
Jan Sigurd Fuglestad
Norway's candidate for Working Group
Vice-Chair (WGIII or WGI)

Male. Born 19.05.1960
Nationality: Norwegian

Orcid.org/0000-0001-6140-8374

Personal website



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Motivation and visions

Our climate is changing, and we are experiencing the severity of the impacts. We have started to mitigate and adapt to these changes, but at a scale and pace that needs to be significantly accelerated. Therefore, it is increasingly important that the IPCC delivers high-quality scientific assessments based on the best available science across a range of disciplines in a timely and policy relevant manner. Experience from the Sixth Assessment Report has demonstrated that cross-disciplinary approaches bring real added value and increase the policy relevance of climate science and IPCC assessments.

I am highly motivated to be part of the effort to take the IPCC to the level needed to address the pressing scientific and policy-related issues ahead of us. If elected, I will further my efforts from the AR6 to support coordination and consistency across the Working Groups and build on what has been learned from writing Special Reports and cross-Working Group collaboration, to make the best and most relevant climate science available to policymakers. I see dissemination as a key aspect for the uptake of IPCC findings in policymaking, and I will continue to support such essential communication in the next cycle.

In my view, the expertise and experience of individual Bureau Members can be better utilized in the upcoming cycle, especially on cross-cutting issues and on support for authors. In particular, I will work to expand and strengthen cross-Working Group collaboration, including with the Task Force on National Greenhouse Gas Inventories (TFI), on issues such as the use and assessment of scenarios, carbon budgets, net zero, consistent emission data, carbon dioxide removal, short-lived climate forcers (SLCF), and air quality. I will also actively support the couplings to Working Group II on regional impacts, such as the assessment of health effects of climate change, and health benefits of emission reductions. The policy-relevant treatment of these topics requires contributions across several disciplines and stronger cross-cutting collaboration and integration is needed from the start of the AR7 process.

During the AR6 process, developing a common glossary emerged as an essential part of the AR6 outcome. I will prioritize the further development, maintenance, and user-friendliness of the AR7 glossary. I will also strive to further improve collaboration across UN Assessments and bodies (e.g., with WMO/UNEP Ozone Assessment, ICAO and IPBES), which I believe is needed for policymakers to appropriately tackle the climate challenge in a holistic manner.

If elected, I will continue as a team player and support the authors and the leadership. I will work for stronger involvement of scientists from the Global South and participation of younger generations of scientists - in general, and especially on topics where I can be particularly active, e.g., scenarios, carbon budgets, net zero, SLCF and the connection between climate and air quality.

IPCC Experience

AR6

In October 2015 Fuglestedt was elected Vice-Chair of IPCC WGI and has been very active in the preparation and writing of several IPCC reports in the 6th cycle of the IPCC.

For the Synthesis Report (SyR) he was member of the Scientific Steering Committee (SSC) for the scoping meeting and later for the SyR itself. He was also part of the SyR Glossary editorial team and member of the team overseeing and supporting the development of figures in SyR. He provided support to authors on the synthesis of key topics including scenarios, overshoot, carbon budgets and net zero.

In the WGIII report he was Contributing Author (CA) in the Summary for Policymakers (SPM) and CA in Ch2, Ch3, and Annex III: Scenarios and Modelling Methods. He also participated in all WGIII Lead Author Meetings as a bridge to WGI.

For the WGI report he was Drafting author of the SPM and author of Technical Summary (TS). In addition, he was CA in Ch1, Ch2, Ch6 and Ch7.

He initiated and organized cross-WG meetings and collaboration on various topics such as scenarios, temperature concepts, carbon budgets, net zero concepts, SLCF, emission metrics, climate effects of aviation, CDR, SRM, and several of these activities resulted in cross-WG boxes. He was also active as a reviewer across the reports throughout AR6.

Fuglestedt was member of the team of coordinating editors for the common cross-WG Glossary.

Special Reports

He was Review Editor (RE) of *Chapter 2 Mitigation Pathways Compatible with 1.5°C in the Context of Sustainable Development* in the IPCC Special Report on Global Warming of 1.5°C (SR1.5). In addition, he was also CA in Ch3 in the same report. For the Special Report on Climate Change and Land (SRCCL) he was part of the Scientific Steering Committee (SSC) for the scoping meeting and was also CA in Ch1.

Other activities

Member of several SSCs; the IPCC Expert Meeting on SLCF in 2017, the IPCC Expert Meeting on Scenarios in 2017, and more recently the IPCC Workshop on Scenarios in 2023, and the in-session technical workshop on common metrics (SBSTA 58). He also participated in the IPCC Expert meeting on regional changes in 2017. He has given presentations at TFI Expert meetings about WGI findings on SLCF.

He also participated in all scoping meetings and in all AR6 approval meetings (SRs, TFI, WG, SyR) and had various roles as co-facilitator, rapporteur of contact groups and huddles.

Fuglestedt has also been active at COPs during the 6th cycle where he co-chaired various side-events organized by the IPCC and presented IPCC findings to stakeholders. At Scenarios Forum in 2019 and 2023, co-sponsored by the IPCC, he organized plenary sessions with three WG co-chairs and co-organized sessions on use of scenarios in AR6 and opportunities for AR7.

Pre-AR6

AR5 WGI: Lead Author (LA), Ch8 Anthropogenic and Natural Radiative Forcing. Draft Contributing Author of the SPM. Participated in the approval meeting in 2013.

AR5 WGIII: Draft Contributing Author for the SPM and CA of Technical Summary (TS). Participated in the approval meeting in 2014.

AR5 SyR: Member of the Core Writing Team. Participated in the approval meeting in 2014.

AR5 outreach: A range of outreach activities for both WGI and the SyR, including a SBSTA-IPCC special event on common metrics to calculate the carbon dioxide equivalence of greenhouse gases, 2014, and several Norwegian outreach activities.

He participated in the SBSTA Workshop on common metrics to calculate the CO₂ equivalence of anthropogenic greenhouse gas emissions by sources and removals by sinks, in 2012, at IPCC Expert Meeting on Climate Change, Food, and Agriculture in 2015, IPCC Expert Meeting on Scenarios in 2015, and IPCC Expert meeting on Science of Alternative Metrics in 2009. Fuglestad has been active as expert reviewer of several IPCC reports.

He was CA in the Special report on Aviation and the Global Atmosphere and in WGI Ch4 and Ch6 of the Third Assessment Report (TAR).

Education

1995 Ph.D. Department of Chemistry, University of Oslo, Norway

1986 M.Sc. Department of Chemistry, University of Oslo, Norway

Positions - current and previous

2016 - Research Director/Special Adviser, CICERO Center for International Climate Research, Norway

1998 - 2016 Research Director, CICERO Center for International Climate Research, Norway

1992 - 1998 Researcher, CICERO Center for International Climate Research, Norway

1989 - 1992 Higher executive officer, Natural Resource Department, Statistics Norway

1988 - 1989 Engineer, Air Pollution Division, Norwegian Environment Agency, Norway

1987 - 1987 Research Assistant, Centre for Development and the Environment, University of Oslo, Norway

Other relevant professional experiences

2002-2004	Member of the Scientific Coordination Committee in the UNFCCC initiated process on modeling and assessment of contributions to climate change (MATCH)
2011	Served as an expert consultant to the US EPA's Advisory Council on Clean Air Compliance Analysis for review of EPA's draft report to Congress on Black Carbon.
2013-2022	Member of Impact and Science Group (ISG), Committee for Aviation Environmental Protection (CAEP) of the International Civil Aviation Organization (ICAO)
2014-2016	Member of the Expert Panel for the initiative "Global guidance on environmental life cycle impact assessment indicators" to revise and update the frameworks of environmental impact indicators in Life-Cycle Assessment (LCA). Initiated by United Nations Environment Programme (UNEP) and the Society of Environmental Toxicology and Chemistry (SETAC).
2014-	Member of Norwegian Minister of Climate and Environment's Climate Advisory Board
2015-	Vice-Chair of Intergovernmental Panel on Climate Change (IPCC) Working Group I
2016-2017	Member of Scientific Steering Committees for <i>1point5 conference Oxford, 2016</i>
2016-2018	Member of the Scientific Steering Committee of the project <i>Half a degree Additional warming, Projections, Prognosis and Impacts (HAPPI)</i> www.happimip.org/
2018-2019	Member of the Scientific Steering Committee <i>Scenarios Forum 2019</i>
2013-2019	Member of conference committee for <i>NCGG7</i> and <i>NCGG8 - 7th and 8th International Symposium on Non-CO₂ Greenhouse Gases</i>
2019-	Member of the Scientific Steering Committee for <i>The Reduced Complexity Model Intercomparison Project (RCMIP)</i> https://www.rcmip.org/
2019-2020	Member of conference committee for the conference " <i>Achieving Net Zero</i> ", Oxford
2020-	Member of the Editorial board for the journal <i>Oxford Open Climate Change</i> https://academic.oup.com/oocc
2021-	Member of the Scientific Steering Committee for <i>Scenarios Forum 2022</i> ; https://scenariosforum.org/
2022-	Appointed member of the Norwegian reference group for Horizon Europe Cluster 5
2022-	Member of The Integrated Assessment Modeling Consortium (IAMC) Scientific Working Group on Scenarios
2022-2025	Member of Impact and Science Group (ISG), Committee for Aviation Environmental Protection (CAEP) of the International Civil Aviation Organization (ICAO)

Since 2018 Fuglestad has given lectures about the IPCC at the MA-level course «Science and Technology in Politics and Society» at TIK Centre for Technology, Innovation and Culture at the University of Oslo. He is also regularly invited to give lectures about the IPCC process and outputs at various courses at the Department of Geosciences, University of Oslo. He has been and continues to act as CICERO's principal investigator for EU funded projects as well as projects funded by the Research Council of Norway. Fuglestad is an experienced leader of multi-disciplinary research groups with an extensive network of international collaborators. He has also supervised and evaluated PhD candidates and acted as reviewer for various journals. Fuglestad is actively disseminating IPCC findings to a broader audience via presentations and outreach in various media.

He has more than 100 publications and a h-index 46 (based on Web of Science, May 31st, 2023).

Selected publications from various areas of research

Scenarios

O'Neill, B. C., Carter, T. R., Ebi, K., Harrison, P. A., Kemp-Benedict, E., Kok, K., Kriegler, E., Preston, B.L., Riahi, K., Sillmann, J., van Ruiven, B.J., van Vuuren, D., Carlisle, D., Conde, C., **Fuglestad**, J., Green, C., Hasegawa, T., Leininger, J., Monteith, S., Pichs-Madruga, R. (2020). Achievements and needs for the climate change scenario framework. *Nature Climate Change*, 10(12), 1074-1084. doi:[10.1038/s41558-020-00952-0](https://doi.org/10.1038/s41558-020-00952-0)

Nicholls, Z., Meinshausen, M., Lewis, J., Smith, C. J., Forster, P. M., **Fuglestad**, J. S., Rogelj, J., Kikstra, J.S., Riahi, R., Byers, E. (2022). Changes in IPCC Scenario Assessment Emulators Between SR1.5 and AR6 Unrevealed. *Geophysical Research Letters*, 49(20), e2022GL099788. doi:<https://doi.org/10.1029/2022GL099788>

Pirani, A., **Fuglestad**, J. S., Byers, E., O'Neill, B., Riahi, K., Lee, J.-Y., Marotzke, J., Rose, S., Schaeffer, R., Tebaldi, C. (2023). Scenarios in IPCC assessments: Lessons from AR6 and opportunities for AR7. (Submitted to *npj Climate Action*).

Temperature trends and responses to mitigation

Samset, B. H., **Fuglestad**, J. S., & Lund, M. T. (2020). Delayed emergence of a global temperature response after emission mitigation. *Nature Communications*, 11(1), 3261. doi:<http://doi.org/10.1038/s41467-020-17001-1>

Samset, B. H., Zhou, C., **Fuglestad**, J. S., Lund, M. T., Marotzke, J., & Zelinka, M. D. (2022). Earlier emergence of a temperature response to mitigation by filtering annual variability. *Nature Communications*, 13(1), 1578. doi:<http://doi.org/10.1038/s41467-022-29247-y>

1.5°C ambition, net zero and carbon budgets

Millar, R. J., **Fuglestad**, J. S., Friedlingstein, P., Rogelj, J., Grubb, M. J., Matthews, H. D., Skeie, R.B., Forster, P.M., Frame, D.J., Allen, M. R. (2017). Emission budgets and pathways consistent with limiting warming to 1.5 °C. *Nature Geoscience*, 10(10), 741-747. doi:<http://doi.org/10.1038/ngeo3031>

Mitchell, D., AchutaRao, K., Allen, M., Bethke, I., Beyerle, U., Ciavarella, A., Forster, P.M., **Fuglestad**, J., Gillett, N., Hausteiner, K., Ingram, W., Iversen, T., Kharin, V., Klingaman, N., Massey, N., Fischer, E., Schleussner, C.-F., Scinocca, J., Seland, Ø., Shiogama, H., Shuckburgh, E., Sparrow, S., Stone, D., Uhe, P., Wallom, D., Wehner, M., Zaaboul, R. (2017). Half a degree additional warming, prognosis and projected impacts (HAPPI): background and experimental design. *Geosci. Model Dev.*, 10(2), 571-583. doi:<http://doi.org/10.5194/gmd-10-571-2017>

Smith, C. J., Forster, P. M., Allen, M., **Fuglestad**, J., Millar, R.J., Rogelj, J., & Zickfeld, K. (2019). Current fossil fuel infrastructure does not yet commit us to 1.5 °C warming. *Nature Communications*, 10(1), 101. doi:<http://doi.org/10.1038/s41467-018-07999-w>

Fuglestad, J. S., Rogelj, J., Millar, R., Allen, M. R., Boucher, O., Cain, M., Forster, P.M., Kriegler, E., Shindell, D. T. (2017). Implications of possible interpretations of 'greenhouse gas balance' in the Paris Agreement. *Phil. Trans. R. Soc. A*. **376**: 2016044520160445 <https://doi.org/10.1098/rsta.2016.0445>

Short-lived climate forcers and air quality

- Samset, B. H., Sand, M., Smith, C. J., Bauer, S. E., Forster, P. M., **Fuglestedt**, J. S., Osprey, S., Schleussner, C.-F. (2018). Climate Impacts From a Removal of Anthropogenic Aerosol Emissions. *Geophysical Research Letters*, 45(2), 1020-1029. doi:<https://doi.org/10.1002/2017GL076079>
- Shindell, D. T., **Fuglestedt**, J. S., & Collins, W. J. (2017). The social cost of methane: theory and applications. *Faraday Discussions*, 200(0), 429-451. doi:<http://doi.org/10.1039/C7FD00009J>
- Stohl, A., Aamaas, B., Amann, M., Baker, L.H., Bellouin, N., Bernsten, T. K., Boucher, O., Cherian, R., Collins, W., Daskalakis, N., Dusinska, M., Eckhardt, S. **Fuglestedt**, J. S., Harju, M., Heyes, C., Hodnebrog, Ø., Hao, J., Im, U., Kanakidou, M., Klimont, Z., Kupiainen, K., Law, K.S., Lund, M.T., Maas, R., MacIntosh, C.R., Myhre, G., Myriokefalitakis, S., Orliví, D., Quaas, J., Quennehen, B., Raut, J.-C., Rumbold, S. T., Samset, B.H., Schulz, M., Seland, Ø., Shine, K.P., Skeie, R.B., Wang, S., Yttri, K. E., Zhu, T. (2015). Evaluating the climate and air quality impacts of short-lived pollutants. *Atmos. Chem. Phys.*, 15(18), 10529-10566. doi:<http://doi.org/10.5194/acp-15-10529-2015>

Carbon cycle responses

- Joos, F., Roth, R., **Fuglestedt**, J.S., Peters, G.P., Enting, I. G., von Bloh, W., Brovkin, V., Burke, E.J., Eby, M., Edwards, N.R., Friedrich, T., Frölicher, T.L., Halloran, P.R., Holden, P.B., Jones, C., Kleinen, T., Mackenzie, F.T., Matsumoto, K., Meinshausen, M., Plattner, G.-K., Reisinger, A., Segschneider, J., Shaffer, G., Steinacher, M., Strassmann, K., Tanaka, K., Timmermann, A., Weaver, A. J. (2013). Carbon dioxide and climate impulse response functions for the computation of greenhouse gas metrics: a multi-model analysis. *Atmos. Chem. Phys.*, 13(5), 2793-2825. doi:<http://doi.org/10.5194/acp-13-2793-2013>
- Gasser, T., Peters, G. P., **Fuglestedt**, J. S., Collins, W. J., Shindell, D. T., & Ciais, P. (2017). Accounting for the climate-carbon feedback in emission metrics. *Earth Syst. Dynam.*, 8(2), 235-253. doi:<http://doi.org/10.5194/esd-8-235-2017>

Non-CO₂ and emission metrics

- Hodnebrog, Ø., Aamaas, B., **Fuglestedt**, J. S., Marston, G., Myhre, G., Nielsen, C. J., Sandstad, M., Shine, K.P., Wallington, T. J. (2020). Updated Global Warming Potentials and Radiative Efficiencies of Halocarbons and Other Weak Atmospheric Absorbers. *Reviews of Geophysics*, 58(3), e2019RG000691. doi:<https://doi.org/10.1029/2019RG000691>
- Hodnebrog, Ø., Etmann, M., **Fuglestedt**, J. S., Marston, G., Myhre, G., Nielsen, C. J., Shine, K. P., Wallington, T. J. (2013). Global warming potentials and radiative efficiencies of halocarbons and related compounds: A comprehensive review. *Reviews of Geophysics*, 51, 300-378. <https://doi.org/10.1002/rog.20013>
- Shine, K.P., R.P. Allan, W.J. Collins, and J.S. **Fuglestedt**, 2015: Metrics for linking emissions of gases and aerosols to global precipitation changes. *Earth System Dynamics*, 6(2), 525-540, doi:[10.5194/esd-6-525-2015](https://doi.org/10.5194/esd-6-525-2015).
- Allen, M. R., **Fuglestedt**, J. S., Shine, K. P., Reisinger, A., Pierrehumbert, R. T., & Forster, P. M. (2016). New use of global warming potentials to compare cumulative and short-lived climate pollutants. *Nature Climate Change*, 6(8), 773-776. doi:<http://doi.org/10.1038/nclimate2998>
- Allen, M. R., Shine, K. P., **Fuglestedt**, J. S., Millar, R. J., Cain, M., Frame, D. J., & Macey, A. H. (2018). A solution to the misrepresentations of CO₂-equivalent emissions of short-lived climate pollutants under ambitious mitigation. *npj Climate and Atmospheric Science*, 1(1), 16. doi:<http://doi.org/10.1038/s41612-018-0026-8>

Simplified climate models

- Kikstra, J. S., Nicholls, Z. R. J., Smith, C. J., Lewis, J., Lamboll, R. D., Byers, E., Sandstad, M., Meinshausen, M., Gidden, M. J., Rogelj, J., Kriegler, E., Peters, G. P., **Fuglestedt**, J. S., Skeie, R. B., Samset, B. H., Wienpahl, L., van Vuuren, D. P., van der Wijst, K.-I., Al Khourdajie, A., Forster, P. M., Reisinger, A., Schaeffer, R., Riahi, K. (2022). The IPCC Sixth Assessment Report WGIII climate assessment of mitigation pathways: from emissions to global temperatures. *Geosci. Model Dev.*, 15(24), 9075-9109. doi:<http://doi.org/10.5194/gmd-15-9075-2022>
- Nicholls, Z.R.J., Meinshausen, M., Lewis, J., Gieseke, R., Dommenges, D., Dorheim, K., Fan, C.-S., **Fuglestedt**, J.S., Gasser, T., Golüke, U., Goodwin, P., Hartin, C., Hope, A.P., Kriegler, E., Leach, N.J., Marchegiani, D., McBride, L.A., Quilcaille, Y., Rogelj, J., Salawitch, R.J., Samset, B.H., Sandstad, M., Shiklomanov, A.N., Skeie, R.B., Smith, C.J., Smith, S., Tanaka, K., Tsutsui, J., Xie, Z. (2020). Reduced Complexity Model Intercomparison Project Phase 1: introduction and evaluation of

Transportation and climate

Lee, D. S., Fahey, D. W., Skowron, A., Allen, M. R., Burkhardt, U., Chen, Q., Doherty, S. J., Freeman, S., Forster, P. M., **Fuglestedt**, J., Gettelman, A., De León, R.R., Lim, L.L., Lund, M.T., Millar, R.J., Owen, B., Penner, J.E., Pitari, G., Prather, M.J., Sausen, R., Wilcox, L. J. (2021). The contribution of global aviation to anthropogenic climate forcing for 2000 to 2018. *Atmospheric Environment*, 244, 117834. doi:<https://doi.org/10.1016/j.atmosenv.2020.117834>

Borken-Kleefeld, J., **Fuglestedt**, J., & Berntsen, T. (2013). Mode, Load, And Specific Climate Impact from Passenger Trips. *Environmental Science & Technology*, 47(14), 7608-7614. doi:<http://doi.org/10.1021/es4003718>

Brasseur, G. P., Gupta, Brasseur, G. P., Balasubramanian, S., Barrett, S., Duda, D., Fleming, G., Forster, P. M., **Fuglestedt**, J., Gettelman, A., Halthore, R. N., Jacob, S.D., Jacobson, M. Z., Khodayari, A., Liou, K.-N., Lund, M.T., Miake-Lye, R.C., Minnis, P., Olsen, S., Penner, J.E., Prinn, R., Schumann, U., Selkirk, H.B., Sokolov, A., Unger, N., Wolfe, P., Wong, H.-W., Wuebbles, D.W., Yi, B., Yan, P., Zhou, C. (2016). Impact of Aviation on Climate: FAA's Aviation Climate Change Research Initiative (ACCRI) Phase II. *Bulletin of the American Meteorological Society*, 97(4), 561-583. doi:<https://doi.org/10.1175/BAMS-D-13-00089.1>

Fuglestedt, J. S., Lund, M.T., Kallbekken, S., Samset, B.H., Lee, D.S. A 'greenhouse gas balance' for aviation in line with the Paris Agreement. *WIRE Climate Change (Accepted)*.

Historical contributions to climate change

Skeie, R. B., **Fuglestedt**, J., Berntsen, T., Peters, G. P., Andrew, R., Allen, M., & Kallbekken, S. (2017). Perspective has a strong effect on the calculation of historical contributions to global warming. *Environmental Research Letters*, 12(2), 024022. doi:<http://doi.org/10.1088/1748-9326/aa5b0a>

James, R. J., Richard G., Boyd, Emily, Young, Hannah R., Otto, Friederike E. L., Huggel, Christian, **Fuglestedt**, Jan S. (2019). Attribution: How Is It Relevant for Loss and Damage Policy and Practice? In Mechler, R., Bouwer, L. M., Schinko, T., Surminski, S., Linnerooth-Bayer, J.-A., (eds.) *Loss and Damage from Climate Change*. <https://doi.org/10.1007/978-3-319-72026-5>

Otto, F. E. L., Skeie, R. B., **Fuglestedt**, J. S., Berntsen, T., & Allen, M. R. (2017). Assigning historic responsibility for extreme weather events. *Nature Climate Change*, 7(11), 757-759. doi:<http://doi.org/10.1038/nclimate3419>

Fuglestedt, J., Kallbekken, S. Fair shares? *Nature Climate Change* 6, 19-20 (2016). <https://doi.org/10.1038/nclimate2791>

Life cycle analyses

Cherubini, F., **Fuglestedt**, J., Gasser, T., Reisinger, A., Cavalett, O., Huijbregts, M. A. J., Johansson, D.J.A., Jørgensen, S.V., Raugei, M., Schivley, G., Strømman, A.H., Tanaka, K., Levasseur, A. (2016). Bridging the gap between impact assessment methods and climate science. *Environmental Science & Policy*, 64, 129-140. doi:<https://doi.org/10.1016/j.envsci.2016.06.019>

Levasseur, A., Cavalett, O., **Fuglestedt**, J., Gasser, T., Johansson, D., Jørgensen, S., Raugei, M., Reisinger, A., Schivley, G., Strømman, A., Tanaka, K., Cherubini, F. (2016). Enhancing life cycle impact assessment from climate science: Review of recent findings and recommendations for application to LCA. *Ecological Indicators*. 71. 163-174. 10.1016/j.ecolind.2016.06.049.

Communication

Hawkins, E., Fæhn, T., & **Fuglestedt**, J. (2019). The Climate Spiral Demonstrates the Power of Sharing Creative Ideas. *Bulletin of the American Meteorological Society*, 100(5), 753-756. doi:<https://doi.org/10.1175/BAMS-D-18-0228.1>