 2023.

Formats like debates on controversial topics between 2-4 panelists and active engagement of both physically and remote attending participants, can move the scientific discourse forward, if done well.

The expansion of the format requires more resources, especially within the secretariat to coordinate and organise as well as potentially for the host country to ensure technological capabilities are available.

Registration fees need to be set for attendance of the physical part of the conference and the remote participation to ensure fair distribution of costs but give enough incentive to engage. A low remote participation fee has been seen as a benefit for attendance of students and Early Career Scientists especially from low-income countries.

Recommendation 5 – On the Future of the Annual Science Conference (ASC)

- ICES will reflect on the future format of the ASC following the cancellation of the 2020 ASC due to the COVID19 pandemic.
 - The existing SCICOM ASC subgroup will “think outside the box” to explore existing and new formats by actively collecting experiences from ASCs, other conferences, and other communities. The goal will be to maintain the ASC as a key ICES “flagship event” and ensure that the key characteristics of the ASC (e.g. networking, partnerships, science exchange) are strengthened while at the same time increasing inclusiveness and reducing environmental impact.
 - The lessons learned from the new formats at the upcoming ASC’s in Copenhagen 2021, Dublin 2022, and from the joint ICES/PICES conference in the US in 2023 will critically inform the discussions on the future evolution of the ASC.
 - Provide resource means to effectively coordinate this process in the Secretariat.
-
- **OWNER** - SCICOM
 - **IMPLEMENTER/IMPLEMENTATION** – SCICOM; Secretariat; Member Countries.
 - **RESOURCE REQUIREMENTS** – 1 position for two years (2022 to 2023).
ESTIMATED COSTS – 0.5 Position focused on lessons and new ASC formats. 0.5 position focused to support implementation of new formats at ASC 2022 = 435,000 DKK.

Recommendation 6 – The Secretariat Post COVID

Secretariat Observations for Post-COVID Operations

Based on results of Secretariat staff survey from April 2021

Drawing on the evidence of a recent survey of Secretariat staff on the impacts of COVID, it was found that experiences over the last year have varied considerably based on one's working areas as well as personal needs.

Given that the COVID-19 situation remains uncertain and dynamic, and the ICES Secretariat is in a major period of transition, (e.g. new Secretary General and move to new headquarters) these are preliminary observations with some initial ideas about recommendations or how they should be developed.

The survey highlighted the following issue areas.

Issue Area	Mitigation actions	Specific Recommendation
<p>ON WORKLOAD How to handle the increase in workload resulting from new patterns of virtual meeting and support</p>	<p>The Secretariat sees a need for additional human and technical resources: both in terms of staff and equipment/tools. More work requires more help.</p> <p>Furthermore, new ways of working require enhanced training in both software tools and techniques, as well as up-to-date IT tools for increased efficiency.</p>	<p>To be further developed based on assessment of available and needed Secretariat resources. If resource gaps are identified, additional investments will need to be approved by Council. (Audience: Council)</p>
<p>ON MEETINGS How to deal with increased volume of meetings as well as time zone challenges?</p>	<p>Increased need to plan ahead so that individuals not overly burdened with back-to-back meetings or meetings outside normal working hours (08:00-18:00).</p>	<p>Should identify how work, office space, and meeting planning could be improved to meet the challenges of an increase in meetings, as well sharing the burden of meetings across time zones.</p>

	<p>A clear need to reconfigure office space, meeting rooms and working schedules to ensure that staff have the ability to support the network meetings without disrupting their colleagues</p>	<p>(Audience: Secretariat/ACOM/SCICOM /WGChairs/Council)</p>
<p>ON HUMAN CONTACT Missing “human factor” and informal relationships with colleagues/network; virtual meetings tend to be purely transactional in nature</p>	<p>Observed that advance virtual preparation for remote meetings increased efficiency and overall participation, but decreased networking opportunities, especially for new participants. Planning should include hybrid approach where both virtual and physical meetings included in work.</p>	<p>A hybrid approach where both virtual and physical meetings are part of work planning should be pursued. The approach should retain the good practice from the remote work period of advance preparation to make best use of physical meeting time. While physical meetings are recognised as important for collaborative work, networking, especially for early career professionals/scientists. (Audience: Secretariat/ACOM/SCICOM /WGChairs/Council/SI-IECS)</p>

In addition to the above, it has been observed that the working situation over the past year has created both opportunities and challenges with regards to an inclusive workspace.

Easier accessibility to virtual meetings opens more opportunities for participation in various work areas.

Likewise, flexible schedules accommodate work/life balance and accommodates different working styles and preferences.

However, Likewise, flexible schedules accommodate work/life balance and accommodates different working styles and preferences. However, work/life balance is been significantly impacted by increased workload as well as meetings taking place outside normal working hours.

Recommendation 6 – The Secretariat Post COVID

- **Workload** - Given the increase in workload and new working norms resulting from the COVID-19 pandemic (i.e. increased use of virtual meetings and support), the Secretariat sees a need for additional human and technical resources both in terms of staff and equipment/tools. Secretariat resource gaps have been identified and additional investments will need to be approved by Council.
- **Meetings** - There is clear need to reconfigure office space, meeting rooms and working schedules to ensure that staff have the ability to support the network meetings without disrupting their colleagues. The move to the new headquarters should facilitate this.
- **Human contact** – the remote work period has led to reduced networking opportunities, for the ICES community, especially for early career scientists and new participants. Future planning should include a “hybrid” approach where both virtual and physical meetings form part of ICES meeting procedures.
- **Work-life balance** – Work/life balance has been significantly impacted by increased workload as well as meetings taking place outside normal working hours. Future planning in the Secretariat must factor in work/life balance and staff wellbeing.
- The COVID19 pandemic and the looming post COVID era presents an opportunity for the Secretariat to review the match between its resources and its current work programmes.

- **OWNER** - Secretariat and Bureau
- **IMPLEMENTER/IMPLEMENTATION** – Secretariat (with ACOM and SCICOM on how groups will operate).
- **RESOURCES** – Additional resources for the Secretariat, that address the COVID19 impacts outlined above, have been identified and costed in Recommendation 1, 2, and 3.
- **ESTIMATED COSTS** – No additional costs.

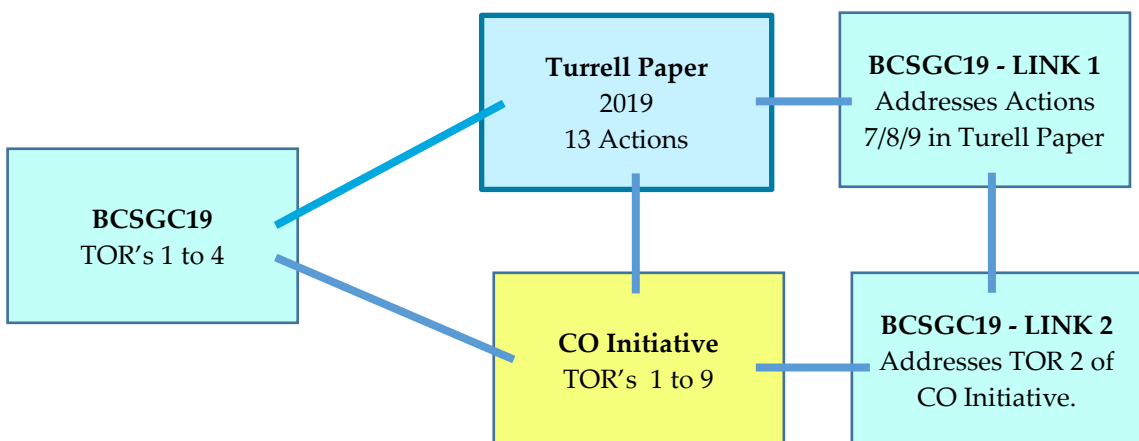
Recommendation 7 – The Zero Carbon Initiative

Linking BCSGC19 to the ICES Zero C Initiative

1. The link between the work of BCSGC19 and the zero C Initiative is not explicit in the BCSGC19 TOR 1 to 4. However, it is specifically mentioned in the preamble to the TOR and ICES Council were very clear that they wanted a strong link established between the work of the BCSGC19 and the zero C initiative.
2. There are two approaches to establishing a strong link – the Bill Turrell paper (2019) and TOR 2 of the C initiative (Figure 1).
3. Firstly, we will use the Bill Turrell paper (2019) as a starting point (foundation) for the linkage process. The Turrell paper has 13 Actions which are outlined in the attached schematic (Annex 1). These actions will form the basis of the linkage. Note the paper is pre COVID19 pandemic but still highly relevant.
4. The work of the BCSGC19 addresses Actions 7, 8 and 9 of Turrell paper.
5. Secondly, the Zero C initiative has their own TOR. These are attached as Annex 2. Note there is strong reference to the Turrell paper.
6. BCSGC19 work already addresses many elements of TOR 2 of the Zero C Initiative.
7. The Turrell paper can also form the basis of a BCSGC19 recommendation. The paper states that ICES has a low CO₂ footprint in relation to ICES meetings. (0.002 M tonnes of CO₂) but “that does not give us an excuse to do nothing”.
8. The annual ICES CO₂ emission total could be offset at an annual cost of € 56,000 (Turrell 2019).
9. In the current marine policy landscape, ICES has a “moral responsibility” to minimise its energy usage while conducting its core business in the secretariat/science/advice/data domains. ICES should strive to minimise its energy usage and CO₂ footprint and “lead by example”. This is a key component of being a “sustainable organisation”. Into the future, the energy usage statistics and CO₂ footprint of ICES become an integral part of the ICES annual report.
10. The move to the new ICES HQ building is an opportunity to action this energy reduction policy.

11. ICES should highlight the elements of its advice/science that will help reduce CO₂ and energy reductions in key marine sectors (e.g. MSP and ORE).
12. ICES science should look a new and innovative ways to reduce CO₂, particularly in relation to new science outputs and initiatives (e.g. science of CO₂ sequestration).
13. ICES should strive to ensure MS data collection programmes (ICES raw material for advice) are as CO₂ efficient as possible. (e.g. Research Vessel Data).
14. The post Covid19 landscape will require organisations to examine their modus operandi, including remote working and remote meetings. This provides ICES with an opportunity to action a minimum energy usage policy.
15. Establish a Bureau Council Working Group and Chair that will work on the TOR's of the Zero C initiative and present their recommendations to Council in 2022. This should consider if ICES is a sustainable organisation.
16. The current Zero C Initiative TOR's should be reviewed in the light of the recommendations of BCSGC19.

Figure 6.5 - Establishing strong link between the work of BCSGC19 and the C02 Initiative



FOOF FOR THOUGHT – THE SUSTAINABLE ORGANISATION

Sustainability is the issue of our times and reflects collective, long term, damaging behaviour that needs our immediate attention. Society needs to generate positive economic results, while solving the problems of polluted oceans, inequality, mass migrations, unsustainable consumption, polluted water, unsafe working conditions and climate change. We need to come up with new ideas scale solutions, and develop the talent to operate sustainable organisations. We need to help everyone in our organisations to develop a heightened degree of awareness about the problems and the challenges. Our problems lie in the way we have been trained to behave, the incentives that encourage similar behaviour and the business practices that keep us going down the same path.

BOOK - Sustainability is the New Advantage
Peter McAteer (2019)
Anthem Press

Sustainability is viewed as the “intersection” of three areas; (1) society; (2) the economy; (3) the environment, or simply put, people, planet and profit. For an organisation to be sustainable, its goal should be to act in ways that have a net positive effect on (1) shareholders; (2) employees and the communities in which they work (3) the environment. The UN Sustainable Development Goals (SDG’s) can provide leaders with a baseline from which to build a sustainable organisation. The sheer number of SDG’s and measures can be seem as overwhelming, while different SDG’s may appear to be in conflict with cultural dimensions leading to different interpretations. However, working within the UN SDG’s framework is a good starting point for discussions on how an organisation can incorporate sustainability into its vision, values and daily operations.

An initial starting point for an organisation on the road to sustainability, is to start with being a “**responsible organisation**”. There are five elements to address on the road to being a responsible organisation (1) Responsibility to the health of the business; an organisation cannot honour its social and environmental responsibilities unless it meets its first responsibility – to stay financially healthy. (2) Responsibility to Employees. An organisation should do what it can to reward the people who make its products and provide its services; (3) Responsibility to customers; offer a service that can be used; (4) Responsibility to Nature; (including energy reduction) the economy depends on nature and organisations will destroy the economy if they destroy nature.

On the road to a **responsible and ultimately a sustainable organisation** - “ *Checking off the easy stuff gives us experience and builds confidence. Tackling the big stuff, and surviving setbacks and failures makes us smarter, stronger and more useful to others. Doing both can lead to environmental and societal gains of the sort we need: some widely imaginative, some quietly effective , some both*”

BOOK - The Responsible Company
What we have learned from Patagonia’s first 40 years.
Yvon Chouinard and Vincent Stanley (2016),
Patagonia Publishers

See Annex 6 For a Checklist of Issues that the Responsible Organisation should address on the road to becoming a sustainable organisation.

Recommendation 7 – On the Zero Carbon Initiative

- While not specifically in the BCSGC19 TOR's, an important element of its work was to link with the Zero Carbon Initiative (Council Group on ZERO C Initiative).
 - BCSGC19 has addressed some elements of the Zero Carbon Initiative TOR 2 (Travel and Remote meetings) and future work should build on this. The 13 actions in the Bill Turrell paper (2019), can also provide a useful starting point (foundation) for the Zero C Initiative. BCSGC19 has considered actions 7, 8 (remote meetings) and 9 (Science Conferences).
 - The Group noted that many of its recommendations will have a positive impact on Net Carbon emissions (e.g. reduced air travel as a result of greater use of remote meetings).
 - **ICES as a Responsible/Sustainable Organisation** - In the current marine policy landscape, ICES has a “moral responsibility” to minimise its energy usage while conducting its core business in the secretariat/science/advice/data domains. ICES should strive to minimise its energy usage and CO₂ footprint and “lead by example”. This is a key component of being a “sustainable and a responsible organisation”. Other elements of a responsible/sustainable organisation should consider business health, employees, customers and impacts on nature.
 - **Highlighting ICES Advice and Science Outputs** – ICES should highlight the elements of its advice/science that will help reduce CO₂ emissions and energy usage in key marine sectors (e.g. via advice on MSP (Marine Spatial Planning); ORE (Offshore Renewable Energy) and Shipping).
 - Establish a Bureau Council Working Group that will revise the TOR's of the Zero Carbon initiative. The Group should work throughout 2022 and present their Draft Report to Council in 2022. The TOR's should consider if ICES work processes and support progress towards the UN Sustainable Development Goals and ICES as a “Responsible Organisation”.
 - It should be noted that flexible working practices, like working from home and remote meetings are also a way to reduce CO₂ emissions generated from local communities.
-
- **OWNER** - Council
 - **IMPLEMENTER/IMPLEMENTATION** – Bureau Council Working Group
 - **RESOURCES** – Working Group Members.
 - **ESTIMATED COSTS** – from current ICES budget.

Soliciting feedback from the ICES community on the recommendations from BCSGC19

Effective community engagement

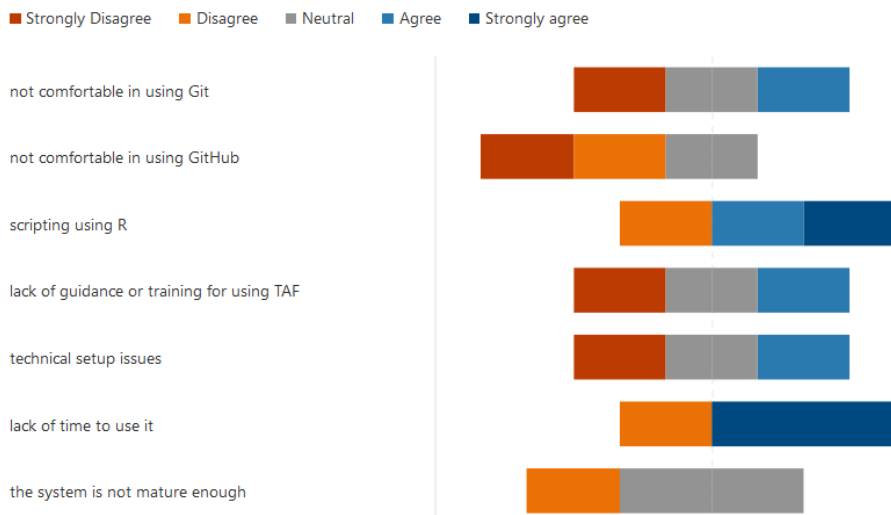
In order to effectively engage with the ICES community, the conversation should be started early as the timeline for feedback is very pressed, potentially before the recommendations are endorsed by Bureau. Use “teasers” in appropriate communication channels for the specific audience to highlight that feedback is needed from the community about the direction of travel. Encourage the audience to “have their say” by providing feedback.

For each recommendation, define what kind of feedback is needed:

- Specific feedback (i.e. narrative comments)
- Indication that they agree with the recommendations broadly (voting options)
- Potentially a very short feedback form
 - Narrative or Likert scale – one question survey
 - Make it comparable among audiences.

3. What are the main barriers for you in using TAF?

[More Details](#)



Targeting feedback

A well-defined target audience is needed for each specific recommendation, recognizing that people only want to give feedback where they see their stake/how they are affected.

There is also a secondary audience, we want stakeholders to be informed about the developments and to communicate that ICES is responsive and adaptive to change as needed. Direct communication to stakeholders about the approved recommendations at the end of the process will also be required.

A townhall/webinar is not the right format for soliciting feedback, given so many different audiences for these recommendations.

Potential Audiences

ACOM/SCICOM/Council/WGCHAIRS/Members of working group/Workshop participants/Advice recipients/observers/Cooperation partners/National institutes/ Others?

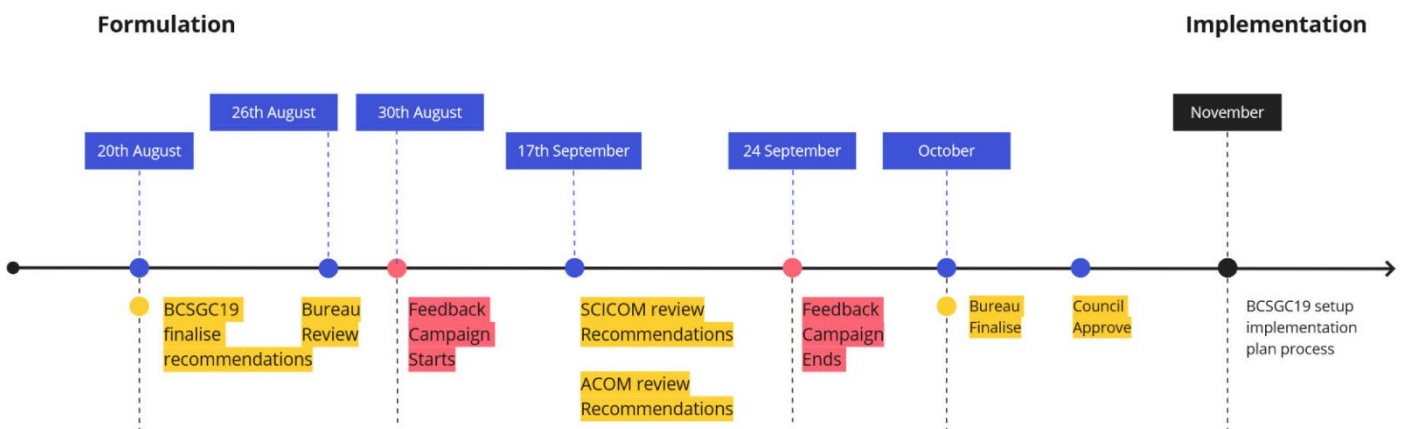
Format of Recommendations

Broadly cover a What, Why, Who and When approach ('How' would be for the implementation plan and not necessary to include at this stage); this is to allow each recommendation to be as self-describing as possible, which in turn makes it easier to communicate and elicit feedback

- What: describe the issue
- Why: define the problem
- When: Would need to have a time horizon for adoption defined
- Who: Define who this will affect
- Should be presented for feedback in the most appropriate way for that audience.

The Way forward

Decouple the timeline for feedback from the ASC



Overview of potential recommendations audiences/ communication channel

Recommendation	Description	Audience	Communication channel
1. Operational process change	To explore options for separating the resolution process and associated information management into elements or modules	Internal Primary: ACOM/SCICOM/Council/Secretariat	ACOM/SCICOM Forum SCICOM September meeting
2. Cultural change	Refocus all aspects of Expert Groups towards a project approach that removes the paradigm of annual meetings being the sole central focus of work	Primary: WGCHAIRS/ members of working groups	WGCHAIRS forum/Twitter (?)
3. Secretariat survey	Requirements for ICES HQ	Primary: Council/Secretariat/National institutes	
4. Critical Gender awareness	Critical gender awareness needs to be mainstreamed in ICES planning.	Primary: Council Training group/WGCHAIRS	WGCHAIRS/email to training group/Council forum
5. CO ₂	Raising awareness about how the work of ICES is contributing to lower CO ₂ emissions.	External Primary: Cooperation partners/stakeholders	ACOM/SCICOM/Council forum/Twitter(?)

Key Considerations on Soliciting Feedback

1. Effective community engagement means defining specific audiences, feedback needed (qualitative and quantitative), and communication channels for each recommendation
2. Take a targeted digital approach to seeking feedback on specific recommendations
3. Decouple the timeline for getting feedback from the ASC

7 Concluding Comments

1. COVID19 will be remembered as the virus that stopped the world. We are all living through a period that can only be described as the greatest act of solidarity in history, as people give up civic freedoms to save lives. While we all agree that managing the health crisis is the overwhelming priority, the social and economic consequences are, and will be, dramatic in an already troubled world.
2. The 2020 ICES Council supported the establishment of a Bureau led Council Sub-Group (BCSGC19) to look into how changes caused by the societal response to the COVID19 pandemic which will impact the future work of ICES in the short and long-term.
3. The BCSGC19 worked throughout 2021 and has addressed and provided 7 recommendations on its four Terms of Reference.
4. The owner, implementor/implementation mechanism, resource needs and estimated costs for each recommendation have been provided to facilitate discussions on funding change at ICES into the future
5. The outputs from the BCSCC19 have been kept at a high level and are of considerable strategic importance for the future of ICES. They will help ICES prepare for new working norms and consider a post COVID19 situation in which many scientists from its Member Countries will have very different work pattern (e.g. working from home; remote meetings).
6. BCSGC19 has also provided a suite of Training to enable the implementation of the 7 recommendations. Preparing for new working norms will include a strong focus on training (particularly the chairs) in “remote working methods and approaches” that address the nature and objectives of the different types of ICES meetings.
7. In the post COVID era, there will be a greater emphasis at ICES to embed gender awareness, diversity, equity, inclusion and wellbeing into the values and culture of ICES.
8. BCSGC19 also provided a recommendation on how the Zero Carbon Initiative might progress in the light of the outputs of the BCSGC19.
9. The business landscape for most organisations, particularly international organisations will look a lot different after the COVID19 pandemic. It would be a mistake to look for a one-size-fits-all plan. Every industry, organisation and community (including marine science) will face unique challenges. Some will be

permanently damaged by what they have gone through. Others will benefit from the changed conditions and attitudes. In any case, organisations that meet these challenges and embrace change with innovative thinking will have the best chance of prospering in the post COVID era.

Appendices

Appendix 1 - TOR of BCSGC19

Appendix 2 - List of BCSGC19 Participants

Appendix 3 - List of BCSGC19 Meetings

Appendix 4 - Draft TOR of Zero C Initiative

Appendix 5 - List of Actions from Turrell (2019) Paper

Appendix 6 – Checklist for a Responsible Organisation

Appendix 1 – TOR's for BCSGC19

Bureau Led Council Sub Group on COVID-19 (BCSGC19)

Terms of Reference

(Version 3 @ 7th Dec 2020)

The 2020 ICES Council supported the establishment of a Bureau led Council sub-group to look into how changes caused by the societal response to the COVID19 pandemic will affect ICES work in the short and long-term.

ICES needs to prepare for a new working norm and consider a post COVID19 situation in which many scientists from Member Countries may have a very different work pattern (e.g. working from home; remote meetings). This will raise a series of issues for the current way of doing business and may impact the current science and advisory process. Preparing for the new working norm should include a focus on training for participants (particularly the chairs) in “remote working methods and approaches” that address the nature and objectives of the different types of ICES meetings. BCSGC19 will also link with the Council Group on the Zero Carbon initiative.

BCSGC19 Participants

Paul Connolly (IE Chair)

Matt Gubbins (UK)

Piotr Margonski (PL)

Chris Zimmerman (DE)

Florence Cayocca (FR)

Mark Dickey-Collas (ACOM Chair)

Jörn Schmidt (SCICOM Chair)

Neil Holdsworth (DATA)

Input from ICES Secretariat

Anne Christine Brusendorff (General Secretary)

Ellen Johannesen (Coordinating Officer)

TOR1- To report on the impacts and lessons learned from the COVID-19 pandemic on ICES work processes and outputs during 2020, including the measures put in place to mitigate these impacts.

TOR 2 - To provide a snapshot on the impacts of COVID-19 pandemic on ICES Member Countries, their societal thinking and the future impacts on their marine science community.

TOR 3 - To make recommendations on training for participants (particularly the chairs) in remote working methods and approaches that address the nature and objectives of the different types of ICES meetings.

TOR 4 - To make recommendations on how ICES might prepare for and adapt to the new ways of working that may/will emerge in a post COVID-19 landscape.

Appendix 2 – List of Participants

1. Paul Connolly (IE Delegate - Chair)
2. Matt Gubbins (UK Delegate)
3. Piotr Margonski (PL Delegate)
4. Chris Zimmerman (DE Delegate)
5. Florence Cayocca (FR Delegate)
6. Mark Dickey Collas (ACOM Chair)
7. Jörn Schmidt (SCICOM Chair)
8. Neil Holdsworth (DATA)
9. Anne Christine Brusendorff (Sec Gen)
10. Ellen Johannesen (Secretariat)

Appendix 3 – BCSGC19 List of Meetings

Due to the various forms of national restrictions in place as a result of the COVID19 pandemic, some members of our Group were working from home with child home schooling, child minding and other commitments. BCSGC19 was flexible with the sequencing of the meetings agenda as some people were not be able to participate for the full duration of our meeting. Furthermore, due to work commitments and summer holidays there was reduced participation at some meetings. Intercessional work between meetings was a critical component of the modus operandi of BCSGC19. Regular updates were given to the ICES Bureau.

Informal Meetings

Dec 2020

Informal 1 to 1 meetings between Chair and Participants on TOR's and approach to addressing the TOR's.

BCSGC19 Meeting 1 (2 Hours)

18th January 2021

Bureau Updated on Progress

4th February 2021

BCSGC19 Meeting 2 (2 Hours)

22nd March 2021

Bureau Updated on Progress

12th April 2021

BCSGC19 Meeting 3 (2 Hours)

17th May 2021

BCSGC19 Meeting 4 (1 hour)

7th June 2021

Bureau Updated on Progress

8th June 2021

BCSGC19 Meeting 5 (1 Hour)

28th June 2021

BCSGC19 Meeting 6 (2 Hours)

19th July 2021

BCSGC19 meeting 7 (2 Hours)

9th August 2021

BCSGC19 Draft Report to be Discussed and Endorsed by Bureau at their meeting on 26th August 2021

Appendix 4 – Draft TOR's of Zero C Initiative

Draft Terms of Reference for Bureau Working Group (From Council meeting October 2020 = Del-Doc 2.3)

TOR 1. Develop a strategy for estimating and publishing the ICES community baseline at an appropriate level of resolution

- a) Begin with a working definition of the “ICES Community” as “activities that are organized directly by ICES operations and activities managed directly by the Secretariat and carried out during meetings of ICES Expert Groups” and refine this as appropriate
- b) Consider alternative approaches for defining baseline (e.g. inventory of historic meetings and participation, more comprehensive approaches to quantify CO2 footprint, etc.)
- c) Investigate the possibility of using an existing guide/framework such as the one available from the Carbon Trust (depending on outcome of b, above) – (may not be necessary)

TOR 2. Inventory, document and evaluate steps already taken to justify travel, facilitate remote meetings, etc. in recent years and, in particular, during the Covid-19 pandemic with careful examination of benefits (such as broader participation) and costs (such reduced social and informal interaction). Make the greatest possible use of lessons learned in developing this strategy (develop best practice guides; collaborate with other organizations, etc.)

TOR 3. Survey member countries and other organizations to determine if they have:

- a) Developed targets and strategies for short- and long-term reduction of their CO2 footprints or otherwise restricted travel and/or other sources of emissions
- b) Conducted CO2 footprint audits or established baselines in other ways
- c) Inventory details related to a and b above and update regularly

TOR 4. Draft a CO2 footprint reduction strategy for ICES which achieves net-zero status as soon as possible and:

- a) Sets short-and long-term targets
- b) Establishes overall CO2 budget reduction trajectories for different parts of the organization
- c) Seeks input from throughout the organization (top-down and bottomup) and is responsive to relevant activities in Member Countries
- d) Encourages and resources innovations that reduce ICES related travel, improve remote meeting capabilities, develop and advance remote networking, etc.

Terms of Reference for Forwarded to SCICOM by Bureau (June 2020)

TOR 5. Together with other relevant organizations, consider approaches for auditing and reducing emissions associated with:

- a) research and monitoring, including use of research vessels and alternative platforms
- b) fishing, aquaculture and fish processing operations
- c) CO2 offsets (e.g. mitigation, offshore energy, biomass /biofuel production)
- d) additional science focus areas?

TOR 6. Emphasize net-zero thinking in everything we do and miss no opportunity to advance on this goal (e.g. upcoming relocation of Secretariat, planning for future ASCs) (Standard TORs for EGs?)

TOR 7. Work with partner organizations such as PICES and OSPAR, to develop joint policies and procedures and take a leadership role in CO2 reduction strategy development and implementation.

Process

This strategy will be developed through a Bureau Initiative/Bureau Working Group. A small internal working group will be established to develop an implementation plan and schedule and to guide the process. This will consist of two individuals from each of Bureau, Secretariat, SCICOM and ACOM and will include staff support from the Secretariat. The process will be designed to encourage and endorse bottom-up participation.

Appendix 5 – List of Actions from Turrell (2019).

Green ticks indicate areas addressed by BCSGC19

13 Actions from Turrell (2019) Paper

1. Science for CCS Monitoring Strategies Future EIA	2. Understanding of Blue Carbon Sequestration	3. Predict threats to Blue Carbon Sequestration Rates and Stores	4. Support Offshore Renewable Energy Through MSP, EIA, Monitoring.
5. Science for C Emission Management in the Fishing Industry	6. C Reducing Survey Technology (AV's)	7. Insist on Remote Access to as many Meetings as Possible	8. Further develop Remote Ways of Professional Contacts
9. Investigate Multi Venue Science Conferences	10. Estimate, Record and Publish Institute Emission Statistics including RV's	11. Set Targets for Reductions in Emissions Including RV's	12. Share Emission Saving Techniques - Measures Between Institutes
13. Consider Vegetarian Catering And Local Produce	A. ICES – Total Emissions on Travel 0.002 M Tonnes CO2	B. Offset Emissions € 56,000 / Year	



Appendix 6 – A Checklist for a Responsible Organisation

The Responsible Company - A Checklist to Start the Thinking around Business Health; Workers; Customers and Nature.

(From - The Responsible Company - Yvonne Chouinard and Vincent Stanley, Patagonia Press, 2012) *(*** Checklist Items in Red are for consideration in a Zero CO2 Initiative)*

CHECKLIST 1 BUSINESS HEALTH

- Board of Directors that meet regularly
- Share Financial Information with employees
- Financial Controls
- Financial Reports
- Financial Reports reviewed by Board
- Audited by Independent Accounting firm
- Incorporate into the Mission Statement a commitment to reduce environmental harm
- **Provide employee training to reduce social and environmental harm**
- **Share information with stakeholders on reducing social and environmental harm**
- **Dedicate, even if part time, staff to monitor the company's social and environmental performance**

*** NOTE ***

NO COMPANY ON EARTH CAN CHECK OFF EVERY ITEM ON THIS LIST. IT MIGHT BE USEFUL TO CHECK WHAT YOUR ORGANISATION DOES DO NOW. YOU WILL THEN BE AWARE OF WHAT NEEDS TO BE DONE, PLAN YOUR PROGRESS AND TRACK IT.

CHECKLIST 2 WORKERS

- Pay a living wage - If you can't figure out when you can.
- Determine whether your company pays above market, or below market rates.
- Paying below market rates means competitors will attract better talent including your own
- Calculate the multiple by which your highest paid employees compares to the lowest paid employee. Narrow the gap.
- Calculate annual attrition rate. If number is high figure out why. set a benchmark for improvement.
- Calculate an internal hire rate for open positions. Are you training properly or allowing people grow in their jobs.
- Company Bonus Plan
- Health Insurance for Staff
- Retirement Plans for Staff
- **Diversity and Gender balance**
- Stock Options
- Vacation Pay
- Maternity and Paternity Pay
- Allow part time and **Flexitime and Remote Working as appropriate**
- Showers Changing Room so employees can exercise at lunchtime
- Establish relationship with childcare centre close to work
- Ensure facilities meet health and safety standards
- Ensure facilities meet disabilities standards.
- Provide company cafe.
- Maintain Board of Directors with outside members
- Subsidies Employee travel to work via public transport, walking, biking.
- Sabbatical Leave
- Employee Handbook
- **Code of ethics**
- **Job Satisfaction Survey**
- Annual Performance Management and Appraisal for Staff
- Determine training needs of Staff.

CHECKLIST 3 CUSTOMERS

- Bank locally - where you know them and they know you.
- Make opportunities for low income people and those with physical or learning disabilities
- Community Service Policy
- staff Group Volunteering Activity
- Create partnerships with local organisations that benefit the environment and the commons
- Make your facilities available for local organisations outside working hours
- identify 80% of suppliers. Meet with them annually.
- **Ethics policy for transacting with suppliers**
- **Our Code of conduct understood by suppliers**
- Set continuous improvement goals for your major suppliers in terms of social, environmental and quality standards
- Share above with other organisations
- **Encourage major suppliers to use renewable energy**
- **Encourage major suppliers to reduce and monitor Greenhouse Gas Emissions, waste and divert it from landfill**
- **Benchmark and reduce water**
- **Encourage Wastewater Recovery Systems**
- **Help set standards with suppliers that reduce social, and environmental harm and educate consumers on the impacts of the products they buy.**

CHECKLIST 4 NATURE (A)

- **Conduct independent audits of energy and water use and waste generation. Target reductions**
- **Share both targets and results with directors, employees and other businesses engaged in related activities, staff meetings, newsletters, web, and new staff orientations**
- **Do not create an environmental bureaucracy - do not make it a public relations or marketing arm**
- **Incorporate environmental goals into job descriptions and performance appraisals**
- **Perform a life cycle assessment of the products that produce 80% of your business**
- **Conduct an independent review of the toxicity of major materials used in products and processes.**
- **Benchmark and target increases in the use of biodegradable material and measure performance**
- **Conduct an independent review of transportation for all inbound freight. - use less air and truck shipping - more rail And ocean freight, increase efficiency reduce energy and pollution**
- **Establish tools that can be integrated into IT software to measure environmental impacts and help improve performance**
- **Take back worn out products for recycling or repurposing or work with partners to do so**
- **Use products to include as much recycled material as possible**
- **Monitor energy bills for spikes in use that may indicate the need for maintenance**
- **Buy renewable energy credits to offset greenhouse gas emissions from company travel and energy use**
- **Purchase renewable energy from your utility company**

CHECKLIST 4 NATURE (B)

- **Set standards for corporate travel. Define priorities for types of business travel. Reduce corporate travel.**
- **Establish video conferencing facilities, ensure they work and that employees are trained**
- **Encourage employees to take the bus, train, carpool or bicycle to work.**
- **Offer electric vehicle ports for visitors and staff.**
- **Tune up energy efficiency in relation to heating and air conditioning.**
- **Use ceiling fans they use 98% less energy than Air Conditioning.**
- **Install renewable energy sources (wind; solar).**
- **Use a 365 thermostat to control heating and air conditioning**
- **Insulate and investigate heat pump technology.**
- **Annual Maintenance of heat-energy systems.**
- **Use solar water heaters**
- **Lighting - install automatic sleep modes, timers and LED bulbs and fixtures.**
- **Increase lighting efficiency by installing optical reflectors or diffusers.**
- **Develop a site specific water budget.**
- **Install low flow toilets.**
- **Check and repair water leaks.**
- **Change window cleaning from periodic to as required.**
- **Harvest rainwater**
- **Use grey water.**
- **Install water flow meters**
- **Pest control - use less toxic pesticides - explore alternative methods**
- **Use recycled oil for equipment**
- **Specify recycled office materials**
- **Discourage printing of e mails and go paperless for meetings**
- **Eliminate non recyclable packaging in the lunchroom.**
- **Compost kitchen waste.**
- **Eliminate single use plastic bottles**

