EDRC
ENVIRONMENT & DEVELOPMENT RESOURCE CENTRE

Scientific Advice Mechanism
to the European Commission

Stockholm Resilience Centre | Stockholm University

Report of the

INTERNATIONAL SEMINAR

RESPONSE DIVERSITY

The Role of the EU and Civil Society in Strategic Crisis Management in an Era of unprecedented Turbulence at the Planetary Level

16th meeting of the Brussels Dialogue on Climate Diplomacy

At the European Economic and Social Committee

Brussels, 24 November 2023

European Economic and Social Committee

BRUSSELS DIALOGUE ON CLIMATE DIPLOMACY

GLOBE EUROPEAN UNION
The Network for Environmental Legislators

Report of the International Seminar

RESPONSE DIVERSITY

The Role of the EU and Civil Society in Strategic Crisis Management in an Era of unprecedented Turbulence at the Planetary Level

Convened as the 16th meeting of the Brussels Dialogue on Climate Diplomacy
at the European Economic and Social Committee
Brussels, 24 November 2023

Editor: Ronald A. Kingham
Editorial Assistants: Eleonora Lucia Cammarano and Areesha Rashid

Published by the Environment & Development Resource Centre (EDRC), The Hague

---

The seminar was co-organised by the Environment & Development Resource Centre, the Scientific Advice Mechanism to the European Commission and the Stockholm Resilience Centre in partnership with the European Economic and Social Committee with the participation of the Brussels Dialogue on Climate Diplomacy and GLOBE European Union.

The views expressed in this report are those of the individual participants and not necessarily the views of their organisations, the publisher, or the seminar organisers, partners, or sponsors.

Except for any elements protected by copyright, reproduction and dissemination of material in this publication for educational and other non-commercial purposes are authorized without any prior permission provided that the editor and publisher are fully acknowledged.

To directly quote any speaker please contact the publisher.

Reproduction for sale or other commercial purposes of all or any part of this report is prohibited without prior written permission of the publisher.

Contents

Introduction 3
Opening and Welcoming Remarks 3
Ronald A. Kingham 3
Céline Tschirhart 4
Tzonka Iotzova 5

Session 1 6
Moderator: Toby Wardman 6
Understanding Response Diversity and How it Works 6
Thomas Elmqvist 6
Maarja Kruusmaa 13
Olaf Deussen 15
Olimpia Imperiali 16
Discussion 17
How to make the EU Climate Diplomacy more effective 22
Stefano Mallia 22

Session 2 24
Moderator: Ronald A. Kingham 24
The Multidimensions of the NATO Climate Change and Security Action Plan 25
Paul Rushton 25
Discussion 32

Follow-up and Closing of the Seminar 34

Annexes

I. Programme of the Seminar 36
II Participants 37
III. For Further Reading 39
IV. Organisers and Partners 44

| Introduction |

As we enter an era of unprecedented turbulence at the planetary level, we urgently need to rethink our crisis management theories, principles, and practices to be fit for purpose in the twenty-first century.

The way we respond to threats to our society is no longer enough for an interconnected, globalised and rapidly changing world. As crises become more complex, their effects can cascade and ripple to all parts of society, the economy, and the environment. They overlap and amplify each other. Their effects are not limited to specific geographical regions or sectors of society, and many continue indefinitely.

Based on the latest scientific evidence, leading experts from across Europe — including the Group of Chief Scientific Advisors to the European Commission — argue that response diversity is one of the key measures needed now.

Response diversity is an important component of resilience and represents the range of different options available to respond to disruptions and threats in general. This is a challenging concept in times when societies often strive to increase efficiency by removing redundancies — but in a dynamic and uncertain world, redundancies and diversity provide multiple options for responding to new and unexpected crises.

The purpose of the event was to discuss how the European Union and its member states could develop proactive measures to deal with multiple and interacting crises, and how the concept of response diversity could be interpreted and implemented in European policy.

Participants in the hybrid seminar included European and international policy makers and practitioners active in crisis prevention and management, civil society representatives and academics. □

| Opening and Welcoming Remarks |

Mr Ronald A. Kingham
Executive Director
Environment & Development Resource Centre

I am very pleased to open this International Seminar on "Response Diversity: The Role of the EU and Civil Society in Strategic Crisis Management in an Era of unprecedented Turbulence at the Planetary Level" and to welcome the participates including those joining on-line and watching the live streaming of today's seminar - from as far away as Brazil, Chile, and Pakistan.

This event has been co-organised by the EDRC, the Scientific Advice Mechanism to the European Commission and the Stockholm Resilience Centre in partnership with the European Economic and Social Committee. We very much appreciate the partnership with the EESC for hosting this event today.

We also wish to thank GLOBE European Union for its help in the planning for this event including through the hosting of the GLOBE EU **"Wakeup Call #14 with Professor Thomas Elmqvist"** (Video) on 11 October 2023.

This seminar is being organised as the 16th meeting of the Brussels Dialogue on Climate Diplomacy (BDCD) which is an informal network for the exchange of information and the promotion of cooperation among some 40 participating organisations including European institutions, international and regional intergovernmental organisations, NGOs and think-tanks active in the nexus between climate change and international, national, human and environmental security.

As is our tradition in the meetings of the dialogue, we will reserve time at the close of the seminar for participants to share information on their recent, on-going, and upcoming activities which should be of interest to everyone gathered here today.

Dr Céline Tschirhart
Scientific Policy Officer
Scientific Advice Mechanism to the European Commission

It's a great privilege to welcome you today on behalf of the Scientific Advice Mechanism to the European Commission to this international seminar on response diversity.

And I would especially like to express our thanks for the great collaboration we've had with the EDRC and the EESC, as well, for hosting this event today.

I will just provide a little bit of a background to this event. Some of you know it and others not – but the Scientific Advice Mechanism provides independent scientific evidence and policy recommendations to the European institutions by request of the European Commission.

It consists of three parts. First, there is the group of Chief Scientific Advisors to the EC – and Maarja Kruusmaa is one of them here today. The role of these 7 Eminent Scientists is to write the policy recommendations for the Commission.

Then there is SAPEA which stands for Science Advice for policy by European Academies. We are a consortium of academies and networks from all over Europe, and our job is to compile evidence, reviews and synthesis that inform the recommendations of the advisors.

And finally we have the SAM unit within the Commission who support the advisors in their work and liaise with the Commission directly.

In June 2021, the European Commissioner for Research and Innovation, Mariya Gabriel and the European Commissioner for crisis Management, Janez Lenarčič, both asked the advisors to provide scientific advice on the question of how can the EU improve its strategic crisis management?

So we formed a working group of experts, and we worked on it for over a year and, of course, the background to this was the COVID-19 crisis, which was very much affecting the EU still.

But also there was the recognition that crises were getting more complex, transboundary, and connected and that our methods, our practises, and our frameworks for tackling those had to get up to speed. And that is the background to how response diversity came about.

Of course we go in depth into that today and but first I'm very pleased to welcome Ms Tzonka Iotzova. Thank you.

Ms Tzonka Iotzova
Head of Unit
External Relations
European Economic and Social Committee (EESC)

Hello, welcome to the EESC. I'm really happy to see you. My task today is to welcome you here in the committee. For some of you this is the first time that you come to the European Economic and Social Committee, and you may not know exactly what this kind of European institution is. Actually, it's not an institution but a body of the European Union. As it is called officially by the Treaty, the European Economic and Social Committee is an advisory body of the EU, and its task is to give advice to the European Commission, European Council and European Parliament.

It can react to the European policy in two ways. The first way is when the Treaty requires compulsory consultation of the European Economic and Social Committee, and this is so in very many cases of European legislation and everything that has to do with European economic and social policies.

But also the committee can take the initiative to provide opinions to the European institutions on its own initiative, so we often act on our own initiative to warn the Commission and the other institutions if we see a crisis coming, if we see that there are things on which the Institutions should act. For instance, this committee was one of the instigators of the European Charter of Human Rights. We also were one of the first institutions to call for fair trade legislation in the EU and now very recently - If I come to the recent history of the committee - two weeks ago we called for a European Blue Deal, so a specific action of the European institutions to work on water, water management, water availability, because we see that even the European Union is very far away of getting to the Sustainable Development Goals on water. So for me personally, my life is crisis management every day, more or less.

I came here as a head of unit two years ago. I worked on external relations, so since then we had the Russian invasion of Ukraine. We had to provide space for Ukrainian civil society organisations to be able to work here in Brussels, but also to help civil society organisations in Ukraine to continue working, we are in direct contacts with many civil society organisations in Ukraine.

This year in February we were on mission to Israel and Palestine, and we saw that the situation was already very worrying because with civil society you can already see where the peace is under threat. Because we saw that civil society on both sides were not talking to each other, and this is already a sign of getting far apart without people to people contacts which are very important in order to avoid crisis. So, now we have also the war between Israel and Hamas
On which we are working among other things.

Within the Committee we have three groups: the group of employers, the group trade unionists, and the group of civil society organisations. A little later today our President of the Employers Group will talk to you about our opinion on climate diplomacy. This one will be adopted soon in our plenary. We are also preparing an opinion on the climate and security nexus. We also prepared an opinion - also to be adopted in December - on the crisis of in multilateralism.

So, as I told you, it's crisis after crisis. But we hope that events like this and studies and evaluations like the one you will be talking about today will help us to have a more strategic approaches to crisis.

And thank you again for being here today at the EESC.

| Session 1 |

Moderator: Mr Toby Wardman
Head of Communications
Scientific Advice Mechanism to the European Commission

Thank you very much indeed. I'll add my words of welcome to those you've already heard. My name is Toby. I am the Head of Communications at the Scientific Advice Mechanism to the European Commission. I'll be moderating the first half of this event.

The next speaker, Dr Thomas Elquist, is Professor of Natural Resource Management at the Stockholm Resilience Centre at Stockholm University. Previously he served as the lead for the scientific report "Cities and Biodiversity Outlook: Action and Policy" produced by the Secretariat of the Convention on Biological Diversity (CBD) in 2012.

He was a member of the working group on Strategic Crisis Management in the EU, and we've asked him to say a few words to introduce the topic of Response Diversity in general and to provide some impetus for the discussion for the rest of our panel.

| Understanding Response Diversity and How it Works |

Dr Thomas Elmqvist
Professor in Natural Resource Management
Stockholm Resilience Centre
Stockholm University

Thank you very much. Response diversity is an interesting concept that has quite a bit of history, but recently there's been an increasing interest in trying to explore it. You could say that the history goes back to studies in ecology and to understanding the role of diversity of responses for stability. It became clear that it is not just diversity in the number of species that is important for stability, it's what those species do and how they may differ in responses to disturbances and shocks. If you have seven species which are contributing to the same function as e.g. pollinators, but respond in the same way to a disturbance, i.e. all species decline markedly in numbers, it could just have the same effect as in the case of just having one pollinating species. So that started the interest in the role of diversity in maintaining crucial functions in ecosystems, which is important for maintaining stability or as a buffer against disturbances and shocks.

There have been other fields of research interested in response diversity, such as economics and social science, to understand responses to disturbances or shocks. The concept of response diversity is often viewed as a very important component of resilience. Resilience is a very abstract concept and very hard to grapple with and measure, but response diversity is more amenable to being quantified and measured. There is a lot of research underway in developing methods for

measuring response diversity. So perhaps here is an avenue where we can come closer to quantifying something, and when we quantify something, it's often easier to manage. It's also easier, perhaps, to develop policy since you can measure, monitor, and see what direction you're going.

There is now interest in many different fields, especially in the context of the world we're living in, where we are experiencing more and more crises—not just single crises, but what is called polycrisis, where one crisis is connected to another.

I don't know if you've read about it in the papers, but in Sudan, they have experienced 40 years of severe drought. The soil is completely dried out, and now, after one month of torrential rain, they are facing enormous flooding because the soil cannot absorb the rain. That's an example of where extreme events combine and cause a more than additive effect, resulting in devastating consequences for agriculture and the population.

Similarly, in Libya, we had an extraordinary event in September with heavy rain that devastated an entire city. These extreme weather events are now starting to affect highly densely populated areas. For example, in Sicily, fires have reached cities like Catania.

This reality compels us to try to understand how we can comprehend this new world with interconnected crises and what tools we can use to deal with these polycrises. Perhaps response diversity will prove to be a valuable concept when we try to navigate this new unchartered terrain where we need to expect the unexpected.

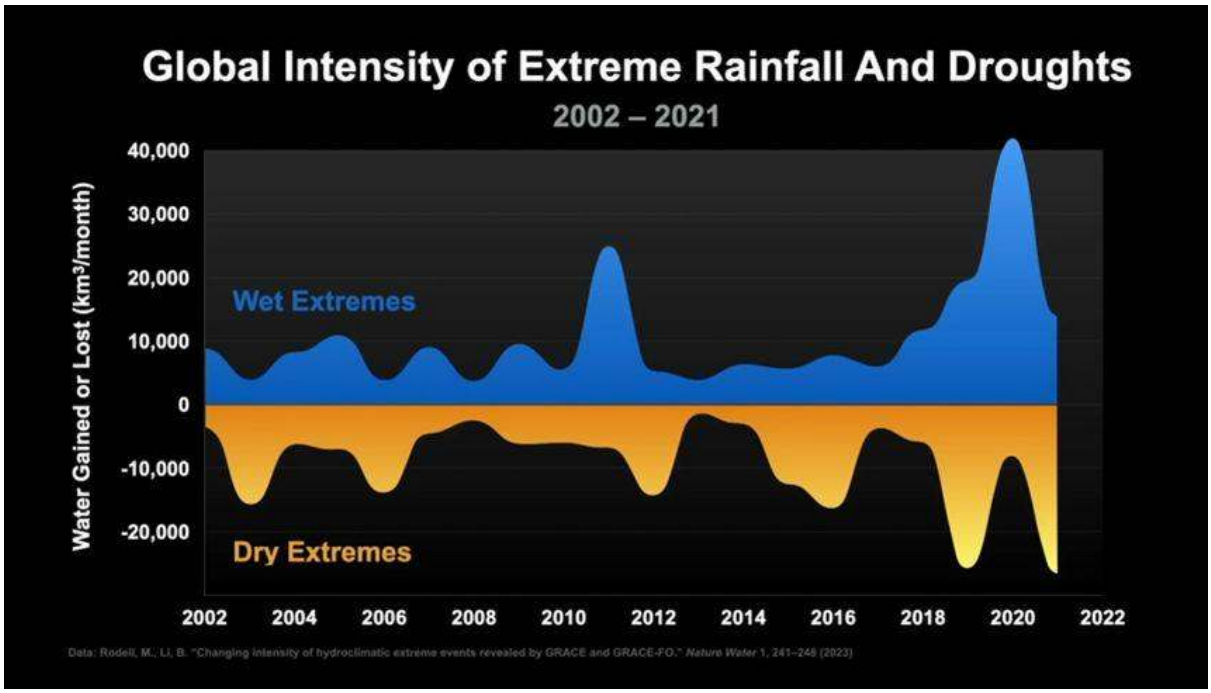


Fig. 1

I have referred to extreme drought and flooding, (Fig. 1) like what happened in Libya and Sicily. But these events also occur against the backdrop of slow processes. We use the concept of globalization, which is a very complex concept, of course. One of these slow changes is what I call "shifting diversity." (Fig. 2) This means that you might locally experience higher diversity over time, such as in food or sources of information, while on a global scale, there is homogenization. For example, you can go to a local food store here and find a rich variety of food from all over the world. If I go to a food store in Stockholm, it's more or less the same variety. Scientists refer to this as changing alpha and beta diversity. We're moving from a world with low alpha diversity (low local diversity) and relatively high beta diversity (high global diversity) to a world where, locally,

you have high alpha diversity but decreasing beta diversity. This shift has consequences when it comes to crises.

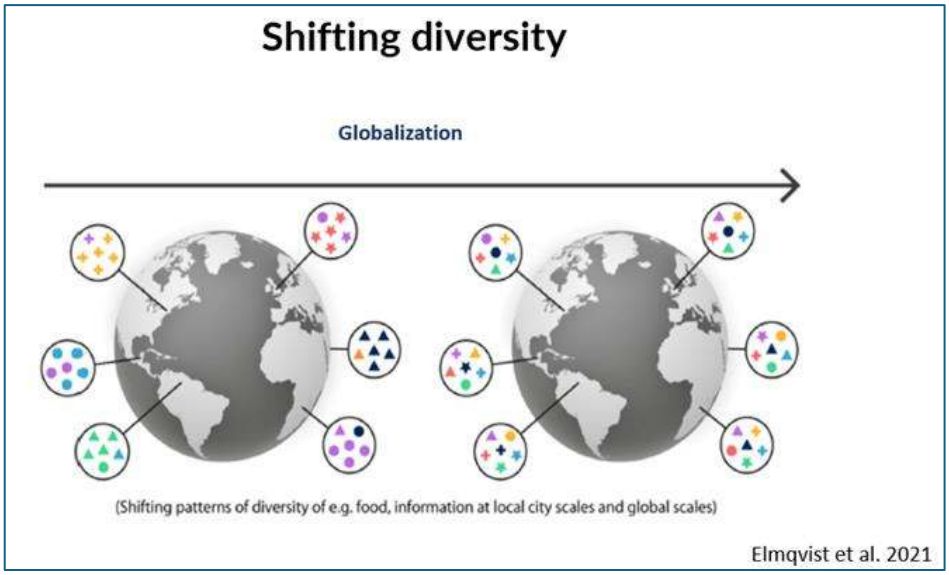


Fig. 2

Another effect of globalization is "shifting modularity and connectivity". (Fig. 3) Here you can see a change happening, albeit a slow one, where we transition from a world with high modularity and low connectivity—where settlements were more isolated and had high local connectivity but low overall connectivity—to a world with low modularity but high connectivity due to the presence of different technologies, transportation, and, generally, globalization. This shift has significant consequences. One example is the COVID-19 pandemic, where we saw the rapid spread of the virus to all countries and continents in a very short time.

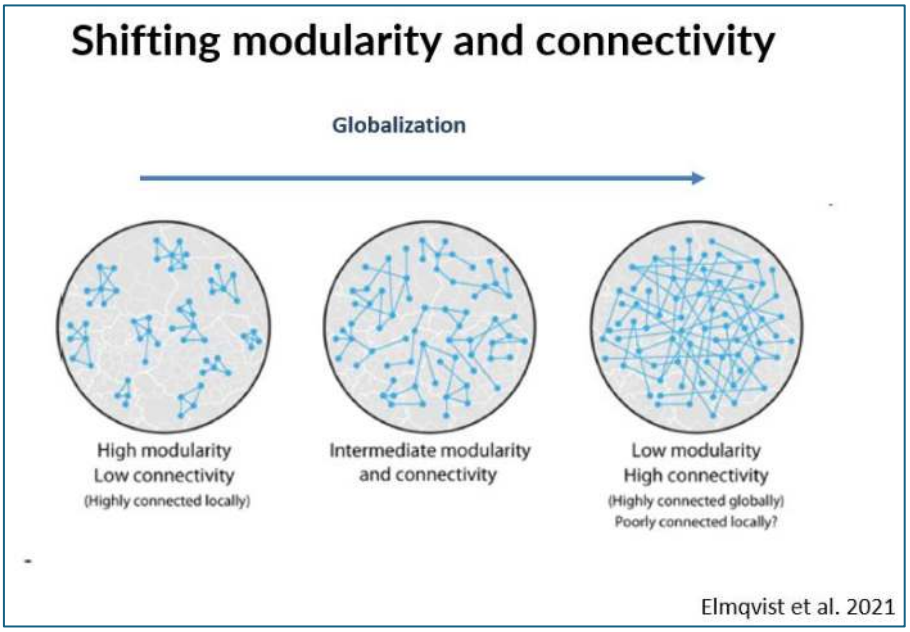


Fig. 3

Polycrisis has been defined as a cascade of crises that collide—distinct but entangled—causing damage much greater than the sum of their individual harms. The question then is: how do we deal with this new world where we might face polycrisis that could overwhelm society? If we're not well-prepared in advance, we might not have the capacity to respond effectively.

There is a long philosophical history and much wisdom that dates back centuries, beautifully encapsulated in Cervantes' "Don Quixote" with the saying, "Don't put all your eggs in one basket." This idea forms the foundation of how to deal with uncertain crises and polycrisis. It ties into the concept of response diversity, which reflects the diverse ways in which different players—be it species, actors, or infrastructures—perform functions and respond differently to various shocks. This diversity enables a system to maintain its functions despite facing a range of different shocks or polycrises, ensuring that it continues to operate in much the same way.

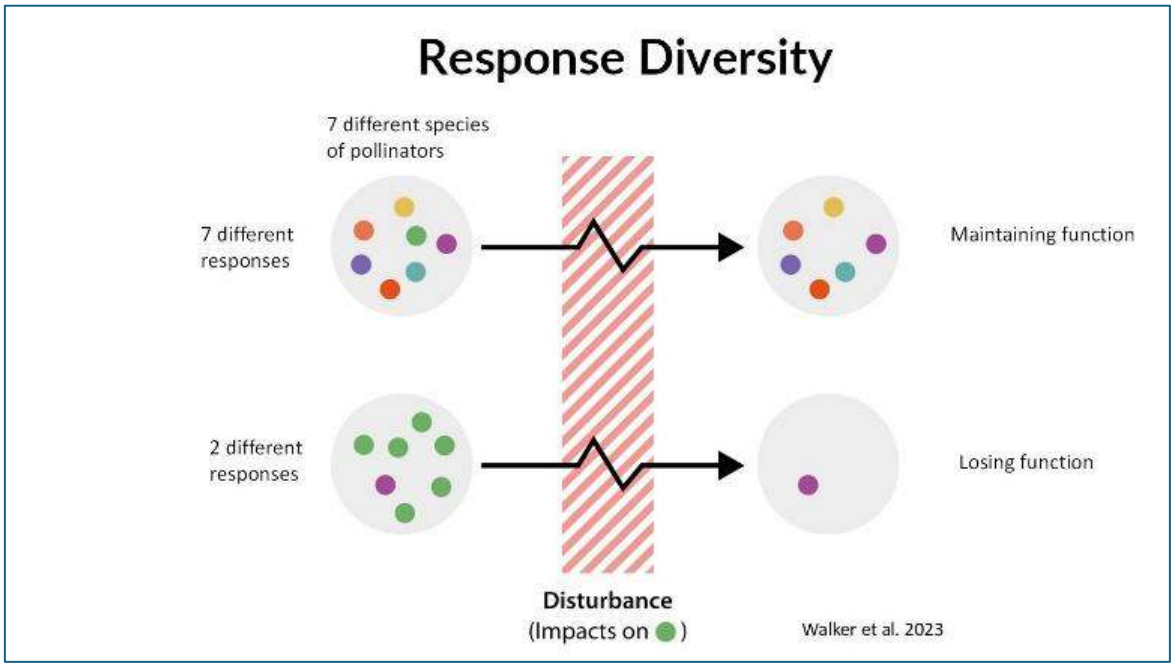


Fig. 4

This concept is part of a strategy for navigating this new world. To illustrate, consider the empirical data we have from studies of pollination. (Fig. 4) A large meta-analysis of pollination systems across the globe shows that where there is high diversity, there is also interannual stability in crop production. Whether facing droughts or floods, the diverse pollinating community remains active, ensuring continued pollination. But it's not just species diversity that matters—response diversity is crucial. You could start with seven different species of pollinators, each responding differently to a disturbance, or you could have seven species with only two different responses. In the first scenario, functions are maintained despite the disturbance, but in the second, functions are lost even though the number of species is the same. This concept can be applied to different players and entities, such as banks, financial systems, or infrastructures. (Fig. 5)

An example of low response diversity is the financial crisis of 2008. The panic that struck the world in September 2008 stemmed from the banking and financial systems' high connectivity and low modularity. As some experts warned earlier that year, when the subprime loan system began to falter, it triggered enormous consequences, some of which we still experience today.

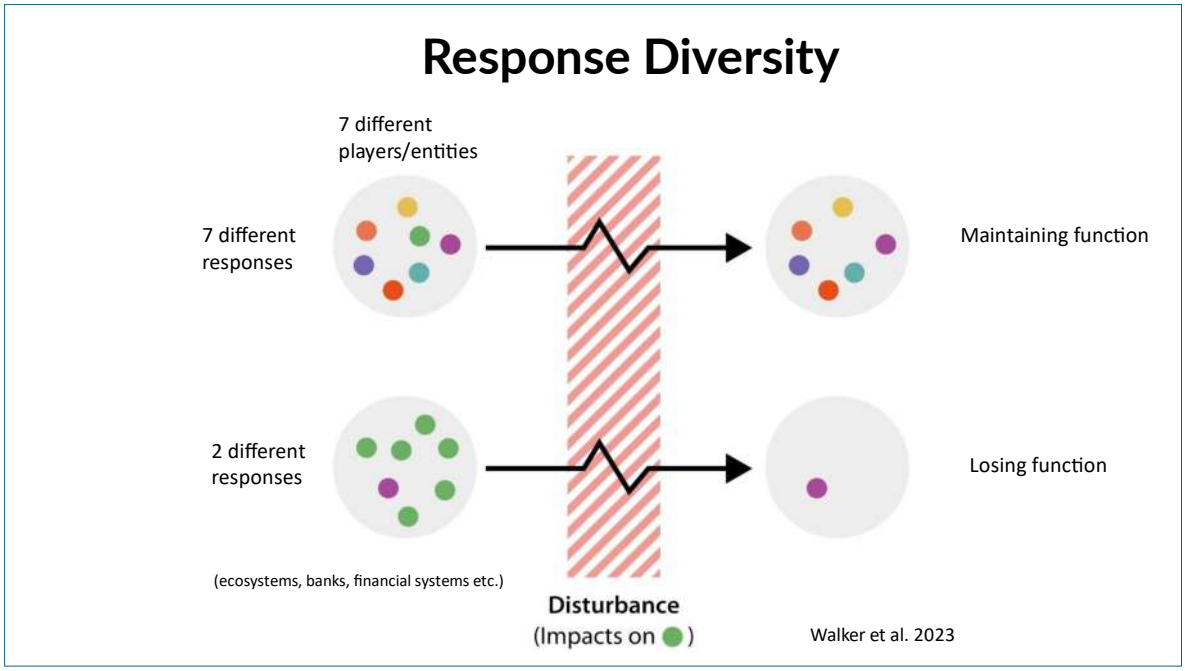


Fig. 5

Response diversity is also influenced by efficiency. Consider a self-organised network with many connections. If you decide to make that system more efficient, perhaps by meeting sustainability targets or streamlining operations, you face a trade-off. (Fig. 6) While efficiency is important for developing a well-functioning society, it may come at the cost of losing redundancy and response capacity. If sustainability is narrowly viewed as merely achieving more efficient resource use, you may reduce response diversity, leading to a system that, while having an apparent higher efficiency, is less resilient. Therefore, it's essential to intentionally design systems with diversity, modularity, and managed connectivity.

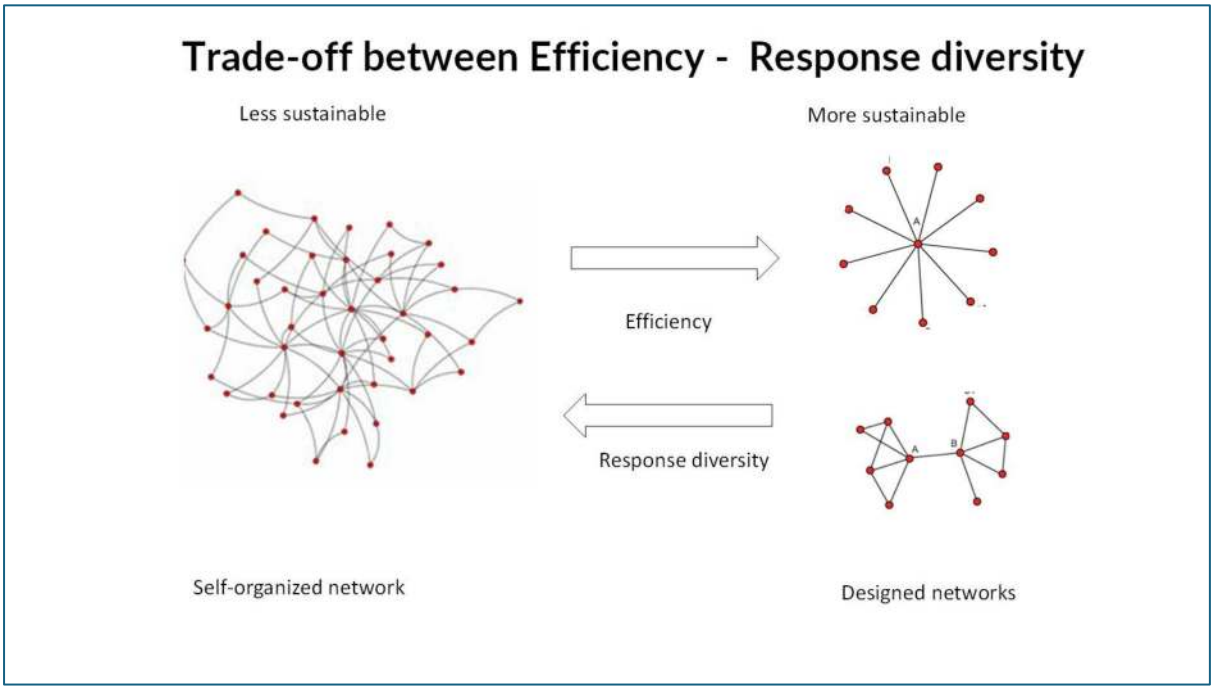


Fig. 6

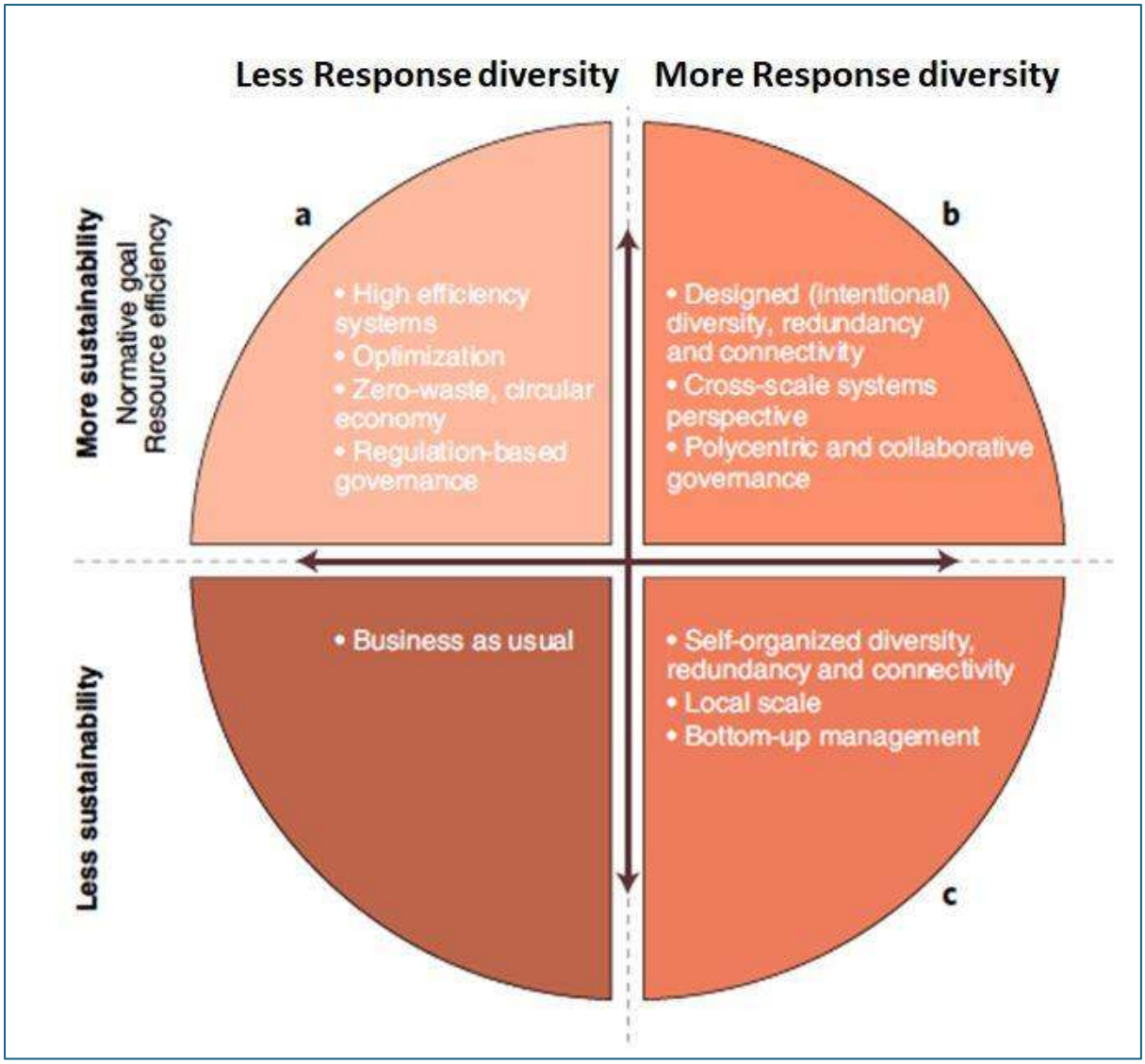


Fig. 7

Societal change can occur on many different scales, depending on the type, intensity, and scale of the crisis. For small-scale crises affecting individuals or society, the first strategy is coping. We all understand this—keeping a little extra money in the bank for emergencies like the COVID-19 crisis. However, as disturbances or crises scale up in intensity and frequency, coping becomes insufficient, and adaptive capacity must be developed. This is where we are now with the climate crisis—we can no longer cope; we must adapt. But if crises continue to intensify, even adaptation won't suffice. We will need to embark on a transformative trajectory, completely changing our approach. In such challenging situations, response diversity becomes even more critical. In these changes many things can go wrong, but response diversity provides more options and alternative paths forward. (Fig. 7-8)

To summarize, (Fig. 9) and as a basis for reflection in the panel: scale is important—local diversification may occur at the expense of global simplification. We should keep modularity and avoid over-connectedness. There are serious trade-offs, as increasing efficiency to meet sustainability targets often reduces options for resilience. Overlapping governance is important, especially in transformative processes where response diversity plays a crucial role. Finally, maintaining and building resilience involves social and financial costs, an important point to consider.

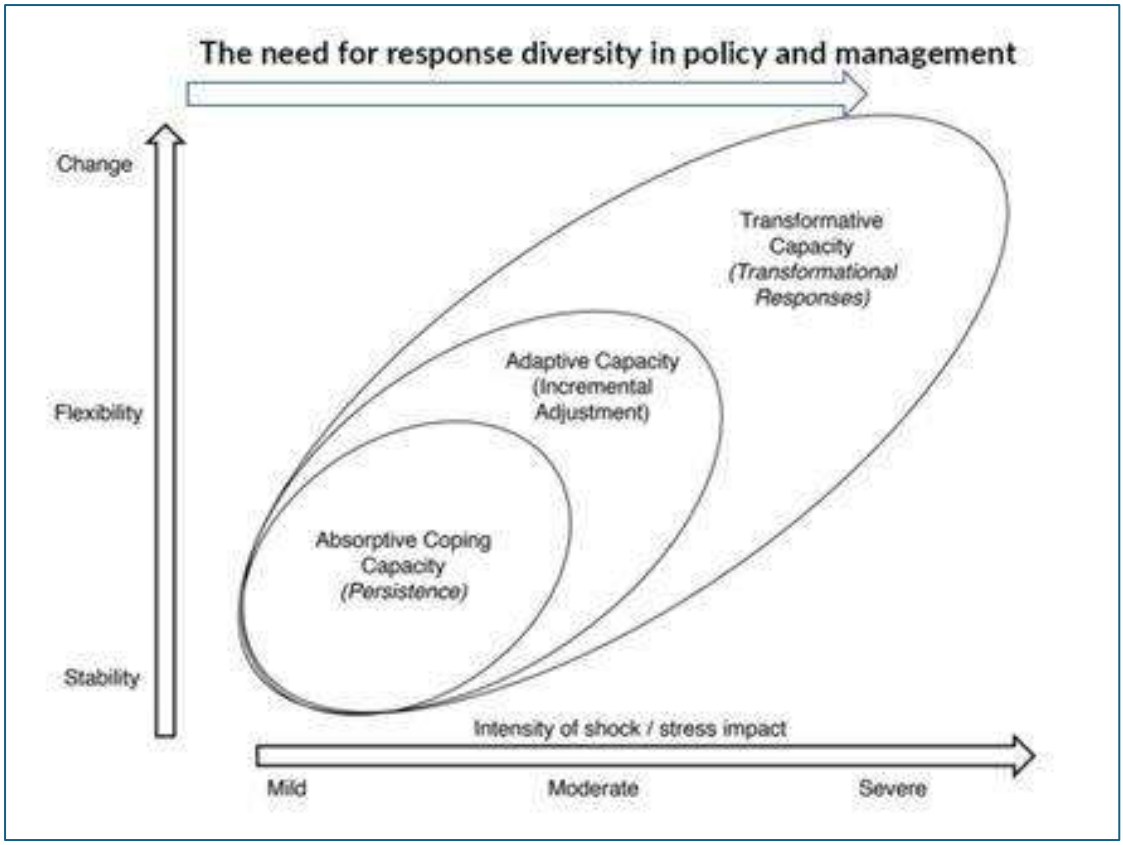


Fig. 8

Fig. 9

Toby Wardman

Thank you very much indeed, Thomas.

Now, we have an eminent panel of experts here to discuss Thomas's presentation. I'm going to go first to Maarja Kruusmaa, if I may. Maarja is an eminent academic in her own right. She is a

professor of Biorobotics and Vice-rector for Research at the University of Technology (TalTech) in Tallinn in Estonia.

But she's here this afternoon, primarily in her role as a member of the Group of Chief Scientific Advisors to the European Commission. The other part of the Scientific Advice Mechanism that Céline mentioned at the start.

Maarja, about a year or so ago, Thomas and his colleagues in the SAPEA working Group presented you with an extensive evidence report talking about response diversity and a range of other areas related to crisis management that he's touched on. And your role then was to take that and to make some concrete policy recommendations out of it. How did you approach that? What did you do?

Ms Maarja Kruusmaa
Member
Group of Chief Scientific Advisors to the European Commission

Photo by Estonian Foreign Ministry - https://www.flickr.com/photos/estonian-foreign-ministry/50665379052/, CC BY 2.0, https://commons.wikimedia.org/w/index.php?curid=104607688

First of all, years before writing down the recommendations, I had an extremely intellectually rewarding year working with people like Thomas and his colleagues and listening to the best experts in Europe and around the world on strategic crisis management. The work was very exhaustive, and if I compare it to some of the other reports we've made, it’s obvious that crisis is a very broad issue.

Some of our reports have been much more focused and, frankly, simpler. We ended up with 25 recommendations, even after cutting it back several times.

If you ask me what the main messages or recommendations of the report are, the first one might seem trivial—almost too obvious—but I want to convince you that it isn’t. As you’ve heard from Thomas, crises are changing; the nature of polycrises is one of cascading crises happening faster and faster. The first recommendation is almost a "no-nonsense" point: the nature of crises is changing, so the way we manage these crises must change as well. Makes sense, right?

This actually poses a significant problem for governance—whether it's the European Commission, member states, regions, or other entities. The governance structures we historically have in place, dating back to the time of Bismarck, might prove ineffective if things are happening so fast. So, what do we do? Historically, governance has relied on hierarchical structures in administration, which worked quite well in stable times. However, when things are happening very quickly, the feedback mechanisms, as Thomas mentioned, become slow and clumsy, as information gets transformed and delayed through the various levels of hierarchy.

What we need in such a structure is some form of cross-cutting, fast channels for sharing information and making decisions. We've actually witnessed this shift over the last five to ten years. The European Union was not originally designed for crisis management; the idea was that member states would manage their own crises. But as crises have increasingly become cross-border, the EU has had to take a more active role. When you have a crisis involving just two neighbouring countries, like Belgium and Germany, they can sit down and figure it out. But with three or more member states involved, it becomes logical for the European Commission to take the lead. This shift has happened almost naturally, without the European Commission necessarily pushing for it, simply because the nature of crises is changing.

You can also see this evolution in the European Civil Protection Mechanism and the ERCC, which have become faster and more responsive to diverse crises. We found strong evidence that Europe is actually performing well in this regard; the ERCC responds quickly to different situations around the world and has a tangible impact. In my opinion, Europe is becoming a crisis manager, and we are getting pretty good at it on the European level.

Now, when it comes to response diversity, it's a very interesting topic, especially in rapidly changing situations. When circumstances change quickly, local administrations, governance structures, and people on the ground can react more effectively if they have some level of distributed autonomy. It's beneficial to have a loosely structured system that allows for quick decision-making and responsiveness.

This is particularly important in Europe, given its diversity. For example, a firefighter in Lapland might use different methods to tackle a fire than a firefighter in Andalusia. They aren't doing things differently out of laziness; there are good reasons for these regional variations. Because the regions are so different, it's crucial to maintain response diversity. Moreover, response diversity allows systems to evolve; different approaches to the same issue can be compared over time, enabling us to learn from one another.

This was one of our straightforward recommendations: to keep response diversity. However, I want to emphasize that having response diversity or autonomy does not mean having a completely self-organizing system, where the system is left entirely to its own devices. We saw the limitations of such an approach during the early months of the pandemic, with everyone hoarding supplies without considering others. Every self-organizing system will settle into some sort of equilibrium, but it might not be the equilibrium we want for Europe as a whole.

I look forward to an interesting discussion with the other panel members and with Thomas about this complex problem.

Toby Wardman

Thank you very much indeed, Maarja.

So we have two other panellists here who can speak, perhaps on the policy maker side. Mr Olaf Deussen is a member of the Cabinet of EU Commissioner Lenarcic who was one of the two commissioners who originally asked for this scientific advice on crisis management.

Olaf, I know you work specifically on issues of crisis management, emergency response and so on. I want to ask you first generally what can you do with this kind of advice when you receive it? Like do you have examples of how it's been put into practise in European policy making.

And then perhaps for you, and for Olimpia in a moment, if I may, there is this question of the trade-off Thomas mentioned - the trade-off between response diversity and efficiency that essentially the more diversity you have the more redundancy you build in and so that could be a trade-off.

But Maarja also raised the point, I think, partly to reject or push back against this idea of a trade-off between response diversity and coordination or centralization or kind of overall governance. So, if there is anything you would like to say on that topic as well, you're most welcome to. Thank you.

Mr Olaf Deussen
Member of Cabinet
Cabinet of EU Commissioner Lenarcic
European Commission

Thanks a lot. First of all, welcome—especially to the people joining us online. If I understood correctly, some people in Chile got up very early to be here, and in Pakistan, some are staying up very late to participate in this discussion, which is very much appreciated. I also want to thank the organisers. I think this panel and the discussion are already very diverse, which is a good contribution to the overall conversation.

To jump right into the question posed to Toby about how, on the political level, you use academic and scientific advice: I recall a discussion we had two weeks ago with our commissioner while planning his intervention at a conference on crisis management. The first thing he said was, "Look again at what the advisors said. Look at some of their references and make reference to that in their advice." I'm mentioning this for two reasons. First, it's linked to what Thomas said about the fast-paced, interconnected world we live in, especially in politics, where things move very quickly. It's crucial to have these moments where you take a whole year to sit down, condense some of these ideas, and work on them over time in the area of crisis management.

Very concretely, one thing our commissioner referred to—and what we are now working on—is the role of the Emergency Response Coordination Center in civil protection and crisis management. We're considering how it can play a stronger role, which was one of the recommendations. Of course, when we delve into the complexities, we must ask whether it should be a centralized or non-centralized hub. Thomas made some important references to over-connectivity, which I think is crucial to discuss, so I would be interested in getting some input on that.

From my side, on the topic of response diversity, one thing that came to mind this morning—something that had somehow escaped my mind over the last weeks and months—is that diversity is actually one of the mottos of our European Union, where we say, "Unity in diversity." I thought that was very important because you mentioned that Europe is very diverse. However, I think, at least in the area of crisis—the polycrisis—there is a certain unity in recognizing that we are in a crisis. This wasn't always clear, and in some parts of the world or segments of society, it still isn't. For example, climate change denial still exists. But overall, there seems to be unity in acknowledging the crisis, and then the responses are diverse.

I would now like to highlight three points before handing the floor over to you. First, let’s discuss the topic of resilience. At the political level, particularly at the top Commission level, I believe the main policy on resilience building is essentially the Green Deal. The core idea is that we need to develop a response to cope with climate change. This involves both avoiding the avoidable and adapting to what is now unavoidable, given that humanity has waited too long to act on certain issues. I’m not saying this as a form of doom-saying, but rather to emphasize that we have a policy framework for resilience building.

These two aspects—mitigation and adaptation—are central, but I’d also like to touch on what was mentioned by colleagues in my commissioner’s specific area of crisis management and civil protection. Earlier this year, in February, we established disaster resilience goals. This policy framework, developed by the EU Commission in collaboration with the member states, focuses on how we can enhance resilience specifically within civil protection. It’s not about resilience

everywhere, but specifically how we can improve resilience in civil protection, covering critical infrastructure and practical aspects of society. We've also had discussions with the Committee of the Regions about how local communities can enhance their resilience. This ties into what Thomas mentioned about the initial coping mechanisms people have, such as adaptation, and how those fits into the broader policy level.

At this point, I'll stop and hand the floor over to my colleague. I look forward to the exchange and the discussion. Thank you.

Ms Olimpia Imperiali
Policy Officer
Emergency Response Unit
Directorate-General for European Civil Protection and Humanitarian Aid Operations
(DG ECHO), European Commission

Thank you all. And I'd like to thank the organisers for this very interesting discussion on a topic that I believe is highly relevant—response diversity. Indeed, diversity is something that resonates strongly with the European Union, which is fundamentally based on this principle. The system we currently have in place to respond to crises is diverse and relies on distributed systems, reflecting this diversity at its core. We are built in this diversity.

Diversity also characterizes the crises we are facing. Just this past summer, we experienced one of the worst seasons in terms of wildfires, while simultaneously dealing with floods across various regions. On August 6th, we received requests for assistance for both wildfires and floods at the same time. In addition to these natural disasters, we are also grappling with complex emergencies such as the ongoing war in Ukraine. All of this underscores the need for diverse responses, as a single answer cannot address all these challenges.

Our system, with the Emergency Response Coordination Centre as one of its main hubs, is adapting in response to these challenges. To borrow Thomas's terminology, we are not just adapting, but we are also transforming as we navigate these crises. Significant efforts are being made at the European Union level, and the crisis management scientific opinion has provided a valuable impetus, pushing us to better understand what will help us respond effectively using all the resources available at the EU level.

Here, the diversity of the response is key—how to utilize everything the EU has at its disposal. While we have a lot, we must balance this with efficiency. This requires applying certain standards and designing a system that can effectively use various assets, capacities, capabilities, and expertise in a targeted manner to meet diverse needs. It's a complex task, and I recognize that this can create some confusion. However, what I'm trying to convey is that the Emergency Response Coordination Centre and the Union Civil Protection Mechanism are beginning to work within this framework by developing standards.

At the same time, we are significantly increasing our efforts in areas that can provide solutions to this complexity, particularly in terms of anticipation and preparedness. We are mapping out the diversity of resources available and planning accordingly. This involves building scenarios and preparing strategies, which is something we are actively doing, especially under the Emergency Response Coordination Centre 2.0 initiative. This initiative, which has been developed in line with scientific opinion, is helping us to anticipate challenges as much as possible, avoiding surprises, and leveraging all the resources available at the European Union level.

While diversity can be a challenge, it also acts as a buffer, providing resilience in seemingly contradictory ways. I believe that the Union Civil Protection Mechanism is a platform that brings together these diverse, sometimes conflicting, elements and helps the European Union respond quickly and effectively to the challenges we face. Thank you.

| DISCUSSION |

Toby Wardman: Thomas, I wonder if I could ask you a question because we've heard some discussion about this trade-off, which I find quite interesting. It seems we need to strike a balance between two approaches. On the one hand, as Maria pointed out, we don't want a system that is entirely self-organizing, because while it might be highly adaptive, it might not lead to outcomes that are necessarily fair or desirable. On the other hand, we also don't want a system that is entirely top-down, centralized, and streamlined, because such a system would lack the diversity and flexibility needed to effectively respond to crises.

You've suggested that the evidence points to the need for balance. Does the evidence provide any insight into where exactly we should strike this balance? What are the key considerations we should keep in mind when determining how much autonomy versus control is optimal for a system designed to manage crises?

Thomas Elmqvist: Well, it depends on the system, but first of all, there are lots of theoretical work on connectivity and modularity showing that systems with some sort of intermediate connectivity and modularity are much more resilient than systems and have very high modularity or very low modularity. So viewing a system could also be applied when we're talking about governance.

The collaborative governance or a combination of bottom up and top-down governance is probably more robust than either one of them. So I agree totally with you that a completely self-organised system might have responsiveness, but I don't see it as a very sustainable system.

Maarja Kruusmaa: Yes, I totally agree with that. There has to be some sort of intervention because self-organizing systems will naturally self-organize. The question then becomes, where are the boundaries?

We had a bit of a discussion with Thomas before we started, and as you mentioned, Thomas is a plant ecologist. We both, and I think we all, understand that we need to be very cautious when drawing analogies from nature and applying them to human society. Sometimes these analogies work, but other times they don't quite fit.

In Europe, one key boundary we have is our value system. As you already mentioned, certain experiments or approaches are simply not allowed because we've collectively agreed not to permit them. Nature, on the other hand, doesn't have these constraints—it can run all sorts of experiments without restriction. So, in a sense, we're bounded by our values in terms of what kind of equilibrium we want our systems to be directed toward.

Toby Wardman: You mentioned at the start of your remarks that crises are evolving—right, evolving. Not only do we have more and more frequent crises, but there are also different kinds, and they're overlapping increasingly and interacting with each other. This makes it a challenge.

At the same time, we've got a very diverse landscape to operate in, especially within the European Union. This makes it rather hard to give scientific advice that’s going to be useful for more than about the next 30 seconds. Doesn’t it?

Maarja Kruusmaa: No, actually not. I was actually worried about that at first when I started listening to the experts. But, you know, scientists are great in that way—they always work in

abstractions and general concepts, which can be quite reassuring. We were discussing crises as a general concept, and that's not trivial because every crisis, no matter how diverse, has something in common. Whether it's a forest fire or a flood, it doesn't matter—you still have to evacuate people.

This shared aspect of crises provides a kind of framework, regardless of the specific type of crisis you're dealing with. It's comforting in a way because, even though crises may be very different from each other, you can still learn from one and apply those lessons to the next. Even if you can't anticipate the specifics of the next crisis, you can ensure that certain key functionalities remain in place.

Olaf Deussen: I fully agree with what you said which is also in line with what I mentioned earlier. On the policymaking level, it's crucial to acknowledge that we live in a fast-paced, hyper-connected society where you often need advice almost instantly—within 30 seconds, even.

But I think this is where scientific advice plays a vital role, by providing the necessary abstraction. It allows us to pause, reflect, and consider things more deeply. That's why some of these concepts in policy terms, even if they seem outdated after a year, remain relevant. In academic terms, a year isn't much time at all. This is why our commissioner continues to reference these ideas—they still hold value, unlike in other areas where things might become obsolete quickly.

This aspect is crucial. Additionally, scientific advice and the concept of diversity help us understand that while we're talking about polycrises and permanent crises, and acknowledging that systems are becoming more complex, there's a growing demand for simpler, more straightforward solutions. This is a significant contradiction. Politically, there's a strong temptation to offer easy answers, but honesty requires us to admit that things are indeed complex and messy.

However, by acknowledging this complexity, and justifying it, we can eventually lead to something positive. The real challenge lies in navigating the space between science and policy and ensuring that both can work together effectively.

Toby Wardman: Yes, and it's a pity that another panel member, Luke Bass, couldn't join us in the end. It's a shame because he's the Director of the Belgian Climate and Environment Risk Assessment Centre, and his insights would have been valuable. Belgium, as we know, is quite interesting in terms of its governance structures. It's already very diverse, not just in governance, but also in terms of competencies—determining which part of the government is responsible for which aspect of crisis management is always a challenge.

I wonder if there's a broader lesson here. The EU, in many ways, finds itself in a similar situation with its own competence diversity as well as response diversity. The question is, to what extent is this diversity an asset when you're looking for varied responses to crises? Does this distribution of responsibilities enhance our ability to respond effectively, or does it introduce risks? Too much diversity can indeed make it challenging to pinpoint responsibilities and streamline actions.

Olimpia Imperiali: I believe that response diversity should focus on leveraging a variety of capacities and assets. However, when it comes to actual response, it's crucial to have certain homogeneous standards. These standards ensure that the assets, people, and assistance being provided are integrated, interoperable, and able to work together effectively. There is a need for member states to demonstrate solidarity and cooperation, especially in a crisis, to ensure their responses are interoperable.

But when we talk about response diversity, it's not just about civil protection pillars. We should look beyond that and consider what the European Union can bring to the table in terms of response capabilities. Beyond just responding, it's also vital to focus on building resilience, which is itself a form of response. Empowering people is key here. They need to be involved and take

responsibility, especially as we move into a future where polycrises and overwhelming complexities are already happening.

For instance, we're dealing with more than 200 requests for assistance per year. These are significant numbers, and there's a sustainability issue not just for the EU but for each member state as well. Crises create vulnerabilities, which in turn lead to further crises—it's a vicious cycle. The only way forward is to involve people in this picture, empowering them and raising awareness.

Science can play a crucial role here, helping to build a resilient society. At our level, we're working hard on this, particularly in the context of civil protection, but it's an effort that everyone needs to take up. We're doing the best we can, of course, but it's a collective responsibility.
At our level, we do the best we can, of course.

Toby Wardman: I did want to give Thomas the last word just to respond on any of the points he's heard. I also want to ask if there's one or two members of the audience here in the room who would like to ask a question after Thomas.

Thomas Elmqvist: One of the most important aspects, in my view, of what we learn from using this concept is its relevance to governance. This is especially significant given the new challenges we face. The key question is how to be part of a society that has developed overlapping governance structures sufficient to react to unknown events.

There's a natural tendency to streamline and build efficiency, but we must always keep in mind the need to maintain sufficient redundancy in our systems and how do we intentionally design for diversity, modularity, and manage connectivity within these systems.

Megan Richards *(Senior Advisor, Rud Pedersen Public Affairs / Former Visiting Senior Fellow, German Marshall Fund of the United States / Former Director, Energy Policy, DG Energy, European Commission):* This has been a very interesting discussion. Perhaps my question is a bit simplistic, but I'm curious about the prevention aspect of responses. How can we reduce the need for such diverse responses in the first place? Can we learn from the diversity of past responses to better prevent problems in the future, thereby minimizing the complexity and frequency of crises that require these varied approaches?

Thomas Elmqvist: Thank you. That's a very good question. I think one answer to that is that you need response diversity when things happen, but reaching that point requires ongoing work, nurturing, and investment over a long period. Building and maintaining response diversity ensures that you're prepared to deal with an uncertain future. It's essential to prevent the inadvertent loss of this diversity over time. In this sense, response diversity is not just a reaction to crises but a crucial part of prevention.

Toby Wardman: I'm sure what you said is absolutely right—but it sounds to me like the question was perhaps more about whether you can essentially reduce the need for diversity and redundancy by being better prepared in the first place. Is it possible to minimize the requirement for diversity if your preparation is more robust?

Thomas Elmqvist: Yes.

Olimpia Imperiali: This is what we were discussing earlier. When we talk about responses, we are dealing with situations where we need to act quickly. However, it is clear that prevention and preparedness—although not always highlighted—are crucial. By prevention, I mean not just waiting for a crisis to occur but actively working to prevent it and preparing in advance. Empowering people plays a significant role here, as prevention requires a collective effort from everyone and all member states. Investments in prevention must be made consistently, not just when a crisis arises.

Many member states face the issue of focusing on prevention only when a crisis is imminent, rather than proactively. Science can significantly contribute to raising awareness and improving preparedness. At the European Commission level, our mandate is to complement the efforts of member states. We focus on better understanding our risks, as risk knowledge aids in both preparation and prevention. Our work, including initiatives like the disaster-related goals discussed earlier, is aimed at enhancing these aspects of preparedness and prevention.

Jamie Shea *(Secretary General, GMACCC / Senior Fellow, Peace, Security and Defence, Friends of Europe / Former Deputy Assistant Secretary General for Emerging Security Challenges, NATO)***:** First of all, thanks to the panel. I enjoyed the insights from the discussion. It was very good, and as someone who is somewhat of a part-time academic these days, I appreciate the theoretical perspective. However, what really interests me is the practical application, particularly given the European Union's experiences in disaster response over the last couple of summers. The floods, fires, and droughts affecting so many countries—not just in the Mediterranean but also in northern regions—have made summers increasingly challenging, even for tourists who have had to be evacuated after just a few days.

What I'd like to understand is how the learning feedback mechanism works in real-time. The EU responds and coordinates at the national and local levels, and there are various mechanisms for mobilizing solidarity assets and capabilities across borders. How does the feedback loop operate in terms of evaluating and learning from these responses in real time? For instance, how does the EU communicate with member states about what worked, what didn't, and what needs improvement? Is there a process where the EU might say to member states, "We expected more in this area and were disappointed with what was provided"?

Additionally, I'd like to know more about how these lessons learned and feedback might trickle down into EU directives or regulations concerning crisis management. How does the policy machinery adapt and take action based on real-time experiences?

On a related note, as the EU mobilizes more of its resources for internal disaster responses, does this create any tension with its capacity to remain a global citizen? Specifically, does the EU face challenges in providing disaster relief and humanitarian assistance to other countries affected by earthquakes, natural disasters, and similar crises while managing its own internal demands?

These are my two main questions. Thank you.

Olaf Deussen: Thanks, Jamie. I'll start with a concrete example, and if colleagues have additional insights, they can certainly come in. I'll use the wildfires from the summer of the previous year as a case in point. While wildfires are not the only type of disaster we face, they receive significant media attention and have a substantial psychological impact on people, making them particularly notable.

Last summer, many EU countries activated our solidarity mechanism for wildfire support. We have a fleet of firefighting planes, but we reached a point where we had to limit further support due to the high volume of requests. We had to tell member states that, if another request came in, we would not be able to provide additional assistance. The available resources were stretched thin, and member states needed to manage the situation independently or seek other response capacities.

In response, the EU Commission made a strong call to increase our fleet. We decided to double the number of planes from around 10 to 25. This was a direct policy action to address the immediate needs. However, the planes are not all stationed in Brussels; they are distributed among member states. This shift in strategy also prompted a reconsideration among some member states that previously dismissed the need for firefighting planes. The changing situation has led them to support and deploy these assets now.

This summer, we were better prepared with more planes. However, the policy focus shifted as the media and public started to ask more about prevention and preparedness, rather than just response. Although we had improved our response capabilities, the call for more emphasis on prevention and preparedness became louder. This reflects the cyclical nature of policy discussions, where after improving response, there is a push to enhance prevention and preparedness by, for example, having better plains.

Regarding global solidarity, while we can fulfil most requests for support, the success of the solidarity mechanism poses its own challenges. For instance, Bolivia recently activated the mechanism for wildfire assistance. While we were able to provide expertise and aid, there is a growing need to expand our capacity. If every country requests support simultaneously, we face limitations. Now it becomes a policy choice as we need to increase the means. If we want to give this solidarity globally everywhere we need to increase the means, the ways of responding, having response diversity. We should also find other mechanisms that it's not just an EU body who intervene. But at this stage balancing response capabilities with global support remains a challenge and an area for ongoing development. Overall, the solidarity mechanism is functioning well, and its impact is appreciated.

Ms Maarja Kruusmaa: Maybe just, if I may, one thing about prevention in crisis management is that it's a challenging job. When you do it really well, nobody recognizes it because if you manage to prevent a crisis, people often don't understand why you made such a big deal out of it.

I actually think we are improving in prevention, though it might not always be apparent. What is important is that there are many "near misses"—situations where something almost happened, but we managed to prevent it. Here, feedback loops become really crucial. For example, regarding the forest fires that did not occur, it's essential to analyse how and why they were prevented and what we did well.

We need to encourage the implementation of such feedback mechanisms at all levels of governance.

Megan Richards: Just to build on that, thank you very much for your insights. While efficiency and cost-effectiveness might not always be popular topics, I'm a strong advocate for them. In the context of climate change, for example, mitigation often proves to be far less expensive than addressing the full-blown consequences of climate-related errors. This principle applies similarly to crisis responses.

In crisis management, the value of prevention should be measurable. Ideally, we should be able to quantify the cost-effectiveness of prevention measures by comparing them to the potential expenses associated with managing a crisis. For instance, if we prevent a wildfire, we should be able to calculate how much we saved by avoiding the extensive human, social, financial, and economic costs that would have arisen from dealing with the disaster.

Assessing the cost-benefit of prevention versus response can help reinforce the importance of investing in proactive measures and can provide a compelling case for allocating resources towards prevention strategies. This approach not only highlights the value of preventing crises but also supports the argument for sustained investment in effective prevention practices.

Toby Wardman: I would now like to introduce Mr. Stefano Malia, who is a member of the European Economic and Social Committee and, in one sense, our host here. He is also the President of the ESC Employers Group. So, Mr. Malia, the floor is yours.

How to make the EU Climate Diplomacy more effective

Mr Stefano Mallia
President
Employer's Group, EESC /
Rapporteur of the REX/569 EESC Opinion on the EU Climate Diplomacy for adoption in December 2023

Good afternoon, everyone. I'm very pleased to have had the opportunity to listen to your previous conversation. I found it very engaging, especially because it's a topic I don't often deal with in my daily work. To ensure we're all on the same page, I think it might be helpful to give a brief overview of the committee I represent. I'm not sure about the background of everyone in the room, so a quick introduction could be useful.

First and foremost, my name is Stefano Malia, and my role generally here is that I am what is referred to as the president of the employer's group, which now makes me take a step back. The European Economic and Social Committee is a committee which represents civil society. It's split up into three groups where you have employers, trade unions, and what we call NGOs and civil society. The committee, incidentally, is set up by the treaties. So it's not a committee which somebody thought of today and in six months' time will disband. This is set up by the treaties, and it's a committee which has 329 members from all the EU member states.

Our role is, and the official function of this committee is, to give the point of view of civil society on all EU proposed legislation. Most of the EU, I would say 85% of all proposed legislation, comes to this house. We call it our house of civil society. Our role is to discuss this legislation. Of course, I would be discussing it from an employer's point of view. We also have the workers, trade unions discussing it from their point of view. And we also have the third group, which is called civil society and NGOs, discussing it from their point of view. Then we express an opinion, issuing a document which is discussed at various levels, pretty similar to the structure of the parliament. Finally, it goes to a plenary where all the 329 members vote on this opinion.

The idea is, and continues to be, that the policy maker, the council, the commission which proposes, and then the council and the parliament, also receive the formal view of civil society on all EU legislation which has been proposed. This is the role that we play. I am the president of the employers' group in the house. We have 106 members in the group. We represent some 20 million enterprises. The people in my group are coming from business associations or businesses themselves.

It is important to emphasise that we are not paid civil servants or paid members of this house. We are appointed by our organisations to come here to represent the people we represent back home. Every week, I go back to Malta, because that is where I come from. I come from an SME employing 65 people. I was proposed by the employer bodies in my country to represent employers in Malta. The employers' group appointed me as president.

The value added of what we do is that we go back home to our countries practically every week. When I come back here, I come back with the problems of an SME. I come back with the problems of businesses that are facing credit problems, financing problems, recruitment problems, and

bureaucratic problems. When we are looking at EU legislation, we are in a position to give some kind of value added from this point of view. It is similar in the other groups, where we have people coming directly from trade unions in their country. In the third group, we have people coming from environmental NGOs, farmers associations, and NGOs concerning poverty and diversity. So there's a significant mix, and this is who we are in this house.

I am here also because, as I said, as a house, we present opinions and points of view. While we respond to requests coming from the Commission for new legislation, we also have the opportunity to do what we call our own initiative opinions. Indeed, as a committee, we are working on our own initiative opinion on climate diplomacy. This is why I have been asked to come here today to share some points of view from our end on a document that is still in the making. It has moved along two of the three stages in the house. In December, it will go to plenary for the final discussion and vote.

In terms of climate diplomacy, which I am sure is not a new concept to any of you, we look at the possibility and the strength of the European Union to use its soft power in addressing climate change. Incidentally, someone mentioned the Mediterranean and climate change. As I told you, I come from Malta, and I'm happy to say that this week we had the first rains in six months after a blistering summer. This week was the first time we had serious rainfall in six months, so that is indeed good news from my point of view.

Returning to the topic we are discussing, we feel it is very positive that the European Union has taken the lead in addressing climate change. The argument is that the European Union is responsible for some 7 or 8% of world emissions, and how much of an impact can the European Union have? But I think that is a fallacious argument. We have our responsibilities for things we have done in the past, and we have responsibilities towards other countries around us.

We are positive that the European Union takes the lead on this, in terms of leadership and mediation, as well as shaping international climate action responses. We are keen to see that the Green Deal produces the desired results. We must achieve the desired results of the Green Deal because we want to export this model, these actions, and these ideas to other neighbouring countries that are at a different stage of economic development.

The Green Deal was drafted and put together in a different geopolitical situation, particularly concerning energy. Some dynamics have certainly changed. The European Union has a number of goals for 2020, 2030, and 2055, which we are moving towards with momentum. This requires a huge effort.

For those who say that we need the Green Deal to address climate change when it arrives, I say climate change is here, so it is not about when it arrives. However, we have some preoccupation about where we stand with the Green Deal. There are targets set, and increasingly, I can tell you from the business community, there is some worry that we will not achieve the targets we have set. We have set targets, but we did not have clear methodologies or a clear path in terms of how we are going to achieve them. This is even more so in the changing dynamic we have in front of us.

For example, since the blatant aggression of Russia on Ukraine, we have increasingly talked about strategic autonomy and having strategic industries we need to take care of, such as the steel industry. The steel industry is a critical strategic industry. However, when you ask if we will realistically produce enough clean energy for the steel industry to function over the next five to ten years, nobody can give an answer. I say this not because I think the Green Deal should be scrapped. Far from it. We need to reassess where we are and, if necessary, recalibrate the targets we have set. The worst thing we could do is to maintain these targets, arrive on the eve, and find we need to set new targets or timelines. This would lose us credibility internationally and create unnecessary hardship internally. So this is something we need to think about.

On the front of climate diplomacy, we believe this should not be restricted to only two states. It is not an issue of the EU negotiating a trade agreement with a region or country but should also be at the level of civil society, businesses to businesses, and NGOs to NGOs. We are keen on this because civil society has strong partnerships within and outside the European Union. We believe we can be important contributors to policies and actions concerning climate change. This could take place over the next few months and years.

Given that climate is already and will increasingly be a source of crises, we must acknowledge this. Climate change will continue to be a root of imbalances within our region, causing issues such as illegal immigration. This is a sensitive topic for the European Union, and climate diplomacy needs to be a focus of our external relations. It should become a flagship policy.

When taking actions internally and externally, climate and climate diplomacy need to be considered. We must promote a holistic approach, considering it not only as an environmental problem but also as a social problem. Involving civil society in this effort is crucial, and existing structures already facilitate this. This house is one of them, where we have regular interaction with the European External Service and all the commissioners. We are also involved in the Domestic Advisory Groups (DAGs) where there is a trade relationship with other regions or states. This structure is already in place, so we are not asking for more bureaucracy but utilising existing structures.

I appreciate that during your earlier discussion, you were very micro and technical, talking about actual equipment and expertise level discussions. From our end, our goal is to push the European Union to take action in the direction of climate diplomacy and climate change. I hope we can get our house in order, especially regarding the Green Deal.

| Session 2 |

Moderated by Mr Ronald A. Kingham
Executive Director
Environment & Development Resource Centre

Before I introduce our next speaker let me just remind you that we will use the final few minutes today to hear about the next steps that that Celine and Thomas and others will be taking and for the participants to present any information they wish to share regarding their own recent and upcoming activities.

Now I'm very pleased to welcome Paul Ruston who has been asked to inform us on the latest news regarding NATO's Climate Change and Security Action Plan.

| The Multidimensions of the NATO Climate Change and Security Action Plan |

Mr Paul Rushton
Officer, Climate and Security
Emerging Security Challenges Division
NATO

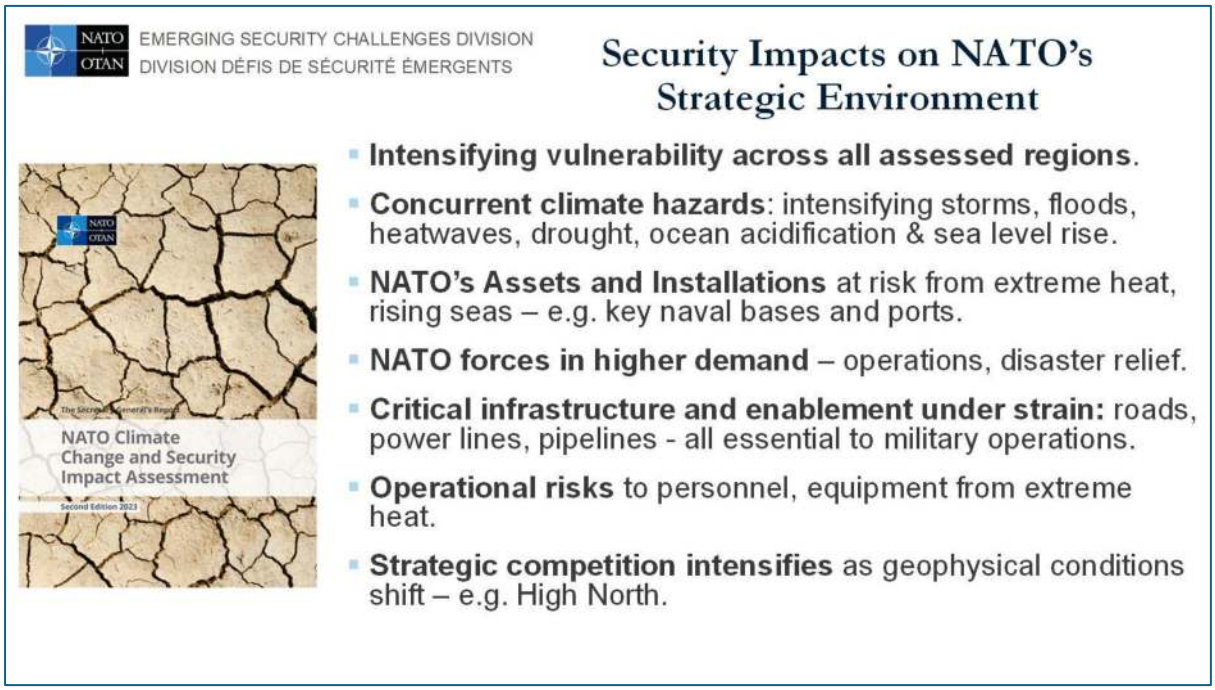
Good afternoon, all. Thank you to Ron for organizing the panel and for moderating, and to everyone who participated in the previous panel for a really fantastic and fascinating discussion. My name is Paul Rushton, and I'm an officer with the Climate and Energy Security Section in NATO's Emerging Security Challenges Division.

I'll pause for a moment just to note that I will come to the theme of response diversity, but I don't think I can get there from a NATO perspective without talking briefly about how NATO views climate change and particularly its security implications. As I'm Canadian, it's traditional to start every presentation with an apology, which is to say that for those of you who are already well familiar with NATO's Climate Change and Security Action Plan, there may be a bit of duplication here. However, I am going to focus on what's new and how it contributes to the themes of the day.

So, in the most fundamental sense, NATO set out climate change as one of the defining challenges of our times—a threat multiplier that impacts allied security both in the Euro-Atlantic area, which is our domain of operations, and in our broader neighbourhood. That's from the Climate Change and Security Action Plan that we agreed upon in 2021.

We fully agree and understand that climate change is a multifaceted challenge that impacts economies, livelihoods, human health, environmental health, and biodiversity. But NATO is NATO, and befitting our specialty, we focus on security impacts of climate change. For us, it affects every one of the core tasks that we've set out for ourselves in our guiding document, which

is the Strategic Concept created in 2022. We have an obligation to ensure effective deterrence and defence, crisis prevention and management, and cooperative security with our network of partners. And climate change makes every one of those tasks harder. I'll explore that a little bit before working to tie in the response diversity issue.



So, looking at what we see as the core security impacts of climate change on our strategic environment, there is certainly one with which I think you're all familiar, and that's the idea of climate change as something that is increasing vulnerability, reducing resilience in communities and countries, and increasing the likelihood of violent conflict and vulnerability to extremism. It is not necessarily a single causal factor behind armed conflict, but it certainly reduces resilience and increases vulnerability in a wide variety of contexts.

In terms of direct impacts on NATO, we look at the concurrent climate hazards that we're all seeing—intensifying extreme weather events, floods, storms, heat waves, droughts—as well as other, longer-term, perhaps more pernicious events such as sea level rise and ocean acidification. From a very NATO perspective, we also look at the impacts on our assets and installations, which for us is a wide variety of, for example, key naval bases and ports that are essential to our operations but are at risk from rising sea levels and rising ocean temperature fluctuations.

We see a world in which NATO forces, even as they work to fulfil their mission of providing collective defence, are also in higher demand for humanitarian assistance and disaster relief, requiring them to be in more places at one time than ever before. Our critical infrastructure, which is essential to enabling our security operations, will be under strain. Roads, power lines, and pipelines are increasingly stressed by extreme heat and extreme weather events.

In many cases, we see direct risks to operational personnel who suffer from extreme heat in ways that we have not seen before. For example, our NATO mission in Iraq, which is an increasingly state multinational training mission working in partnership with the Iraqi government, is increasingly losing operational days to what we call "black flying days"—days when the heat level is so extreme that it is simply incompatible with human health to operate outside. Each year, in general, we have more of these days, and we have to adapt to them in our operational planning.

We are also seeing climate change affect our strategic competition as our strategic competitors, for example, Russia and China in particular, lay further claim to areas of the Arctic in the extreme north as receding sea ice creates new areas for great power competition. China declares itself a near-Arctic state, and we've seen Russia increase its activity there. From our core security focus, these are issues that we have to address to ensure the security of our allies.

We are also looking at how NATO is affected by huge economic and technological changes, especially the global transition to green energy, which is an absolutely necessary step to address the climate crisis. However, we also have to adapt to it in terms of the technology we use and the ways that we operate. This is where it's a great opportunity to give a nod to the polycrisis that was discussed because none of these are independent effects. They all overlap with and reinforce each other in complex and sometimes entirely unpredictable ways that you would expect changes in a complex system.

A bit of a primer on the commitments NATO has made to address these issues: these are primarily set out in our **Climate Change and Security Action Plan**. There are four pillars to this plan: awareness, adaptation, mitigation, and outreach. The awareness piece involves understanding not just what security challenges climate change poses for us, but to the extent possible, where, how, and when we will feel its impacts. For us, it's absolutely essential that we not only know but that we are able to advise policymakers, to factor these changes into our investments and planning, and to guide operational commanders on the ground who are fulfilling NATO missions on how they can adapt to a changing climate.

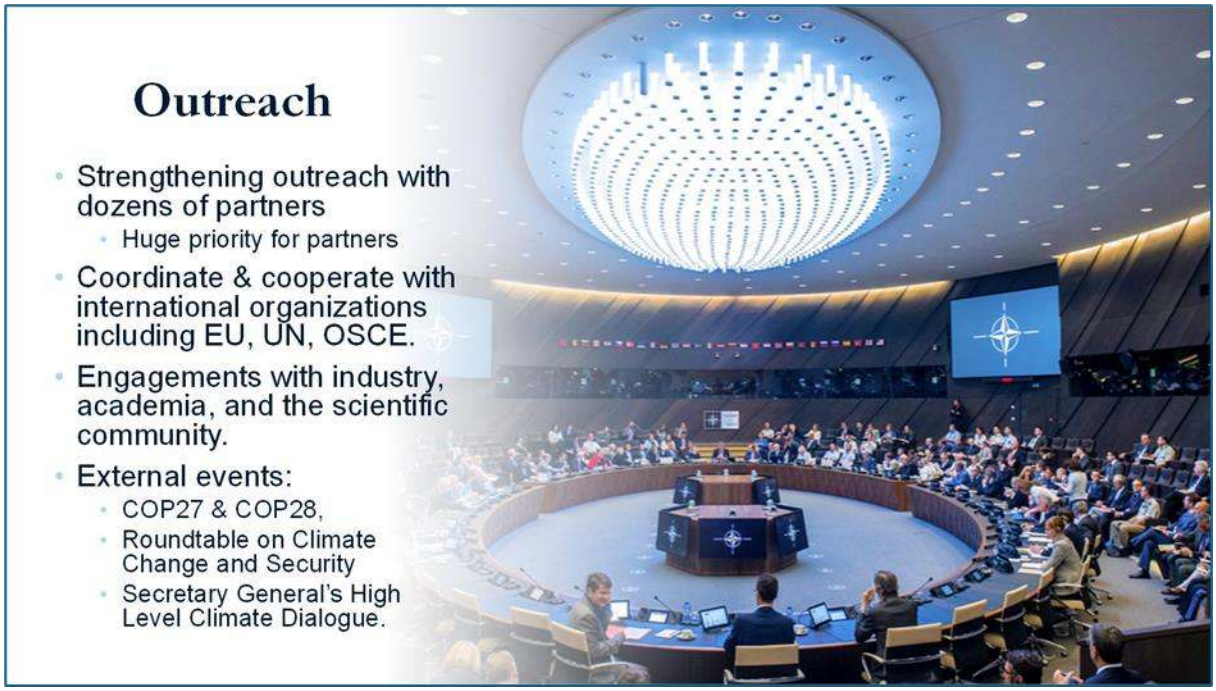
We have a few key documents and products that have come out on this. We do an annual impact assessment that looks at the impact of climate change on NATO's entire area of operations and interest. We have a prototype risk management framework, which someday will be in a position to be shared with all allies and partners. It's an online platform that helps spell out spatially specific security effects from climate change in a variety of operating environments. We also have a huge program of scientific and technical cooperation, both within NATO and a network of about 5,000 research scientists, as well as the NATO Science for Peace and Security Program, which encompasses partnership activities.

Our mitigation activities involve looking at ways that we can reduce the ways NATO contributes to climate change. We've made an overarching commitment to cut our greenhouse gas emissions by 45% by 2030 and to achieve net zero by 2050. That means we need to look at every way we can mainstream investment in green energy for our forces, bases, and vehicles.

We can explore how to implement alternative fuels and propulsion systems, and other ways of making sure that our missions and training are as efficient as possible while maintaining maximum effectiveness and interoperability to fulfil our collective security mission.
Where possible, when we look at new technologies, we try to find ways to drive operational advantage from green tech because it's not always just going to be a compromise you are going to make in the name of reducing greenhouse gas emissions. We may find, for example, that military vehicles like logistics trucks operating on electricity rather than fuel have a shorter supply

chain and simpler maintenance requirements. So, we are also looking for opportunities to improve our efficiency, reduce our footprint, and boost our effectives at the same time.

We have an adaptation strand of work, which aims to mainstream climate change into every aspect of what we are doing at the Alliance. This means that our capabilities, materials, and technology all need to operate in future environments, which, unfortunately, are going to be more difficult. It will be hotter, dustier, and affected by more extreme weather, and we need to continue to be effective in that context. This will involve new training, new operational planning, new gear, and new ways of managing and building resilience in our logistics and supply chains as well as our broader societies.



Lastly, we have our outreach line of work, which is about strengthening the way we work with our extensive network of national partners - 37 partners at last count and ever-growing, though sometimes the number decreases when one of those partners joins the Alliance as an ally.

We coordinate and cooperate with a group of international organisations, particularly the EU and the UN, according to specific specialties. We engage closely with industry, academia, and the scientific community. We hold external events and participate in forums like this, and we will be present at COP 28 next week. We hold an annual roundtable on climate change and security, and we have a high-level dialogue led by the Secretary-General to help it be broadly understood that NATO plays an important role in addressing this challenge.

Now, where does this come into response diversity from our point of view. I think one of the thoughts that leapt out at me from the readings on response diversity is: "Agents in a system must have multiple ways by which they can respond to changes and disruptions. In other words, response diversity provides the raw material for adaptive behaviour." That really stood out to me because, when facing such a complex multifaceted crisis as climate change, which is punctuated with abrupt tipping points and prone to sudden nonlinear changes, specializing in a single area positions us to fail. That was very much the theme of the first panel we had, and it's something that NATO has taken to heart.

In our way, we have a natural specialization on climate change that perhaps none of the other international organisations exactly replicates. For us, it's security in all its forms. Yes, defensive deterrence is a core message for us, but our allies have also made major commitments to improve the resilience of their societies against all manner of threats, including climate change. We have a role to play in preventing crises and conflicts, including those that may be partially precipitated by climate change. We are applying a variety of diverse avenues to our response. Everything I mentioned in the adaptation and mitigation pieces—adapting our policy, process, behaviour, and technology—shows there is profound diversity within NATO's response as a single organisation.

However, climate change is such a diverse and multifaceted security challenge that the response can't be found purely in security policy. We know that because you won't have military security if you don't have food security. If climate change undermines the foundations of social stability, it's very hard to build military security on top of that. We can't address all of these challenges ourselves, and despite everything I've said, and all the commitments NATO has made, we know that many people wouldn't call us a frontline climate change organisation in many senses.

We don't do large-scale development programming or adaptation programming like the UN does. We don't make industrial or agricultural policy like the EU does. When an allied country makes a commitment to NATO to build their resilience or to phase out the greenhouse gas consumption of their militaries, these are voluntary commitments, and we facilitate those efforts, but we don't have a formal regulatory role. When it comes to responding to natural disasters or other climate emergencies, we're not usually the frontline first responders; that's primarily the responsibility of national governments and humanitarian organisations. We know that each of these is an essential component of true long-term stability and security. Which is to say that response diversity and in turn a comprehensive approach to our security means that we will have to coordinate effectively with an enormous variety of actors. This includes areas of deconfliction to make sure that we're not duplicating each other's work. We need to have consistent dialogue and exchange to share our understanding of how the security impacts of climate change are evolving and identify areas where we can support each other's work. Every one of these actors, from NATO to the EU to the UN to regional organisations like the OSCE, has its own core mandates and specializations. Neither our effectiveness as an organisation nor the broader team of response diversity is served if we try to do everything. We focus on what is within our core talents, recognizing that this is only one important part of the broader response.

There are challenges ahead in this line of work. One is the broader theme of ensuring that we at NATO internally can continue to advance the climate change and security agenda and fulfil the three core tasks I referenced earlier. It's not an easy time in international security, even without the impact of climate change. NATO is facing the largest conventional military threats in at least a generation in response to Russia's invasion of Ukraine, which has intern set off a broader range of climate impacts and environmental threats. We need to ensure that we continue to build our effectiveness and interoperability between NATO forces while reducing our greenhouse gas impacts and avoiding new strategic dependencies.

In the broadest sense, and with an eye toward response diversity, there is nothing more important than effectively partnering not just as a theme but at the speed of relevance with the climate crisis itself because it is a moving target. We need our coordination to keep pace with the evolving polycrisis. It's one thing to say we need to regularly coordinate; it's another to work as quickly as the evolving polycrisis demands. This is where we have to set our level of ambition. This means designing response diversity into every aspect of our work, not with the intention of doing everything ourselves, but with the understanding that coordination and even some overlap, at the cost of efficiency, can contribute to a more effective response. □

| DISCUSSION |

Blair Brimmell, **(***Second Secretary, Climate Change and Security, Global Affairs Canada, Canada's Permanent Delegation to NATO):* So, Paul, you and I already see each other fairly frequently because I work at Canada's mission to NATO and on this subject, among others. But today there are a couple of thoughts that I wrote down during the previous panel that I'd like to put to you.

Do you think there is some inherent tension between the benefits of diversity and how that promotes resilience versus NATO's traditional push for interoperability and standardization? Do you have any thoughts on how to square that circle or whether it's one that needs to be squared?

And, similarly, you know we love doctrine in NATO, so do we need to change our approach to making doctrine if we recognize the benefits of response diversity or does that make it into our doctrine somehow?

Paul Rushton: NATO doctrines, standards, and practices have always adapted to changing environments, and we've had a process for developing those that's been honed over, I guess, 75 years now. I probably wouldn't say so much that it needs to be changed to incorporate response diversity; it's that it's always included response diversity to a certain extent. This is where it will bleed into an answer to your original question. NATO has a fundamental approach to ensuring that we can work together as an alliance that's based on interoperability and standardization. That is just meant to provide a foundation of common command and operations that ensures every ally can participate in joint operations and share information in the same ways. It doesn't mean that everyone has the same capabilities or does the same things. There's still room for individual allies to have national specializations.

This is a great time to say thank you to Canada's first Climate Change and Security Center of Excellence because that's a great example of how each nation, while we all operate on a common platform and under a NATO command, we can specialize in different aspects of the climate crisis. We can see the way Canada's building a specialization in climate change and security, but Lithuania is also developing a complementary specialization in energy security. The allies who work on protecting critical infrastructure under challenging and ever-changing circumstances are bringing that to the table as well.

It's no surprise to anyone to say that the Norwegians run a great line of work on effective operations in cold weather environments, and they're adapting to climate change in their own way. Some of the southern allies who are particularly operational in NATO mission areas are doing the same for hot weather climates, and they're all bringing those experiences back into NATO to build interoperability and, in its way, build response diversity without sacrificing that fundamental interoperability at the core of the alliance.

Katarina Kertysova, *(Climate Security Officer, Emerging Security Challenges Division, NATO*): I am a colleague of Paul's. I wanted to ask, since we're at the European Economic and Social Committee, if Paul could maybe tell us a little bit more about the importance of EU - NATO

collaboration and where we stand, where do we move from here, especially when it comes to climate security.

Paul Rushton: Certainly, I can link with the policy top line, which is that we've declared the EU a unique and essential partner for NATO because so many of our areas of interest are coterminous. There's no way to fulfil, for example, NATO's commitments towards resilience against climate without involving the EU because the EU is undeniably the core player on resilience for the allies who are members. So, at the very least, there's a foundational need for understanding what each is doing in this area, but we can go well beyond that. NATO is never going to make agricultural policy. I won't say that the EU will never make a common security and defence policy, but I will say that we'll probably always maintain certain specializations and areas of overlapping but distinct responsibility that are both going to be essential to addressing the climate crisis.

With that, we can go beyond simple sharing of awareness to deconfliction and coordinating our work with partners because we have many of the same common partners. There are many areas in which we seek out how we can support them in complementary ways. We can build on that with best practices, the exchange thereof, and lessons learned. One of the joys of the climate crisis is that we're all going to fail a lot in trying to address locally specific impacts, and it would be best if we didn't all have to fail twice in the same thing.

So, the exchange of lessons learned in specific operational contexts, specific countries, or policies that work particularly well in given hot weather, cold weather, wetland, maritime, etc., operating environments is probably going to provide insights for both NATO and the EU. Conversely, what the EU figures out about how to build national resilience and food supply systems is going to be very valuable for NATO allies who are not members of the EU, and we will have opportunities to do this kind of exchange.

Ron Kingham: I would imagine that an important aspect of the cooperation between NATO and the EU is also in the area of early warning involving mechanisms for monitoring as well as alert systems. This involves not only predicting floods or storms, for example, but also in predicting the impacts of such events. To what extent is cooperation between EU and NATO crisis management centres operational on a daily basis?

Paul Rushton: Yes, absolutely. When I refer to awareness, that's very much what I mean: understanding what climate impacts we're feeling in the long term but also in the immediate practical future. I don't want to speak too much on behalf of the colleagues who work in NATO and the Euro-Atlantic Disaster Response Coordination Centre (EADRCC), but I know that there is functional exchange between them on an operational basis rather than just biannual meetings, etc.

We're also developing very specific climate prediction and climate awareness tools, sharing what products we have with European and other counterparts while also planning to open up the broader suite of tools as soon as it's appropriate to do so. We're having comparable discussions with the EU about the ways that we're going to integrate what I probably wouldn't quite call an early warning system, at least at NATO, but certainly a more flexible and comprehensive set of tools for understanding the specifics of the climate crisis. For what it's worth, we also have similar, if somewhat smaller in scope, exchanges with the UN on this subject as well because they have their own specializations and, by definition, the broadest scope of all.

Megan Richards: used to be responsible in the EU for relations with NATO on energy transition. So, I just wanted to say that we always appreciated our exchanges with NATO very much. They were very useful. You've dealt of course with the Joint Research Centre in the European Commission, which has all sorts of earth observation functions such as Copernicus. So I just wanted to underline how important that relationship is, which is often not understood and often thought of as non-existent. But it really was very useful and very important for us.

| Follow-up and Closing of the Seminar |

Ron Kingham: I would now like to call on Thomas and Celine to ask if you have any conclusions drawing from today's meeting and what they mean for the next steps in your further research and work.

Thomas Elmqvist: Well, thank you very much. I've enjoyed this afternoon tremendously. It's been fantastic to meet people working with the policy development on a daily basis and trying to find that two- way communication.

Olaf said we have to have a follow up with his cabinet and the disaster and risk management people within the EU. So I'm pretty sure there will be some follow up from this meeting and maybe coming closer to how this concept could become more operational. And that means to also maybe understand the limits of the concept: where is it useful to apply and where isn't - which I also think is very important and where I think science and research could be really important.

So thank you everyone for asking very good questions and participating in a very lively debate.

Céline Tschirhart: Well, thank you, Thomas. This was a very nice wrap up. I also learned a lot today, although we've talked about response diversity for over a year and discussing this event also for many months. At the SAM unit we work upon request from the European Commission and we're waiting for the next requests linked to crisis management. We don't know yet when or how they're going to come, but crises happen all the time and change. So, as Thomas said, maybe follow up is on the horizon.

In the meantime, since we published our report on response diversity, we published advice also on sustainable food consumption and there is now work going on concerning artificial intelligence as well as research and on solar radiation modification. So we're busy and we are also very open to other opportunities to discuss crisis management and response diversity. So thank you very much also for coming today and I hope to meet you again soon.

Ron Kingham: I would just like to add that we will be preparing a report of today's meeting, and we will encourage you to share that with others who you feel will benefit from reading about this important topic and our discussion. We will also seek to find ways to maintain communication with everyone here today and joining us remotely as part of the follow up.

Let us now turn to the last item on the agenda which is to provide anyone with an opportunity to share information on their own recent and forthcoming activities.

And, if I may, I would like to kick off this round by informing you about the project on Climate and Security Action through Civil-Military Cooperation in Climate-Related Emergencies (**Project CASA**). It is co-organised by the Climate Security Association of Canada (CSAC), the Crisis Management and Disaster Response Centre of Excellence (CMDR COE), the Environment & Development Resource Centre (EDRC)Foundation for Global Governance and Sustainability (FOGGS), and the Global Military Advisory Council on Climate Change (GMACCC). It is sponsored by the Directorate of Strategic Coordination and Outreach of the Canadian Department of Defence through its Mobilizing Insights in Defence and Security Program.

The aim of the project is to study the extent to which NATO and selected non-NATO countries have engaged their national militaries in responding to climate-related emergencies. It examines trends in these responses over time, the degree to which national militaries have the resources and mechanisms needed to prepare for and respond to these emergencies, and the consequences for force composition and readiness from participation in civil protection operations. The project does so through an interdisciplinary network of experts who are working to collect, analyse, and publish data on relevant military activities and civil-military cooperation.

It is also a very participatory research project in which the experts involved - and any others who are interested - can connect, share information and explore other opportunities to work together.

Fred Kruidbos, *(Biologist – ecologist, Ecology, K-SN Ecological Services B.V.)*: I am a biologist specialise in ecology, I have my own company and I'm also working for the Dutch Ministry of Defence. One of the projects that I'm working on, which is related to the themes we discussed today is a project on the effect of Dutch policy on the renovation and insolation of Dutch households.

This is of course related to the reduction of greenhouse gases, but on the local scale insolation of houses means that certain animals like bats and certain birds are prevented to get into their shelters and reproduction sites which has implications on the sustainability of their populations. But it also has an impact on our own health as for instance where bats play a very important role as a protective shield against the bites of mosquitos including exotic species migrating further north and bringing pathogens with them – something we should prevent.

I'd also like to mention the publication which I co-authored and which is on the reading list for this seminar entitled **"The Climate-Conflict-Displacement Nexus from a Human Security Perspective".** I would be happy to discuss you the issues we deal with in the book regarding the impact of climate change on interconnected human and ecological systems.

Abigail Robinson, *(Director, Continua):* I'm currently working as an independent expert in security and defence, and a lot of my work focuses on the intersection of climate change and security. I'll mention just a couple of things briefly.

One is that over the past couple of years I Co-led with another colleague from the Geneva Centre for Security Sector Governance, a study that looked specifically at how security institutions like the military but also the police and others are responding to climate and environmental risks. We looked at four very different environmental, geographic and political contexts: Brazil, Sierra Leone, Palestine and the Philippines. And came up, I think, with some interesting insights.

You know, in terms of really thinking a little bit more broadly about how we can use the capacity of the security sector in responding to some of these challenges that includes certainly disaster response and crisis management but also dealing with environmental crime and other forms of environmental protection.

And then coming up over the next year or two I'm working on designing a new two-week climate security course for the Institute for Security Governance, which is part of the US defence department. That is going to be a course mid to senior grade military leaders from different countries in different regions around the world. The focus will be on really looking at the broader range of contributions that armed forces can make in this space with a special focus on environmental protection.

And then I'm also having the opportunity now to serve on the Advisory Group for Project CASA which Ron just mentioned.

So I think we'll have a good opportunity, especially in this climate security course to take some of the concepts that were discussed today, including response diversity and bring those into a space where they can really be considered by different military leaders.

Blair Brimmell: The new **NATO Climate Change and Security Centre of Excellence** has been mentioned already but I'd just like to add that it has recently been officially launched in Montreal, Canada, with Mathieu Bussières as director and that the Centre now has 12 participating countries . The Centre's website will be going live soon and I'm sure very good work will coming out from the Centre in short order.

Karolina MacLachlan, *(Senior Advisor, Policy & Advocacy, at the Center for Civilians in Conflict -CIVIC)*: I work for the **Center for Civilians in Conflict**, and I wanted to really introduced myself because both CIVIC and myself are relative newcomers to the climate change and security space. We focus on protecting civilians in conflict as. We have recently released a very short paper – entitled **"Climate Change and the Protection of Civilians in Conflict"** on how climate change links up with protection risks and how it influences responses to threats to civilians. One side of the issue that we have seen is quite similar to what Paul has mentioned in that climate change is a threat multiplier when it comes to protecting civilians as well.

The other side is perhaps a lot more tactical and down to the ground in that we have seen the necessity to adapt military preparedness and also military education to account for different patterns of behaviour caused precisely by climate change and that could influence the behaviour of civilians that the military sees, and that the military has to respond to. We're currently trying to build that out into a more systematic programmatic component of what we do. And so I think best I could say at the end is watch this space. There might be more coming soon.

Ron Kingham: I found the paper very interesting because it is a great way of getting the big picture and to see how different aspects and issues are interconnected. As it is so relevant to our discussion today, we will add it to the reading list for this seminar.

Now, to everyone, thank you very much for joining us today. I hope you enjoyed it as much as I have. I especially wish to again thank our partners organisations and our speakers and also those who have followed today's event remotely. We hope to share at least a summary of today's discussion with you soon and encourage you to share that with you friends and colleagues.

Annexes

Annex I. Programme of the Seminar

13:15-14:00	***Arrival and Registration***
14:00-14:15	***Opening and Welcoming Remarks*** Mr Ronald A. Kingham, Executive Director, Environment & Development Resource Centre Dr Céline Tschirhart, Scientific Policy Officer, Scientific Advice Mechanism to the European Commission Ms Tzonka Iotzova, Head of Unit, External Relations, EESC
	Session 1: Moderated by Mr Toby Wardman, Head of Communications, Scientific Advice Mechanism to the European Commission
14:15-14:35	***Understanding Response Diversity and How it Works*** Dr Thomas Elmqvist, Professor in Natural Resource Management, Stockholm Resilience Centre, Stockholm University / Former Lead, UN "Cities and Biodiversity Outlook" / Former Lead, Urban Planet: Knowledge towards Sustainable Cities, Future Earth
14:35-15:00	***Panel of Respondents*** - Ms Maarja Kruusmaa**,** Member, Group of Chief Scientific Advisors to the European Commission / Professor of Biorobotics and Vice-rector for Research at the University of Technology (TalTech), Tallinn - Mr Olaf Deussen**,** Member of Cabinet, Cabinet of EU Commissioner Lenarcic, European Commission

	- Ms Olimpia Imperiali, Policy Officer, Emergency Response Unit, Directorate-General for European Civil Protection and Humanitarian Aid Operations, (DG ECHO), European Commission
15:00-15:15	***Discussion***
15:15-15:30	***How to make the EU Climate Diplomacy more effective*** Mr Stefano Mallia, President, Employer's Group, EESC / Rapporteur of the REX/569 EESC Opinion on the EU Climate Diplomacy for adoption in December 2023
15:30-15:45	***Discussion***
15:45-16:15	***Coffee Break***
	Session 2: Moderated by Mr Ronald A. Kingham, Executive Director, Environment & Development Resource Centre
16:15-16:30	***The Multidimensions of the NATO Climate Change and Security Action Plan*** Mr Paul Rushton**,** Officer, Climate and Security, NATO
16:30-16:45	***Discussion***
16:45-17:00	***Follow-up and Closing of the Seminar***
17:00-18:00	***Reception***

Annex II: Participants

International Seminar
RESPONSE DIVERSITY
The role of the EU and Civil Society in Strategic Crisis Management in an Era of unprecedented Turbulence at the Planetary Level

Convened as the 16th Meeting of the Brussels Dialogue on Climate Diplomacy
Date: Friday, 24 November 2023 – 14:00-18:00 CET
Venue: European Economic and Social Committee, Brussels & Online

LIST OF EXPECTED PARTICIPANTS

Mr Luc Bas, Director, Climate and Environment Risk Assessment Centre, Belgium Federal Government

Mr Georg Berveniku-Brunner, Austrian Academy of Sciences

Colonel Raul Kleber de Souza Boeno (Ret.), Member, Global Military Council on Climate Change (GMACCC) / Former Head of the Strategic Studies Advisory Office and of the Civil Affairs Section (E9) of the 5th Army Division, Brazil

Mr Richard Brewin, Programme Manager, Energy & Environmental Security, Emerging Security Challenges Division, NATO HQ

Ms Blair Brimmell, Second Secretary, Climate Change and Security, Global Affairs Canada, Canada's Permanent Delegation to NATO

Ms Margaret Brusasco-Mackenzie, Senior Advisor and Chari, Advisory Council, Institute for Environmental Security (IES) / Former Head, International Affairs and Adviser on Sustainable Development, Directorate-General for the Environment, European Commission

LCol David Burbridge, Deputy Commander, CF Real Property Operations Group, Canadian Armed Forces

Ms Diana, Burghardt, Project Advisor, European Health and Digital Executive Agency (HaDEA)

Mr Olaf Deussen, Member of Cabinet, Cabinet of EU Commissioner Lenarcic, European Commission

Mr Bienfait Dunia Ombeni, Director, Dunia Bora Foundation

Dr Thomas Elmqvist, Professor, Stockholm University, Stockholm Resilience Centre / Former Lead, UN "Cities and Biodiversity Outlook" / Former Lead, Urban Planet: Knowledge towards Sustainable Cities, Future Earth

Lt Gen (R) Tariq Ghazi, Member, Global Military Council on Climate Change (GMACCC) / former Defence Secretary of Pakistan

Mr Sven Hartwig, Public Relations, Austrian Academy of Sciences

Ms Claudia Heilmann, Austrian Academy of Sciences

Ms Olimpia Imperiali, Deputy Team Leader of the Situational Awareness Sector, DG ECHO, European Commission

Ms Tzonka Iotzova, Head of Unit, External Relations, European Economic and Social Committee

Ms Frida Jangsten, Climate Section, Department for Multilateral Banks, Sustainability and Climate, Ministry for Foreign Affairs, Sweden

Ms Sophie Jouineau, Consultant, ITG

Ms Katarina Kertysova, Climate Security Officer, Emerging Security Challenges Division, NATO

Dr Marcus King, Professor, School of Foreign Service, Georgetown University

Mr Ronald A. Kingham, Executive Director, Environment & Development Resource Centre (EDRC) / Coordinator, BDCD, GMACCC and Project CASA

Ms Ellie Kinney, Campaigner, Conflict and Environment Observatory (CEOBS)

Ms Jordan Koop, Policy Officer, Climate Change and Security, NATO

Dr Georgios Kostakos, Executive Director, Foundation for Global Governance and Sustainability (FOGGS)

Ms Dimitra Koutouzi, Policy Officer, EUROMIL

Mr Fred Kruidbos, Biologist – Ecologist, Ecology, K-SN Ecological Services B.V.

Ms Maarja Kruusmaa, Member, Group of Chief Scientific Advisors to the European Commission

Dr Karolina MacLachlan, Senior Adviser-Policy & Advocacy, Center for Civilians in Conflict

Mr Kim MacLachlan Vetting, Governance Advisor, Civ-Mil liaison (SHAPE J9), NATO - SHAPE

Mr Stefano Mallia, President, Employer's Group, European Economic and Social Committee

Mr Ville Majamaa, Team Leader, Institution Building Unit - DG NEAR, European Commission

Ms Helena Martin Herrero, Blue Book Traineeship, Cabinet of European Commissioner for Crisis Management, Janez Lenarčič, European Commission

Ms Marie Sophie Mayer, Trainee, JRC, European Commission

Mr Roland-Jan Meijer, Secretary-General, GLOBE EU

Mr Laurence Moffett, Rise for Climate Belgium

Ms Aurélie Mont-Reynaud, Second Secretary, Environment and Fisheries Mission of Canada to the EU

Ms Jeannette Mullaart, Senior Advisor, Environment & Development Resource Centre (EDRC)

Dr Orlin Nikolov, Director, Crisis Management and Disaster Response Centre of Excellence (CMDR COE)

Mr Owen Petchey, Professor, University of Zurich (tbc)

Ms Sirpa Pietikäinen, MEP, European Parliament (tbc)

Dr Octávia Portugal Frota, Senior Advisor, Grouping HAD&S and ULB_ATM (tbc)

Ms Megan Richards, Senior Advisor, Energy and Technology, Rud Pedersen Public Affairs / Former Visiting Senior Fellow, German Marshall Fund of the United States / Former Director, Energy Policy, DG Energy, European Commission

Ms Abigail Robinson, Director, Continua

Mr Paul Rushton, Officer, Climate Change and Security, Emerging Security Challenges Division, NATO

Dr Jamie Shea, Secretary General, GMACCC / Senior Fellow, Peace, Security and Defence, Friends of Europe / Former Deputy Assistant Secretary General for Emerging Security Challenges, NATO

Mr Ioannis Sokos, Policy Assistant, EUROMIL

Dr Ricardo Tavares da Costa, Senior Researcher, Joint Research Centre, European Commission

Dr Céline Tschirhart, Scientific Policy Officer, EC Scientific Advice Mechanism

Dr Ilze Trapenciere, Advisor to the President, Latvian Academy of Sciences, International Department, Latvian Academy of Sciences

Mr Raymond Van Ermen, Director, The EPE

Mr Toby Wardman, SAPEA Head of Communications, Scientific Advice Mechanism

Ms Andrea Windegger, Austrian Academy of Sciences

Dr Rachael Winfree, Professor, Rutgers University / Member, Response Diversity Network

Annex III: For Further Reading

Essential Reading:

Walker et al., "Response Diversity as a Sustainability Strategy", Nature Sustainability, 30 January 2023 - Full text / Extract (2 pages)

EU Climate Diplomacy - EESC Own-initiative opinion - Ongoing (updated on 09/10/2023) - Bureau decision date: 25/01/2023 - This opinion was subject to debate and vote at the REX Section meeting on 28 September 2023 and the final plenary vote is planned for 13-14 December 2023. Directly download the opinion here.

NATO Climate Change and Security Action Plan - Compendium of Best Practices (July 2023) - PDF 1.5 MB

More Background Material:

Websites

Response Diversity Network The aims of the Response Diversity Network currently include: To organise and accelerate scientific advances about response diversity; To promote the inclusion of response diversity in the monitoring and assessment of biodiversity and ecosystem change; and to provide clear and accessible information about response diversity to relevant individuals and organisations.

Books, Papers and Reports

Center for Civilians in Conflict, "Climate Change and the Protection of Civilians in Conflict" August 23, 2023

"Europe wants to get better at planning for the worst: The EU is developing the concept of 'open strategic autonomy' to survive and thrive in an increasingly uncertain world. It might even put a senior commissioner in charge of it", By Sarah Anne Aarup, Politco, 11 October 2023

"Maui fires could taint the island's waters". Scientists are investigating Researchers in Hawaii are studying the deadly blazes' effects on drinking-water quality and how they might affect local marine ecosystems. By Jeff Tollefson, Nature, 30 August 2023

Hill, Alice, "The Age of Climate Disaster Is Here: Preparing for a Future of Extreme Weather", Foreign Affairs, 25 August 2023

Samuel R. P.-J. Ross, Owen L. Petchey, Takehiro Sasaki, David W. Armitage, "How to measure response diversity", Methods in Ecology and Evolution, British Ecological Society, Volume 14, Issue 5, May 2023, First published, 21 March 2023
Walker et al., "Response Diversity as a Sustainability Strategy", Nature Sustainability, 30 January 2023

SAPEA Evidence Review Report and Scientific opinion from the Group of Chief Scientific Advisors to the European Commission "Strategic crisis management in the EU", 22 November 2022

Mohamed Behnassi, Himangana Gupta, Fred Kruidbos, Anita Parlow (Editors), The Climate-Conflict-Displacement Nexus from a Human Security Perspective, Springer Cham, 2 April 2022

M. Nyström, J.-B. Jouffray, A. V. Norström, B. Crona, P. Søgaard Jørgensen, S. R. Carpenter, Ö. Bodin, V. Galaz & C. Folke, Anatomy and resilience of the global production ecosystem Nature volume 575, pages 98–108, 6 November 2019

Hill, Alice C. and Martinez-Diaz, Leonardo, "Building a Resilient Tomorrow: How to Prepare for the Coming Climate Disruption" Oxford University Press, November 2019

Lozano Basanta, Juan Alfonso, "Disaster Risk Reduction contribution to Peacebuilding programmes", Uppsala University, Disciplinary Domain of Humanities and Social Sciences, Faculty of Theology, Department of Theology, Student thesis, 2014

Thomas Elmqvist, Carl Folke, Magnus Nyström, Garry Peterson, Jan Bengtsson, Brian Walker and Jon Norberg, Response Diversity, Ecosystem Change, and Resilience, Frontiers in Ecology and the Environment, Vol. 1, No. 9 (Nov., 2003), pp. 488-494 (7 pages)

News Articles and Interviews

"Europe wants to get better at planning for the worst: The EU is developing the concept of 'open strategic autonomy' to survive and thrive in an increasingly uncertain world. It might even put a senior commissioner in charge of it", By Sarah Anne Aarup, Politco, 11 October 2023

"Tested in Greece's Fires: An Emergency Force for 27 Countries" The European Union deployed firefighters and equipment in what could be a preview of how it handles disasters linked to climate change", By Matina Stevis-Gridneff, New York Times, 30 August 2023

"The next pandemic could strike crops, not people: Genetic uniformity is central to modern farming. It leaves us vulnerable to plant disease breakouts.", By Saima Sidik, GRIST, 22 August 2023

"Strategic Crisis Management in the EU: How to be ready for wildfires?" with Professor Thomas Elmqvist, SAPEA Communications, YouTube, 24 July 2023

Interview with Mr. Alfonso Lozano Basanta, Coordinator of the Emergency Response Coordination Centre (ERCC) in the European Commission in the context of the Militaries for Civil(Ian) Emergencies - M4CE Project, Foundation for Global Governance and Sustainability (FOGGS), YouTube, 20 November 2021

UN Documents

United Nations Office for Disaster Risk Reduction (2023) GAR Special Report: Measuring Resilience for the Sustainable Development Goals. Geneva.

NATO Documents

Environment, climate change and security (24 July 2023)

NATO Climate Change and Security Centre of Excellence (24 July 2023)

Euro-Atlantic Disaster Response Coordination Centre - EADRCC (20 Sep. 2021)

Resilience, civil preparedness and Article 3 (02 August 2023

Climate Change & Security Impact Assessment - The NATO Secretary General's report (2023) - PDF 6 MB

NATO Climate Change and Security Action Plan - Compendium of Best Practices (July 2023) - PDF 1.5 MB

Implementing NATO's Climate Security Agenda: Challenges Ahead (10 August 2023)

EU Documents

JOINT COMMUNICATION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL: A new outlook on the climate and security nexus: Addressing the impact of climate change and environmental degradation on peace, security and defence, HIGH REPRESENTATIVE OF THE UNION FOR FOREIGN AFFAIRS AND SECURITY POLICY, European Commission, 28 June 2023

"The EU Strategic Compass", European Economic and Social Committee, Adopted on 25 January 2023

Statement from the European Group on Ethics in Science and New Technologies "Values in times of crisis: Strategic crisis management in the EU" Directorate General for Research and Innovation, European Commission, 2022

Hearing and Study Group on the EU Climate Diplomacy (3 May 2023) – Public hearing in the framework of the 1st meeting of the Study Group REX/569 The EU Climate Diplomacy

On the issues covered by the opinion on the Strategic Compass:

Related EESC opinions:
REX/463 - The new EU strategy on foreign and security policy
CCMI/154 - European defence industrial development programme
CCMI/162 - European Defence Fund
CCMI/173 - The industrial dimension of the Security Union (own-initiative opinion)
CCMI/179 - Action Plan on synergies between civil, defence and space industries
CCMI/189 - Roadmap on security and defence technologies
REX/402 – EU Maritime Security Strategy
REX/542 – Improving the EU's capacity to respond to extreme events outside its territory
REX/546 – Restrictions for transport operators in Belarus
REX/554 – Instrumentalization of migrants

European Parliament / EPRS:

REPORT on a European Parliament recommendation to the Council and the Vice-President of the Commission / High Representative of the Union for Foreign Affairs and Security Policy on the EU's Foreign, Security and Defence Policy after the Russian invasion of Ukraine

Strategic Compass: Towards adoption, Elena Lazarou with Linda Tothova, At a Glance, EPRS, November 2021

Where will the EU's Strategic Compass point?, Tania Latici and Elena Lazarou, Briefing, EPRS, October 2021

The European Union's 'Strategic Compass' process, Elena Lazarou and Tania Latici, Graphic, EPRS, April 2021
EU Strategic Autonomy in a Time of Great-Power Rivalry Dr. Elena Lazarou (EPRS) at LSC22, 29/05/2022 - Video

Council

EU cooperation on security and defence (Consilium.europa.eu)
Security and defence: EU to move forward on common security and defence (Council 10/05/2021)

Council conclusions on Security and Defence (Council, 10/05/2021)

A Strategic Compass for a stronger EU security and defence in the next decade (21/03/2022)

Statement of the Members of the European Council, 26 February 2021

G7 Leaders' Communiqué - Executive summary 28/06/2022

Main EEAS documents:

Towards a Strategic Compass (21/03/2022, EEAS website)
Foreword by HR/VP Josep Borrell (EN) (FR) 24/03/2022
A Strategic Compass for Security and Defence - EEAS Website (europa.eu)
A Strategic Compass for Security and Defence - document (EN) 21/03/2022

EEAS - Factsheets etc.:

The European Peace Facility 18.07.2022
The EU' climate change and defence roadmap 31.03.2022
Countering hybrid threats 31.03.2022
Factsheet: A stronger civilian side of the EU's Common Security and Defence Policy 30.03.2022
EU Missions and Operations 28.03.2022
EU-NATO Cooperation 26.03.2022
Military Mobility 26.03.2022
Permanent Structured Cooperation (PESCO) - factsheet 25.03.2022
Reinforcing the EU-UN Strategic Partnership on Crisis Management 24.03.2022
EU Rapid Deployment Capacity 21.03.2022
Questions and answers: a background for the Strategic Compass 21.03.2022
A Strategic Compass for the EU 21.03.2022
Infographic - A Strategic Compass for the EU 2022
Factsheet: Coordinated Maritime Presences 21.03.2022
Cybersecurity: EU External Action 16.12.2020
Questions and answers: Threat Analysis – a background for the Strategic Compass 20.11.2020
Implementation Plan on Security and Defence (01.03.2018)

Other relevant publications:

EUISS activities and publications on Strategic Compass

EUISS Podcast: What is the Strategic Compass? 05/11/202

Eastern Partnership: Speech by High Representative/Vice-President Josep Borrell at the EP plenary 08.06.2022

EU's Foreign, Security and Defence Policy after the Russian invasion of Ukraine: Speech by High Representative/Vice-President Josep 07.06.2022

Civilian CSDP: High Representative Josep Borrell delivers keynote address on the 15th Anniversary of the Civilian Planning Conduct and Capability 23.05.2022

The Strategic Compass is out: now we have to implement it 25.03.2022

Time to move forward with the Strategic Compass 18.11.2021

A Strategic Compass for Europe 15.11.2021

Interview on Strategic Compass 12.11.2021

Europe cannot afford to be a bystander in the world. We need a "strategic compass" 10.10.2021

Rentrée 2021: Afghanistan and beyond 06.09.2021

The EU's Strategic Compass for Security and Defence (Clingendael.org, 31.05.2021)

What's next for European defence? 07.05.2021

Moving forward on European defence 28.02.2021

ANNEX IV: Organisers and Partners

Brussels Dialogue on Climate Diplomacy

The Brussels Dialogue on Climate Diplomacy (BDCD) is an informal network for the exchange of information and the promotion of cooperation among European institutions, international organisations, NGOs and think-tanks active in the nexus between climate change and international, national, human and environmental security. There are currently more than 40 Participating Organisations in the BDCD.

Attendees at the BDCD meetings may participate in their individual capacities and not necessarily as representatives of their respective organisations. The BDCD project is coordinated by the Environment & Development Resource Centre.

Website: https://www.brusselsdialogue.net/

Environment & Development Resource Centre

The *Stichting* Environment & Development Resource Centre (E DRC) was established in Amsterdam in 1991 as a non-profit foundation. Its aim is to contribute to the achievement of global sustainable development that is environmentally sound, socially just and respectful of cultural diversity.

EDRC also serves as a catalyst for new initiatives to redress shortcomings in the international environment-development-security policy- making process. The Centre acts as an independent 'honest broker' carrying out and commissioning innovative studies, promoting co-operation between the environment, development and peace movements, between researchers and activists, and between NGOs and decision makers.

Website: https://www.edrc.net/

European Economic and Social Committee

The European Economic and Social Committee (EESC) is the voice of organised civil society in Europe. It represents employers, workers and civil society organisations. The expertise of its 329 members helps optimise the quality of EU policies and legislation.

Committed to European integration, the EESC contributes to strengthening the democratic legitimacy and effectiveness of the European Union by enabling civil society organisations from the Member States to express their views at European level. This Committee fulfils three key missions:

- Helping to ensure that European policies and legislation tie in better with economic, social and civic circumstances on the ground, by assisting the European Parliament, Council and European Commission, making use of EESC members' experience and representativeness, dialogue and efforts to secure consensus serving the general interest;
- Promoting the development of a more participatory European Union, which is more in touch with popular opinion, by acting as an institutional forum representing, informing, expressing the views of and securing dialogue with organised civil society;
- Promoting the values on which European integration is founded and advancing, in Europe and across the world, the cause of democracy and participatory democracy, as well as the role of civil society organisations.

The EESC is a consultative body that gives representatives of Europe's socio-occupational interest groups and others a formal platform to express their points of view on EU issues. Its opinions are addressed to the Council, the European Commission and the European Parliament. It thus has a key role to play in the Union's decision-making process.

Website: https://www.eesc.europa.eu/en

GLOBE European Union

Within the European Parliament, GLOBE EU serves as a platform for discussing European Commission policy proposals and for coordinating political action among like-minded legislators in the European Parliament and at member state level. It seeks to facilitate structured discussions between Members of the European Parliament, Commission officials, specialists, and a diversity of stakeholders through high-level round tables, workshops and conferences.

GLOBE EU is the cross-party group of European Parliament (EP) legislators acting as the 'EU chapter' of GLOBE International. GLOBE EU does not have the status of an EP intergroup. It was formally registered as a Belgian international non-profit association (AISBL) in 1992.

The vision inspiring the work of the GLOBE community worldwide is that of a world in which nine billion people can live well, and within the planet's resources, by mid-century.

Website: https://www.globe-eu.org/

Scientific Advice Mechanism to the European Commission

The Scientific Advice Mechanism provides independent scientific evidence and policy recommendations to the European institutions by request of the College of Commissioners.

It consists of three parts:

- The Group of Chief Scientific Advisors, seven eminent scientists whose role is to make policy recommendations
- SAPEA (Science Advice for Policy by European Academies), which brings together Europe's academies and Academy Networks to review and synthesise evidence
- The SAM secretariat, a unit within the European Commission whose role is to support the Advisors and liaise between the Scientific Advice Mechanism and the European Commission

In some activities, such as communicating about our work, the three parts collaborate closely. But when giving scientific advice, SAPEA and the Advisors work independently, following specific procedures to maintain the independence and quality of our advice.

Website: https://scientificadvice.eu/

Stockholm Resilience Centre

Stockholm Resilience Centre (SRC) is a joint initiative between Stockholm University and the Beijer Institute of Ecological Economics at The Royal Swedish Academy Sciences, located within faculty of Science at Stockholm University.

The centre was founded with funding from Mistra by Johan Rockström and Carl Folke in 2007, based on the insight that the biosphere, society and the economy should be studied as one system to address the complex challenges that face humanity.

Our research builds on science insights that date back more than half a century ago. Explore the image above to see the roots of resilience and scientific advancements related to the Centre.

Today, the centre has become a world-leading sustainability and resilience science centre, advancing science for a liveable planet.

160 researchers and staff from across the world now work at the centre, located at Albano at Stockholm University.

Website: https://www.stockholmresilience.org/