

Mini Symposium: 'Linking Antarctic Science with Environmental Protection: Celebrating the 25th Anniversary of the Madrid Protocol'.

SCAR Open Science Conference, 23 August 2016, Kuala Lumpur.

Organizing Committee: Dr Jose Xavier, Dr Kevin Hughes, Dr Annick Wilmotte and Ms Gabriela Roldan.

Welcome speech: [Dr Jeronimo Lopez-Martinez, president of SCAR:](#)

The list of the guest speakers and the title of their presentations follows here:

- ['The Madrid Protocol and the Committee for Environmental Protection: a historical perspective'](#), Dr Yves Frenot (Director of the French Polar Institute and former Chair of the CEP 2010-2014);
- ['The Status of the Madrid Protocol and the challenges of today'](#), Mr Ewan McIvor (Chair of the Committee for Environmental Protection, Senior Environmental Adviser for the Australian Antarctic Division);
- ['Linking Antarctic science and policy: a marine perspective'](#), Dr Andrew Constable (Programme Leader at the Antarctic Climate and Ecosystems Cooperative Research Centre, Science advisor for Australia at CCAMLR);
- ['Antarctic Environments Portal: giving your research policy impact'](#), Ms Birgit Njåstad (Head of the Environmental Management Sector at the Norwegian Polar Institute; Project Manager of the Antarctic Environments Portal);
- ['The role of SCAR in the Antarctic Treaty System – an environmental protection perspective'](#), Professor Steven Chown (Head of the School of Biological Sciences at Monash University, Australia, current president of SCAR -Aug 2016),
- ['Path to Impact...how can scientists influence Antarctic policy'](#), Dr Aleks Terauds (Senior Research Scientist and Section Head of the Biodiversity Conservation section for the Australian Antarctic Division; Standing Committee for the Antarctic Treaty System):

Introduction by Dr Jose Xavier:

We are about to start our Mini Symposium. First of all, I would like to welcome you to this Mini Symposium that links Antarctic Science with Environmental Protection, and having a unique

opportunity to celebrate the 25th anniversary of the Madrid Protocol. Actually, it's been quite a busy year on celebrations, particularly in the last Antarctic Treaty Consultative Meeting in Chile, it was quite overwhelming of the success that the Madrid Protocol has been over the last 25 years.

Before we start, I would like to thank not only the invited speakers who have kindly accepted to work with us in the last year in planning this Mini Symposium, but also and particularly the people that have been working quite hard in the last year in planning this Mini Symposium: Annick Wilmotte from Belgium, Kevin Hughes from the UK, Gabriela Roldan from NZ, Daniela Liggett from NZ, who has been working with us quite closely. Also, the local organizers, it has been a pleasure to be in Kuala Lumpur and we have been very welcomed here.

We also welcome our colleagues that are here from the Committee of Environmental Protection and also SCAR-SCATS (Scientific Committee for Antarctic Research – Standing Committee for the Antarctic Treaty System). Actually, it's a privilege that two of the invited speakers, Aleks, highly involved and active member of SCATS, and Steven Chown, who led it and also David Walton, who is around and was one of the leaders of SCAR-SCATS, the Standing Committee for the Antarctic Treaty System. So, thank you very much, your hard work has really paid off in this last year organizing this Mini Symposium.

This Mini Symposium was initially planned, and it is planned today for you, Antarctic active scientists. This is our audience. This was always, since day one, planned for you to think why we should link the science that you do into policy-making. If you are a scientist, in a research group, we consider that it could be quite a challenge still today. Why should you do it, if you haven't done it before? Why is it relevant when you are under pressure every day to publish? Or, if you don't have guidelines from your research institute, for example? Could this be a good way, for example, if you link your science into policy, to giving something back to the community? to reinforce the way we do science, not only today but to influence what it can do in the future, even improve the way, or to minimize the impact that can have in the environment? Could this be a good way to get better grants, because you have a broader view of the implications of your science? But also, as you have heard in the last hour, how can influence the career of early career scientists? Actually, various talks were about conservation and led with some repercussions on policies.

We also thought, as a coordinating committee, that we have (in the audience) our peers from the Commission of Environmental Protection and others that are not scientists, and this Mini Symposium is also for you. During this Conference we have various sessions that link science into policy. This is quite an important moment in time that we have today.

The Antarctic Treaty, as you know, was signed in 1959 and is recognized as one of the most successful international agreements. That is something we really appreciate. So, what we do in the Antarctic, the science that we do and the policy that we have today has been recognized internationally at the highest levels. But there is still a lot of work to do. Actually, bringing science into policy can be quite a big challenge. The Madrid Protocol, or the Protocol for Environmental Protection to the Antarctic Treaty was signed in 1991 and entered into force in '98, reiterating again that Antarctica is a natural reserve devoted for science and for peace. It was then when the Committee for Environmental Protection started their work and had major implications in the last 25 years.

In a nutshell, what we are going to learn during these talks is to provide examples for you as scientists on how you can engage with policy, how can you bring your science into policy. To learn more about the Commission for Environmental Protection and the hard work they have done in the last 25 years. Also, to learn more about this community, to learn that, actually, policy makers are our friends and they can bring science to another dimension. We definitely need to work together more.

Just a couple of notes before we start: do write the questions that you have for any of the panellists and even if we do not have time, do please come back to us with your questions. Your input is extremely important to us and, while we celebrate the 25th anniversary of the Madrid Protocol, we hope this Mini Symposium could be another bust to reinforce these connections between Antarctic science and policy. Thank you so much. can

[Introduction by Dr Annick Wilmotte:](#)

My role is to give you the structure of this Mini Symposium. During these two hours that we have, we will have a short introduction by the president of SCAR, Dr Jeronimo Lopez. Then, six colleagues, either scientists or policy makers, or a mixture of both, will shortly present some aspects of their work, of the CEP and linking with Environmental Protection. Then, because this Mini Symposium is for you, there will be time for a panel discussion. We have microphones placed in the corridors and you are really welcome to ask questions, have your opinion, interrogate and receive your answers. Because we are also involved in a scientific paper on this initiative, we have asked to record this Mini Symposium. But, if any of you have objections to it, please let us know and we will delete the part where you had participated. Also, this recording will be used only for scientific purposes, we rely on Daniela Liggett's stewardship on the ethical handling of such material. We follow all ethical procedures thanks to her.

And last, please don't forget to answer the survey. We have put the link on the slide here, but if it is too complicated just send an email to Gabriela Roldan and she will give you access to the survey. This is part of the research we want to do concerning the link between science and policy-making, which will include this survey and also some interviews. Thank you very much.

Dr Jeronimo Lopez-Martinez: SCAR's role in the Antarctic Treaty System

SCAR's missions include to provide advice to the Antarctic Treaty System, especially through the Antarctic Treaty Consultative Meetings and since the Protocol exist, to the Committee for Environmental Protection (CEP). But SCAR has been paying attention to the Conservation in Antarctica even before the Madrid Protocol. Since 1970, it was in a SCAR Subcommittee on Conservation, this was under the working group on Biology. Later, it was connected with a specialist group of Environmentalist and Conservation (COSEAC) and this was the main way to connect with the Antarctic Treaty Meetings. A person that was in a key position in this period, in the early years of the (Madrid) Protocol has been David Walton, who is here in this meeting. But when SCAR structure was reviewed in a big manner in 2002, this was changed and in the first years David Walton continued there until 2005 in the new subsidiary Committee within SCAR, that is the Standing Committee of the Antarctic Treaty System. Since 2005 to 2015, in these ten years, the chair for this important standing committee has been Steven Chown, who is here. That has been a period where the position of SCAR has been reinforced in front of the Treaty Meetings and SCAR appreciates very much the personal contributions of Steven and all the science community that is behind it. Since 2015, the place has been occupied by Aleks Terauds, who is now the chair for this Committee.

During this time, SCAR participated and has the status of observer to the Antarctic Treaty Meetings and CEP meetings, a status that also has COMNAP and CCAMLR. Every year, SCAR presents a different number of Information Papers and Working Papers, about eight to twelve of these. The number is not important, is more important the content. But every year, there are some papers with important content presented.

SCAR has contributed since the start of the Protocol in many ways: contributing to the Recommendations, the decisions and Agreements adopted by the CEP. For instance, the scientific use of animals, the introduction of non-native species, the collection of meteorites, the impact of noise on mammals. As you can see, these are not specifically biological issues, for example of impact on colonies. Sometimes SCAR's contribution is jointly with COMNAP, because many times the scientific and operational issues are very connected. Contributions of this kind, in many cases, have been in the form of Codes of Conduct that have been adopted by CEP and ATMC. In the (Antarctic)

Treaty meeting in May, (the last contribution) was in the activities in Geothermal Areas. This was a paper presented by SCAR and adopted as a Recommendation by the CEP.

I would like only to comment in short, that this idea to advice to the Antarctic Treaty System and in the framework of the (Madrid) Protocol, is, and I think it should continue being a priority for SCAR. I think we are in a very good way. The SCAR positioning in front of the (Antarctic) Treaty was reinforced in the last years and this is very good. I, we appreciate very much that the chair of the CEP is here involved in this Mini Symposium, the Secretary of the Antarctic Treaty is also a participant in this meeting is an excellent sign of that, the chair of COMNAP is also here; I think this is an excellent way to push all together in the same direction that is indicated by the (Madrid) Protocol, and I hope this Mini Symposium will contribute to it. Thank you very much.

Dr Ives Frenot: 'The Madrid Protocol and the Committee for Environmental Protection: a historical perspective'.

Good morning everyone, dear colleagues. First of all, I would like to thank SCAR and the organizers of this Mini Symposium for the kind invitation to present this talk.

As you are all well aware, Antarctica is a white spot from space but under the ice is a huge, huge continent of fourteen million square kilometres in area. This continent is a very remote place surrounded by the vast Southern Ocean. It was also discovered very late and there were few economic activities after its discovery, mainly in the first part of the 20th century, activities by sealers and whalers, both in the Sub Antarctic islands and along the coast of the Antarctic Peninsula.

There are, of course, likely mineral resources in Antarctica but the nature and quantity have remained largely unknown. The last important fact is that we have seven claimant countries in Antarctica.

In 1957-58, more than sixty countries, four thousand scientific organizations and twenty five thousand scientists were involved in a very special scientific event, the International Geophysical Year (IGY). This era demonstrated a high interest on this region for scientific research. IGY opened the door for the next fundamental step for the future of Antarctica: it created the best conditions to make Antarctica a continent dedicated to science. I recall that, at this time, the political situation of world was very critical with the two East and West blocks confronted. Antarctica appeared as a location of the planet where we could work without such political pressure.

The Antarctic Treaty was signed in December 1959 by twelve countries and entered into force in 1961. It is really a unique example of joint international governance and it has been until now very successful, even with plentiful of consensus and decisions and quick responses to prevent security issues in Antarctica.

In 2016, the Antarctic Committee counted fifty six States to the Antarctic Treaty, the most recent being Portugal, and twenty nine of these Parties are Consultative Parties. These Parties have voting rights under the Treaty. The basis of the (Antarctic) Treaty is the status quo regarding the territorial claims, so it is very important for our work in Antarctica today. The second basis is that the continent is dedicated to peace and science, it means freedom of scientific investigation in Antarctica, freedom on scientific station settlement and the Treaty includes that we have cooperation through information exchange, personnel exchange and scientific observation exchange.

Following the entry into force of the (Antarctic) Treaty in 1961, the Parties have negotiated free standing international agreements. These are: the Convention for the Conservation of Antarctic Seals (CCAS), the Convention for the Conservation of Marine Living Resources (CCAMLR), Convention for the Regulation of Antarctic Mineral Resource Activities, signed in Wellington in 1988, but this Convention was never ratified so it has not entered into force. The last is the Protocol on Environmental Protection to the Antarctic, also called the Madrid Protocol. These three ratified elements, CCAS, CCAMLR and the Madrid Protocol, constitute what we call the Antarctic Treaty System.

The Environmental Protocol was agreed in 1991, following the demise of the negotiations in the Wellington workshop. The Protocol designates Antarctica as a natural reserve, devoted to peace and science, and the reason that Antarctica has such a high environment standards is to ensure that it is valued as a global scientific laboratory.

The (Madrid) Protocol entered into force in 1998 and it is also important to mention that there is no expiration of the Protocol. Preserving Antarctica as a valued scientific resource is one of the primary proposals of the Protocol. This is reflected in article 3 of the Protocol that states: 'activities shall be planned and conducted (...) so as to accord priority to scientific research and to preserve the value of Antarctica as an area for the conduct of such research, including research essential to understanding global environment'. To this end, scientific research is necessary to support and improve environmental management outcomes.

One of the most known articles of the Protocol is article 7: the prohibition of Mineral Resources activities and this article reads 'any activity relating to mineral resources, other than scientific research, shall be prohibited'.

The Environmental Protocol itself sets the standards for environmental protection. The more detailed rules are contained in six Annexes: the first one on Initial Environmental evaluation, the second on Conservation of Fauna and Flora, the third on Waste Disposal and Waste Management, the fourth on Prevention on Marine Pollution, the fifth on Area Protection and Management, and the last one on the Liability arising from Environmental Emergencies. But this last one was agreed in 2005 and is not yet ratified and has not entered into force.

The Protocol includes the Committee of Environmental Protection, the CEP, and the function of the CEP 'shall be to provide advice and formulate recommendations to the Parties in connection with the implementation of the Protocol, including the operation of its Annexes, for consideration to the Antarctic Treaty Consultative Meetings (ATCMs)'. Article 12 of the Protocol lists the realms on which the CEP should advise the ATCM. These include: e) means of minimizing or mitigating environmental impacts of activities in the Antarctic Treaty area, g) the operations and further elaboration of the Antarctic Protected Area system, i) the collection, archiving, exchange and evaluation of information related to environmental protection, j) the state of the Antarctic environment, and, k) the need for scientific research, including environment monitoring, related to the implementation of this Protocol.

There are 37 parties, which are listed on the slide, and all this Parties are active participants on the CEP. Notably, there are more member of the CEP than there are Consultative Parties to the Antarctic Treaty, making the Committee the largest of all the bodies of the Antarctic Treaty System. There are three formally designated observers to the Committee (SCAR, CCAMLR and COMNAP) and a number of invited experts (ASOC, IAATO, IHO, IPCC, IUCN, UNEP, WMO).

Before giving the floor to my colleague Ewan Mclvor, the head of the CEP my message to you is that science input to the CEP is essential for the protection of the Antarctic. Thank you very much.

[Ewan Mclvor: 'The Status of the Madrid Protocol and the challenges of today'](#)

I would like to start by congratulating our Malaysian hosts for a fantastic event here and thanking the Mini-Symposium organizing committee and SCAR, for organizing what I think is a very timely and important discussion.

I have the privilege to work quite closely to the Antarctic policy and science interface, so it is a real pleasure for me to have the opportunity and get immerse in the world of Antarctic science at these conferences. I really take a lot away from the discussions and the presentations here. So thank you also for that.

We just had a presentation from Ives, which has brought us all up to speed of the functions of the Madrid Protocol and the Committee for Environmental protection, which I would refer to throughout as the CEP. I'll speak about how protecting Antarctica continues to be the focus of international attention and some of the challenges of today with reference to work of the Parties of the CEP.

Regarding the status of the Madrid Protocol, and typically I'm stating the obvious, as you've heard the Madrid Protocol entered into force in 1998. So that means that today there is a binding international agreement that seeks to ensure the comprehensive protection of Antarctica as a natural reserve devoted to peace and science. As an up-to-date indication of the Antarctic Treaty Parties support to that objective, is relevant to refer to the outcomes of the Antarctic Treaty Consultative Meeting held in Santiago earlier this year, and in particular I make reference to the Santiago Declaration on the 25th Anniversary of the Madrid Protocol. In that declaration, the Antarctic Parties stated their strong and unwavering support for the objectives and purposes of the Madrid Protocol, including the mining ban, and they also pledged to strengthen, further strengthen their efforts to preserve and protect the Antarctic environment. Of particular relevance to subject of this symposium, the Parties also reaffirmed the importance of drawing on the best available scientific information in informing the protection and management of Antarctica.

The Santiago Declaration was a fitting way for the Parties to mark this significant anniversary, the 25th anniversary of the Protocol. But it is worth highlighting that environmental protection has been the clear focus of discussion at the annual Antarctic Treaty Meetings, not just this year but for the last 25 years.

A further indication of the health of the Madrid Protocol can be drawn from the increase in number of State Parties to the Protocol, from twenty six in 1991 to thirty seven parties today, as we just heard from Yves. And there is good indications that this number will continue to grow. On that point, I would like to take the opportunity to warmly welcome the announcement made by the Minister last night that the Protocol will enter into effect for Malaysia next month. So it will be wonderful to welcome Malaysia as the 38th party to the Protocol and as a member to the Committee for Environmental Protection. Regarding the status of the Protocol, in summary I say it remains in high

level of international support for the Madrid Protocol as the best means in advancing the protection of the Antarctic region.

Despite this strong international commitment, that doesn't mean that there are any grounds for complacency. Indeed, the establishment of the Committee for Environmental Protection arose from the recognition that the Antarctic Treaty parties would continue to require expert advice on how best to address ongoing and emerging environmental challenges facing the Antarctic region.

A general challenge for the CEP arises from the fact that our knowledge of Antarctica is not complete and the situation is not static. To effectively fulfil its role, the CEP requires a sound understanding of things like what is the state of the Antarctic environment, how is it changing and how is it likely to change in the future, how do human activities interact with the environment and what are the consequences of those interactions. Also, what are the environmental implications of pressure arising from activities outside the Antarctic Region. To help focus its activities on most important issues, the CEP has for many years, utilize a rolling prioritize five-year Work Plan. The issues identified in the Work Plan reflect the CEP members' views on the main environmental challenges facing Antarctica. Many of these issues, I've noted, are the subject of discussion in presentations this week.

I don't have time to rush through all those issues now but you can see in a very broad way those issues are listed on the screen. If you are interested you can look at the details on the Work Plan, the URL is provided here on the screen (www.cep.aq). But I would like to briefly touch on the higher priority issues identified by the CEP. The first relates to addressing the risks to Antarctica biodiversity associated with non-native species. There has been good progress made on addressing the risks of species to be transported from outside the Antarctic Region to Antarctica, and also, on the basis of excellent research input provided by SCAR. But CEP has an ongoing and forward work programme in non-native species that will seek to establish ways to effectively monitor for, and respond to species that do get establish in Antarctica. Also, to look at effective ways to address risks associated with the transport of species between bioregions in Antarctica, and risks associated with marine species introductions.

The second issue relates to understanding and addressing the environmental implications of climate change in the Antarctic for the protection and management of the environment. This is the subject of a recently developed CEP-Climate Change Response Work Programme, and that Work Programme aims to identify actions to help prepare for, and build resilience to the environmental impacts of a changing climate. The SCAR Antarctic Climate Change Environment Report and annual the updates provided by SCAR to the CEP and the Treaty Parties are an excellent and valuable input for this work.

Thirdly, I would like to mention that the CEP is undertaking work in support of the Parties desire to insure the appropriate management of Antarctic tourism, by better understanding how tourism interacts with the environment and potential consequences of those interactions. A priority for the CEP's future work in this regard is developing a practical means of identifying and devise the sensitivity of sites to tourist visitation, including as a basis for monitoring and possible future management action.

The final priority I would like to mention is the further development of the Antarctic Protected Areas System. This relates to a commitment in the Protocol into identifying designate protected areas within a systematic environmental geographic framework. An excellent science-based product, such as the environmental domain analysis of Antarctica, the Antarctic conservation biogeographic regions, and also the assessment of important of important bird areas in Antarctica, are fundamental resources for the work in this regard.

Further engagement with the science community will be essential as we continue to work on these and other challenges, because without relevant, timely and high quality scientific information, the CEP will clearly lack of a critical input for the policy-making process.

Which brings me to my final slide. When the Antarctic Treaty Parties adopted the Madrid Protocol in 1991, they recognised the value of Antarctica as a place for conducting globally significant science. They also recognized the importance of the role of science in informing the wise management and protection of the Antarctic region. And 25 years on, this is clearly the case presently. SCAR has been, and no doubts will continue to be, an active contributor of high quality scientific advice to the Antarctic Treaty System. This is where I would like to end, with an advertisement, and that is to encourage any of you who have an interest in this regard to come forward and to make further contributions to this work. You shortly hear presentations about the SCAR Standing Committee of Antarctic Treaty System, which from the CEP perspective plays a really important role as the main interface between the Antarctic science community and the Committee for Environmental Protection. You will also hear about the Antarctic Environments Portal, which is emerging as a valuable source of policy-ready scientific information relevant to the CEP's priorities.

And finally, I just would like to say please do also feel free to contact your national representatives to the CEP. I hope you can see from the slide that they are really quite a friendly bunch.

Thank you very much.

Dr Andrew Constable: 'Linking Antarctic science and policy: a marine perspective'

Good morning everybody. It is with great pleasure that I have been putting together this talk since being invited and I would like to thank the organizers of this mini-Symposium for inviting me to have a think about the link between science and policy from a marine perspective. I worked for thirty odd years in the CCAMLR environment and I started at the same time the Minerals Convention was being negotiated, and saw the rapid transition to the Madrid Protocol over five years. It was quite extraordinary period and science played a fundamental role in that.

What I want to do in this talk is not just talk about from a marine perspective but, how do you channel science from policy. To me, the link between science and policy is not the provision of science and then take that up into policy. It's actually the harmonization of science and policy, it's about scientists and policy-makers working together to deliver an outcome. And the Antarctic environment is a unique environment because we have to work with consensus.

If you look at the map on the bottom right of the screen you will see that this was produced around the 1600s. In Jennifer's talk this morning, she indicated that her model failed because it had the ice sheet extended way out to the Southern Ocean. Well, I think these cartographers got it right in the 1600s and Jennifer, in fact, got it right and this is a sign of what the pre-history size of the ice sheet was and that we are really experiencing climate change. But it might just be uncertainty in our cartography and the scientific information going with it.

But, how do we deal with that?

We heard already from Yves and Ewan about the Madrid Protocol, and articles 2 and 3 are essential to think about that from a science perspective. On the map you can see a solid yellow line representing the area of the Antarctic Treaty. Is the 60 (south) parallel and the red lines indicate the 2000 metres isobaths. Most of the interest in the Antarctic Treaty System is in waters shallower than the 2000 metres isobaths, even the krill fisheries concentrate in those areas. You can see that, from a marine perspective, is only a small area compared to the entire Southern Ocean that we might be dealing with, as well as the Antarctic continent.

The CCAMLR area, which was negotiated by the entire Antarctic Treaty Consultative Parties after CCAS was brought into force, it was extended to take up to the Polar Front and that line, that yellow line is the extent of the CCAMLR area. But there is an area of overlap south of 60 degrees.

When you look at articles 2 and 3 of the Madrid Protocol, is a very important part of the Antarctic Treaty System. In the preamble to the Protocol, it actually talks about reaffirming the objectives of CCAMLR, so there is this fusion in the marine environment which goes anywhere that is marine.

There is a fusion of CCAMLR requirements and the requirements of the Protocol. What is really interesting if you look at the CCAMLR convention, in articles 3 and 5, it indicates that even for countries that are parties to CCAMLR but aren't parties to the Antarctic Treaty, they still have to abide by the protection mechanisms that are instituted by the Antarctic Treaty and the Madrid Protocol.

So, there is this powerful fusion between these two bodies. From the marine perspective, the Madrid Protocol has something to offer in the management the marine environment in that area.

So, what can we do as scientists when we look at articles 2 and 3 of the Protocol? One of the principles is to limit adverse impact on ecosystems. What are those types of adverse impacts and how we might go about limiting?. They are good science questions to inform policy. There are a number of points that the Antarctic Treaty Consultative Parties need to avoid such detrimental changes to species and populations, to not cause threatened to endangered species to current to going further, and to not to degrade areas. How do scientists provide the information so it can be brought into effect? There is also a requirement to monitor, particularly for early warnings of adverse effects. Can we stop them from happening? Can we actually detect those? Can we assess the effects once the activities have been undertaken? Can we actually identify when there might be unforeseen effects? These are very important questions from a science perspective in order for the Antarctic Treaty Consultative Parties to do their business.

What is also really important is that this information is needed according to the Protocol. This information is needed prior to activities being undertaken. The activities should be planned and coordinated and undertaken with these ideas in mind. Scientists have a big role to play right through this process.

What is our challenge? Here I am going to read through some slides to give you a perspective about how you can deliver science into this policy framework. A core challenge as a scientist in the Antarctic Treaty System is that decisions are made in consensus, they are evidence made, evidence is based on science and science itself is founded on scepticism, is never one hundred percent sure. For many of us, we might get ask a very important question by a policy-maker and we might say 'maybe this..., maybe that..., there is this view over here..., maybe you should talk to them too'. We are never quite certain about what advice we might deliver and as a result, consensus. Which is a grant to proceed, might not be full agreement in the proposition but is at least an agreement to proceed. How do we actually deliver that given there is this debate among scientists?

I think we can, but there is another challenge that we face. If we move from the top left to the bottom right (of the screen), the region of interest is the region that managers are interested in. As scientists, we might do ship transects, we might go drilling on the ice sheet or something like that, but we might have transects which are large scale but there are still small compare to the region of interest. We then have stations at particular locations or at particular times, and most of us will spend most of work out analysing the samples. When you try to go back through all of that process, you can see that to deliver science into management requires us to upscale the work that we spend most of our time on. For me, as an Antarctic scientist as I am sure you have experience this, we can't do it alone. I think that is one of the great things about SCAR and the way it is organized, and the Antarctic community is organized, we can actually bring scientists together to address the big questions even though our own scientists are only doing small scale relatively to those management questions.

How do we link science and policy? I want to walk you through this. Don't be disturbed by the number of boxes in the flow chart (shown on the screen), but this eventually will show the links between science and policy. That top line is the overall objective that we see written into conventions. On the left you can see what we are seeking in the Madrid Protocol and in CCAMLR is the conservation and protection, and on the right you can see that there is some idea of strategic processes for mitigation, avoidance and adaptation. If you like, these are the CEP and IPCC. What they are interest in is what the status is now? What is the status likely to be? And what are the gaps of knowledge that are important for trying to see our way clear.

Science plays a number of roles, having set status and having a model for the future. I thought Rob (De Conto) this morning showed this morning the importance of good models for looking into the future. And even they may be uncertain, they are important to take into account. I am not going to going to that in further detail but I am happy to provide that for further discussion.

In the last couple of minutes, I just want to give you some examples. Tourism and predator colonies: what do we need to do as scientists? Tourists go there, penguins change their behaviour. Do they? Good question. How do we manage the interactions between the tourists and the colonies? In the long term, though, what is going to happen to the colonies as a result of tourism? I thought Jamie, this morning, articulated very nicely how developing models to better understanding the colony dynamics is going to be really important for being able to look at the effects of people on them. In the end, we need to know about what are the long term trends and abundance, so we should be monitoring those as well.

Protected areas is a really important case. I showed you here the boundaries of the proposed East Antarctic representative Protected Areas. These areas were designed as reference areas, as well as important areas for conservation in which there would be careful management of fishing and research activities. A recent study by Dean Raymond and his co-workers shows the importance of foraging habitats. Those areas are important for predators, and they allow us to monitor change if we can set them up as reference areas. They have an important role, not only protection but also being able to tell us about the future.

A big question that we face right now is: what is the current state of the ecosystem? We heard about different states: the krill-based system and the fish-based system, Rowan talked about that this morning. They all depend on the environmental states and the relatively abundance and relatively importance species will vary accordingly. But we don't know where the system is now. One of the things that are number of us is discussing at this meeting is about benchmarking the Southern ocean ecosystem, so we can identify what is the current state of the whole of the Antarctic and the Southern Ocean marine system. Can we develop plausible for ecosystem models, are then start to tell us about the consequences of change and the consequences of human activities.

Just to recap quickly, science has a very important role to play in policy and decision making. Scientists need to be able to harmonize their work and be able to work together to provide the best outcomes in a policy setting. That is the key question and I think that if you would like to see more about what questions the scientists might ask with respect to the Madrid Protocol, I encourage you to read article 3 of the Protocol because is a very important part of the system. Thank you

[Birgit Njåstad: 'Antarctic Environments Portal: giving your research policy impact'](#)

Thank you to the organizers of this mini-Symposium. As the other speakers, I believe this is a very important opportunity for us to interact between scientists and policy makers. It's a pleasure to be here to talk to you. I should also say good afternoon, as we have moved into the afternoon session today.

I am here today to let you know why and how you can and should give your research policy impact. In the nine minutes that I have been provided for this purpose, I will briefly introduce you to and remind you about the Antarctic Environments Portal, as an interface too between science and policy. I will also say a few words about the motivation behind evidence-based policy making, I'll talk about some challenges that we are facing in this regards, and I will then come back to highlight the Portal's role as one, not 'the' solution to this effect.

To talk about the Portal which is the title of my talk, let me run through some of the basics of it. The Antarctic Environments Portal was formally launched in 2015, only one year ago, after been developed over a number of years from an initiative from New Zealand. The Antarctic Environments Portal is a web-based available source of defensible information on environmental issues targeted at managers and policy-makers. In particular, it targets the members of the CEP that you have heard about and the Antarctic Treaty Parties. The Portal aims to close the increasing growing gap between the scientific knowledge, and masses of it in one hand, and the policy making on the other. The Portal consists of short articles on the management of relevant topics, and I think, when you go into the Portal to look in there you will see a number of issues that Ewan pointed out on his talk of CEP priority issues. You will see these reflected in the topics' list in the Portal today.

The articles in the Portal conform to a prescribed style, are apolitical, contain no recommendations and aim to provide an accurate representation of the current state of knowledge contained in the peer-reviewed literature on the topic in question. The content is developed by key scientific experts and the subjects to a robust editorial process.

Even though this is the theme of my topic, time does not allow me to go into the details of the Portal but I urge you to visit www.environments.aq and take some time to explore the Portal and its content if you haven't done so already. And if you have, you might want to do it again, it is evolving constantly. I would, however, like to stress that the Antarctic Treaty Parties have recognized the Portal as an important source of scientific information. They have also requested that SCAR use the Portal actively to provide scientific advice to the Parties, and have further more encouraged the scientists to participate in preparation and review of articles for the Portal. All this you can find out in the Resolution 3 of the Antarctic Treaty Consultative Meeting 2015, one year ago.

Why is it important to make science accessible to the policy makers? I would start by saying that policy makers simply put, and we can talk about this more later, but simply put is the effort to develop policies which serve to promote an overarching aim. In the Antarctic context, the Environmental Protocol, which we are celebrating here today and of which we have talked about, constitutes the framework for the development of environmental policies, setting overarching goals and directing actions towards protection and conservation. There are, of course, other drivers that frame policy in Antarctica as well, but I am not going to detail these today.

Policies should and are known with developing broad analysis and assessment of all available and relevant information. It is important to know in this context that it has over the last decades, become more and more important to build environmental policies, upon de foundation of solid and robust systematic review of scientific evidence rather than on perceived knowledge and the

precautionary principle on them. These are not two different things but there is a shift towards a more 'standing on the evidence' itself to make the decisions more robust in making.

That scientific evidence plays such a key role in Antarctic policy making, it is not a flushing thought or wishful thinking, but it is clearly stipulated as a prerequisite in the Environmental Protocol, I would argue. The Protocol, in fact, specifically invites the science community to contribute to the shaping of the Antarctic environment policies, as well as request the policy-makers to make use of such contributions. I refer here to article 12.2, which you can see on the screen. SCAR in particular plays an important role in putting forward a scientific bases for the policy deliberations. We have heard that stated by other speakers, and I am sure you will hear more about it from Steven and Alek as they take the floor after me.

There is a vast and increasing amount of research been undertaken in Antarctica, but I argue that neither the individual members of the CEP, the Committee itself and SCAR really have the sufficient organizational means to carry out in depth analysis of the scientific basis for all issues that are and have been under discussions by policy-makers. A strong interface between science and policy will, however, be even more essential for future decision making as activities in Antarctica increase and diversify. That is, as Antarctic conservation becomes more and more complex, the more important it is to ensure the best possible foundation to build policies upon.

Collecting and understanding the scientific evidence is not a straight forward task. From the policy making side of things, the difficulties can possibly be summarize in the four overarching points that I put up on the slide here (on slide: The policy makers' challenge: 1) the piecemeal of knowledge, 2) the rapidly increasing amount of knowledge, 3) scientific results being published for scientific use, 4) the need for the collated "full picture"). Firstly, knowledge and understanding is produced as pieces of a puzzle in which seemingly similar studies become hard to see nuances of importance. Findings from different studies may seem to contradict each other, results may be very location-region specific. Now this, looking from a policy maker side, looking into the research results. Secondly, there is a constant production of new pieces to the puzzle, and the rate of the production is increasing. The total amount of available information is becoming incredibly large. Thirdly, the detail specific and complex scientific publications that are publishing results, scientific articles, are rarely readily or easily understood by non-experts. In this case, policy-makers are non-experts but they are experts in their field. In short, what the management needs in order to be efficient in the decision making process, policy makers need easy access to the full picture.

In flicking the coin you might notice that, in general terms, science needs to produce more and more accurate explanation as how the natural world works. Increasing our knowledge base is by

definition a step-by-step process in which we are constantly closing on the knowledge gaps but rarely completing picture fully. There is little professional incentive to communicate science to other users than the science community itself, and furthermore, evidence that is provided by scientists is used in a manner that might be considered unhazardous from a scientist view point. From example, uncertainties and important details are ignored. I think Andrew pointed to some of those issues in his talk recently.

That takes me back to the Antarctic Environments Portal. The Portal, in fact, aims to meet and resolve some these challenges and obstacles perceived both by the policy makers and the scientists. It synthesises current understanding and puts forward a full picture of selected priority issues and thereby, users' policy-makers have easy access to scientific evidence in a form that can be readily used for the purpose of policy and management. The Portal's summary articles are by key scientists in the field, that is you guys, and assure that the most important details are included. Furthermore, efforts are made to ensure that the articles are referable, providing DOI on them and do, also, find ways to show how the articles have impacted on policy making.

To summarize, and I know this is very short to try to present the Portal, harnessing scientific knowledge to support and inform policy-shaping is essential for sound and robust management decisions. The knowledge and skills to effectively engage policy making is an art in itself. The packaging of the evidence is important and surprisingly difficult aspect of the art, but here is where the Antarctic Environments Portal comes in because it provides the scientific community with a ready to use and efficient scientifically sound mechanism for presenting and packing scientific evidence to the policy and management community. The Portal provides the policy makers an easy-access information platform for use in the Antarctic decision making context. So, what I am saying is that a collaborative and concerted effort between the science community and the policy-makers towards an expanded use of the Portal where overtime we are bound to have substantial on the way and manner on which Antarctica's environmental policies are shaped and implemented. I believe this can only be for the good of the future of Antarctica. My message to you all is to go home, see how you can contribute to the Portal. You will find a package in the Conference's registry bag that says 'I have an idea for the portal', look at it, provide your input and contribute. Let's do it together. Thank you.

Professor Steven Chown: 'The role of SCAR in the Antarctic Treaty System – an environmental protection perspective'

Thank you to the Committee to inviting me to participate in this timely and interesting symposium. And to our Malaysian hosts for an excellent meeting and fantastic icebreaker last night, which was exceptionally enjoyable.

I have slightly deviated from the title that Jose gave me. I didn't warn him knowing that he would give me a stern talking if he knew in advance, but the Standing Committee of Antarctic Treaty in SCAR is just a mechanism for the advice of SCAR to reach the Antarctic Treaty System's members. It is actually SCAR that provides the mechanism, and in so doing I would say it is SCAR members because SCAR is only as strong as its members. What I would like to share with you this afternoon is simply a few examples on how this can be done, how it operates from inside SCAR rather than from an external perspective and just a few examples on some impacts that SCAR has had in the policy setting.

I am going to talk about just a few points. The first is that SCAR provides solicited advice. The Antarctic Treaty System may say 'we want to know about something'. It also provides unsolicited advice. In other words, something comes up from the science community that 'this is really important, we think it has huge policy implications' and the decision-makers and policy-makers really need to think hard about what the scientists are saying. All of this has to be based, as Birgit clearly pointed out and Ewan before, on sound evidence-based. Increasingly, that involves some form of systematic review or meta-analysis because of the sheer size and scope of the literature. And indeed, SCAR has to follow the kind of gold standard that the world has set in place in terms of systematic review. Our interest in participating is because is in SCAR's vision to provide this advice, it is part of why we exist as an organization. Also, in our personal interests and where these two aligned, we have the very best outcome. In other words, we want to, as individuals, seek to an improvement and an advance in environmental protection based on sound evidence.

You have seen a few quotes. This one is from the very first meeting of the Treaty Parties in 1961, I just pulled out one of their recommendations that highlights that SCAR has really been encouraged to continue with its advisory work. That is from the earlier days of the Treaty, it has been recognized that SCAR is really important. So we have, essentially, a mandate to work from.

You have seen this now for the third time: in the Protocol, again, there is a reiteration that SCAR really plays an important role.

Let's think about some solicited advice examples. The Stockholm Convention on persistent organic pollutants came into the Treaty and said 'so, what's happening in Antarctica? what is the status?'. The Treaty, in turn, asked the CEP for advice in what's happening. The CEP, in turn, asked SCAR for advice. And SCAR in turn said 'we have some people that are really really good in this area, we will ask them to provide us with an update'. And that is exactly how it worked. We turned into the community and said 'who is in this area?, can you provide us with an update?'. A fantastic report was produced, was put into the CEP and of course, we were able to offer advice and then fed back into the Stockholm Convention.

We have also, as an organization, we have been reputedly asked about bioprospecting. Netherlands, Belgium and the United Nations University have put together an interesting list of bioprospecting and patents, and so on that have been produced on the basis of Antarctic organisms. SCAR has been asked for further advice. 'What kind of research has been done? who is doing the research and what is the extent?', and we responded by providing information in this area.

Finally, we have also been asked about wildlife disturbance. Andrew raised that very clearly, there is all sorts of interesting and new scientific means to provide feedback on wildlife disturbance, not only from tourism but also from our own activities.

These are examples of classic solicited advice. We get asked a question and we respond. SCAR is quite a small organization, so it doesn't necessarily respond to every request for advice because there is some that quite simply cannot cope with. And this is an important thing for the community because we have to be able to say 'we can't handle it at the moment' or 'the evidence is actually not strong enough to provide with any clear advice at the moment'.

Southern giant petrels is a good example of request for advice. In 2006, the CEP was thinking about Specially Protected Species and had identified Southern giant petrel. Turns out that there weren't that many accumulated data, so SCAR held a meeting in 2008 and in the same year reported back. The key point of this example is that SCAR reached out to a number of other organizations, such as Bird Life International and said 'can you help us with an IUCN rigorous-type assessment, can you help us gather the data'. Then, we spoke to the community and said 'bring your data'. In this instance, much of that data weren't actually published. We knew that, but the (Antarctic) Treaty was pressing us for an answer. In fact, the workshop was held, an independent person led it which was Stewart Butchard from Bird Life International and we were able to feed some advice back to the (Antarctic) Treaty System. In 2009, the Agreement on the Conservation on Albatrosses and Petrels reiterated one of SCAR's key findings, which was that we didn't have sufficient evidence yet to give a good idea of trends, we might have a good idea on status but not such good idea on trends.

What we have to think as a community is how has that fed into our science funding. Because we are not only a group that provides advice, we are also a group of scientists that talk to our funding agencies about key areas of significance. And I think here, as a scientist talking back to the policy-makers, because of course we can do so, that link between some of the advice that is coming through in the higher level of policy in the Treaty and then the way funding is dispersed nationally, is the link that perhaps needs more thought in the future.

What about unsolicited advice? Well, I think David Walton was very good at giving unsolicited advice throughout his tenure. One of the key areas that he identified was that, to identify key protected species in fact, the CEP could look to the IUCN rigorous process and learn from it. That was a piece of unsolicited advice that worked very very effectively and was taken up.

Non-native species was a very curious blend of both solicited and unsolicited advice and has had tremendous impact in the Treaty System in terms of policy reform that is taken place and, in fact, on the ground actions through the Council of Manager of National Antarctic Programmes.

We have heard of environmental change and change impacts. This is a key area where SCAR ACCE report went to the Treaty. As a consequence we had a special meeting of the Treaty Parties, which then came up with the Climate Change strategy as to what could be done and what resources were required for it.

Key to SCAR's activity is that SCAR's vision and strategic plan it actually says that 'we should identify issues emerging from greater scientific understanding and bring them to the attention of policy makers'. I think for us that is very important as a community. If we think something is important we should step forward and say 'we need to pay attention to this'. I give you an example: in the current or at least the prior CEP meeting, I had a discussion with some colleagues that were present, and I hope I haven't misrepresented what someone was actually talking to me about what one of the statement was. The statement was that there was real interest in the Ross seal. The Ross seal is an interesting specie, as far as a could work out through a quick look through the literature most of the evidence on numbers can from pack ice seal survey some time ago and some genetic work. Yet, we know that there is interest coming in the species. So, as a community, we should be already thinking all the great things we hear about satellite sensing and so on, how applicable are they? Are they actually applicable? Can we give an answer back and say if this is possible or not? And that evidence can only come up from ourselves.

A further example I have is one that perhaps will it less well with many of the policy-makers. Again, from the recommendation 1-V from the 1961 (ATCM) Meeting, it was suggested that SCAR and the

Treaty Parties always makes friends with those around the world to provide better evidence. So, I have been thinking a lot about this recently, how can we actually make this work from SCAR's perspective? who should we be making friends with, learning from their procedures and actually fitting into global views? With a group of colleagues we then came up with the idea. Actually, did you know that the actual decade is the decade of biodiversity? Is in the United Nations Environment Programme Convention Biological Diversity Initiative. So by 2020 a report will come out on the State of Global Biodiversity and how are we doing. The UN or the CBD produces Global Biodiversity Outlooks (GBO). They say very little about Antarctica and there are good reasons for that, because the mechanisms are set up in slightly different ways. We ask: 'should we be thinking about this? does it have any relevance?'. As soon as you look at the twenty Aichi targets that are part of the CBD Strategic Plan, you can immediately see connexions. Sustainable management of marine living resources: we see connections to CCAMLR. Pollution reduced: what about Annex IV Marine Pollution of the Madrid Protocol. Protected areas, increased and improved: that goes to Annex V. Some very clear linkages and the question is: are we feeding the information up? So, when the world decides in 2020 how things are looking for biodiversity globally, does it also have an answer that we as a community have put forward, so stepping up to our international and global responsibilities. The icons at the bottom of the screen are used by GBO to decide globally, based on a very substantial synthesis of evidence, how things are going.

This work has been completed by a huge group of colleagues funded by the Monaco Government, SCAR and my institution Monash University together and I will give you a brief glimpse: strategic goals D and E which are listed as you can see (on screen) from 14 to 20. Antarctica is in blue and the rest of the world's assessment is in red, asterisks indicated uncertainty with three asterisks indicating fairly substantial certainty and less than that increase in decline certainty. Actually, things are not looking that good for the region. We have a huge pile of evidence that was compiled through an expert solicitation and a process of synthesizing the published available evidence, and that is not looking too good. Overall, and we put this out, this is clipped out of the SCAR website. The biodiversity outlook based on this basis, the Southern Ocean and Antarctica appear to be no better than for the rest of the world. If you are an optimist, is not worse than the rest of the world. Key though, because a fair number of people who saw this were quite negative in their perspective, was that actually the opportunity to prove things are just tremendous. This is a small community and we have a direct link to the policy world. I think from a SCAR perspective, that I a key message that I want to leave with you today: is that we have one of the easiest science policy transitions that exist, given the scope of international organizations elsewhere. We really are able to do science, in fact, we are doing science in this room, we have people here sitting asking 'how can it be done? And what

are the mechanisms from each side? how can we breach the language barrier that is so typical between science and policy interfaces?

Just to leave you with the key messages again: a) we provide both, solicited and unsolicited advice, b) it has to be evidence based, c) we have to facilitate science, that is SCAR's role but that science also feeds into policy, d) the advantages: we can really provide four major advances in environmental protection. For individuals, the real opportunity to have an impact. Many people in the science world today and especially at our University and Monash. Many of our students say they only want to do science that has some opportunity to deliver an improvement to conditions in the world. SCAR offers that opportunity and it does so through our participation and the mechanism of the Standing Committee. I would like to thank a few colleagues, a few funders and yourself for your attention.

Dr Aleks Terauds: 'Path to Impact...how can scientists influence Antarctic policy'

Thank you to the organizers of this Mini-symposium. The title of my talk, as I changed it slightly from Jose asked me to do, but really is covering the same aspects: practical impact. How can we scientists influence Antarctic policy? I look around this room and I see a number of Antarctic scientists who have used high quality science to make a successful transition into policy change. But I also look around and I see an equal number of people for whom that pathway isn't as clear. So, I am going to step back from the details in my presentation and I'm going to talk about some broad ideas that my colleagues and myself have used as we tried our very hardest to use science to influence Antarctic policy.

The first thing I would like to talk about is passion. Passion drives a lot of the work that we do in Antarctica. Why else do we go down and spend time away from our loved ones in harsh cold environments if we were not passionate about what we do. Some of the most successful science into policy transitions that I am aware of started with a passionate person or group of passionate people. So, it's hard to overstate the importance of being passionate on what you do if your burning desire is to make policy change in Antarctica. Don't work on aspects of Antarctic science that are going to improve your X Index; if you have a burning desire to change Antarctic policy work on something that you are passionate about. People are passionate about a whole range of aspects of Antarctica; we have people passionate about penguins, springtails, rocks, all sorts of the terrestrial and the marine environments. All these ecosystems, these aspects that we can work on increase our understanding and influence policy change.

Another important aspect of influencing Antarctic policy is identifying priorities. More or less, every organization has priority areas. There are national priorities: what's important to your country? If

you can talk to policy makers, communicate with them effectively, and I will talk about that more shortly, understand the priorities, link that to what you are passionate about, then you are off to a good start. The same at the international level: what's important to the Treaty? Ewan really articulated what's important to the CEP. Again, that is a great starting point where you can target your research if you want to make a difference in Antarctic policy. As Steven clearly pointed out, SCAR is also a great place to start. The SCAR research programmes, for example the implementation plans, for on the likes of Ant-Eco for example, there is some clear guidance in terms of research priorities that you could work with it and affect policy change. Priorities aren't the be-all end-all of this however, as a number of my fellow speakers have pointed out, emerging issues can also be important. Again, SCAR is a great place to bring those emerging issues, increase their profile and then bring them to the Antarctic Treaty and affect policy change.

Communication may be seen like a no brainer, and to be honest, is one of the key elements. Getting your good quality science into the policy arena and affecting change. Scientists and policy-makers aren't quite as different to each other as is albatross and an erect-crested penguin. There is no doubt that there is good communication happening in several parts of the world between policy makers and scientists. There is also no doubt that, in other parts of the world, this communication could be improved. Communicating with your policy-makers is a key element of success in transitioning your science into policy successfully. This can happen at multiple levels as I have just said. It happens at a national level but it also in international level, engaging other countries in your research. If it's not possible to undertake multinational research, disseminate your findings as widely as you can, engage with other countries researchers and with other countries' policy-makers. The more engagement, the more communication that you have at national and international levels prior to trying to achieve policy change the more successful you are likely to be in making that transition.

Publishing can be one of the most effective ways of communicating your research findings. This is a challenge for all, this is a challenge for those of us in government agencies, for example, where publishing your research may not be the highest priority. But, nevertheless, it is hard to think off a stronger evidence-base for policy recommendation than publishing your work in a high quality scientific journal. It has the added value of being independently assessed, and through the submission review and publishing process is more than likely that your work is being improved. Publishing in quality journals also allows for wide dissemination of your research. It makes it, in many cases, more accessible even getting to the point beyond the Antarctic community where many of us are focused. Getting that sort of dissemination, getting that sort of profile to that level could be a key element to make that policy-maker to sit up and take notice of what you are doing.

My fellow speakers have done an excellent job on talking about the Antarctic Treaty System. We have a real advantage as Antarctic scientists because we actually have the Antarctic Treaty System. The Protocol of Environmental Protection to the Antarctic Treaty System is quite specific about mechanisms of preserving and protecting Antarctica. You need to take advantage of this explicit direction, the Protocol give us such clear guidance in some many aspects of potential research interests that it really does put us in a good position to hit the ground running in terms of affecting policy change.

In my mind, the CEP and CCAMLR are the powerhouses of the Treaty, they have the capacity of generate and implement change. Engaging with these organizations, with these instruments of the Treaty are exceptionally important in the transition of science to policy change.

The other thing I would like to note about engaging with these bodies is that it is super important to have clear objectives and realistic expectations. These sort of expectations can be tempered or they can be worked out by engagement in communication prior to coming to these bodies. This is one of the big advantages of that sort of prior engagement, is the understanding what are they likely to be ready to accept. As Andrew clearly pointed out, is a consensus system, everybody, every single party has to agree. For this to happen, you really need to make a convincing case.

Finally, I would like to talk about the pathway, how to engage with these bodies. You can do it nationally, talk to your policy makers, understand what their priorities are, how are these linking with what you are interested in and try and work with them to take your work into the CEP or CCAMLR, for that matter. One of the advantages of doing this, is that they can help you to distil what maybe is not quite as accessible as Birgit pointed out in a scientific article, into a working paper or some other form of input that can actually be understood by policy-makers. SCAR provides you with a number of avenues, a number of ways to get into these bodies, if you like. In particular, the Standing Committee for the Antarctic Treaty System, its main role is doing this. We are very supportive of this type of research, but we are also supportive of hearing about emerging issues, as Steven put it out. We are very keen to hear what is it that you think is important. We have the capacity as an observer to the CEP, to bring these sort of research ideas and findings to the Antarctic Treaty, hopefully to facilitate policy change.

The Antarctic Environments Portal is also another aspect, another initiative I should say, that can be a very effective way or providing policy-ready science to a range of policy-makers.

I think I've used up the short time that was located to me today, and I hope I've given you at least a couple of ideas, especially for those of you to whom the pathway to policy change wasn't as clear as

to how you might effectively make the transition from your science into policy change. Thank you for your attention.

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