

National Flagship
Atmosphere & Climate
Competence Center (ACCC)

Host organizations

University of Helsinki ([UH](#))
Finnish Meteorological Institute ([FMI](#))
University of Eastern Finland ([UEF](#))
Tampere University ([TAU](#))

Director

Markku Kulmala, UH;

Vice Directors

Jaana Bäck, UH
Ari Laaksonen, FMI
Annele Virtanen, UEF
Miikka Dal Maso, TAU

Contact

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www.accflagship.fi
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Funded by:



ACCC Flagship

— from deep scientific understanding
to practical solutions

Knowledge co-production seminar,
18-19 September 2023



EU Arctic strategy – current state and future needs

Monday 18 September 2023

EU Arctic strategy – current state and future needs

Monday 18 September 2023

9.15 Arrival and pick-up from the airport & visit/early check-in to the hotel. Short walk from hotel to Parliament

11.00 Arrival to the Parliament

11.30 Visit to the EU Parliament (mandatory)

13.00 Lunch at the Parliament's guest cafeteria (pre-booked, at own expense)

14.00 Visit to the Parliamentarium (mandatory)

15.30 EU Arctic strategy – current state and future needs

Venue: European Parliament 5E1

Moderator: Adjunct Professor **Hanna Lappalainen**, ACCC/UH

Prof. **Tuukka Petäjä** (ACCC/UH): 'Arctic collaboration'

- **Urmas Paet** MEP

- **Clara Ganslandt**, Special Envoy for Arctic Matters, Head of the Western Europe/Arctic/Regional Division (Europe 1), EEAS

Discussion

17.00 Hotel/free time

19.00 Dinner hosted by MEP Hautala

Venue: restaurant La Brasserie de la presse, Rue Royale 100



EU Arctic strategy – current state and future needs
Tuesday 19 September 2023

Venue: Finnish Liaison Office for EU R&D, located at the Permanent Representation of Finland in Brussels, Avenue de Cortenbergh 80

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8.30-9.00 Arrival & coffee

9.00-9.15 Opening

Opening and welcome: MEP Heidi Hautala
Introduction of ACCC Flagship
Introduction round of participants

9.15-11.15 / Role of science in environmental and climate diplomacy in the current geopolitical context

Moderator: Adjunct Professor Yulia Yamineva (ACCC/UEF)

Academician, Prof., Director of ACCC **Markku Kulmala** (UH): 'Global initiatives and the role of science diplomacy' (online)

Short comments:

- Prof. **Timo Vesala** (ACCC/UH) 'Experiences on the climate policy as a member of the Finnish climate panel'



- Adjunct Professor **Roseline Thakur** (ACCC/UH) 'Challenges in global in-situ observations'
- Dr. **Rosa Rantanen** (ACCC/UH) 'Climate security and civil society'

MEP **Sirpa Pietikäinen**

Chantal Marijnissen, Head of Unit for Environment, Sustainable Natural Resources, DG INTPA

Tibor Stelbaczky, Principal Adviser on Energy Diplomacy, EEAS

Terhi Lehtonen, Coordinator for inter-institutional relations - Climate law and green deal legislation, DG CLIMA

Discussion

11.15-11.30 Break

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11.30-13.00 / New trends in climate policy and law and global stocktake

Moderator: MEP Heidi Hautala

Prof. **Kati Kulovesi** (ACCC/UEF) ‘EU climate law after Fit for 55 – what is needed next?’ (online)

Short comments:

- Doctoral Researcher **Maiju Mähönen** (ACCC/UEF): ‘Climate litigation’
- Advisor **Sami Paatero** (ACCC/UH): ‘Carbon verification system’

MEP **Ville Niinistö**

Damien Meadows, Adviser on Legal and Interinstitutional issues, DG CLIMA

Madelaine Tuininga, Head of Unit - trade and sustainable development, DG TRADE

Discussion

13-14 Lunch

14.00-15.30 / EU Forest and agricultural policy and economy in the global context

Moderator: Adjunct Professor Anna Lintunen (ACCC/UH)

Prof **Olli Tahvonen** (ACCC/UH): ‘Forests and climate policy’

MEP **Nils Torvalds**

Christian Holzleitner, Head of Unit for Land Economy and Carbon Removals, DG CLIMA

Astrid Schomaker, Director for Global Sustainable Development, DG ENV

Julia Christian, Forest Governance Campaigner, FERN (forest and rights NGO)

Discussion

15.30-16.00 / Joint discussion and networking

16.15 Minibus to the airport leaves from the Finnish Liaison Office

ACCC Delegation



Anna Luomaranta, FMI

Dr. Anna Luomaranta works as a Group Leader in Extreme Weather and Climate Change -research group in the Weather and Climate Change Impact Research unit at Finnish Meteorological Institute (FMI). Her own research topics have concentrated on the characteristics and changes of winter climate conditions in Finland. She is the chairperson of the management group of the climateguide.fi, the national portal of climate change information for Finland. She is one of the two FMI representatives in the Nordic Framework for Climate Services -collaboration group.

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Eeva Kuntsi-Reunanen, FMI

Eeva Kuntsi-Reunanen works as a senior researcher in the Weather and Climate Change Impact Research unit at Finnish Meteorological Institute (FMI). She is currently acting as a head of Climate Change and Innovation Research group at FMI. She has studied CO2 emissions and intensity development, scenario and model development and burden sharing as well as future emission targets. Currently she works on issues related to economics and impacts of climate change

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ACCC Delegation



Rosa Rantanen

PhD., Research Coordinator, University of Helsinki (INAR; UH)

Rosa is the head of the Initiative for a Safer Climate network that brings together researchers and civil so-ciety organizations. The network is a part of ACCC Flagship's outreach work. The umbrella theme is safer climate, which covers collaboration with climate researchers, climate security experts, non-governmental organizations, artists and others. Rosa has worked in several civil society organizations and interdisciplinary projects in Finland and abroad. Her background is in philosophy, especially in applied ethics.

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Anneli Pauli, University of Helsinki

Dr. Anneli Pauli currently works as a Professor of Practice (Impact and networking) at the Institute for Atmospheric and Earth System Research, University of Helsinki, which is part of a Finnish Flagship called Atmosphere and Climate Competence Center (ACCC). Her tasks include EU cooperation, strategy and roadmap processes, enhancing cooperation with and impact on civil society, as well networking with public and private key stakeholders. Anneli's academic background is in aquatic sciences, and she has a long career in research & innovation policies and climate action in Finland and in the EU.

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Jaana Bäck, INAR- forest

Prof. Jaana Bäck leads the Ecosystem Processes group at the Department of Forest Sciences and is the vice director of the ACCC Flagship. She works on climate change impacts on forests and on feedbacks between forests and atmosphere. She is coordinating the integrated European Long-Term Ecosystem, critical zone and socio-ecological Research Infrastructure (eLTER RI) Advanced Community project eLTER PLUS, and involved in several Horizon Europe projects on forests, climate change and biodiversity. Member of the Finnish Nature Panel.

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Sami Paatero is an Adviser of the Atmosphere and Climate Competence Center, ACCC. Sami is an entrepreneur and independent adviser active in developing R&D cooperation between academic research and business sectors. During last few years, Sami has been working in the fields of mobile communication technologies, digital transformation and platform economy. He has been developing taxation and health services, digital education technologies and most recently new climate innovations. Prior to private sector career, he has gained an extensive experience from public sector, especially in the area of foreign and security policy as well as digitalization of government services and IT infrastructure.



Timo Vesala, University of Helsinki
Timo Vesala has been Professor of Meteorology since 2001. He acted as Academy professor in 2015-2019. Vesala's main research fields are micrometeorology, biosphere-atmosphere interactions, biogeochemical cycles – especially carbon and water cycles – in forests, wetlands and lakes and related greenhouse and other trace gas exchange with the atmosphere and ecophysiology. Member of National Climate Panel 2020-2023. Vesala has contributed to public debate on climate impacts of forestry. He has promoted and produced several pieces of art combining art and science.
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Hanna Lappalainen, University of Helsinki
Research Coordinator, PhD, Docent in Atmospheric Sciences, leads the Arctic-Boreal Hub - University of Arctic Thematic network, Secretary General, Pan-Eurasian Experiment (PEEX) Program and PI of the AASCO-Arctic Science Collaborations project (2024-2026) funded by prince Albert Foundation. She has an experience of coordinating large-scale research projects and being a member of several international working groups. As the geopolitical relevance of the Arctic region continues to expand, the role of science diplomacy becomes increasingly pivotal. She motivated to illuminate the tapestry of connections that underlie Arctic research while contributing to the science diplomacy landscape.
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Anna Lintunen, INAR -forest and -physics
University researcher Anna Lintunen leads Team Boreal Trees and Climate Change in the University of Helsinki. The team studies how boreal trees and forests respond to changing climate conditions and how, in turn, forests affect the climate. She co-leads ACCC research program on quantifying and activating the potential of land-based climate change mitigation and leads several research projects with strong stakeholder collaboration. Such collaborators include e.g., Finnish cities.
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Prof. Tuukka Petäjä, vice-director of INAR, University of Helsinki
Over 20 years of research experience related to experimental atmospheric sciences. His research interests span from 1) Aerosol-cloud interactions, 2) Development of mass spectrometric methods for atmospheric aerosols and trace gases; 3) Measurement techniques for aerosol particles; 4) Long-term and field campaigns; 5) Aerosol-cloud-climate-biosphere interactions, 6) Air quality. He has educated 37 PhDs to completion. Published over 550 peer reviewed articles (10 in Science, 10 in Nature), total citations 31400, h-factor of 84, highly cited scientist (since 2014, Thompson Reuters) and has received Aerosol Foundation Award for multidisciplinary research 2022, Vaisala Award 2013 for his work on combining state-of-the-art science and instrument development; Receiver of Science and Technology in Society Future Leader Award, New York Academy of Sciences, PI of Biogenic Aerosols – Effects on Clouds and Climate (BAECC), multiplatform research campaign to elucidate the role of secondary aerosols to clouds, supported by US Department of Energy. Board member of PACES initiative. (Co)-Coordinating EU projects (iCUPE, ACTRIS IMP, RI-URBANS). 10 M personal research funding as the PI, 48 M with consortia.
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Roseline Thakur, University of Helsinki (UH)
Adjunct Professor Roseline Thakur (Docent, Atmospheric Sciences) specializes in aerosol formation studies in Boreal, urban and coastal sites in Europe, India and polar regions using chemical ionization mass spectrometry and particle size distribution instrumentation. Her main research focusses on aerosol-climate feedbacks in different ecosystem regimes. She is the main co-ordinator for the coastal-Atmospheric research site at Tvärminne Zoological station, Hanko, Finland. She is actively involved with the Finland-India partnership projects focussing on capacity building in atmospheric science to tackle urban pollution in Global South. She has been seven Polar scientific research campaign to her credit both as a participant and as a campaign leader. She has authored many international publications and has been a Mentor for Climate Hackathons, Advisor to Indian Polar Research Network, reviewer and editor to various environmental research reports and publications.
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Olli Tahvonen, INAR -forest
Olli Tahvonen, D. Sc. (Econ.) is a professor of forest economics and policy (University of Helsinki), previously professor of economics (University of Helsinki) and professor of environmental economics (Finnish Forest Research Institute). Currently his focus is on reinforcement applications in economics of forest resources and forest carbon. His earlier topics include game theoretic models on climate change and fossil fuels and models on optimal economic growth with natural resource scarcity.
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Yulia Yamineva, UEF
Yulia Yamineva is Senior Researcher at the University of Eastern Finland Law School holding the title of Docent in Climate Law and Policy. She has published in leading academic journals on international and national law on climate change and air pollution prevention, and the science-policy interface. Yamineva has also contributed to several UN policy reports on and consulting assignments for UNEP and UNITAR on climate change negotiations' support for developing countries. She previously worked for the UN Climate Change Convention Secretariat and the International Institute for Sustainable Development.
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Federico Bianchi INAR-physics, University of Helsinki (UH)
Received his PhD in atmospheric chemistry from the ETH Zürich in 2014. In 2015-2018 he was a postdoc, first at ETH Zürich, and from 2016 at UH. In 2019, he was awarded with an ERC starting grant, and in 2023 he has been awarded as a Full Professor on atmosphere and cryosphere interactions at the University of Helsinki. He has won several awards, among which the Arne Richter Award from the European Geophysical Union for Outstanding Early Career Scientists in 2017, and the Schmauss Award in 2021. His research focuses on the formation of atmospheric new particles from the pristine free troposphere to polluted megacities.
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Mikhail Sofiev, FMI
Research professor Mikhail Sofiev is a deputy leader of FMI atmospheric composition modelling group. He is a PI of the SILAM atmospheric composition model and IS4FIRES fire information system and coordinator of SILAM modelling team. His areas of interest are various modelling and monitoring aspects of atmospheric chemistry, physics, and biology. He is leading an EU project SYLVA on monitoring and modelling of bioaerosols in the atmosphere, as well as two projects of Academy of Finland: HEATCOST on global impact of vegetation fires in past and future climate, and SPORELIFE on fungal spores in the air.
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Marja-Liisa Tuomola FMI
Group leader and meteorologist Marja-Liisa Tuomola leads Innovations and Projects group in Customer Services unit. The group is responsible for helping to transform research activities to services and feeding customer needs to R&D processes. She has led several projects and is currently leading FMI's new customer portal development. She has worked in and led several groups at FMI and also worked as coordinator in EIG EUMETNET (grouping of European National Meteorological Services) Secretariat.
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Tom Kokkonen

Tom Kokkonen is working as a University Researcher in INAR, University of Helsinki. He is a co-leader of the Gigacity research group which is focusing on the interactions of meteorological conditions, aerosol processes and air quality especially in China. His personal research expertise is meteorological research focusing on atmospheric pollution and urban climate processes. Tom Kokkonen is also closely involved in INAR's research and educational collaborations with several universities in China.

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Pak Lun Fung, Postdoctoral Researcher, INAR/Physics

Pak Lun Fung, also known as Alan, is a Postdoctoral Researcher at urban meteorology group in INAR. He works with estimation models on air quality and greenhouse gases especially in urban areas. He is also interested in bringing low-cost sensing and machine learning techniques to atmospheric science. Alan collaborates with computer scientists, transport experts and meteorologists.

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Miikka Dal Maso

Professor, Tampere University (TAU), Vice-Director of ACCCC

My research tries to answer the question of how the emissions from human-made aerosol sources evolve in the atmosphere and how they affect climate and air quality.

Currently my Team is focused on studying the formation of secondary aerosol in various settings, from car tailpipes and factory stacks to street canyons and the urban atmosphere. We use both in situ and chamber data as well as process and CFD modeling

I lead TAU activities in the Atmosphere and Climate Competence Center Flagship.

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Laura Riuttanen

University Lecturer, University of Helsinki (INAR; UH)

Laura leads Climate University, network of 27 Higher Education Institutions in Finland to foster climate and sustainability education in higher education (www.climateuniversity.fi). Her group does research on climate competencies of the society as well as on climate education. Laura has been active in developing innovative climate education, like Una Europa Micro-Credential in Sustainability.

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Kati Kulovesi, UEF

Kati Kulovesi is Professor of International Law and Co-Director of the Center for Climate Change, Energy and Environmental Law at the UEF Law School. She holds a PhD and has previously taught at the London School of Economics and Political Science. She has followed the UN climate negotiations for more than 20 years and published widely on international and EU climate law. She was a member of Finland's Climate Change panel in 2014-2019 and received an European Research Council (ERC) starting grant for her ClimaSlow research project in 2017-2022. She has lead several other climate-related multidisciplinary research projects, including the ongoing Finnish Strategic Research Council project Leaving No one Lost in Transition: Citizens and the Legitimacy of Finland's Transition to a Carbon Neutral Welfare State, and is also involved in the Horizon 2020 project 4iTraction and the GreenDeal-Net Jean Monnet network. Kati also gave legal assistance to environmental NGOs in Finland's first climate case in 2022-2023.

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Vilja Johansson, UEF

Vilja Johansson is a doctoral researcher at the Center for Climate Change, Energy and Environmental Law at University of Eastern Finland and a visiting researcher at Brussels School of Governance at Vrije Universiteit Brussel. Her research focuses on the concept of a just transition, and its legal evolution in international, European and comparative law.

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ACCC Delegation



Maiju Mähönen

Maiju Mähönen is a PhD candidate from the University of Eastern Finland (UEF). Her personal research focuses on EU climate litigation, but she has worked extensively on national climate law, too. In addition to working on her PhD articles, she is co-authoring a book on climate law and working in two multidisciplinary research projects called 2035Legitimacy (national) and 4i-Traction (Horizon 2020). She was also a part of a pro bono -group providing legal assistance to the NGOs who filed Finland's first climate case.

As to her educational background, Maiju Mähönen holds a master's degree in law from the University of Helsinki. She wrote her master's thesis on EU law. Before joining UEF, she has worked with matters of EU law and policy (especially regarding the Single Market) at the European Commission, the Ministry of Economic Affairs and Employment, and the Permanent Representation of Finland to the EU.

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Tuula Honkonen

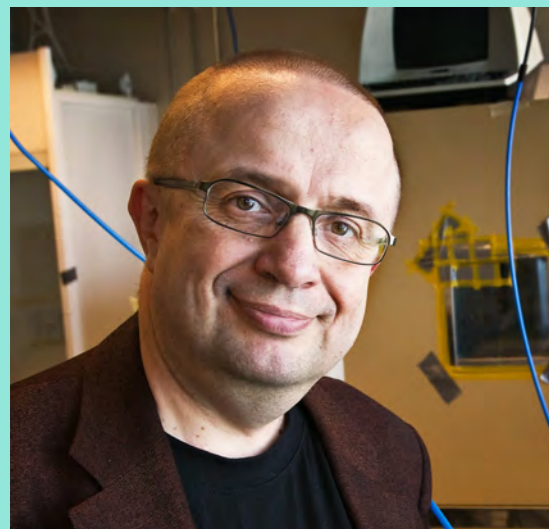
Senior Lecturer, University of Eastern Finland (UEF)

Tuula is a Senior Lecturer of International Law at the UEF Law School. She is specialized in international environmental law, and her research focuses largely on climate change law and policy at different levels of governance: from global and transnational to the national level. One of her current research questions in this field concerns the openness of the formation of the EU and national positions to UN climate negotiations. Honkonen has also studied air pollution regulation and cities' climate resilience from a legal perspective. In addition, her current research interests include climate and water diplomacy especially from the EU perspective.

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ACCC Delegation



Markku Kulmala; University of Helsinki

Academy prof. Markku Kulmala: Aerosol and environmental physics, Academician, ISI Highly Cited Researcher and ERC Advanced Grant holder (x2), Leader of INAR and ACCC Flagship. (~1200 publications, WoS H-index 124). The main focus of his research team has been (for all topics published papers either in Nature or in Science): 1) formation and growth mechanisms of atmospheric aerosols, dynamics of aerosols, air ions and clusters; 2) aerosol-cloud-climate interactions; 3) relationships between the atmosphere and different types of land surfaces; 4) Climate – air quality interactions. The backbone of his research is long-term data from the SMEAR (Stations Measuring the Earth Surface Atmosphere Relations) stations both in Finland and China. The SMEAR stations have versatile continuous, long-term measurements of mass and energy fluxes between atmosphere and biosphere, aerosol properties and biosphere-atmosphere CO₂/trace gas/aerosol interactions (Kulmala et al., 2001; Hari et al., 2016). His recent interest has been in solving air pollution problems in complex air quality chemistry-physics and meteorology continuum
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About the ACCC — from deep scientific understanding to practical solutions

The Atmosphere and Climate Competence Center (ACCC); Academy of Finland Flagship Programme 2020-2028

- University of Helsinki
- Tampere University
- University of Eastern Finland
- Finnish Meteorological Institute

Safe climate and clean air

- Interaction with climate and air quality policy and decision makers, businesses, other private sector and civil society
- Budget ~50 M€/a, ca. 800 researchers and other staff



ACCC Flagship R&I environment

- International, multidisciplinary top science on Climate, Air Quality, Forestry, Climate policy & Economics
- Multidisciplinary global collaboration network
- Leading role in developing European environmental research infrastructures (ENVRI)
- Increasing business collaboration and new spin-offs
- Science diplomacy China, India, Arctic (Russia suspended)



ACCC Community

- **ACCC disciplines:**
 - Natural sciences:** physics, chemistry, meteorology, forest sciences, ecology, geography
 - Social sciences:** economics, law, political sciences
 - Applying also:** computer science, statistics, engineering
- ACCC designs and provides **education programs:** BSc, MSc, PhD programmes, and massive online open courses (MOOCs)
- Interdisciplinary climate competencies: Climate University





Fig. 1: Research Programs serve as framework for Impact Program. Impact Program: 13 Task projects and forums with 40 public & private sector collaborators

The Impact of ACCC will be to increase competitiveness and solve sustainability challenges through proactive research, development and innovation collaboration and partnership with policy and business sectors

ACCC Research and Impact

The ACCC consortium brings together the scientific knowledge of the ACCC partners (UH, FMI, UEF, TAU) and the needs and expertise of 40 stakeholders.

As a national Flagship, ACCC will support Finland to become an internationally leading expert and provider of technological solutions and data services relevant to climate change.

In practise

The ACCC coordinates its work via its Research and Impact Programs.

The three Research Programs consist of:

1. Quantifying and activating the potential of land-based climate change mitigation
2. Quantifying the air quality-climate interactions and their impacts
3. Climate change impact and adaptation

The Research Programs serve as the framework for ACCC collaborations with multistakeholder partners to deliver knowledge-based actions and solutions through its Impact Programme.

The Impact Program is divided into 13 Impact Tasks and Forums (Fig. 1) that will maximize the interaction between research community, businesses, policy and societal sectors.

The 13 Impact Tasks of ACCC

[Task 1:](#) Carbon sequestration of agricultural land - to develop methodology to estimate carbon sinks and other climate impacts of agricultural land for greenhouse gas inventories, carbon markets and carbon footprint assessments.

[Task 2:](#) Verification of forest stocks and soil as carbon sink and storage, and climate effects of reforestation and afforestation.

[Task 3:](#) Verification of carbon neutrality and compensation of emissions for private companies - to build concrete compensation projects with scientific impact verification.

[Task 4:](#) Climate neutral cities and a healthy atmosphere - to support the Finnish cities with their preparedness to climate change impacts and achieving climate neutrality.

[Task 5:](#) Novel eddy covariance technology to observe Carbon sink - to develop an operative eddy covariance station that is inexpensive, low-powered, easy-to-use and virtually maintenance free.

[Task 6:](#) Novel technology for comprehensive atmospheric observations - to develop new robust, easy to use and cost effective instruments/technologies/methods for atmospheric observations and to co-create new technologies with the participating companies.

[Task 7:](#) Solving the air pollution cocktail - to co-design sustainable pathways from deep understanding to practical solutions to mitigate air pollution.

[Task 8:](#) Climate Analytics Finland - to define and develop a successful business services for impartial climate impact verification for emissions, sinks and air quality, in Finland and internationally.

[Task 9:](#) Climate – Air Quality Society Forum - to facilitate new partnerships and open dialogue between business collaborators, researchers and the general public on climate neutrality and sustainability.

[Task 10:](#) Operational phase of PEEEX - PEEEX is a multidisciplinary climate change, air quality, environment and research infrastructure program focused on the boreal North-Eurasia and Arctic regions.

[Task 11:](#) Global Observatory - to build an observatory network with well-equipped ground stations around the world linked to satellite-based remote sensing, laboratory experiments and computer models, to track Earth surface-atmosphere interactions and energy flows.

[Task 12:](#) Science Diplomacy - to contribute to science-in-diplomacy; To co-design solutions to the Grand Challenges like climate change and air quality, through the education of young scientist and by providing a platform for international dialogue between scholars and society.

[Task 13:](#) Climate University - is a network of 12 universities and 6 universities of applied sciences in Finland that develops climate change and sustainability teaching in higher education.



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