Book of Abstracts

BUP Symposium 2025

Strengthening the Security and Resilience of the Baltic Sea Region – Environmental, Political, Social, and Economic Shocks and Crises

UPPSALA UNIVERSITET

Oral presentations given on
27-28 November 2025

The Baltic University Programme
Since 1991

This Book of Abstracts contains 65 abstracts from oral presentations held at the BUP Symposium 2025. In total, there are 140 authors of the presented abstracts. Those who gave the presentations are colleagues at BUP participating universities.

The BUP Symposium in short

The aim of the event is to provide a platform for regional educational and research communities to connect with colleagues, disseminate recent research, initiate new discussions, and foster future collaborations. This year, the BUP Symposium was held in person for the first time, while participants from Ukraine were offered the possibility to join remotely.

The theme of this year's Symposium 'Strengthening the Security and Resilience of the Baltic Sea Region: Environmental, Political, Social, and Economic Shocks and Crises' was particularly timely in an era of climate emergency and geopolitical instability. The BUP is founded on the principle that sustainable development in the Baltic Sea Region depends on collaboration across borders, disciplines, and sectors. By bringing together diverse perspectives, the Symposium highlights the importance of holistic, interdisciplinary approaches to strengthen regional security and resilience.

The Symposium was hosted and organised by the BUP Coordinating Secretariat in Uppsala, Hamburg University of Applied Sciences, and Södertörn University. It featured five parallel sessions framed by BUP core themes:

- Climate Change in Times of Environmental and Geopolitical Instability
- Energy Security and Energy Transitions
- International Relations: Cooperation and Conflict
- Civil Society and Preparedness
- Resilient Food Systems and Water Security

Each session brought together a diverse group of researchers and included presentations, reflecting the breadth of current research efforts in the region.

Editor

Adam Sjöström

Content

Session 1 - Climate Change in Times of Environmental and Geopolitical Instability

Moderator: Dr. Jelena Barbir, Hamburg University of Applied Sciences

Climate change remains a pressing global issue for countries, institutions, and entire regions amplifying security risks, economic challenges, and resource competition, creating intricated connections with geopolitical conflicts. Environmental changes, such as rising sea levels and droughts, force migration, staining resources and contributing to social tension. The surged frequency and intensity of climate-related disasters over the decades escalated not only economic losses but also the number of fatalities. These events indicate the urgency of mitigation and adaptation measures at various levels. Bio-based solutions and Artificial Intelligence (AI) offer an additional opportunity that can contribute to strategies and policy- and decision-making processes aimed at climate change resilience of local communities.

Framing Forest Security: The Climate-Security Nexus and Policy Alignment in the EU and Baltic States

Alessandra Giolo & Johanna Johansson

Abstract:

This paper identifies and analyses dominant frames in the policies of European Union bodies, agencies, and institutions concerning climate and resource security, as well as in national policies and among forest stakeholders and officials of public agencies in the Baltic States (Estonia, Latvia, and Lithuania). The aim is to examine how the European Commission, the European Parliament, the European Council, and the European Environmental Agency define climate security and the associated threats, while highlighting the critical role of natural resources, particularly forests, in this context. National policies for climate action in Latvia, Estonia, and Lithuania are also analysed, with an emphasis on their inclusion of forests. The analysis is also supported by 25-semi structured interviews among actors in the forestry sectors of the same countries. The study identifies clear gaps in the current climate security discourse, including only a minor mention of the management of natural resources, especially forests, within the official plans and recommendations issued by the European institutions. However, in the national policies, forests are often mentioned as an integral part of climate action plans. Additionally, the findings stress the need for a deeper understanding of the importance of natural resources in addressing emerging threats, such as ensuring the sustainable supply of timber during geopolitical shifts, water regulation and soil health. Strengthened measures are essential to promote collaboration at both local and national levels, thereby advancing the narrative of, and need for, climate security within institutional policies.

Keywords: Baltic States; climate security; EU institutions; frame analysis; forests

Authors:

Alessandra Giolo, PhD candidate

Södertörn University

Huddinge, Sweden

alessandragiolo [at] suni [dot] se

Johanna Johansson, Associate Professor

Södertörn University

Huddinge, Sweden

johanna.johansson [at] sh [dot] se

European Sustainable Finance in Times of Geopolitical Instability: The Textile Sector Case

Agnieszka Kacprowicz & Alina Szypulewska-Porczynska

Abstract:

Our study examines how the European Union's sustainable finance framework is being reconfigured amid rising geopolitical instability. It assesses its implementation within a high impact sector—namely, the textile industry. While the EU remains a global leader in sustainability governance, recent crises have prompted short-term policy adjustments that threaten long-term environmental and social goals. In February 2025, the EU proposed the Omnibus I package, amending EU ESG regulations that are not yet fully enforced. Our focus is on selected textile companies listed on stock exchanges across the Baltic Sea Region, which are required to comply with EU reporting obligations but are not directly covered by the EU Taxonomy. As part of the desk research, legal acts were analysed to evaluate changes against two distinct paradigms of sustainable finance. Then, using qualitative content analysis of sustainability disclosures from issuers, we evaluate the comparability of resource-use reporting and its alignment with EU reporting standards. The main difference lies in the scope of reporting under the double materiality assessment, which undermines financial institutions' ability to accurately assess environmental and social risks. The analysis of EU Taxonomy disclosures indicates that only a small proportion of CAPEX and OPEX qualify as taxonomy-aligned, with investments predominantly in vehicle fleets, real estate, and IT infrastructure. Moreover, all companies anticipate ongoing growth, implying that emission reductions will mainly be achieved through efficiency improvements. By combining a meta- and macro-level perspective of ESG policy reform with micro-level data from an ESG-sensitive industry, we highlight the necessity for ambitious, coherent implementation tools and enhanced accountability mechanisms. The findings are relevant for policymakers, investors, and regional stakeholders working to strengthen the resilience of the Baltic Sea Region through sustainability.

Keywords: Sustainable finance; ESG; textile industry; EU taxonomy; Baltic Sea Region

Authors:

Agnieszka Kacprowicz, PhD candidate

Warsaw School of Economics (SGH)

Warsaw, Poland
akacpr [at] sgh.waw [dot] pl

Alina Szypulewska-Porczynska, PhD
Warsaw School of Economics (SGH)
Warsaw, Poland
aszypu [at] sgh.waw [dot] pl

Responses of Brackish-Water Plankton Communities to Ocean Alkalinity Enhancement Using Mesocosms

Henna Yliluikki & Jonna Engström-Öst

Abstract:

The aim is to measure brackish zooplankton community responses to future conditions, and to study the ecological impacts of Ocean Alkalinity Enhancement (OAE) in a coastal zone affected by eutrophication. A mesocosm experiment studying OAE and its ecological, physiological or cellular responses of plankton communities will be conducted in western Gulf of Finland. OAE is a marine carbon dioxide removal technology, where sea water alkalinity is enhanced by adding alkaline material to the ocean to increase buffer capacity. Effects of OAE to organisms living in eutrophicated brackish water are little studied. This knowledge is crucial when evaluating the use of OAE as a marine carbon dioxide removal concept or tool to improve the condition of sea water. We will use two OAE-treatment intensity level in replicates: 1) low concentration of added alkalinity, 2) high concentration of added alkalinity and the control treatment with no added alkalinity. Alkalinity will be increased by adding slaked lime ($Ca(OH)_2$). The natural planktonic community will be added to the mesocosms. Basic physical and biogeochemical properties, including carbonate chemistry and nutrients (phosphate, silicate) will be measured. We will observe metabolic responses of zooplankton to OAE by measuring respiration and analysing lipid content and profiles of zooplankton. Also, we will study community, reproduction and oxidative stress with biomarkers such as lipid peroxidation and antioxidative enzymes activity of zooplankton. OAE may enhance the quality of water, which could positively affect the metabolism of plankton community, and improve the carbon sink. Novel results will be presented during the meeting.

Keywords: Zooplankton; ocean alkalinity enhancement; metabolic responses

Authors:

Henna Yliluikki, PhD candidate

Novia University of Applied Science & University of Turku

Raasepori, Finland & Turku, Finland

henna.yliluikki [at] novia [dot] fi

Jonna Engström-Öst, Special Researcher

Novia University of Applied Science

Raasepori, Finland

jonna.engstrom-ost [at] novia [dot] fi

Reducing Single-Use Plastics Across the Baltic Sea Region – Positive Environmental Impact of BALTIPLAST Solutions

Jelena Barbir, Estefania Carpio Vallejo, Andrea Dobri, Brosnar López Rodríguez & Patrycja Karwasiecka

Abstract:

Plastic production continues to rise at unprecedented rates, while recycling and waste management systems remain insufficient. Each year, an estimated 1,500 tonnes of plastic waste enter the Baltic Sea Region (BSR), threatening marine ecosystems and the communities that depend on them. Microplastics accumulate in the water, sediment, and food chains, affecting fish, seabirds, and ultimately human health. The consequences are not only ecological but also economic, impacting fisheries, tourism, and local livelihoods. Despite growing awareness, current measures are inadequate to curb plastic pollution at its source, highlighting the urgent need for innovative, scalable solutions that reduce plastic consumption, improve recycling practices, and foster sustainable behaviour across all sectors of society. This paper sheds light on the solutions developed by BALTIPLAST, an initiative funded by the Interreg Baltic Sea Region Programme 2021–2027, which aims to prevent and reduce single-use plastics (SUP) and plastic packaging across the BSR. The solutions are structured into four categories: (1) Strategic Framework, which helps local governments embed SUP reduction and circular economy measures into their strategies, (2) Technical and Technological Measures to strengthen municipal collection and sorting systems, (3) Soft Solutions for Organisations that help to identify, reduce, and monitor organisational plastic consumption, and (4) Soft Solutions for Households to address single-use plastic consumption in everyday life at home. These solutions work synergistically within a circular approach, where progress in one area reinforces actions in others. Through a circular economy lens, BALTIPLAST addresses plastic pollution by combining strategic management, technical innovation, and communication-driven behavioural change. Recognising that no single measure can drive systemic transformation, the project implemented and tested solutions across municipalities, schools, businesses, and households. This multi-dimensional strategy revealed synergies among interventions, ensuring that success in one area accelerated change across the system.

Keywords: Plastic pollution; circular economy; sustainability strategies; behavioural change; Baltic Sea; waste management

Authors:

Jelena Barbir, PhD

Hamburg University of Applied Sciences

Hamburg, Germany

jelena.barbir [at] haw-hamburg [dot] de

Estefania Carpio Vallejo, MSc

Hamburg University of Applied Sciences

Hamburg, Germany

estefania.carpio [at] haw-hamburg [dot] de

Andrea Dobri, MSc

Hamburg University of Applied Sciences

Hamburg, Germany

andrea.dobri [at] haw-hamburg [dot] de

Brosnar López Rodríguez, MSc

Hamburg University of Applied Sciences

Hamburg, Germany

brosnar.lopezrodriguez [at] haw-hamburg [dot] de

Patrycja Karwasiecka, Bachelor candidate

Hamburg University of Applied Sciences

Hamburg, Germany

patrycja.karwasiecka [at] haw-hamburg [dot] de

How do Observation-Based ISIMIP3a and Projection-Based ISIMIP3b Impact Assessments with GFDL-ESM4 Compare Under SSP1-2.6 and SSP5-8.5

Julius Emmanuel Emuriat

Abstract:

The GFDL-ESM4 model is an advanced coupled chemistry carbon climate Earth system model emphasizing comprehensive earth system interactions, which include detailed atmospheric chemistry, carbon cycle, and ecosystem processes. A comparative assessment of Observation-Based ISIMIP3a and Projection-Based ISIMIP3b impact analyses using GFDL-ESM4 and atmospheric forcing datasets (GSW3-W5E5) was performed for SSP1-2.6 and SSP5-8.5 climate scenarios. Aggregated precipitation and temperature data (1901–2019 observed, 2020–2050 projected) were bias-corrected and processed in Python, enabling statistical trend analysis and scenario visualization. Trend plots indicate SSP5-8.5 yields consistently higher and more variable temperature and precipitation outcomes than SSP1-2.6, increasing hazard risks such as landslides and flooding. These results underscore the need for climate adaptation strategies tailored to rising variability and reinforce the importance of robust mitigation policies to mitigate severe impacts projected under high-emission scenarios.

Keywords: Observation-based forcing; projection-based forcing; GFDL-ESM4 climate model; bias adjustments and downscaling; SSP scenarios

Author:

Julius Emmanuel Emuriat, PhD candidate

Silesian University of Technology

Gliwice, Poland

julius.emmanuel.emuriat [at] polsl [dot] pl

Living with Climate Change: The Role of Individual Skills Development

Justas Kažys

Abstract:

The level of awareness about climate change among the general public and politicians is sufficiently high. However, the climate crisis is still not being treated as the most important issue in current socio-economic and geopolitical contexts. There are scientifically supported approaches suggesting that the climate crisis is, at its core, a human crisis of relationships, and that a mindfulness-based approach could be key to overcoming it. Moreover, there is growing recognition that progress on the global Sustainable Development Goals (SDGs), including SDG 13 'Climate Action', is not happening quickly enough, and that this can only be addressed by fostering inner development towards more sustainable futures. Inner Development Goals (IDGs) focus on cultivating the personal and social skills needed to tackle global climate and environmental challenges. The research was focusing on the main findings of the international project MP4s – Mindfulness Practices for Students in Society – which aims to help students manage emotional difficulties by creating open resources that support the development of a broader range of competencies. A syllabus for students in higher education has been developed that integrates contemplative practices within the contents on climate justice and transition, contemplative arts, and leadership. The findings of this presentation are based on an online survey (613 respondents, 2022) investigating the role of emotions, meditative practices and the significance of IDGs for 'Climate Action' (SDG 13), and the continuation of the project's ideas from the reflections of students who participated in MP4S project's "Climate justice and Mindfulness" training and regular meditative practice sessions as part of their lectures on climate change at Vilnius University (76 responses, 2023–2025). The MP4s survey results showed that more than 2/3 of respondents agreed that developing IDGs skills are important for reaching the SDG 13 goal, and mediative practices could be a good instrument to invoke climate actions. The deeper qualitative thematic analysis of the students' reflections revealed that they strongly support the concept of inner and emotional skills development, and positively react to the integration of a meditative practice into the climate change lecture content. This model of integrating meditation-based practices and mindfulness-based syllabi could be extended to all members of academia and beyond.

Keywords: MP4s project; Inner Development Goals; qualitative thematic analysis; climate actions

Author:

Justas Kažys, Associate Professor

Vilnius University

Vilnius, Lithuania

justas.kazys [at] gf.vu [dot] lt

Increasing the Spatial and Temporal Resolution of the Climate Monitoring Network by Using IoT Solutions

Laimonas Kairiukštis & Kamile Kairiukštyte

Abstract:

The new proposed version of the Clean Air Directive states that fixed measurements may be supplemented by modelling techniques, applications, and/or indicative measurements to assess air quality and provide adequate information on the spatial distribution of the ambient air quality. Indicative measurements using IoT measuring devices can increase climate monitoring networks exponentially with significantly lower costs compared to fixed measurements, however, issues of measurement uncertainty, device verification, and calibration arise. The creation of a heterogeneous environmental monitoring network by adopting IoT measurement devices in order to accomplish the new Clean Air Directive requirements are crucial by increasing the spatial and temporal resolution of the climate monitoring network. Lithuanian metrology observational case study using data from the state Metrology Observation Network were used and calculations were made on how the spatial resolution would change if we used the concept of a man as a sensor. The proposed example of possible network development for Lithuanian weather observation can be easily adapted in other countries to increase the expansion of meteorological networks. This study shows how excellent and massive the use of IoT measuring devices in environmental monitoring science can gain improvement in climate change surveillance. Especially in sparsely populated areas where the monitoring network is poorly developed. The digitalization of metrology opens up new opportunities for using IoT measuring instruments, but the metrological connection of these instruments to the SI system must be ensured, which requires the creation of a complex ICT infrastructure. This structure must ensure the timely and secure transfer of not only data but also digital calibration certificates, automatic calibration of devices, and support of other metrological functions with minimal human intervention. The question must be raised about interdisciplinary cooperation between scientists for ensuring a quality infrastructure for environmental monitoring.

Keywords: IoT metrology; Clean Air Directive; indicative measurements; Citizen Science, calibration

Authors:

Laimonas Kairiukštis, Associate Professor

Kaunas Kolegija Higher Education Institution

Kaunas, Lithuania

laimonas.kairiukstis [at] go.kauko [dot] lt

Kamile Kairiukštyte, Master candidate

Lithuanian University of Health Sciences

Kaunas, Lithuania

kamile.kairiukstyte [at] stud.lsmu [dot] lt

Prospects for Implementing Phytotechnologies to Restore Soil Functions and Mitigate Climate Change

Larysa Cherniak

Abstract:

In the context of increasing anthropogenic pressure on soils, the degree of ecological degradation is intensifying, leading to a diminished role of soils in the restoration of the biosphere under the influence of climate change. Consequently, identifying new environmentally safe solutions for soil restoration in technogenically impacted areas has become a pressing issue. One of the key advantages of phytotechnologies lies in their environmental safety and economic viability. The application of phytoremediation processes can reduce soil erosion, restore biodiversity, and enhance carbon sequestration, thereby contributing to a reduction in atmospheric greenhouse gas concentrations. Phytotechnologies represent a promising tool for climate change adaptation and are among the most effective approaches for addressing soil degradation in technogenically loaded areas while restoring the ecological functions of soils. Their effectiveness in combating the consequences of climate change is attributed to the ability of plants to stabilize, accumulate, or break down pollutants, as well as to improve soil structure and fertility. The article is devoted to the study of the effectiveness of phytotechnologies, with usage of various plant species to rehabilitate the ecological condition of soils in a technogenically affected area. The experimental results confirmed the efficacy of these methods in restoring soil health under such conditions. Furthermore, the integration of phytotechnologies into sustainable land-use strategies has been shown to support long-term soil resource conservation and the stability of agroecosystems in the face of climate change. In conclusion, the implementation of phytotechnologies offers an effective and scientifically substantiated approach to soil restoration and to mitigating the adverse effects of climate change.

Keywords: Phytotechnologies; soil restoration; climate change; environmentally friendly solutions

Author:

Larysa Cherniak, Associate Professor

State University “Kyiv Aviation Institute”

Kyiv, Ukraine

specially [at] ukr [dot] net

Challenges Raised by Expansion of Urban Green Infrastructure Pursuing Adaptation to Climate Changes

Marharyta Radomska & Oksana Tykhenko

Abstract:

Urban greenery is seen as a valuable component of both sustainability of cities and their adaptation to climate changes. In times of unexpected weather trends and pressures of social-economic character the development of urban green infrastructure faces a range of difficulties and raises issues itself. The paper deals with the disadvantages of green spaces expansion, in particular, degraded logistics efficiency within a city, displacement of local species and rising threats of invasions, increasing local pollution and waste generation, as well as conflict of interests between local residents, business, transport enterprises, developers, etc. Park maintenance costs are also a restricting factor when choosing strategy and layout of green areas expansion. The analysis using multicriteria evaluation shows the need for searching balance between contradicting needs, like providing connectivity between green spaces for better environmental resilience and road connectivity for better transportation. As a result, ecosystem advantages must be coupled with potential disadvantages in decision making process when it comes to building sustainable infrastructure in cities, especially those damaged by military action, natural and technogenic accidents. Moreover, the research concludes that needs of the climate change adaptation are able to affect the final decision and modify project solutions considerably, since the heat island mitigation is possible with the methods, not contributing to the stability and resilience of urban plant communities. Thus, the projects of urban adaptation to climate changes must be considered in terms of maladaptation risks mitigation and contribution to environmental safety of cities.

Keywords: Sustainable city; urban planning; parks; ecosystem services

Authors:

Marharyta Radomska, Associate Professor

State University “Kyiv Aviation Institute”

Kyiv, Ukraine

m.m.radomskaya [at] gmail [dot] com

Oksana Tykhenko, Professor

State University “Kyiv Aviation Institute”

Kyiv, Ukraine

oksana.tykhenko [at] npp.kai.edu [dot] ua

Aerobiology as a Tool for Climate Change Research in Northern Europe

Olga Sozinova

Abstract:

Aerobiology is an interdisciplinary field that plays an important role in public health, agriculture, environmental science, and climate research. It focuses on studying airborne biological particles, such as airborne pollen and spores, and their movement, concentration, and effects. This field helps us understand the interaction between the biosphere and the atmosphere, particularly how vegetation responds to climate change. Long-term pollen concentration data can be useful for studying climate change, as it reflects environmental shifts over time. Since aerobiological data mainly concern wind-pollinated plants, factors such as long-distance pollen transport must also be considered. Regular aerobiological monitoring has been conducted in Riga, Latvia, since 2003 using a Hirst-type Burkard volumetric pollen sampler. This study analyses long-term pollen concentration data in combination with meteorological data to identify patterns and changes over time. The analysis revealed noticeable changes in pollen data, indicating shifts in plant behaviour and the presence of invasive species. These changes are likely linked to rising temperatures in recent decades. Understanding these trends is important for identification of possible environmental changes and effects on ecosystems and human health in the Baltic Sea region.

Keywords: Aerobiology; pollen monitoring; climate change; invasive species

Author:

Olga Sozinova, PhD

University of Latvia

Riga, Latvia

olga.sozinova [at] lu [dot] lv

Global Perspectives on Consumer Behaviour towards Biodegradable Food Packaging: A Bibliometric Approach on Trends Before and after the COVID - 19 Pandemic

Julia Rabelo Vaz Matheus, Camila Marcolongo Cortat, Letícia de Oliveira Gonçalves, Jelena Barbir, Patrycja Karwasiecka & Ana Elizabeth Cavalcante Fai

Abstract:

Despite the widespread environmental repercussions, global plastic production, particularly single-use plastic items, is increasing, while recycling rates remain comparatively low. To address the issue of plastic pollution, alternatives, such as biodegradable food packaging, have recently been emerging. This brief review aims to provide an overview and comparative bibliometric analysis of the global scientific literature addressing consumer behaviour related to food biodegradable packaging, with a specific focus on the periods before and after the COVID-19 pandemic. The analysis comprises a total of 113 articles that were retrieved and selected from the Scopus and Web of Science databases between 2015 and 2025. By examining publication trends, thematic evolution, geographic distribution, and shifts in research focus, the study seeks to uncover how the pandemic has influenced scientific priorities, societal concerns, and consumer-related challenges in the context of food packaging. This review also highlights key differences in national and regional research outputs, offering insights into cross-country behavioural dynamics and emerging topics such as sustainability, hygiene, and risk perception. Key findings indicate that Italy, the United States, the United Kingdom and Germany emerged as the leading countries in this area of research. Since 2020, there has been a notable increase in publications on this topic, which is likely interlinked with the COVID-19 pandemic. The heightened concerns about hygiene and protection of food packaging have led to a sharp increase in plastic consumption - particularly by online food delivery and takeaway services. While this met immediate safety requirements, it also exacerbated the environmental challenges posed by the increase in plastic waste and its long-term impact. These findings support future research directions and policymaking in the design and communication of biodegradable food packaging solutions.

Keywords: COVID-19; food packaging; biodegradable; bibliometric analysis

Authors:

Patrycja Karwasiecka, Bachelor candidate

Hamburg University of Applied Sciences

Hamburg, Germany

patrycja.karwasiecka [at] haw-hamburg [dot] de

Julia Rabelo Vaz Matheus, PhD

Rio de Janeiro State University (UERJ)

Rio de Janeiro, Brazil

juuh.rabelo [at] hotmail [dot] com

Camila Marcolongo Cortat, MSc

Rio de Janeiro State University (UERJ)

Rio de Janeiro, Brazil

camilamgcortat [at] gmail [dot] com

Letícia de Oliveira Gonçalves, BSc

Rio de Janeiro State University (UERJ)

Rio de Janeiro, Brazil

nutricionistaleticia [at] edu.unirio [dot] br

Jelena Barbir, PhD

Hamburg University of Applied Sciences

Hamburg, Germany

jelena.barbir [at] haw-hamburg [dot] de

Ana Elizabeth Cavalcante Fai, Professor

Rio de Janeiro State University (UERJ) & Federal University of the State of Rio de Janeiro (UNIRIO)

Rio de Janeiro, Brazil

bethfai [at] icloud [dot] com

Unlocking the Circular Potential of Common Reed in the Baltic Sea Region

Paula Linderbäck, Netsanet Legesse & Laura Montin

Abstract:

Common reed (Phragmites australis) is a fast-growing, nutrient-rich plant widely present along the coasts of the Baltic Sea. While sustainable reed harvesting is increasingly promoted for coastal management and biodiversity restoration, the biomass is largely underutilized. In many cases, harvested reed is left at collection sites, where it risks nutrient leakage back into the ecosystem—undermining the very environmental gains of the harvesting process. This study explores the potential of reed biomass as a circular bio-based solution to enhance climate resilience, resource efficiency, and rural development in the Nordic bioeconomy. Specifically, it aims to evaluate reed's material properties, environmental benefits, and economic opportunities for regional value creation. An interdisciplinary approach was applied, combining environmental science, engineering, and industrial economy. Harvested reed from selected coastal areas in Finland was analysed for moisture content, fiber structure, lignocellulosic composition, and nutrient levels. In parallel, value chain mapping identified gaps and opportunities for industrial applications, including biocomposites, bioenergy, and soil improvement. Environmental and economic assessments were conducted to evaluate circular business models and potential climate benefits. The material characterization showed that reed biomass possesses suitable properties for use in different areas, for example biocomposites, energy production, and nutrient recycling. Locally valorising reed could reduce nutrient runoff, lower CO_2 emissions in materials, and minimize transport distances. Economic analysis suggests opportunities for new circular business models and regional supply chains. Socially, this approach supports rural job creation and community engagement in ecosystem restoration. The results demonstrate that with targeted harvesting practices and process optimization, reed can be transformed from an underutilized biomass into a valuable climate-smart resource. Reed-based solutions contribute to climate mitigation, enhance community resilience, and support the Nordic region's transition toward a more sustainable and circular bioeconomy.

Keywords: Common reed; value chain; Baltic Sea; circular economy; reed biomass valorisation

Authors:

Paula Linderbäck, PhD

Arcada University of Applied Sciences

Helsinki, Finland

paula.linderback [at] arcada [dot] fi

Netsanet Legesse, Master candidate

Arcada University of Applied Sciences

Helsinki, Finland

netsanet.legesse [at] arcada [dot] fi

Laura Montin, Fil. mag.

Arcada University of Applied Sciences

Helsinki, Finland

laura.montin [at] arcada [dot] fi

The Impact of Climatic Factors on Residential Design in Western Pomerania, Poland

Piotr Gradzinski

Abstract:

This research addresses the problem of energy optimization for single-family housing in Western Pomerania, Poland. The issue is particularly relevant due to the region's changing climate and its long-term implications for architectural design. The study begins with an overview of the local climate, highlighting irreversible changes such as increased wind intensity and the formation of floodplains. The analytical part focuses on the impact of these changes on building material selection and architectural form. Two primary methodologies were applied: Life Cycle Assessment (LCA), aimed at minimizing CO_2 emissions and energy consumption associated with building materials, and Building Information Modeling (BIM), used to evaluate the influence of environmental factors (light, shade, wind) on building shape and energy performance. The LCA analysis was constrained by a Reference Service Life (RSL) of 100 years and based on data from Environmental Product Declarations (EPDs). Results are expressed in terms of Global Warming Potential (GWP) and Primary Energy (PE) for construction materials, using $kgCO_2eq$ and MJ units. Calculations were carried out using the author's proprietary tool. The BIM analysis provides a calculation-based justification for architectural forms currently designed in the study area. It includes simulations of building shadow range, annual surface insolation, indoor daylighting, wind loads (at 25 m/s or 90 km/h), and annual passive solar energy gains and losses. The findings call for a rethinking of current architectural design paradigms, emphasizing climate-responsive and environmentally conscious solutions. The study advocates for sustainable development in architecture and construction, particularly in the context of the Anthropocene and ongoing climate change.

Keywords: Architecture; sustainable design; LCA; BIM; climate-responsive architecture

Author:

Piotr Gradzinski, Assistant Professor

West Pomeranian University of Technology in Szczecin

Szczecin, Poland

piotr.gradzinski [at] zut.edu [dot] pl

The Role of ESG Frameworks in Poland's Soy Supply Chain under the European Green Deal

Pedro Trus Mendes & Piotr Stankiewicz

Abstract:

Agricultural systems in the European Union (EU) are central to the green transition, with regulatory frameworks such as the European Green Deal (EGD) and the EU Deforestation Regulation (EUDR) increasingly influencing national food policies. Environmental, Social, and Governance (ESG) standards have emerged as important instruments for aligning agri-food value chains with climate mitigation objectives. This paper explores how ESG frameworks—particularly those embedded in the EUDR—are being institutionalised in Poland, a country heavily dependent on imported soy. Using preliminary data collected through document analysis and interviews with stakeholders, this study investigates the differential impacts of ESG compliance on large agribusiness firms and small to medium-sized farms. Initial findings indicate that while larger actors position ESG as a path toward sustainable transformation, smallholders experience growing exclusion due to limited institutional capacity, financial constraints, and marginalisation within vertically integrated supply chains. These dynamics generate a de facto compliance environment where non-mandated actors are subjected to traceability and standardisation pressures imposed by processors and retailers. The study adopts a Multi-Level Perspective (MLP) framework to analyse power asymmetries between regime actors and niche innovators. It argues that ESG instruments, though framed as neutral governance tools, often act as filters of visibility and gatekeepers to market access. As such, current policy frameworks risk reinforcing existing structural inequalities within agri-food systems. This paper calls for the development of inclusive mechanisms that ensure the participation of small and medium farms in sustainability transitions, contributing to debates on climate governance, supply chain justice, and agri-food resilience.

Keywords: ESG frameworks; European Green Deal; agri-food policy; soy imports; sustainability transitions

Authors:

Pedro Trus Mendes, PhD candidate

Nicolaus Copernicus University

Torun, Poland

trusmendes [at] doktorant.umk [dot] pl

Piotr Stankiewicz, Associate Professor

Nicolaus Copernicus University

Torun, Poland

piotr.stankiewicz [at] umk [dot] pl

Individual Green Certificate Market for Baltic Region

Piotr Staszkiewicz

Abstract:

Land-use changes are a root cause for many sustainability challenges, such as food security, climate change and biodiversity loss. A profound understanding of land-use changes is therefore essential to foster a better understanding of the human interactions with the environment. Obtaining a deeper knowledge of the dynamics of land-use change and its underlying factors, together with an assessment of the effectiveness of different land management practices at various scales in providing sustainable solutions, represent important milestones for tackling climate change and biodiversity challenges. Focusing on Europe, Europe-LAND will provide a better understanding of these multiple interactions, synergies and trade-offs amongst the factors that influence land-use. This paper presents the Horizon Europe research project "Towards Sustainable Land-Use in the Context of Climate Change and Biodiversity in Europe (in short: Europe-LAND)", which aims to develop, test and implement integrated tools that can improve our understanding of the factors behind land use decisions in Europe. In addition, Europe-LAND aims to explore the awareness and engagement of agricultural and land-use stakeholders in relation to the challenges of climate change and biodiversity. The project strives to expand the knowledge base on how land use decisions can be influenced to efficiently and socially responsibly support policy goals such as mitigation and adaptation to climate change and biodiversity conservation. Finally, it mobilises stakeholders (e.g. land users, local, regional and national authorities, policy-makers, regulatory agencies etc.) by providing a smooth and efficient knowledge transfer of project results to our target groups.

Keywords: Climate change; land use; Europe; biodiversity; agriculture

Author:

Piotr Staszkiewicz, Associate Professor

Warsaw School of Economics

Warsaw, Poland

piotr.staszkiewicz [at] sgh.waw [dot] pl

Towards Sustainable Land-Use in Europe

Walter Leal Filho

Abstract:

This study proposes a model for the internalization of greenhouse gas (GHG) emission certificates at the individual level within the context of the Baltic Sea region. The model aims to address the environmental challenges posed by industrialization and the commercialization of natural resources, specifically focusing on the region's unique ecological and economic dynamics. Existing environmental taxation frameworks typically target pollution at its source (supply side) within specific national boundaries, with funds collected through the demand-side pricing of goods and services. However, these solutions are often constrained by national borders, exacerbating inequities between developed and developing areas and disproportionately impacting the poorest regions. Moreover, the distribution of funds tends to be ineffective due to legislative arbitrage, and democratic enforcement of rights and obligations is lacking, affecting a significant portion of the population in the Baltic Sea region. The Individual Greenhouse Certificate Model (IGHCM) overcomes these limitations by proposing that even a negative net-gain system on private consumption can promote a fairer distribution of resources within the region. This model also fosters pro-environmental and sustainable behaviours among citizens while framing the allocation of conservation funds across the Baltic region. To develop this model, we conducted a rapid literature review on GHG issues from Tier 1 accounting sources, analysed through the lens of information asymmetry theory and signalling theory. This research contributes to the growing body of literature on incorporating externalities into everyday transactions, with a focus on the Baltic Sea region's environmental and socio-economic challenges.

Keywords: Baltic Sea, greenhouse gas emissions, individual GHG certificates, environmental taxation, regional sustainability, global wealth distribution

Authors:

Walter Leal, Professor

Hamburg University of Applied Sciences

Hamburg, Germany

walter.leal2 [at] haw-hamburg [dot] de

Session 2 - Energy Security and Energy Transitions

Moderator: Assoc. Prof. Mikael Höök, Uppsala University

As the Baltic Sea region faces increasing geopolitical tensions and environmental challenges, energy security and new energy solutions have become critical priorities. How can new energy developments enhance energy security and improve the energy systems around the Baltic? How do current green transitions go and how will newly announced nuclear ambitions affect the situation? How to handle risks from future transports of fossil fuels via the Baltic? This session will evaluate ongoing energy transition efforts, challenges and future development, explore new and existing energy dilemmas, and discuss how to handle future energy challenges in the Baltic Sea region.

Culturally Adapted Behavioural Interventions for Promoting Residential Energy Conservation in the Baltic Sea Region: Evidence from a Survey Experiment

Jesper Alvarsson-Hjort, Andrius Kažukauskas & Mall Leinsalu

Abstract:

This study investigates how culturally adapted behavioural interventions influence residential energy conservation behaviours in response to energy system stress in the Baltic Sea region. Specifically, the research examines individuals' willingness to receive and act upon culturally adapted informational nudges aimed at energy consumption reduction during peak demand periods. The study employs a randomized digital survey-based field experiment conducted in Sweden, Estonia, and Lithuania in 2025, assigning participants to one of four intervention groups. These groups receive informational nudges emphasizing energy security/reliability, environmental concerns, or a combined approach addressing both security and environmental issues. A structural equation modelling approach is utilized to analyse how underlying cultural dimensions influence responsiveness to these interventions. By exploring the differential impacts of culturally adapted messaging, this research aims to identify effective strategies for promoting energy-saving behaviours at the right times across diverse cultural contexts in the Baltic Sea region.

Keywords: Electricity; system reliability; environmental attitudes; behavioural interventions; survey experiment; Baltic region

Authors:

Andrius Kažukauskas, PhD

Vilnius University & Södertörn University

Vilnius, Lithuania & Huddinge, Sweden

andrius.kazukauskas [at] evaf.vu [dot] lt

Jesper Alvarsson-Hjort, PhD

Södertörn University

Huddinge, Sweden

Mall Leinsalu, PhD

The National Institute for Health Development

Tallinn, Estonia

How Climate Change and Geopolitical Instability Impact Corporate Financial Risk – The Special Role of the Baltic States

Bartosz Nieścior

Abstract:

Modern companies operate in an increasingly unstable environment characterized by the increasing frequency of extreme weather events, decarbonization policies, supply chain disruptions, and rising geopolitical tensions (such as wars, sanctions, and energy crises). The aim of this lecture is to analyse the impact of these phenomena on corporate financial risk, with particular emphasis on the Baltic countries (Lithuania, Latvia and Estonia), which, due to their geopolitical location and economic structure, are particularly vulnerable to such threats. The analysis is based on a review of the economic literature and empirical research covering data on the solvency, financing costs, and adaptability of companies in selected sectors. Case studies of companies operating under conditions of climatic and geopolitical disruption are also included. Additionally, the analysis employs quantitative approaches and elements of ESG (Environmental, Social, and Governance) risk assessment, particularly relevant in the context of increasing regulatory requirements and access to financing. Companies operating in the Baltic States are exposed to particular risks due to their proximity to areas of armed conflict (e.g., the war in Ukraine), their high degree of integration with European and global supply chains, and their strong reliance on imported energy resources. At the same time, these countries' economies are characterized by a high proportion of small and medium-sized enterprises (SMEs), which have limited capacity to diversify and adapt to sudden changes. As a result, the region is experiencing a growing number of restructuring and bankruptcy proceedings, particularly in high-emission sectors and industries strongly linked to international trade. In the Baltic States, there is a particular need to build companies' financial resilience to cumulative climate and geopolitical risks. Managing these risks should be incorporated into strategic financial planning and corporate restructuring processes. Developing a regulatory framework that better integrates environmental and geopolitical risks into creditworthiness assessments will also be crucial. Due to the specific nature of the region, it is also necessary to support the SME sector – both through dedicated financial instruments and advice on risk management and adaptation to changing conditions.

Keywords: Climate change; geopolitical policy; corporate finance; Baltic States; energy law

Author:

Bartosz Nieścior, Assistant Professor

Warsaw School of Economics

Warsaw, Poland

b.niesc [at] sgh.waw [dot] pl

When a Watt Saved is a Crisis Delayed: Electricity Consumers' Voluntary Reduction Capacity in Emergency Times

Britt Stikvoort, Denise Uwamariya, Cajsa Bartusch & Vera Van Zoest

Abstract:

As extreme weather events and geopolitical tensions increase, electricity grids face growing risks of disruption. When grid stability is threatened, public cooperation in reducing electricity use during emergencies can be essential for keeping vital societal functions operational and in preventing cascading disruptions across connected systems. This study examines households' willingness to reduce electricity use during emergencies, and what consumption is perceived as essential, using Swedish households as a case-study. Drawing on Protection Motivation Theory, the study moreover explores how perceptions of the threat and ability to respond shapes behavioural intentions to reduce electricity use. 500 + participants will be randomly assigned to one of two hypothetical emergency scenarios in which the government asks citizens to reduce consumption to avoid a negative outcome; either a scenario where the consequences of noncompliance include random large-scale blackouts, or a scenario where consequences include brief planned blackouts. Respondents report how much use they perceive as essential versus reducible across household devices, perceived threat, self-efficacy, response efficacy, and willingness to reduce/shift consumption during the scenario. Analyses include comparison of essential to baseline consumption requirements (self-reported), revealing the potential capacity of consumers to curb their consumption, and an examination of effects of psychological variables on hypothetical emergency compliance in terms of energy reduction. The study provides insights into the potential voluntary reduction capacity of households during emergencies, which household activities are most and least likely to be curtailed, and what psychological drivers are associated with emergency electricity-saving intentions. Findings can inform strategies enhancing societal resilience and public responses to disruptions to critical electricity infrastructure. Although based on Swedish data, the findings are relevant to the Baltic region as a whole, where countries face similar challenges in managing electricity demand during crises, and where regional grid interdependence makes public response capacity a shared concern.

Keywords: Emergency behaviour; energy crisis; essential electricity reduction; protection motivation theory

Authors:

Britt Stikvoort, Post-Doctoral Fellow

Uppsala University

Uppsala, Sweden

britt.stikvoort [at] psyk.uu [dot] se

Denise Uwamariya, Post-Doctoral Fellow

Swedish Defence University

Stockholm, Sweden

denise.uwamariya [at] fhs [dot] se

Cajsa Bartusch, Associate Professor

Uppsala University

Uppsala, Sweden

cajsa.bartusch [at] angstrom.uu [dot] se

Vera van Zoest, Associate Senior Lecturer

Swedish Defence University & Uppsala University

Stockholm & Uppsala, Sweden

vera.vanZoest [at] fhs [dot] se

Grid Resilience in Systems with High Shares of Inverter-Based Resources

Freja Bruncrona & Robert Eriksson

Abstract:

Modern society is critically dependent on reliable access to electricity. This reliability is increasingly under threat as climate change is expected to raise the frequency and intensity of extreme weather events, leading to more frequent large-scale disruptions of power infrastructure. Meanwhile, efforts to mitigate climate change are transforming the power system itself. Fossil-fuel-based synchronous generators are gradually being replaced by inverter-based resources (IBRs) such as wind and solar power. This transition promotes decentralization, which can enhance system flexibility and redundancy, and IBRs offer fast response capabilities and a diverse range of control options. However, without adapting resilience strategies to the evolving system architecture, these benefits may be outweighed by new vulnerabilities, including challenges in stability, fault ride-through, disturbance detection, and recovery. Despite its increasing relevance, grid resilience lacks standardized definitions and frameworks. Most existing approaches rely heavily on historical or simulated data, which poses limitations for long-term strategic planning, since historical records and conventional models quickly lose validity in the rapidly changing system. This project aims to develop a toolbox for scenario and strategy development, risk assessment, and decision analysis. It borrows methods from different disciplines and combines them into a holistic and predictive framework, capable of analysing the dependencies and tradeoffs of both qualitative and quantitative resilience indicators.

Keywords: Grid resilience; inverter-based resources; energy transition; strategic planning

Authors:

Freja Bruncrona, PhD candidate

Uppsala University

Uppsala, Sweden

freja.bruncrona [at] angstrom.uu [dot] se

Robert Eriksson, Professor

Uppsala University

Uppsala, Sweden

robert.eriksson [at] uu [dot] se

A Synthetic Grid Model Ensemble for Renewable Energy Integration and Resilience Studies in the Baltic Region

Geoffrey de Sena & Malin Göteman

Abstract:

The European electricity grid is undergoing significant changes as it shifts toward increasing levels of variable renewable energy sources (VRES). Some Nordic countries continue to pursue an expansion of offshore wind in the Baltic and North Sea regions. Integrating large VRES with a power grid originally designed for baseload power from nuclear power plants and an expansive fleet of hydropower poses a challenge for energy system resilience. A realistic grid model on which various scenarios can be tested would provide valuable insight into grid vulnerabilities and potential resilience measures. Current Nordic grid models are limited in size and are typically employed for short timescale dynamic analyses. Due to security concerns, no extensive and realistic grid model is available for public research. However, a synthetic grid model that matches reality in certain key parameters may be equally valuable. Synthetic grids representing actual systems have been created based on population statistics, open-source generator data, and nominal voltages. In this project, we adapt this approach to the Baltic region to create an ensemble of synthetic grid topologies. We first replicate the grid of the Nordic synchronous area and then analyse the final system for its statistical properties. We use those properties to create a synthetic grid in a deterministic fashion. We then incorporate probabilistic methods at the stages of substation location and branch connection to generate a series of similar networks. We validate the models by ensuring that they conform to requirements set forth in the Nordic grid code. The result is an ensemble of synthetic grid models that, when tested with various VRES penetration scenarios in various weather conditions, enables uncertainty estimation of operational variables. Future modifications may include additional transmission, energy storage, and reactive power compensation to evaluate the potential for these actions to facilitate VRES integration.

Keywords: Power system modeling; resilience; renewable energy

Authors:

Geoffrey de Sena, PhD candidate

Uppsala University

Uppsala, Sweden

geoffrey.desena [at] angstrom.uu [dot] se

Malin Göteman, Professor

Uppsala University

Uppsala, Sweden

malin.goteman [at] uu [dot] se

Energy Security of the Gas Exporting Countries: Evidence from High-Income OECD Economies

Honorata Nyga-Łukaszewska

Abstract:

This study aims to describe and analyse the phenomenon of energy demand security in the 21st century, focusing on high-income, net natural gas-exporting countries within the OECD. The research is structured around two core objectives: a theoretical examination of the concept of energy demand security within the broader contexts of energy security and international economics, and an empirical analysis of its impact on the international competitiveness of selected OECD economies. The theoretical component utilizes scoping literature reviews to evaluate the evolution of energy security research in leading academic databases. A particular emphasis is placed on the underrepresentation of demand security—especially from the perspective of energy-exporting countries—in the fields of economics and business. This gap forms the basis for identifying a promising direction for future research. The empirical component employs an econometric modelling framework informed by Heckscher-Ohlin and Ricardian theories. The model incorporates relative and human capital endowments (Heckscher-Ohlin) and labour productivity (Ricardian) to assess the relationship between energy demand security and international competitiveness. Norway serves as a benchmark for comparison among high-income OECD gas exporters. The theoretical analysis confirms that while energy security studies have grown in prominence, demand-side considerations—particularly from the perspective of exporters—remain underexplored in economic literature. The econometric analysis, covering the period 1997–2019, reveals that the international competitiveness of gas-exporting economies like Norway is influenced by both labour productivity differentials and factor endowments. These findings suggest that energy demand security does not play a significant role in shaping the competitive standing of developed energy-exporting nations. Energy demand security is an emerging yet under-researched aspect of energy economics. This study highlights its significance and suggests that incorporating demand-side perspectives into economic analyses of energy-exporting countries may enhance understanding of their long-term competitiveness in global markets.

Keywords: Energy security; trade models; natural gas market; Heckscher-Ohlin/Ricardian hypothesis

Author:

Honorata Nyga-Łukaszewska, Assistant Professor

Warsaw School of Economics (SGH)

Warsaw, Poland

hlukas [at] sgh.waw [dot] pl

Allocation of Responsibilities for the Protection of Critical Maritime Energy Infrastructure under German Constitutional and European Law

Johanna Rust

Abstract:

Maritime energy infrastructures including pipelines, power cables and offshore wind farms form the backbone of modern societies and economies as they guarantee a secure supply. However, they are extremely vulnerable and their protection constitutes a multifaceted challenge both practically and legally. Maritime infrastructures are severely affected by climate change-related risks and rising geopolitical tensions. Safeguarding such infrastructures against various and wide-ranging threats, including deliberate acts of sabotage and disruption or unintentional harm (e.g. natural disasters or accidents) is becoming increasingly important. Yet protecting maritime infrastructures is complicated by an intricate legal framework resulting from the absence of territorial sovereignty, international law of the sea, complex national competencies, and the need to involve private operators. To ensure the security and resilience of infrastructures, the distinction of roles and the unambiguous allocation of responsibilities are particularly important. The research focuses on examining the legal prerequisites for the allocating responsibility. It analyses current national and European legislative instruments designed to safeguard the physical security of maritime infrastructures. These measures primarily address the operators' responsibility for the complex and costly protection of their infrastructure. Operators are required to proactively prepare for and counter threats. Responsibility of state actors is only addressed in a perfunctory manner and remains limited to supervisory, advisory and data collection functions. This restricted role, however, creates a tension between the state's responsibility for supplying the population with the necessary infrastructure and the role of private corporations in delivering the supply. In fact, the responsibility of operators for protection is to no avail if a certain level of danger makes protection impossible without state support. To resolve this tension, further research aims at defining where responsibilities for protecting maritime infrastructure can, are or should be allocated on the basis of German constitutional law and European law.

Keywords: Critical maritime infrastructures; physical infrastructure protection; security of supply; resilience of infrastructures; responsibility for protection of critical maritime infrastructures

Author:

Johanna Rust, PhD candidate

University of Kiel

Kiel, Germany

jrust [at] law.uni-kiel [dot] de

Are there Decentralized Solutions for Ukraine's Energy Sector? Energy Regulatory Framework Analysis

Nadiya Kostyuchenko, Denys Smolennikov & Inna Tiutiunyk

Abstract:

The Russian full-scale war in Ukraine has exposed the vulnerability of centralized energy systems. Between 2022 and early 2025, around 70% of all Ukraine's energy facilities was either occupied by Russian forces, destroyed, or damaged. With extensive destruction of generation facilities and limited financial resources for rapid reconstruction during wartime, decentralized energy sources emerge as the most viable solution for uninterrupted energy supply to both population and industry. Implementing effective energy decentralization mechanisms must be grounded in a robust regulatory framework. This study examines potential pathways for the Ukraine's post-war energy sector development, highlighting opportunities for decentralization and decarbonization. The paper analyses the current state of Ukrainian regulations in energy sector. The authors specifically examine the degree of both technological (infrastructure) and organizational (governance) decentralization of energy sector in current Ukrainian legislation. Methodologically, the researchers conducted content and thematic analysis of legislation using keywords related to energy sector decentralization. The study investigates organizational decentralization across three dimensions: (1) energy market structure, including market liberalization and feed-in tariffs; (2) citizen involvement through local energy communities, prosumers, and active consumers; and (3) funding patterns such as citizen investments, crowdfunding, and small-scale investments. Technological decentralization analysis focuses on distributed generation and renewable energy solutions like photovoltaic and wind power. The study reveals fragmented legislative initiatives in energy decentralization. While some progress exists toward market liberalization, the legal energy framework lacks substantive mechanisms to support decentralized energy models. The research concludes that despite Ukraine's gradual legislative adaptation toward energy decentralization, a comprehensive implementation strategy remains absent. The existing legal framework fails to establish procedures, mechanisms, and conditions enabling local energy communities, associations, and independent producers to actively participate in energy production and distribution. Current provisions primarily support centralized management models rather than facilitate citizen and local community involvement in energy governance, financing, and production.

Keywords: Energy transition; decentralization; legislation; regulations; content analysis; thematic analysis

Acknowledgements: The authors wish to acknowledge funding from Swiss National Science Foundation, grant No.IZURZ1_224119.

Authors:

Nadiya Kostyuchenko, Associate Professor

Sumy State University & University of St. Gallen

Sumy, Ukraine & St. Gallen, Switzerland

n.kostyuchenko [at] biem.sumdu.edu [dot] ua

Denys Smolennikov, Associate Professor

Sumy State University

Sumy, Ukraine

dos [at] management.sumdu.edu [dot] ua

Inna Tiutiunyk, Associate Professor

Sumy State University

Sumy, Ukraine

i.tiutiunyk [at] biem.sumdu.edu [dot] ua

Data-Driven Optimization of Electric Vehicle Performance and Infrastructure Use in the Context of Energy Transition

Norbert Lech

Abstract:

The development of electromobility plays a crucial role in achieving energy security and sustainability objectives in the Baltic Sea region. However, widespread deployment of electric vehicles (EVs) requires optimization of their operational efficiency, safety, and integration with existing energy infrastructure. This research aims to combine engineering methods and data-driven decision-making to improve the usability, predictability, and energy performance of EVs in urban and regional transport systems. The research is based on several complementary studies, including comparative analysis of urban public transport fleets (diesel, hybrid, and electric buses), predictive modelling of energy consumption and recuperation processes under standard SORT driving cycles, and the design of neural network models for range prediction. Further methods include the development of a digital twin for refrigerated EVs with route optimization modules, and the application of genetic algorithms for travel planning based on charging station availability, charging types, and environmental conditions. Electric buses showed the highest ecological and economic efficiency, especially when supported by AI-based operational strategies. Machine learning models achieved high predictive accuracy in modelling energy usage and recuperation. The digital twin model demonstrates the capability to support live monitoring and planning optimization. Simulation results indicate that the proposed routing algorithms can enhance travel time management under varying range and charging conditions. The results demonstrate that integrating data-driven models with intelligent infrastructure planning can substantially improve EV performance, reduce emissions, and enhance the resilience of transport systems. The presented multi-method approach supports policy-making and energy transition strategies by offering practical tools for optimizing vehicle configuration, routing, and charging infrastructure. This work contributes to building a more reliable and energy-secure future for electrified mobility in the Baltic Sea region.

Keywords: Electromobility; route optimization; digital twin; machine learning; energy efficiency

Author:

Norbert Lech, PhD candidate

West Pomeranian University of Technology in Szczecin

Szczecin, Poland

norbert.lech [at] zut.edu [dot] pl

Energy Security in the Baltic Sea Region: Are We at Risk?

Vera van Zoest

Abstract:

We are facing several crises simultaneously: we have not yet seen the end of the effects of the pandemic, we are in the middle of a climate crisis, we faced an energy crisis because of the war in Ukraine, and global geopolitical tensions may lead to economic crises. The European energy system has a high resilience, but we have recently seen examples from Spain and Portugal where a large-scale blackout can lead to major disruptions in societal functions. During the war in Ukraine, we have also seen that energy has become a prioritized war target to destabilize society. We present the first results of the "Resilient Electricity Supply in Sweden: Towards a National Crisis Energy system (RESISTANCE)" project, based on literature reviews and workshops, and discuss the vulnerability of the European energy system using the four pillars of energy security: availability, accessibility, acceptability, and affordability. In this presentation we will focus on the Baltic Sea Region. We discuss the risks of the energy security pillars collapsing based on developments in the war in Ukraine, polarization and hybrid warfare, cyber-attacks and sabotages, as well as the effects of climate change. When polarization increases to a level where the European Union is scattered, international agreements may no longer be met. This, in combination with decreased availability and accessibility, and an increased demand for electricity as a result of decarbonisation efforts, could lead to an increase in electricity prices or even blackouts. We conclude that the four pillars of our resilient energy infrastructure are in need of guarding, through a strong Europe with tempered polarization, a strong cyber security including awareness amongst users of smart energy devices, a decreased dependency on large centralized power production, and local mapping of risks related to natural hazards, including predictions for climate change.

Keywords: Energy security; resilient infrastructure; hybrid warfare; energy crisis

Author:

Vera van Zoest, Associate Senior Lecturer

Swedish Defence University & Uppsala University

Stockholm & Uppsala, Sweden

vera.vanzoest [at] fhs [dot] se

Session 3 - International Relations: Cooperation and Conflict

Moderator: Prof. Joakim Ekman, Södertörn University

The Russian attack on Ukraine in 2022 as well as the return of Donald Trump to the Oval Office in 2025 have challenged the global world order, including the prospects for democracy, respect for human rights, economic freedom, sustainable development and the ability to mitigate climate change. The countries of the Baltic Sea Region and Eastern Europe are strongly affected by these challenges. This session relates to the BUP theme "Sustainable societies" and welcomes contributions that explore the different ways the present global situation challenges the region, including topics like for example increased geopolitical competition and economic protectionism, the expansion of authoritarianism, populism and Euroscepticism.

A Paradigm Shift in Border Management in the Baltic Sea Region

Anna Moraczewska

Abstract:

The reconfiguration of geopolitical realities in the BSR as a result of Russia's policies and actions has triggered several decisive shifts in the policies of the Baltic Sea states. In the wake of threats, particularly military ones, there is an increasing significance of the security paradigm, which often begins to dominate other existing state priorities. National borders can be considered as an immune system that responds to external threats in the most immediate way. We can observe such a situation on the eastern flank of the Baltic Sea region, where all countries have decided to decisively tighten their border regimes with Russia and Belarus. Comparing the policy priorities of cross-border cooperation with these countries prior to 2021 demonstrates a paradigm shift of this cooperation previously based on SD pillars towards MBSA (make borders strong again). The aims of this presentation will be to compare sustainable development concept in border relations promoted by the BSR states until 2021 with its current alternative representing opposite attitude to the role of the border with Russia or/and Belarus. Main methods used in this study will be quantitative methods and comparative analysis. Moreover, the SD paradigm will be applied. The analysis is supposed to indicate consequences of this paradigm shift in border management for the BSR and propose several problematic questions for consideration.

Keywords: Borders; paradigm shift; militarisation; sustainable development, eastern flank

Author:

Anna Moraczewska, Associate Professor

Maria Curie-Skłodowska University

Lublin, Poland

anna.moraczewska [at] mail.umcs [dot] pl

The “Northern Turn” in Poland’s Geopolitical Culture

Damian Szacawa & Piotr Oleksy

Abstract:

The paper analyses the impact of changes in the security architecture in the Baltic Sea region (BSR) on Poland's geopolitical culture. Russia's invasion of Ukraine in 2022 led, on the one hand, to Finland and Sweden joining NATO and, on the other, to a crisis in relations between Poland and its partners in Central Europe. This resulted in a new opening in Poland's policy towards its northern partners, who began to be seen as key allies in its multidimensional security policy. This latest diplomatic opening was in line with earlier investment and economic activities related to the BSR and ongoing socio-cultural processes, which have brought the countries of this region closer to Polish society. Therefore, according to the authors, we should speak of a “Northern Turn” in Poland's geopolitical culture. This means that this culture has been enriched by a new direction that is of great importance to multidimensional security and strategic development. The article analyses three spheres of this phenomenon: formal, which pertains to the analysis of international system dynamics; practical, which relates to actual political and strategic decisions; and popular, which reveals transformations in culture and identity.

Keywords: Baltic Sea Region; Poland; foreign policy; security; geopolitics; strategic culture

Authors:

Damian Szacawa, Assistant Professor

Maria Curie-Skłodowska University

Lublin, Poland

damian.szacawa [at] mail.umcs [dot] pl

Piotr Oleksy, Assistant Professor

Adam Mickiewicz University

Poznan, Poland

p.oleksy [at] amu.edu [dot] pl

Strategic Narratives and Conflict Spillover: The Baltic Sea Region Amid Russia's War on Ukraine

Daria Vilkova

Abstract:

The post-2022 phase of the Russian-Ukrainian war has profoundly reshaped the security environment of the Baltic Sea Region (BSR), elevating its geopolitical significance and vulnerability. Beyond direct military threats, the war has accelerated the spread of strategic narratives emphasizing conflict spillover risks in the domains of hybrid warfare, cyber threats, and energy security. This study focuses on the influence of the war on strategic narratives adopted by BSR states. Its aim is to explore the implications for regional cooperation and resilience-building efforts within changing threat perception. The main method applied in this research is discourse analysis of official government statements, security strategies, and leading media outputs from key BSR countries from 2022 to 2025. Considering the changing security landscape within NATO, the looming threat of Euro-Atlantic divide under the Trump administration and other developments, Sweden and Finland will be of specific interest as case studies. The study examines shifts in language, threat-framing, and narratives of resilience. The analysis reveals convergence of threat perceptions across BSR states. The aggressive war from early 2022 has been portrayed as not only a regional conflict but a systemic threat to the liberal international order and regional stability. In addition to the grand narrative of democracies versus autocracies, studied strategic narratives emphasize the risks of conflict spillover into the Baltic region. This translates into urgency of strengthening deterrence, and the necessity for deepened cooperation within existing and emerging frameworks. Strategic narratives serve as powerful tools when it comes to shaping security policies and public resilience. The study recommends the balance of assertive strategic communications with initiatives that leave space for resilience building and conflict prevention mechanisms.

Keywords: Baltic Sea Region; strategic narratives; conflict spillover; resilience; Russian-Ukrainian war; security cooperation

Author:

Daria Vilkova, Assistant Professor

Taras Shevchenko National University of Kyiv

Kyiv, Ukraine

mv.vds [at] clouds.iir.edu [dot] ua

Anchors of Resilience: The Role of Regional Development and Cross-Border Cooperation in Strengthening the Baltic Sea Region's Security

Emilia Jankowska-Ambroziak

Abstract:

The Baltic Sea Region (BSR) faces a unique convergence of environmental, political, social, and economic shocks, exposing vulnerabilities that demand integrated and coordinated responses. This paper examines the underexplored yet critical role of border regions and cross-border cooperation in enhancing the BSR's resilience to multi-dimensional crises. Drawing on case studies and policy analysis from EU border regions within the BSR, the research explores how cross-border frameworks, such as Interreg and European Groupings of Territorial Cooperation (EGTCs), have become vital instruments of regional development and stability. The study analyses how joint initiatives in economic diversification, infrastructure development, emergency preparedness, and environmental protection contribute to risk mitigation and strengthen adaptive capacities at the regional level. Particular attention is given to the dynamics at EU external borders, where economic cooperation must balance with geopolitical risks and security concerns. The paper argues that fostering resilient borderlands through innovative regional policy and transnational partnerships offers a scalable model for crisis management not only within the Baltic Sea basin but also in other vulnerable peripheries of Europe. Recommendations are presented for enhancing EU policy frameworks to further leverage border regions as strategic hubs of cooperation and resilience-building in an era of accelerating uncertainty.

Keywords: Regional resilience; regional development; Interreg; border regions; EU policy

Author:

Emilia Jankowska-Ambroziak, Assistant Professor

University of Bialystok

Bialystok, Poland

e.jankowska [at] uwb.edu [dot] pl

Worth Defending? Exploring the Role of Democratic Values in Sweden's Military Strategic Communication

Isabelle Karlsson & Cecilia Cassinger

Abstract:

This paper aims to enhance our understanding of how military strategic communication mobilise democratic values and ideals, which civil society is expected to support. Drawing on discourse theory, the paper conceptualises military strategic communication as a process that unites various publics. This paper argues that these publics are largely imagined and constructed through communication. It also asserts that the 'defence-worthiness' of values is constructed through communication. Adopting a narrative approach, the study illustrates how and which values are mobilised in military strategic communication. Focusing on gender equality — a core value of Swedish democracy — the study analyses how this value is framed as a national ideal worth defending while creating civil society publics with whom it may resonate. A discourse analysis of strategic communication materials from the Swedish Armed Forces, collected over seven years, is conducted with a particular focus on which publics are included or excluded. Shifts in narratives surrounding certain incidents will also be examined, such as Sweden's entry into NATO in 2024. Initial findings suggest the normalisation of women in the military, the intersection of militarisation and commodification, and the use of gender equality as a strategic position. Ultimately, the paper argues that gender equality acts as a placeholder for democratic ideals while remaining an empty signifier. It discusses how values can form connections between civil society, democratic ideals, and military organisations. Thus, it highlights the complexity of military strategic communication and demonstrates how it can be perceived as value-driven.

Keywords: Military strategic communication; societal values; gender equality; democracy; discourse; narrative

Authors:

Isabelle Karlsson, PhD

Lund University

Helsingborg, Sweden

isabelle.karlsson [at] iko.lu [dot] se

Cecilia Cassinger, Associate Professor

Lund University

Helsingborg, Sweden

cecilia.cassinger [at] iko.lu [dot] se

Critical Infrastructure Protection in the Baltic - Assumptions for a New Approach to CI Protection

Joanna Zukowska, Adam Duda, Michal Marciniak & Krzysztof Wiater

Abstract:

The report 'Safer Together: Strengthening Europe's Civilian and Military Preparedness and Readiness' authored by former Finnish President Sauli Niinistö and commissioned by the President of the European Commission presents a comprehensive strategy for strengthening the European Union's civilian and military preparedness. The Report identifies critical infrastructure as one of the main security challenges and a priority for EU preparatory action. Based on the report, the authors developed the assumptions of a new approach to the protection of CI. This model, which primarily fulfils the feature of a holistic/comprehensive approach, describes existing threats and is based on a new definition of defence, protection and additional measures in the area of CI financing and insurance. The solution presented describes the limitations of the Defence/Protection/Other Measures triangle and the directions of change needed to improve the effectiveness of the solutions used. The authors pay particular attention to the challenges arising from the need to coordinate activities in the public and private domains, as well as the selection of appropriate measures to protect CI. In addition to the traditional ones, the presented model considers both new forms of threats (e.g. hybrid activities, cyber-attacks, new forms of sabotage or disinformation), as well as new means of defence and protection (e.g. satellite monitoring and data processing, use of AI or anti-drone and unmanned systems). The model also presents the challenges faced by the banking and insurance sector and the solutions used to finance and insure CI, both during the investment phase and in the case of the need to rebuild/repair an already functioning CI. According to the authors, the proposed model can be applied both individually by individual Baltic Sea states, but - based on bilateral and multilateral solutions - can be applied by most Baltic Sea states. The model makes use of already developed and applied solutions and procedures (especially in the area of military defence), however, the authors present areas that require fundamental changes in order to achieve an adequate level of CI security. The presented model considers mainly the Polish perspective, but opens up a wide range of research opportunities for joint university centres located in most of the Baltic Sea countries.

Keywords: Critical infrastructure; protection; defence; Baltic Sea countries

Authors:

Joanna Zukowska, Associate Professor

Warsaw School of Economics

Warsaw, Poland

joanna.zukowska [at] sgh.waw [dot] pl

Adam Duda, PhD

Warsaw, Poland

dudaadam [at] op [dot] pl

Michal Marciniak, PhD

Warsaw, Poland

mi.marciniak [at] wp [dot] pl

Krzysztof Wiater, PhD

Warsaw, Poland

krzysztof.wiater [at] ngllegal [dot] com

Navigating the New Geopolitics: Economic Resilience and Strategic Autonomy in the Baltic Sea Region

Marianna Gladysh

Abstract:

The Baltic Sea Region (BSR), historically a crossroads of trade and cultural exchange, has once again emerged as a critical geopolitical fulcrum. The full-scale invasion of Ukraine by Russia in February 2022 irrevocably shattered the post-Cold War security paradigm, forcing a profound re-evaluation of national interests and strategic priorities across Europe. Within this dramatically reshaped landscape, the BSR stands as a compelling case study for understanding the intertwined concepts of economic resilience and strategic autonomy. While military deterrence remains foundational, the weaponization of economic interdependencies has elevated economic robustness to an equally vital component of national and collective security, driving the region towards a new model of self-reliance and proactive engagement in the emerging global order. The geopolitical context of the BSR has undergone a seismic shift. The longheld doctrines of neutrality and non-alignment in Finland and Sweden have given way to NATO membership, transforming the Baltic Sea into what is often termed a "NATO lake." This strategic realignment, while bolstering military security, simultaneously intensifies the economic dimension of geopolitical competition. Russia, facing unprecedented sanctions and isolation, has demonstrated a willingness to leverage its economic influence, particularly in energy, as a tool of coercion. This new reality necessitates that BSR states not only enhance their military capabilities but also fortify their economic foundations to withstand external pressures and maintain their sovereignty in an increasingly fragmented and unpredictable world. However, navigating this new geopolitical landscape is not without its challenges. The costs associated with rapid energy diversification, supply chain restructuring, and significant investments in defence and technology are substantial, potentially straining national budgets and impacting economic competitiveness. Maintaining internal cohesion within the EU and the BSR, especially when faced with differing national economic priorities or varying levels of exposure to external shocks, also presents a continuous challenge. Despite these hurdles, the opportunities are equally compelling. Enhanced regional cooperation, leveraging the robust frameworks of the EU and Nordic Council, allows for shared investments, coordinated policy responses, and the pooling of resources. The BSR can also position itself as a leader in green technologies and sustainable development, attracting foreign direct investment and fostering new growth sectors that align with both security and environmental imperatives.

Keywords: Baltic Sea region; resilience; security

Author:

Marianna Gladysh, Associate Professor

Ivan Franko National University of Lviv

Lviv, Ukraine

mgladysh [at] ukr [dot] net

EU Policies' Impact on Cross-Border Cooperation's Institutional Frameworks in the Zakarpattia Region (Ukraine)

Myroslava Lendel

Abstract:

One of the key instruments for advancing local and regional democracy, balanced socio-economic development of border regions, regional security, and the integration of candidate and accession nations into the European Union (EU) is cross-border cooperation. Even though this phenomenon first appeared in the 1950s and is present in relations between practically every nation on the continent, not just those members of the EU, its institutional typology has not yet been fully developed, particularly when discussing candidate states like Ukraine. Research on the impact of political factors, such as RU policies, on establishing various forms of cross-border cooperation is notably lacking. Using the Zakarpattia region as an example, we aim to systematize the institutional forms of cross-border cooperation in Ukraine and identify how EU policies have influenced its development. The main research questions are; Did a dominant form (s) of institution for cross-border cooperation emerge between CBC actors in the Zakarpattia region and relevant actors in neighbouring EU states between the 1990s and 2020s? And In what ways do EU policies influence the institutional choices of CBC actors in the Zakarpattia region regarding collaboration with stakeholders from neighbouring countries? The methodology for borderland studies is based on an understanding of cross-border regions that need to be explored through an analytical examination of spheres such as political activities of various levels of government in territories adjacent to borders; political influences exerted on the inhabitants of cross-border regions by various political actors; and the residents' local political culture. The concept of multilevel governance, which is a governance network that operates outside the jurisdiction of national states to implement cross-border initiatives while considering the interests of various actors, will also be used, as well as the research of other informal vertical and horizontal networks.

Keywords: Cross-border cooperation; borderland; Zakarpattia region; cross border cooperation institutions

Author:

Myroslava Lendel, Professor

Uzhhorod National University

Uzhhorod, Ukraine

myroslava.lendel [at] uzhnu.edu [dot] ua

The Political and Societal Aspects of Security: Russia's War on Ukraine

Olena Podolian

Abstract:

While relatively obscure until 1980s due to dominance of Realism and Idealism in the debate as well as primarily military focus on Strategic Studies, there has been steady growth in studies and ongoing (re-)conceptualisation of security since. The aim of the presentation is to conceptualise connection between the political and societal aspects of security and 'traditional' harder security, following typology of national security according to Barry Buzan (Copenhagen school). It is based on the analysis of the qualitative data such as number of social opinion surveys, coupled with factual background from Ukraine. In Ukraine, Russian and pro-Russian cultural and political organisations were allowed to function uncritically, and partly they prepared a ground for invasion. Namely, along with NATO's eventual expansion, protection of Russian-speakers was used to construct a threat aimed to justify the war as preventive and defensive. This draws an interesting line between the national minority rights and national security and highlights the problems of balance between the two and democratic enforcement of national security.

Keywords: Security; war; Russia; Ukraine

Author:

Olena Podolian, Postdoctoral Researcher

Södertörn University

Huddinge, Sweden

olena.podolian [at] sh [dot] se

Discourse Ethics, Territorial Integrity, and State Border Inviolability: Relevance of Unifying Dignity and Morality

Raitis Tiliks

Abstract:

The influence of the Pax Americana system, which has underpinned international stability for eight decades, is in gradual decline. This occurs amid a resurgence of neocolonial practices and increasing disregard for the rules-based international order, driven by kinetic warfare and manipulative rhetoric targeting the principles of territorial integrity and state border inviolability. The emergence of complex digital and cyber threats further destabilizes this domain of international and human security. The Russia's ongoing aggression against Ukraine since 2014, coupled with the perceived indecisiveness of democratic states in defending international norms, poses significant challenges to the steadiness of the concepts of territorial integrity and state border inviolability. This paper employs doctrinal legal analysis, incorporating paradigms from securitisation theory and the principle of uti possidetis iuris, to assess discourse ethics on territorial integrity in Europe, North America, and the Russian Federation over the past decade. Two key areas are addressed: 1. Discourse ethics with regard to adherence to the Charter of the United Nations and the Helsinki Final Act of 1975; 2. Ethical considerations and morality in the context of just securitisation. Findings indicate that, beginning in 2022, Europe has responded to challenges by enhancing its security measures and reaffirming commitment to core democratic values. Moreover, within the scope of territorial sovereignty and prohibition of use of force, the societies in the Baltic Sea Region states are critical towards both pseudo-messianic narratives (case of Vladimir Putin 5.0) and 'a good deal' geopolitics (case of Donald Trump 2.0). The paper reaffirms that, in today's circumstances, respect for territorial sovereignty is fundamental to the international legal order. Public and diplomatic communication must uphold this principle. Finally, the analysis underscores the continued relevance of European humanitarian tradition and values-based ethics in discussions concerning national identity and territorial integrity.

Keywords: Discourse ethics; territorial integrity; border inviolability

Author:

Raitis Tiliks, PhD candidate

University of Latvia

Riga, Latvia

mj30051 [at] edu.lu [dot] lv

The Role of Local Governance (Hromadas) in Wartime

Sofiya Shutiak

Abstract:

The ongoing war in Ukraine has underscored the critical role of local governance structures, particularly hromadas (amalgamated territorial communities), in shaping international relations through both cooperation and conflict. My presentation examines how these decentralized entities have become pivotal actors in fostering cross-border collaboration, managing humanitarian crises, and resisting aggression, thereby influencing broader geopolitical dynamics. Against the backdrop of Ukraine's decentralization reforms, which empowered hromadas with greater autonomy, this study explores their evolving role in international relations during wartime. The research employs a mixed-methods approach, combining qualitative case studies of hromadas in border regions with quantitative analysis of cross-border partnerships, humanitarian aid distribution, and conflict mitigation efforts. Data is drawn from interviews with local officials, international organizations, and NGOs, as well as policy documents and reports. Preliminary findings reveal that hromadas have emerged as key facilitators of international cooperation, particularly in humanitarian aid delivery, refugee resettlement, and infrastructure restoration. Simultaneously, they have played a defensive role in conflict zones, coordinating with military and civil defence units to protect local populations. These activities have elevated their visibility on the international stage, fostering direct partnerships with foreign municipalities and organizations. The study concludes that hromadas represent a unique model of local governance that bridges domestic and international spheres during crises. Their resilience and adaptability highlight the importance of decentralized governance in addressing global challenges, offering lessons for post-war reconstruction and international policy. This research contributes to broader debates on the role of subnational actors in international relations, emphasizing their potential to mitigate conflict and promote cooperation in times of war.

Keywords: Local governance; hromadas; international relations; Ukraine war; decentralization, cooperation; conflict

Author:

Sofiya Shutiak, PhD candidate

Ukraine National Forestry University

Lviv, Ukraine

sofiya.shutyak [at] nltu.edu [dot] ua

Geopolitical Shocks in the Arctic: How Greenland's Changing Role Shapes Regional Stability in Northern Europe

Tomasz Branka

Abstract:

The Arctic is rapidly evolving into a key arena for global geopolitical competition, driven by climate change and emerging economic interests. Greenland, with its strategic location and abundant natural resources, has become increasingly pivotal, influencing international relations and regional dynamics in Europe. This study examines how geopolitical shocks in the Arctic, particularly those linked to Greenland's changing role, are reshaping political and economic alliances across Europe. The primary aim of this research is to analyse the impact of Greenland's evolving geopolitical status on European regional dynamics, focusing on its effects on international relations, political realignments, and economic partnerships. A mixed-methods approach was employed, combining a review of policy documents and academic literature with qualitative interviews with regional experts and policymakers. Findings indicate that Greenland's pursuit of greater autonomy, evidenced by its dynamic independence movement and the outcomes of its latest election, and its active international engagement have redefined its global profile. The study also contextualizes the controversial proposal by U.S. President Donald Trump to acquire Greenland, highlighting its symbolic impact on perceptions of the island's value. These developments have recalibrated regional dynamics, prompting a reconfiguration of traditional alliances and stimulating new economic and political opportunities across Europe. In conclusion, the research emphasizes the need for comprehensive, multilateral dialogue to understand and manage the evolving roles of Arctic actors. By closely monitoring Greenland's shifting position, European policymakers can better navigate the complex interplay of regional politics and economic interests.

Keywords: Greenland; Arctic geopolitics; European regional dynamics; political realignment; autonomy movements

Author:

Tomasz Branka, Associate Professor

Adam Mickiewicz University

Poznan, Poland

tomasz.branka [at] amu.edu [dot] pl

How to Isolate the Minsk Authoritarian Regime Without Isolating Belarusian Society?

Victor Shadurski

Abstract:

The reality of the new millennium has become another division of the Baltic Sea Region, caused by the aggressive policy of Russia and its vassal Minsk regime. In these conditions, the issue of supporting Belarusian society, which in 2020 clearly demonstrated its democratic, pro-European choice during mass protests against the dictatorial regime, is especially relevant. The brutal repressions against any manifestation of dissent in Belarus that have been going on for more than five years prove that a deep conflict remains between the authoritarian regime and society. The expected reaction of democratic states to the current events was a desire to isolate the Minsk dictatorship internationally and impose political and economic sanctions. The negative consequence of these justified actions was the restriction of foreign contacts of Belarusian citizens. As practice shows, external isolation of Belarusians benefits authoritarian rulers, strengthens the so-called "iron curtain" between countries and peoples, as well as between Belarusians in the country and Belarusians in exile. It is obvious that adverse consequences from the introduction of sanctions against the dictatorial regime for Belarusian society cannot be avoided. It is necessary to look for ways to minimize the negative impact of the sanctions imposed against the regime on ordinary Belarusians. The objective of the study is to identify areas within which active foreign contacts of Belarusians can be carried out. Of practical interest is also the study of mechanisms of external support for citizens of Belarus who are not supporters of the authoritarian regime. To achieve the objectives of this research, the author studied the opinions of representatives of Belarusian democratic forces in exile on this topic, as well as the approaches of leaders of Belarusian public opinion located outside Belarus. The study of the situation also includes an analysis of official documents of the authoritarian regime and statements by its representatives. For a quantitative assessment of mobility, statistical data on the crossing of the Schengen zone borders by Belarusians were used. Of interest are also the results of sociological research on the issues raised. According to the author, the most effective way to minimize the isolation of Belarusians is to expand the presence of democratic media in the country's information space, which allows reducing the influence of the dictatorship's propaganda. Of great importance for supporting Belarusian society is the extension of the opportunities for ordinary citizens to visit European countries. This requires liberalization of the issuance of Schengen visas to citizens of Belarus untainted by cooperation with the regime, the removal of unjustified technical restrictions

on entry and exit to EU countries, the restoration of railway passenger transportation with Belarus, and others.

Keywords: Belarus; European Union; authoritarian regime; sanctions; civil society

Author:

Victor Shadurski, Independent researcher via EU4Belarus-SALT II

shadurski.victor [at] gmail [dot] com

Session 4 - Civil Society and Preparedness

Moderator: Dr. Ramona Rat, Södertörn University

This session relates to the BUP theme “Sustainable societies” and welcomes contributions that explore the different aspects of crisis preparedness and societal resilience, i.e. the ability of the countries in the Baltic Sea Region to recover quickly from major shocks like armed attacks, hybrid attacks, health crises, natural disasters, and critical infrastructure failures. The way a society can endure internal and external crises and threats may also be related to civil society, media and press freedom, as well as academic freedom.

Knowledge Production in Wicked Times: Emotional Preparedness of Future Professionals to Deal with Global Crises

Aleksandra Halaim & Tatjana Tambovceva

Abstract:

In today's increasingly complex and unpredictable world, higher education must equip students not only with technical knowledge but also with the emotional and psychological competencies to navigate uncertainty. Inner sustainability—the capacity to remain resilient, grounded, and purpose-driven in the face of adversity—has emerged as a critical skillset for future professionals. As university students prepare to become agents of positive change in the society, cultivating inner sustainability becomes essential to help them engage constructively with the "wicked problems" of our time, including regional military conflicts, extreme weather events caused by climate change, as well as economic and political instability. These intertwined global crises demand a new kind of emotional preparedness, one that higher education must actively foster through innovative pedagogies and reflective practices. The discussion focuses on how emotional competence, critical reflection, and transformative learning can empower university students to navigate uncertainty and act constructively in response to the complex global challenges of our time. To unfold this topic, a cross-cut survey was organized in May 2025 by CHS – Centre for Health and Sustainability (Uppsala University) together with Governance and Security Institute (Riga Technical University) to gather some field data on students' attitudes towards current societal challenges, their emotional response to it, and the role of university environment. Specifically, the survey aimed to investigate possible anxiety cases related to major societal challenges, such as climate change and geopolitical situation in the region among university students of the Master Program in Industrial Engineering and Management of RTU. The results highlight possible solutions for emotional identification of students, as well as an emotional environment within the university borders for the student community.

Keywords: Sustainability competencies; emotions; inner sustainability; wicked problems; societal challenges

Authors:

Aleksandra Halaim, PhD

Uppsala University

Visby, Sweden

aleksandra.halaim [at] uu [dot] se

Tatjana Tambovceva, Professor

Riga Technical University

Riga, Latvia

tatjana.tambovceva [at] rtu [dot] lv

Integration and Social Inclusion of Displaced Ukrainians in the UK: Language, Community and Intercultural Awareness

Anna Yunatska

Abstract:

The proposed paper addresses the acculturation and adjustment of Ukrainian adult migrants, who came to the UK after February 2022. Many countries launched refugee schemes for Ukrainian citizens fleeing the war and so did the UK Government, setting up the Homes4Ukraine Scheme. While the expectation was that people would use the Scheme to transition into the community in their area in the UK, find paid work and move into their own accommodation, Ukrainian migrant stories are different. They vary depending on circumstances, ranging from the level of English refugees speak, their professional skills and qualifications, age, motivation and willingness to integrate into the UK society. Migration from a place of crisis encompasses a number of acculturation stages, necessary to adjust to life in a new environment. At the core of the research is the role of language and community, as well as situatedness in the process of adjustment, so the author is aiming at finding out the specificity of the integration process and how community-related acculturation is actualized and verbalized. Apart from being people, we are also cultural beings and our multiple identities are represented in micro-cultures (Neuliep 2021) or small cultures (Holliday 1999) we move through on a regular basis. It is argued that Ukrainian refugee communities tend to develop into identifiable micro-cultures or tribal communities, which have commonalities with the large-scale Ukrainian culture, but also differ from it in a number of ways. In this research project micro-cultures are explored based on the three-Ps model of culture (Frank, 2014), which pinpoints its main components–perspectives (key values and beliefs), practices (behavior patterns, language, incorporation of special vocabulary), and products (cuisine, literary creations, clothing, etc.) of a culture. Methodology-wise the author engages in extensive field research through data collection techniques including interviews, questionnaires, focus group discussions and observation.

Keywords: Integration; micro-culture; language and intercultural awareness

Author:

Anna Yunatska, Associate Professor

Zaporizhzhia National University, Ukraine
Zaporizhzhia, Ukraine
yunatskaya_a [at] ukr [dot] net

Habitability – a Method for Viable and Sustainable Island Communities

Pia Prost & Cecilia Lundberg

Abstract:

Assessing the sustainability of small communities presents unique challenges. However, small islands and archipelagic communities offer ideal study environments due to their spatial limitations. The concept of habitability, adapted from the Agenda 2030 framework, is specifically tailored to suit the context of small island societies. This method is grounded in both scientific research and citizen science conducted by island residents, providing a comprehensive assessment of the island's current habitability status. Key questions include: What are the challenges and opportunities for island communities in addressing demographic imbalances and depopulation? Is the island open and attractive to new residents? What is the quality of services and infrastructure available? How can the community build resilience against threats such as climate change and military insecurity? Drawing on all dimensions of sustainable development, the habitability method evaluates seven thematic areas through 45 indicators. These indicators reveal how sustainable, viable, and liveable the island community is.

Keywords: Island development; nissology; citizen science; Agenda 2030

Authors:

Pia Prost, PhD candidate

Södertörn University

Huddinge, Sweden

pia.prost [at] sh [dot] se

Cecilia Lundberg, PhD

Åbo Akademi University

Turku/Åbo, Finland

cecilia.lundberg [at] abo [dot] fi

Civilian Resilience in an Era of Geopolitical Tension: Rethinking Disaster Risk in the Baltic Sea Region

Daniel Nohrstedt, Charles Parker, Steffi Burchart, Giuliano DiBaldassarre, Jeanne Claire Fernandez, Malin Göteman, Lars Nyberg & Sara Bondesson

Abstract:

In the context of escalating geopolitical tensions and shifting political priorities across Europe, the Baltic Sea Region (BSR) faces a complex security landscape. Traditional notions of national and regional security are increasingly dominated by military and defence investments, often at the expense of human security concerns related to natural hazards, technological risks, and disaster risk reduction (DRR). This paper argues that such a narrowed focus risks undermining the long-term resilience of BSR communities overlooking the compounding or cascading effects of disruptive natural hazard events and disasters. As climate change intensifies the frequency and severity of natural hazards—such as coastal flooding, wildfires, and extreme weather events—failing to integrate DRR into security planning leaves critical vulnerabilities unaddressed. Enhanced interdisciplinary research on natural hazards and DRR is urgently needed to bridge the widening gap between civil protection and traditional defence. The BSR, as a geographically and politically diverse region, offers a vital testing ground for innovative approaches to resilience-building that transcend national boundaries. This paper proposes several priority research themes: (1) the role of cross-border governance mechanisms in coordinating disaster response; (2) the preservation and development of civilian-led collaborative crisis response structures better suited to managing complex non-military emergencies; (3) the integration of climate adaptation into military infrastructure planning; (4) public trust and risk communication in hybrid threat environments; (5) critical infrastructure interdependencies under multi-hazard conditions; and (6) the capability of geographically and thematically defined policy subsystems to engage in long-term planning and remain resilient amid shifting political priorities. Addressing these themes would contribute to strengthening the adaptive capacity of the BSR while ensuring that investments in security are genuinely comprehensive. In an era where environmental and geopolitical risks are increasingly entangled, societal resilience must encompass not only territorial integrity, but also societal cohesion and ecological sustainability.

Keywords: Natural hazards; disaster risk reduction; national security

Authors:

Daniel Nohrstedt, Professor

Uppsala University

Uppsala, Sweden

daniel.nohrstedt [at] statsvet.uu [dot] se

Charles Parker, Professor

Uppsala University

Uppsala, Sweden

Steffi Burchart, Professor

Uppsala University

Uppsala, Sweden

Giuliano DiBaldassarre, Professor

Uppsala University

Uppsala, Sweden

Jeanne Claire Fernandez, PhD candidate

Uppsala University

Uppsala, Sweden

Malin Göteman, Professor

Uppsala University

Uppsala, Sweden

Lars Nyberg, Professor

Karlstad University

Karlstad, Sweden

Sara Bondesson, Senior Lecturer

Swedish Defence University

Stockholm, Sweden

Development Challenges through Applying the Competitive Neutrality Principle in Latvia

Inguss Vircavs

Abstract:

Protecting private sector businesses has been underestimated in how it affects the performance of state-owned enterprises. Economic and geopolitical challenges have insisted on the revised role of state-owned enterprises and their substantiated use to fulfil government tasks in areas where the private sector cannot deliver the services needed by society. To this end, the efficiency facets of state-owned enterprises must be targeted. The research aims to contribute to competition policy improvements by investigating how applied competitive neutrality legislation reflected on the performance of state-owned enterprises and the opportunities to favour the public good. The obstacles posed by legislative and institutional restrictions will be examined to determine whether private competitors are outcompeting state-owned and municipal-owned undertakings. At the same time, the issues of private companies regarding the undue influence of the public sector, including legislative policies and their application by institutions, as well as competition with public sector companies, will be explored. The research answers the following questions: (1) Do legislative restrictions contribute to the commercial conditions of state-owned enterprises and, consequently, their contribution to the public good? (2) Which restrictions and in what combination affect the competitive balance for state-owned enterprises and privately-owned companies regarding their undertakings of services of general interest? (3) Where is the turning point of balance for different industries when these restrictions decrease the performance of state-owned enterprises? Structural expert interviews are being conducted with Latvian public and private sector stakeholders. Furthermore, several experts from selected European countries, including those in the Baltic Sea region, will be approached to gather their experiences with implementing competitive neutrality. Additionally, an expert survey in the private sector will contribute to the quantitative evaluation of critical competitive factors. Finally, a public opinion survey is planned in order to acquire essential knowledge regarding general expectations for how services of general interest should be provided and levels of trust in different providers. Consequently, the study commences broader research on the revival of the role of state-owned enterprises and re-municipalisation in addressing the challenges of the Green Deal, geopolitics, the pandemic, economic crises, and sustainable regional development, where companies owned by the public sector must be effectively utilised. In the event of implementation, the proposed guidelines balance the interests of private business groups and the common good of society, thereby facilitating a business environment closer to competitive neutrality. To achieve

competitive neutrality, restrictions on public sector undertakings should be reduced or amended for private companies to provide services of general interest. A set of criteria for amending restrictions, such as using public funding regardless of whether the company is private or public, will be established.

Keywords: State-owned enterprises; municipality-owned companies; services of general

Interest; re-municipalisation; public good

Author:

Inguss Vircavs, PhD candidate

University of Latvia

Riga, Latvia

inguss.vircavs [at] lu [dot] lv

Total Defence and Cultural Heritage in Spatial Planning

Jimmie Andersén

Abstract:

The changed geopolitical situation has changed the conditions for Sweden's total defence. Within spatial planning, issues of civil and military preparedness and defence have been absent for the past thirty years, they are now re-emerging. Sweden is thus facing planning issues for which there is a lack of knowledge. All total defence measures have a spatial dimension, spatial planning is thus a fundamental aspect of such measures, making the above-described lack of knowledge critical. The research project Total Defence in Spatial Planning contributes to the needed knowledge development. As part of the project, implementing issues of preparedness and defence in spatial planning in the municipality of Karlskrona is researched. Karlskrona naval base is situated in the city center, on the island of Trossö and surrounding islands. The city center and the naval base constitutes the main objects of the UNESCO world heritage site of the Naval Port of Karlskrona. Preservation of cultural heritage is an important consideration for planning, preparedness and total defence in Karlskrona. This site thus presents a heightened complexity in planning for total defence and preparedness. In this presentation, the results of interviews held with municipal planners and security officers, the world heritage organization, and other actors are presented. Issues analysed are; how are the delicate interests weighed against one another, what processes and knowledges are employed, and what processes and knowledges are lacking?

Keywords: Spatial planning; cultural heritage; total defence; planning processes

Author:

Jimmie Andersén, Senior Lecturer

Blekinge Institute of Technology

Karlskrona, Sweden

jimmie.andersen [at] bth [dot] se

Representation of the LGBTQ+ Communities in Ukrainian Media Before and After Russia's Full-Scale Invasion of Ukraine

Leonid Polishchuk

Abstract:

Russia's full-scale invasion has profoundly transformed the Ukrainian social context, intensifying the vulnerability of marginalized groups, including the LGBTQ+ communities. In this situation, media representation plays a critical role in shaping public perception. This dissertation investigates the media representation of LGBTQ+ people in the Ukrainian digital space, analysing the evolution of dominant narratives before (December 2019 – February 2022) and during (February 2022 – September 2025) the full-scale war. The research employs a multi-stage, mixed-method approach: (1) a quantitative content analysis of 1,223 publications from four key media outlets representing public (Suspilne), commercial (TSN), and popular anonymous Telegram (Truha Ukraina, Ukraina Seichas) sectors; (2) a qualitative narrative analysis to identify structural narrative patterns; and (3) focus-group discussions with members of LGBTQ+ communities to analyse reception. Preliminary results from the content analysis reveal a fundamental narrative transformation. Pre-invasion coverage was dominated by "seasonal" (Pride-focused) reporting and narratives of "political antagonism" and "victimization." After the invasion, coverage on commercial (TSN) and anonymous Telegram channels became dominated by a "Narrative Othering via the Enemy," focusing intensely on Russia's state-sponsored homophobia rather than Ukrainian realities. Conversely, the public broadcaster (Suspilne) constructed a new, humanizing narrative of "desecuritization through joint defense," integrating LGBTQ+ soldiers into the national resistance, though popular Telegram channels largely ignored this contribution, practicing a form of "symbolic annihilation." This dissertation concludes that the war triggered a complex shift, introducing powerful integrationist frames while also enabling new forms of narrative diversion, and provides an empirical basis for developing media literacy in a wartime context.

Keywords: Media representation; LGBTQ+; content analysis; narrative analysis; Russo-Ukrainian War; Ukrainian media

Author:

Leonid Polishchuk, PhD candidate

National University of Kyiv-Mohyla Academy

Kyiv, Ukraine

leonid.polishchuk [at] ukma.edu [dot] ua

Interacting with Nature: Human-Nature Connections and Greening Efforts During Wartime in Ukraine

Madeleine Bonow, Marine Elbakidze, Nataliya Stryamets & Oksana Pelyukh

Abstract:

This presentation explores the evolving human-nature connections and the role of greening efforts in Ukraine during wartime, drawing on empirical evidence from two interrelated studies. The first study investigates how the Russian invasion has reshaped people's relationships with nature in three settlements in the Kyiv Region that were occupied and later liberated. Based on 69 semi-structured interviews, the findings reveal a sharp decline in access to key ecosystem services—particularly provisioning and regulating services—due to war-related destruction, contamination, and flooding. Nonetheless, cultural ecosystem services such as emotional attachment, spiritual connection, and symbolic meaning persist as vital sources of resilience and psychological recovery. Private gardens and urban greenspaces emerge as lifelines for healing, social cohesion, and a renewed sense of place. The second study presents results from 94 interviews conducted in 24 greening initiatives in Ukraine, focusing on how they support individual well-being and community development using practice theory. These initiatives contribute significantly to emotional resilience, food security, and social support networks, despite facing persistent challenges such as limited infrastructure and insecure conditions. Together, the two studies underscore the importance of integrating nature-based solutions into both emergency response and long-term recovery strategies, emphasizing not only the functional restoration of ecosystem services but also the cultural dimensions of human-nature relationships in times of crisis.

Keywords: Greening in the red zone; Ukraine; wartime, gardening; human-nature relationships

Authors:

Madeleine Bonow, Associate Professor

Södertörn University

Huddinge, Sweden

madeleine.bonow [at] sh [dot] se

Marine Elbakidze, Associate Professor

Swedish University of Agricultural Sciences (SLU) & Lviv University

Uppsala, Sweden & Lviv, Ukraine

marine.elbakidze [at] slu [dot] se

Nataliya Stryamets, PhD

Nature reserve "Roztochya" Ukraine

natastr [at] gmail [dot] com

Oksana Pelyukh, PhD

Ukrainian National Forestry University

Lviv, Ukraine

pelyukh.o [at] ukr [dot] net

The Dynamics of Coexistence: Resilience Mechanisms in Civil Society Organizations Under Non-State Restrictions in Central and Eastern Europe (Research Plan)

Maria Rybnikova

Abstract:

The radical and violent campaigns targeting civic organizations and activists for human rights have become noticeable in many countries, regardless of their political regime (ICNL 2018; Amnesty International 2017; CIVICUS 2019). While the concept of "changing civic space" is widely used to describe how restrictions reshape civil society, much of the academic literature still focuses on legal measures imposed by states. However, recent research suggests that such legal restrictions often trigger or legitimize additional forms of pressure, typically exercised by non-state actors (ICNL 2018; Della Porta & Steinhilper 2021; Strachwitz & Toepler 2022). Even though, these confrontations within civic space have not gone unnoticed in academic research, they are often portrayed as a battlefield between pro-rights and anti-rights groups (CIVICUS 2019; Flower 2019; Korolczuk 2022). This framing has shifted the focus toward resistance, space reclamation, and contestation, leaving less room for exploring how civil society organizations (CSOs) adapt and build resilience under such pressure. In contrast to previous studies, the author approaches this issue from the perspective of the "targeted" CSOs working on human rights. The author aims to explore how human rights organizations build their resilience in the face of non-state restrictions across various political contexts. What are the mechanisms generating organizational resilience in a face of non-state restrictions? By taking the negative impact of non-state restrictions seriously, this project challenges the assumption of their uniform and inevitable effects. Using a multi-case study research design, the author examines CSOs in Russia, Georgia, and Poland—three contexts within Central and Eastern Europe that exemplify the region's broader illiberal turn. With this project, I aim to improve our understanding of CSO resilience and offer new insights into civic space dynamics in the CEE region.

Keywords: Organizational resilience; civil society restrictions; closing civic space; non-state actors; human rights

Author:

Maria Rybnikova, PhD candidate

Södertörn University

Huddinge, Sweden

maria.rybnikova [at] sh [dot] se

Youth Policies in the EU Countries of the Baltic Sea Region from the Perspective of Building Regional Resilience

Marta Szulc

Abstract:

"Adolescence is a transitional period in which children and young people gradually become recognised as adults, it is a period of half-dependence in which young people try to achieve personal autonomy while remaining dependent on their parents or the state" (The Commonwealth, 2016). In this difficult and challenging period, the role of mature politicians who understand that youth involvement shapes future adults and participants in social and political life is extremely important. The resilience of this social group has implications for society as a whole. The aim of this article is to confirm the hypothesis that a properly implemented youth policy by the EU countries of the Baltic Sea Region fosters social resilience in the region. Youth policy is "A strategy implemented by public authorities with a view to providing young people with opportunities and experiences that support their successful integration into society and enable them to be active and responsible members of their societies, as well as agents of change" (Council of Europe, 2015). The study was based on data analysis as well as interviews with young people involved in participation and youth policy in the Baltic Sea Region. The author identified the following factors that support youth resilience: safety, development, substance abuse prevention, preparation for adulthood, introduction to the labour market, support for personal independence, support for full participation in society. Social resilience is also enhanced by: interactions that foster the experience of community, including good peer relationships, a sense of belonging and a support network, a sense of community building. The analysis allows us to conclude that actively pursued youth policy has a strong impact on building social resilience.

Keywords: Youth policy; youth participation; social resilience

Author:

Marta Szulc, PhD

University of Szczecin

Szczecin, Poland

marta.szulc [at] usz.edu [dot] pl

Wet Imaginaries – Organising Socio-Ecological Just Futures with(in) Öresund

Tracy Trägårdh

Abstract:

This doctoral research explores how organisations engage in speculative and participatory practices to imagine and enact socio-ecological just futures. Focusing on marine organisations in the Öresund region, the study investigates how their activities—ranging from policy development, fishing, marine pedagogy, and urban planning to marine development—contribute to reimagining human–ocean relations. The central research question asks: How do marine organisations imagine and enact socio-ecological just futures with(in) Öresund? The project employs a qualitative case study approach, combining interviews, observations and storytelling sessions. These methods allow for an exploration of how practices bring the unseen life of Öresund into public consciousness and shape new relational understandings between humans and marine environments. The concept of "wet imaginaries" is developed to describe speculative engagements with the sea, where storytelling becomes a method of both inquiry and knowledge production. To analyse these practices, the study introduces the speculative concept of Oceanopolis. This is a conceptual tool developed within the project to interpret how organisations work can be understood as contributing to alternative ways of organising with the Sea. Oceanopolis draws on speculative philosophy and feminist science and technology studies to explore marine practices support or contest more just and inclusive futures. Drawing on Hannah Arendt's notion of plurality and political action, the project views storytelling as a political act that brings diverse realities into dialogue. Arendt's emphasis on the shared world as a space of appearance resonates with efforts to make the marine world visible and meaningful. Storytelling, in this context, becomes a political practice that not only reveals but also reconfigures relationships between humans and other-than-human actants. Inspired by Donna Haraway's notion of SF—science fiction, speculative fabulation, string figures, so far—the project considers practices as forms of worlding. These are material and semiotic acts that shape possible futures. The study embraces a muddy methodology that acknowledges the complexity and entanglement of multispecies research. Through this lens, the work of these organisations are read as a site of speculative experimentation, where new ways of living with(in) Öresund are imagined and enacted.

Keywords: Organising; imaginaries; socio-ecological justice; speculative fabulation; human–ocean relations

Author:

Tracy Trägårdh, PhD candidate

Malmö University

Malmö, Sweden

tracy.tragardh [at] mau [dot] se

Strengthening Civil Society through Environmental Activism: Connecting Insights from the Balkans to the Baltic

Virginia Brenner Music

Abstract:

With Baltic Sea region facing increasing threats from societal fragmentation, geopolitical tensions, and environmental disruptions, the experiences from the Western Balkans offer timely and relevant insights for the countries of the region. The emotional and collective dimensions of contemporary environmental movements in the conflict-affected Western Balkans, particularly those environmental initiatives emerging after 2000, provide important insights into how communities can build more resilient and sustainable societies. Data collected through comprehensive literature review, observation notes and interviews conducted in 2024 indicated that what initially emerged as grassroots efforts to prevent river damming in the Western Balkans region, developed into influential cross-border alliances that transcended deep political and ethnic divides of this fractured, conflictual context. These civil environmental initiatives translated into regional resistance and inspired social resilience through solidarity and reconciliation strengthening overall collective capacity to withstand commonly shared challenges. These movements, after decade long period, not only continue to preserve nature but also advance long-term social resilience and civic empowerment in Western Balkans societies marked by fragmentation and (past) conflicts. The findings of the research concern and are highly relevant for the present-day Baltic Sea Region, where civil society, while institutionally stronger, increasingly faces new forms of strains and uncertainties. The outcomes of the research from the Western Balkans provide a transferable model of practical pathways for the Baltic Sea Region (and beyond), showing how emotional, collective and neutral causes of environmental protection in the socially fragile (post) conflict context can (re)build trust, nurture cooperation and strengthen the social fabric, hence, increase preparedness of the civil society for both, external shocks and internal fractures, strengthening overall long-term stability in the Baltic Sea Region.

Keywords: Baltic Sea Region; social stability; resilience; environmental activism; Western Balkans

Author:

Virginia Brenner Music, PhD candidate

Södertörn University

Huddinge, Sweden

virginia.brenner.music [at] sh [dot] se

Augmented Reality and AI Evaluation for Diagnostics in Conditions of Threats and Needs for the Healthcare System

Volodymyr Hrytsyk

Abstract:

The resilience of a society is measured in many dimensions, the ratios between which change dynamically. And it is their combination that forms a resilient or fragile society. And, as history shows, particularly in the recent war in Ukraine. The presence of strong social and civic resilience can resist the invasion of an entire horde for a long time. The paper explores the concept of solving the problem of preliminary diagnostics of neurological problems. In particular, the problem of remote diagnostics of tremor as an indicator of stress (including military) and diseases such as Alzheimer's and Parkinson's is considered. The urgency of the problem is evidenced by the situation when, in Ukraine in 2022, in the first few months of the war, tranquilizers and antidepressants disappeared from pharmacies, while antibiotics remained. That is, stress (and related diseases) is not in vain ranked 2-3rd in mortality according to UN reporting. The paper proposes a method that, due to AR and AI evaluation, allows 1) earlier and more accurate diagnostics, 2) reduces the burden on the medical system, 3) reduces the crowding of people in hospitals, which is important in war conditions, and 4) reduces the loss of patients' time. The paper shows the results of primary clinical trials: a test group of different age groups, a group with Parkinson's disease, and wounded soldiers after traumatic brain injuries. An unexpected finding was that students (who served as the control group) made more errors when taking the test than soldiers with traumatic brain injuries (not in the acute stage). Parkinson's patients behaved predictably – the algorithm turned out to be more sensitive than the standard 2d approach.

Keywords: AR; neurology; tremor; early diagnosis; healthcare system

Author:

Volodymyr Hrytsyk, Professor

Lviv Polytechnic National University

Lviv, Ukraine

volodymyr.v.hrytsyk [at] lpnu [dot] ua

Intersectionality in Crisis: Integrating Gender, Memory, and Cultural Policy in Post-Conflict Societies

Yuliia Kurylova

Abstract:

Post-conflict recovery is not only about rebuilding infrastructure but also about reconstructing social contracts, collective identities, and inclusive narratives. In the context of the full-scale Russian invasion of Ukraine, intersecting vulnerabilities—especially those related to gender, trauma, and social marginalization – have become more visible. This presentation explores how intersectionality can serve as an analytical and practical tool for designing inclusive cultural and memory policies in societies affected by large-scale violence. The research draws on feminist theory, memory studies, and policy analysis. It combines discourse analysis of policy documents and cultural texts (2022–2024) with insights from two Erasmus+ projects: "Gender Inclusion in Ukraine's Recovery Programs: European Pathways to Equality" and "Fostering European Culture of Tolerance in Ukrainian Perspective: Media, Education, Art". Methodologically, the project relies on intersectional mapping and qualitative content analysis of cultural recovery strategies and civil society initiatives. Findings reveal that gender-inclusive approaches remain fragmented in post-crisis policy frameworks. However, grassroots initiatives – particularly those led by women's organizations and memory activists – provide innovative models for integrating care ethics, remembrance, and cultural inclusion. Artistic and educational practices have emerged as key sites for restoring dialogue, promoting tolerance, and countering exclusionary narratives. The Ukrainian case illustrates how gender-informed memory work and inclusive cultural policy can strengthen social resilience in post-conflict contexts. Intersectionality, far from being a theoretical abstraction, can operationalize fairness and equity in recovery. The presentation calls for institutional mechanisms that foreground care, cultural participation, and multivocality in future-oriented reconstruction efforts.

Keywords: Intersectionality; gender inclusion; cultural policy; memory; post-conflict recovery; Ukraine; resilience; trauma; care ethics

Author:

Yuliia Kurylova, Associate Professor

Zaporizhzhia National University

Zaporizhzhia, Ukraine

triks [at] ukr [dot] net

Session 5 - Resilient Food Systems and Water Security

Moderators: Assoc. Prof. Madeleine Granvik, Uppsala University and PhD candidate Malin Andersson, Uppsala University

Scholars and governments worldwide increasingly see a need to develop resilient food systems, which can withstand crises and shocks like climate change, pandemics, biodiversity loss, disruption of supply chains, food crises, geopolitical events and war. Additionally, food systems connect scales from the local to the global, and different scales are seen as crucial in developing resilient food systems. Central for resilient food systems is to have capacity over time to provide sufficient, appropriate and accessible food and water to all, in the face of various and even unforeseen disturbances. Current food and water systems are highly vulnerable and need absorptive, adaptive, and transformative capacities to be resilient. Handling such complexity and building capacity is a challenge for policy makers, food system actors and scholars. The increased vulnerability in the Baltic Sea Region has raised food and water security concerns to the political agendas, where policies, plans and strategies are updated and developed.

Sheep Farming in Latvia: Challenges and Opportunities for Resilient Food Systems

Agita Bicevska & Matiss Bicevskis

Abstract:

The study focuses on the development of the sheep farming sector in Latvia and its role in building resilient food systems. As a traditional branch of Latvian livestock farming, sheep production contributes to rural livelihoods, landscape management, and local food supply. However, sectoral vulnerability threatens it`s sustainability and integration into resilient food systems. This research applies monographic, descriptive, and comparative methods; content and document analysis; statistical analysis; and synthesis. Quantitative techniques include descriptive statistics based on national databases and slaughterhouse data, while qualitative techniques involve analysis of scientific literature. These methods are used to examine structural changes and sheep meat role in resilient food system. Findings reveal a significant contraction: in the last five years, the number of sheep has decreased by 24.6%. While market signals appear positive - sheep meat prices rose to €688.94/100 kg in 2024 - economic viability remains constrained. Only 800 tons of sheep meat is produced in Latvia in 2024, that is 1% of all meat produced. The same amount is used for food, accounting for 0.5% of total meat consumption in 2024. In the context of resilient food systems, the sector's capacity seems too low. Challenges including climate change, increasing predator populations, and animal disease risks pose additional threats. Furthermore, a large share of sheep meat is processed outside regulated slaughterhouses, undermining legal market development, traceability and food safety. Although dispersed food production during crises is an advantage, and farmers are able to supply sheep meat from on-farm slaughter, the current situation - where a significant part of the sector operates outside unified, regulated standards - effectively slows overall development. Clear and consistent operating requirements would stabilize the market, improve transparency, and generate greater added value across all stages of the sheep meat value chain, from primary production to processing and marketing. This would promote sector professionalisation, higher product quality, better animal welfare, and stronger competitiveness in both local and regional markets, while simultaneously enhancing overall food system resilience. Sheep farming in Latvia, despite its relatively small scale, holds potential to contribute to regional food system resilience - if its systemic vulnerabilities are addressed.

Keywords: Sheep farming; resilient food systems; sustainable livestock production; value chain

Authors:

Agita Bicevska, PhD candidate

Latvia University of Life Sciences and Technologies

Jelgava, Latvia

agita.bicevska [at] lbtu [dot] lv

Matiss Bicevskis, PhD candidate

Latvia University of Life Sciences and Technologies

Jelgava, Latvia

matiss.bicevskis [at] lbtu [dot] lv

Enhancing Resource Recovery through Urine Diversion: A System Dynamics Perspective on Wastewater Management in Gotland

Erika Cristina Francisco & Jennifer McConville

Abstract:

Urban sanitation systems are critical to infrastructure sustainability but are increasingly challenged by population growth, urbanization, and seasonal tourism. Urine diversion offers a viable strategy for enhancing nutrient recovery, fertilizer production, and reducing environmental impacts. This study develops a system dynamics model, using STELLA software, to evaluate the potential of urine diversion for sustainable urban wastewater management in Visby, Gotland, Sweden. The model comprises two modules: one simulates operations of the local wastewater treatment plant (WWTP) under fluctuating population loads, and the other assesses urine diversion for fertilizer production during peak tourist seasons. Six scenarios were simulated over 120 months: (1) Moderate Overload (20% efficiency loss) as Baseline WWTP performance; (2) Severe Overload (40% efficiency loss); (3) Extreme overflow (stormwater overflow); (4) Seasonal Urine Diversion (17.5% collection of public toilets); (5) Expanded Urine Diversion (35% collection of public toilets) and, (6) Expanded Urine Diversion (full adoption of UD as decentralization system). The results indicate strong scenario-dependent differences in environmental performance across the 10-year simulation. The overloaded configurations (S2-S3) exhibit pronounced summer peaks in Marine Eutrophication Potential (MEP), Carbon Footprint (CF), and Water Footprint (WF), with MEP and WF surging far above S1 during tourist-season inflows. Introducing urine diversion markedly improves outcomes. Seasonal diversion (S5) dampens all three indicators relative to S1-S4, while full-year diversion (S6) achieves the lowest impacts throughout the time series, virtually eliminating the summer spikes observed in S2-S3 and reducing CF and WF to near-baseline levels. Urine diversion also enables substantial resource recovery: average annual dry-urine fertilizer potential increases from ~22-25 ton y^{-1} in S4 to ~42-47 ton y^{-1} in S5, and reaches ~282-311 ton y^{-1} with full diversion in S6. Overall, urine diversion, especially year-round implementation, both alleviates WWTP seasonal stress and unlocks large nutrient-recovery yields, supporting circular-economy objectives in regions with strong population variability.

Keywords: Nutrients; fertilizer; carbon and water footprint; eutrophication

Authors:

Erika Cristina Francisco, Postdoctoral Researcher

Swedish University of Agricultural Sciences

Uppsala, Sweden

erika.francisco [at] slu [dot] se

Jennifer McConville, Professor

Swedish University of Agricultural Sciences

Uppsala, Sweden

jennifer.mcconville [at] slu [dot] se

Challenges and Solutions for Preparedness and Sustainability in Swedish Agriculture, a Q-Methodology Study of Stakeholders

Hanna Eneroth, Helena Hansson, Amanda Wood, Raj Chongtham Iman, Georg Carlsson & Elin Röös

Abstract:

The need for more resilient food systems to ensure food security during crises is increasingly highlighted while sustainability challenges in agriculture prevail. The aim of this study was to assess stakeholders' perspectives on how they perceive the challenges and issues related to the role of agriculture to ensure supply of food commodities in times of crises. Q-methodology is suitable to explore an emerging topic using a limited number of respondents. We collected a number of statements (n=47) from policy documents and media reporting on food production, sustainability and preparedness. Food chain actors, policy makers, academics and representatives of civil society in Sweden (n=26) then sorted the statements based on how closely each statement aligned with their individual opinion. Seven interviews were performed to deepen the understanding of the results. Factorial analysis resulted in four factors, including one bipolar factor, and we thus identified five perspectives. The emerging perspectives were: 1) "Act for a nature-based shift", a perspective leaning on principles of environmental sustainability with an emphasis on low-input solutions. 2) "Preparedness by strengthening current production" prioritizes domestic inputs and cattle production. 3) "Ensure long-term solutions" focuses on profitability and diversification of crop systems. 4) "Go for contingency planning" and 5) "Keep up international trade" are two perspectives with a particular focus on food preparedness and they differ by the emphasis on trade in the latter. Results are not representative of any sector or the population but reflect the ongoing debate in Sweden. This study has given us insights on similarities and differences in perspectives that may help in formulating further research on the challenge of applying a long-term perspective on sustainable agriculture, while preparing for food security in a crisis.

Keywords: Agriculture; contingency planning; food systems; Q-methodology

Authors:

Hanna Eneroth, PhD

Swedish University of Agricultural Sciences

Uppsala, Sweden
hanna.eneroth [at] slu [dot] se

Helena Hansson, Professor
Swedish University of Agricultural Sciences
Uppsala, Sweden
helena.hansson [at] slu [dot] se

Amanda Wood, PhD
Swedish University of Agricultural Sciences
Uppsala, Sweden
amanda.wood [at] slu [dot] se

Raj Chongtham Iman, PhD
Swedish University of Agricultural Sciences
Alnarp, Sweden
raj.chongtham [at] slu [dot] se

Georg Carlsson, Professor
Swedish University of Agricultural Sciences
Alnarp, Sweden
georg.carlsson [at] slu [dot] se

Elin Röös, Associate Professor
Swedish University of Agricultural Sciences
Uppsala, Sweden
elin.roos [at] slu [dot] se

Sweden's Water Supply under Climate Extremes: Flood and Drought Risks in a Water-Rich Country

Jeanne Fernandez, Claudia Teutschbein, Giuliano Di Baldassarre & Johanna Mård

Abstract:

A clean and reliable water supply is essential for domestic use, agriculture, industry, and the overall functioning of society. However, the Baltic Sea Region faces multiple threats to water security, including emerging contaminants (e.g., PFAS), the risk of sabotage to critical infrastructure amid growing geopolitical instability, and, no less critically, hydrological extremes of increasing frequency and severity. This ongoing research focuses on flood and drought risks to water supply in Sweden, a country with abundant surface and groundwater resources, yet experiencing the rapid effects of climate change. A scoping review of the scientific and gray literature was conducted to assess hydrological risks to water supply considering four risk components: hazard, exposure, vulnerability, and response. The study covers Sweden as a whole, but the literature addresses different aspects of risk at varying scales: hazards are typically studied at national or regional scales, while exposure, vulnerability and response are often examined at the regional and municipal levels, as water supply is managed locally. The review reveals several knowledge gaps, particularly regarding groundwater drought and future projections of water demand. The literature also points to spatial variations in vulnerability, depending on the size of municipalities and their capacity to develop and implement climate adaptation plans. Moreover, a few studies identify the disconnect between locally managed water systems and transboundary climate hazards as a significant challenge for effective disaster risk management and coordinated responses. To address these issues and identify risk hotspots, a better understanding of the individual risk components and their interactions is needed. The study concludes that increased awareness, enhanced climate adaptation efforts, and further integration of scientific knowledge into day-to-day water management are key to improving preparedness in the water sector. This case study of water security in Sweden offers valuable insights for water managers and policymakers across the Baltic region.

Keywords: Water supply; natural hazards; climate change; risk framework; Baltic Sea Region

Authors:

Jeanne Fernandez, PhD candidate

Uppsala University

Uppsala, Sweden

jeanne.fernandez [at] geo.uu [dot] se

Claudia Teutschbein, Associate Professor

Uppsala University

Uppsala, Sweden

claudia.teutschbein [at] geo.uu [dot] se

Giuliano Di Baldassarre, Professor

Uppsala University

Uppsala, Sweden

giuliano.dibaldassarre [at] geo.uu [dot] se

Johanna Mård, Associate Professor

Uppsala University

Uppsala, Sweden

johanna.maard [at] geo.uu [dot] se

Assessing the Environmental Footprint of Plate Waste in School Catering: A Case Study from Latvia

Juta Deksne, Jelena Lonska, Lienite Litavniece & Tatjana Tambovceva

Abstract:

Global concern over food waste (FW) is growing, contributing to environmental challenges such as greenhouse gas emissions and water depletion. Although prevention is widely promoted, the environmental footprint of FW, particularly in institutional canteens (e.g., schools), remains underexplored. School canteens, where food is both prepared and consumed, offer a unique setting to assess FW volume and environmental footprint. This study estimated the embedded environmental cost of plate waste (PW) in school catering. PW data were collected during three measurement periods (five days each) in the 2023/2024 school year from four schools (S1–S4) in Rezekne, Latvia, covering 17,144 plates. All schools used a pre-served, partially portioned catering model with a unified menu during the observation weeks. Environmental impacts were calculated using carbon footprint (kg CO_2-eq), based on AGRIBALYSE 3.2 (Cornelus et al., 2024) and CarbonCloud (2025), and water footprint (m^3), based on WaterStat (Mekonnen & Hoekstra, 2010; 2011). PW was recorded in cooked/ready-to-eat form. When only raw product coefficients were available, AGRIBALYSE cooked-to-raw conversion ratios were applied. The results showed school-level variation in PW and environmental impacts. S3 had the lowest PW per student (10.0 kg/school year), resulting in the lowest carbon footprint (20.4 kg CO_2-eq) and moderate water use (15.2 m^3). S2 followed with 11.6 kg PW, 26.0 kg CO_2-eq, and 17.5 m^3 water use per student/school year. S1 had moderate PW (11.1 kg/school year) but the highest impacts (29.0 kg CO_2-eq; 20.1 m^3), due to high-impact FW like meat. S4 had the highest PW (17.3 kg/school year), but not the highest impacts (26.4 kg CO_2-eq; 14.9 m^3), as the FW consisted mostly of low-impact foods. Differences between schools were statistically significant ($p < 0.05$). These findings highlight the need for targeted FW prevention strategies tailored to local conditions, focusing on reducing the waste of high-impact food groups to improve the sustainability of school meals.

Keywords: Food waste; school catering; plate waste; carbon footprint; water footprint

Acknowledgements: This research is funded by the Latvian Council of Science, project "Testing Interventions and Developing a Knowledge-based Recommendation System to Reduce Plate Waste in School Catering in Latvia", project No. lzp-2022/1-0492.

Authors:

Juta Deksne, PhD candidate

Riga Technical University

Rezekne, Latvia

juta.deksne [at] rta [dot] lv

Jelena Lonska, Associate Professor

Riga Technical University

Rezekne, Latvia

jelena.lonska [at] rtu [dot] lv

Lienite Litavniece, Associate Professor

Riga Technical University

Rezekne, Latvia

lienite.litavniece [at] rtu [dot] lv

Tatjana Tambovceva, Professor

Riga Technical University

Riga, Latvia

tatjana.tambovceva [at] rtu [dot] lv

Three-Dimensional Modelling of Drinking Water Quality in Mälaren under Present-Day and Future Conditions

Jorrit Mesman, Hampus Markensten & Don Pierson

Abstract:

Freshwater systems have high ecological importance and are also directly used by humans for recreation and drinking water provision. The water quality of these water bodies is currently under threat by climate change, eutrophication, and the release of pollutants; a lower water quality may result in reduced ecosystem services and increased costs for drinking water production. Understanding threats to water quality and the ability to anticipate them is therefore of primary societal interest. Mälaren, the third largest lake in Sweden and a major source of drinking water in the Baltic region, serves over 2 million people in Stockholm and other communities in its watershed. Drinking water quality is occasionally put under pressure by high dissolved organic matter, PFAS (per- and polyfluoroalkyl substances), and cyanotoxin concentrations, and there are concerns about how such impacts will develop into the future, for example under warmer and more extreme climate conditions. To investigate these issues, we have set up a three-dimensional hydrodynamic-biogeochemical model of the lake and coupled it to input sources from the surrounding watershed, in collaboration with local drinking water providers. The aim of this model is to better understand threats to drinking water provision in Mälaren and run scenarios regarding extreme hydrological events under future climate conditions. While the project is still under way, the model has already been used to evaluate the frequency and magnitude of extreme streamflow events under present-day and future climate conditions, and to evaluate the importance of multiple PFAS sources on the water withdrawn at water supply intakes. Similar threats to drinking water sources are widespread, in the Baltic Sea area and elsewhere. Aquatic ecosystem models, such as those developed here, can play a role in identifying risk areas and exploring scenarios, and as such they can be a valuable support for drinking water providers.

Keywords: Modelling; lakes; drinking water; PFAS

Authors:

Jorrit Mesman, PhD

Uppsala University

Uppsala, Sweden

jorrit.mesman [at] ebc.uu [dot] se

Hampus Markensten, PhD

Swedish Agricultural University

Uppsala, Sweden

hampus.markensten [at] slu [dot] se

Don Pierson, PhD

Uppsala University

Uppsala, Sweden

don.pierson [at] ebc.uu [dot] se

Assessment of the Relationship Between Climate Indices and Surface Water Quality Indicators

Kristina Karoseviciene & Laima Cesoniene

Abstract:

Climate change is one of the most pressing environmental issues of the 21st century, significantly affecting the state of aquatic ecosystems. This study focuses on assessing the relationship between climate indices and surface water quality indicators in the Utena District, Lithuania. The region has experienced notable climatic changes over recent decades, including an increase in average annual air temperature, altered precipitation patterns, and a decrease in frost depth. These factors have a considerable impact on the hydrological regime and water quality. The research examined four surface water bodies: Lake Politiškiai, and the Raše, Vyžuona, and Šventoji Rivers. Data were obtained from the Utena District Environmental Monitoring Programme (2010–2024) and the Lithuanian Hydrometeorological Service (1980–2024). The main parameters analysed were biochemical oxygen demand (BOD_7), total nitrogen (N_t), and total phosphorus (P_t). Correlation analysis was applied to evaluate the relationships between these water quality indicators and climate variables such as air temperature, precipitation, and frost depth. The results indicate that surface water quality in the Utena District is influenced by climate variability. Increased BOD_7 values and decreased dissolved oxygen levels were observed, suggesting a higher risk of eutrophication. The correlation analysis showed a strong positive relationship between air temperature and BOD_7 and a negative relationship between frost depth and nitrate nitrogen (NO_3-N). In conclusion, the study highlights that climate change has a significant impact on surface water quality. Continuous long-term monitoring and sustainable water management strategies are necessary to mitigate eutrophication processes and enhance the resilience of aquatic ecosystems.

Keywords: Climate change; surface water quality; Utena District; eutrophication; correlation; BOD_7, N_t, P_t

Authors:

Kristina Karoseviciene, PhD candidate

Vytautas Magnus University

Kaunas, Lithuania
kristina.karoseviciene [at] vdu [dot] lt

Laima Cesoniene, Professor
Vytautas Magnus University
Kaunas, Lithuania
laima.cesoniene1 [at] vdu [dot] lt

Understanding Barriers and Enablers in Collaborative Governance of Food Systems Planning: Insights from ten Swedish Municipalities

Madeleine Granvik, Malin Andersson & Izabelle Egnell

Abstract:

Scholarly discourse highlights the critical role of food systems planning in transforming food systems, emphasizing the need for a systems-oriented perspective and the dismantling of deeply institutionalized sectoral divisions. Collaborative governance among diverse stakeholders is increasingly recognized as essential, with municipalities positioned as central actors due to their extensive food-related competencies. Achieving resilient local food systems requires collaboration across sectors. This study examines how Swedish municipalities engage in collaborative food systems planning and identifies factors that enable or constrain these efforts. Drawing on semi-structured interviews with officials from ten municipalities, the analysis is guided by a theoretical framework combining food systems planning and collaborative governance, focusing on the factors affecting the collaborative process; starting conditions, institutional design, and facilitative leadership. Findings reveal persistent barriers across three types of collaboration: within municipalities, with neighbouring municipalities, and with external actors. Internal collaboration is often confined to a few departments, with limited cross-departmental coordination and few municipalities designating an actor responsible for overarching food-related work. Inter-municipal collaboration primarily occurs through joint procurement, which supports network-building and trust but is hindered by differences in resources and ambition. External collaboration tends to be short-term and driven by individual initiatives rather than institutional structures, making it vulnerable over time. External actors, such as food sector organizations, play a critical role in initiating and sustaining broader collaborations. Overall, municipal collaboration in food systems planning remains fragmented, with limited coordination. Key enablers include political will, resource allocation, committed officials, and increasing awareness of food preparedness. Strengthening institutional structures, enhancing cross-departmental coordination, and fostering long-term collaborative governance are essential to developing resilient local food systems.

Keywords: Collaborative governance; food systems planning; integrated planning; municipalities; resilient food systems

Authors:

Madeleine Granvik, Associate Professor

Uppsala University

Uppsala, Sweden

madeleine.granvik [at] balticuniv.uu [dot] se

Malin Andersson, PhD candidate

Uppsala University

Uppsala, Sweden

malin.e.andersson [at] geo.uu [dot] se

Izabelle Egnell, Research assistant

Uppsala University

Uppsala, Sweden

izabelle.egnell [at] geo.uu [dot] se

Collaborative Food Systems Planning at the Municipal Level: Barriers, Enablers, and Regional Collaborations in Sweden

Malin Andersson, Madeleine Granvik & Rebecka Milestad

Abstract:

Municipal food systems planning, including collaboration at different levels, both within municipalities, and between municipalities and other food systems actors, is stressed as central in developing food systems resilience. While food systems planning is a growing priority for local governments around the globe, there are still gaps in practice, and barriers to food systems transformations are less studied. In Sweden, municipalities have strong local self-governance, and responsibilities related to food range from providing public meals in schools, pre-schools, and health care services (including procurement of food) to spatial planning, contingency planning, and promoting sustainable development. This makes them an interesting case for studying food systems planning at the local scale. Through interviews and document analysis this study explored food systems planning in three Swedish municipalities, as well as collaborations with regional food systems actors, focusing on barriers and enablers in such work. The results showed that the municipalities worked with food systems planning in three distinct ways, one primarily focused on local food procurement, one focused on food systems projects, and one had developed a local food strategy. Food preparedness emerged as a new policy area in all three municipalities. Overall, active and committed officials, so called "food champions" were identified as crucial in promoting transformation. The Public Procurement Act, a lack of resources and time, and a lack of national guidance, were stated as barriers to procuring local food and promoting food preparedness. Having a local food strategy provided mandate and direction, enabling both internal and external collaborations. Working in projects, "projectification", provided opportunities for innovation and collaboration, while at the same time suffering from a lack of stable funding and preventing long-term planning. Finally, regional food systems actors were recognized as playing a key role in establishing platforms for collaboration and knowledge exchange between food system actors.

Keywords: Collaboration; food systems planning; food systems resilience; local food strategies; municipalities; projectification; public food procurement

Authors:

Malin Andersson, PhD candidate

Uppsala University

Uppsala, Sweden

malin.e.andersson [at] geo.uu [dot] se

Madeleine Granvik, Associate Professor

Uppsala University

Uppsala, Sweden

madeleine.granvik [at] balticuniv.uu [dot] se

Rebecka Milestad, PhD

FOI Swedish Defence Research Agency

Stockholm, Sweden

rebecka.milestad [at] foi [dot] se

Towards Sustainable Preparedness in Swedish Agriculture: Conceptualizing an Integrated Framework

Oluwaseun Adedeji, Hanna Eneroth, Elin Röös & Helena Hansson

Abstract:

Nordic food systems are increasingly exposed to complex risks from climate change, biodiversity loss, market volatility, and geopolitical disruptions. While resilience has become a widely discussed framework in agricultural and food policy, preparedness remains underexplored and often limited to short-term coping mechanisms. Current approaches often prioritize crisis recovery or focus on governance-level interventions while neglecting farm-level and systemic preparedness. This paper introduces sustainable preparedness as a novel, integrated framework that combines resilience, preparedness, and sustainability to guide farm-level decision-making and capacity-building, with particular attention to the Swedish agricultural context. Resilience refers to the capacity of farms to absorb, adapt, and transform in response to shocks, while preparedness emphasizes anticipatory actions taken to minimize risks before crises emerge. Sustainability ensures that these responses maintain long-term ecological integrity, economic viability, and social well-being. The concept of sustainable preparedness aims to integrate these perspectives by emphasizing proactive and long-term solutions grounded in sustainable practices. By drawing on literature from sustainability science and food system resilience, as well as investigating food system actors' perception on sustainable preparedness, this paper proposes a paradigm shift towards sustainable preparedness- a framework that anticipates risks, enhances adaptive capacity, and integrates sustainability principles into agricultural planning and governance. The sustainable preparedness framework will enable a better understanding among researchers and stakeholders and help develop a common language to be used when discussing, measuring and designing policy for sustainable food preparedness. It will also provide a pathway for enabling farmers to build adaptive capacity while maintaining sustainability goals. The paper will provide recommendations for targeted policy support, advisory services, knowledge exchange, and financial mechanisms to enable sustainable preparedness at the farm level across Nordic agricultural landscapes.

Keywords: Sustainable preparedness; food system resilience; agricultural policy; food-system planning; sustainability

Authors:

Oluwaseun Adedeji, PhD candidate

Swedish University of Agricultural Sciences

Uppsala, Sweden

oluwaseun.adedeji [at] slu [dot] se

Hanna Eneroth, Postdoctoral researcher

Swedish University of Agricultural Sciences

Uppsala, Sweden

hanna.eneroth [at] slu [dot] se

Elin Röös, Senior Lecturer

Swedish University of Agricultural Sciences

Uppsala, Sweden

elin.roos [at] slu [dot] se

Helena Hansson, Professor

Swedish University of Agricultural Sciences

Uppsala, Sweden

helena.hansson [at] slu [dot] se

Agricultural Production Diversity in four EU Countries of the Baltic Sea Region: Prospects for Resilient Food Systems and Food Security

Pontus Ambros, Sirkku Juhola & Madeleine Granvik

Abstract:

Land use and food system resilience are closely interconnected, as the management and allocation of land directly influence the capacity to produce food reliably, sustainably, and under conditions of stress, such as climate change, pest outbreaks, or economic disruptions. Agricultural Production Diversity (APD) is considered one of the more important elements of food system resilience. The agricultural landscape of the Baltic Sea Region (BSR) is becoming more dominated by large farms. This might impact APD, with consequences for food system resilience and food security. This study investigates whether changes in the agricultural landscape from 2000-2020 impacted the APD in Finland, Sweden, Poland and Latvia. The APD is estimated using production data and the Shannon Diversity Index. Correlations between the diversity and five indicators associated with landscape changes are tested and analysed. The results show that the diversity increased in the case of Poland, while it decreased in Latvia. For Sweden and Finland, the trend was weak but positive during the studied time period. Moreover, no universal patterns of correlation within the four countries are found, and there is no evidence that landscape changes impact the APD. Three possible explanations for what might impact the APD are discussed within the context of the BSR. This study reveals that there is no clear connection between farm enlargement and changes in the APD in the studied countries. This partly contradicts findings in similar studies and reveals the complexity of how changes in the agricultural landscape might impact production diversity, food system resilience and food security. We suggest that other parameters such as, geographical, socioeconomic and historical, should also be include to better understand how the APD is changing. These parameters are likely to play an important role in impacting the APD on a national level.

Keywords: Agriculture production diversity; food system resilience; food security; CAP; Shannon Diversity Index; farm size

Authors:

Pontus Ambros, PhD candidate

Uppsala University & University of Helsinki

Uppsala, Sweden & Helsinki, Finland

pontus.ambros [at] balticuniv.uu [dot] se

Sirkku Juhola, Professor

University of Helsinki

Helsinki, Finland

sirkku.juhola [at] helsinki [dot] fi

Madeleine Granvik, Associate Professor

Uppsala University

Uppsala, Sweden

madeleine.granvik [at] balticuniv.uu [dot] se

Re-thinking a Sustainable Farm: A Conceptual Foundation and Indicator Framework

Md Rezanual Islam, Lisa Höschle, Malin Jonell, Thomas Slijper, Vivian Wei Huang & Helena Hansson

Abstract:

Meeting the rising needs for healthy food, raw materials for industries, and vital ecosystem services (e.g., carbon storage) while minimizing the environmental impacts of agriculture remains a major global challenge. Achieving this balance requires farms to operate sustainably. Yet what constitutes a "sustainable farm" is still debated, and existing farm-level assessment frameworks often overlook the complexity and interrelationships among all dimensions of sustainability. In this study, we develop a conceptual foundation for a sustainable farm, which explicitly models the interrelationships between sustainability dimensions. A robust monitoring framework of farm sustainability enables the assessment of progress, identification of gaps, cross-farm comparisons, and evidence-based decision-making at the farm level. Our approach addresses the complexity and interconnectedness of economic, environmental, and social sustainability dimensions while considering novel dimensions such as animal welfare and good governance. Using Swedish agriculture as a case study, our study proposes appropriate indicators within sustainability domains for farm-level sustainability assessment and offers guidance for indicator selection for actors involved in such assessments. While focused on Swedish agriculture, the conceptual approach and insights have broader relevance and adaptability to other European agricultural contexts and can support actors such as farmers, researchers, and policymakers in aligning farm-level practices with national and global agrifood system sustainability targets.

Keywords: Sustainable farm; Swedish agriculture; monitoring framework; food system sustainability

Authors:

Md Rezanual Islam, PhD candidate

Swedish University of Agricultural Sciences

Uppsala, Sweden

md.rezanual.islam [at] slu [dot] se

Lisa Höschle, Postdoctoral researcher

Swedish University of Agricultural Sciences

Uppsala, Sweden

lisa.hoschle [at] slu [dot] se

Malin Jonell, PhD

Beijer Institute of Ecological Economics & Stockholm University

Stockholm, Sweden

malin.jonell [at] su [dot] se

Thomas Slijper, Postdoctoral researcher

Swedish University of Agricultural Sciences

Uppsala, Sweden

thomas.slijper [at] slu [dot] se

Vivian Wei Huang, Associate Professor

Swedish University of Agricultural Sciences

Uppsala, Sweden

wei.huang [at] slu [dot] se

Helena Hansson, Professor

Swedish University of Agricultural Sciences

Uppsala, Sweden

helena.hansson [at] slu [dot] se

Biodiversity Foot- and Handprint in Agricultural Life Cycle Assessment

Triin Sellis, Sirli Pehme & Eve Veromann

Abstract:

Although Life Cycle Assessment (LCA) is widely used to quantify environmental impacts across production systems, including agricultural, the integration of biodiversity into LCA remains limited and has traditionally focused on negative outcomes, including ecological footprint indicators. Yet, sustainable, climate-resilient agriculture depends on ecosystem services grounded in healthy ecosystems and rich biodiversity. We aim to advance the incorporation of biodiversity into agricultural LCA by synthesizing existing approaches and introducing the complementary concept of the biodiversity handprint - a measure of positive actions and outcomes that enhance or restore biodiversity along the whole agricultural value chain. Current methods for including biodiversity in LCA rely largely on land-use, land-use-change indicators and species-richness models. However, these approaches often fail to capture other critical aspects like the influence of management practices on biodiversity outcomes. To address these limitations, this review proposes a biodiversity-inclusive LCA framework that integrates both detrimental and beneficial interactions between agricultural systems and ecosystems, thereby better recognizing and rewarding practices that support biodiversity. By integrating both footprints and handprints, agricultural LCA can evolve from a tool focused solely on minimizing damage to a framework that also recognizes and promotes positive biodiversity outcomes. This shift aligns with global biodiversity goals, supports the maintenance of natural capital within planetary boundaries, and offers actionable pathways for farmers, supply-chain actors, impact evaluators, and policymakers. In doing so, the review contributes to advancing the ambitions of the UN Convention on Biological Diversity, its related protocols and other global level strategic documents.

Keywords: Agricultural sustainability; environmental impact assessment; ecosystems; LCA application; handprint; footprint

Authors:

Triin Sellis, PhD candidate

Estonian University of Life Sciences

Tartu, Estonia

triin.sellis [at] emu [dot] ee

Sirli Pehme, Senior Specialist

Estonian University of Life Sciences

Tartu, Estonia

Eve Veromann, Professor

Estonian University of Life Sciences

Tartu, Estonia

Book of Abstracts

BUP Symposium 2025

uu.se/balticuniv