



Research Notes Letter

*Research & Innovation for a sustainable
Baltic Sea Region*

Vol. 2, Issue 1, 2019

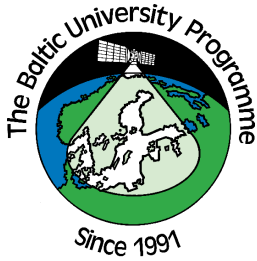
**Recent research from
BUP Member Universities**



UPPSALA
UNIVERSITET



**The Baltic University
Programme**



RESEARCH NOTES LETTER

Issue 1-2019

Welcome to the BUP Research Notes Letter: - Research & Innovation for a Sustainable Baltic Sea Region

Welcome to the first issue of The Baltic University Programme Research Notes Letter in 2019. This newsletter is a compilation of Research Notes on interesting research related to sustainable development at some of the 84 BUP Member Universities.

We are very pleased to receive more and more contributions from BUP colleagues that want to spread their research in this forum. Looking at the statistics for the downloads from our web site regarding research, it has increased.

The aim with the Research Notes Letter is to spread research findings and to spread knowledge on researchers and research groups in the Baltic Sea Region as a service to BUP Member Universities. Please enter your contribution, preferably within the BUP Themes Climate Change, Education for Sustainable Development (ESD), Circular Economy, Urban-Rural Development, Renewable Energy, Sustainable Food Production & Consumption, Sustainable Transport and Sustainable Water Resources.

We encourage you to contribute with research findings to the BUP Research Notes, as this is an opportunity to both contribute to the development of BUP research efforts and cooperation, as well as a way for you to spread your research findings and information on you as a researcher/your research group.

You are welcome to submit your contribution using the online Research Notes Form on our web site, or if you find it more convenient send a pdf copy of your article to the editors.

Christian Andersson and Ulrika Klintberg,
Editors

Christian Andersson
Web Master
The Baltic University Programme
Uppsala University
Villavägen 16, 752 36 Uppsala, Sweden
Christian.Andersson@balticuniv.uu.se

Ulrika Jansson Klintberg
Communicating officer
The Baltic University Programme
Uppsala University
Villavägen 16, 752 36 Uppsala, Sweden
Ulrika.Klintberg@balticuniv.uu.se

CONTENT

The role of transformation in learning and education for sustainability Authors: Walter Leal Filho, S. Raath, B. Lazzarini, et al.	3
Concentration of Micro- and Macro-Elements in Green and Roasted Coffee: Influence of Roasting Degree and Risk Assessment for the Consumers Authors: Július Árvay, Marek Šnirc, Martin Hauptvogel et al.	4
Experimentalist Governance to Foster Cooperation in the Baltic Sea Region: A Focus on the Turku Process Author: Savitri Jetoo	5
Shipping and the environment: Smokestack emissions, scrubbers and unregulated oceanic consequences Authors: David R. Turner, Ida-Maja Hassellöv, Erik Ytreberg and Anna Rutgersson	6
Evergreen Issues of planning? Learning from history for sustainable urban-rural systems landscapes Authors: Madeleine Granvik and Per Hedfors	7
Defining Terms for Integrated (Multi-Inter-Trans-Disciplinary) Sustainability Research Authors: Paul Stock and Rob J. F. Burton	8
Down the black hole: sustaining national socio-technical imaginaries of coal in Poland Authors: Magdalena Kuchler and Gavin Bridge	9
Challenges of urban green space management in the face of using inadequate data Authors: Marcin Feltynowski, Jakub Kronenberg, Tomasz Bergier, Nadja Kabisch, Edyta Łaszkiewicz and Michael Strohbach	10
The genetic prehistory of the Baltic Sea region Authors: Alissa Mittnik, Chuan-Chao Wang, Saskia Pfrengle et al.	11
New generation EU directives, sustainability, and the role of transnational coordination in Baltic Sea maritime spatial planning Authors: Björn Hassler, Nerijus Blažauskas, Kira Gee et al.	12

CONTENT cont.

A transnational and holistic breeding approach is needed for sustainable wheat production in the Baltic Sea region	
Authors: Aakash Chawade, Rita Armoniené, Gunilla Berg et al.	13
Wood production and biodiversity conservation are rival forestry objectives in Europe's Baltic Sea Region	
Authors: Per Angelstam, Vladimir Naumov, Marine Elbakidze et al.	14
Geopolitics and religion – a mutual and conflictual relationship. Spatial regulation of creed in the Baltic Sea Region	
Author: Tomas Lundén	15
The application of two-dimensional hydrodynamic models for underwater archaeological finds from the Vistula River in Warsaw, Poland	
Authors: Hubert Kowalski, Artur Magnuszewski and Artur Radecki-Pawlik	16
Sustainability performance in the Baltic Sea Region	
Authors: Siarhei Manzhynskia, Nikolai Siniak, Alina Żróbek-Róžańska, Sabina Żróbek	17
 <u>Winners of the BUP PhD Award 2018</u>	
Sustainability for Dinner: An Ethnological Study of how Sustainable Eating is Practised in Everyday Life	
Author: Matilda Marshall	18
Process retrofitting through Process Intensification: a structured approach	
Author: Magda Barecka	19

The role of transformation in learning and education for sustainability

OPEN ACCESS

Authors

W. Leal Filho(1), S. Raath(2), B. Lazzarini,(3) V.R. Vargas(2), L. de Souza,(2) R. Anholon,(4) O.L.G. Quelhas(5), R. Haddad(6), M. Klavins,(7) V.L. Orlovic (8)

University

(1) Hamburg University of Applied Sciences, Hamburg, Germany, Manchester Metropolitan University, Manchester, United Kingdom, (2) North-West University, Potchefstroom, South Africa, (3) Universitat Politècnica de Catalunya, Barcelona, Spain, (4) State University of Campinas, São Paulo, Brazil, (5) Federal Fluminense University, Rio de Janeiro, Brazil, (6) Damascus University, Syria, (7) University of Latvia, Riga, Latvia and (8) University of Belgrade, Belgrade, Serbia

Type of publication

Peer review

Abstract

Education research has acknowledged the value of transformation, which offers an opportunity for researching and rethinking how appropriate and successful educational practices may be. However, despite the role of transformation in higher education and particularly in sustainability learning, there is a paucity of studies which examine the extent to which transformation and learning on matters related to sustainable development may be integrated.

Based on this perceived research need, the purpose of this article is to present how transformation in learning in education for sustainability requires the commitment of Faculty and the engagement of students. To do this, a set of qualitative case studies were used in higher education institutions across seven countries (Brazil, Serbia, Latvia, South Africa, Spain, Syria, UK). The findings revealed that the concept of education for sustainable development has not been sufficiently integrated into the concept of transformation in higher education institutions. It also found that to enhance sustainability in the curricula, academics should develop collaborative approaches, and discuss how to redesign their own disciplines, and how to appreciate the epistemology and multicultural vision of sustainability, both as a topic, and as a field of education research. It was further found that reflections of the academics on their own values are crucial for developing the transformative potential of students as agents of a sustainable future. It is necessary that universities should transform to serve as models of social justice and environmental stewardship, and to foster sustainability learning.

Reference

W. Leal Filho, S. Raath, B. Lazzarini, V.R. Vargas, L. de Souza, R. Anholon, O.L.G. Quelhas, R. Haddad, M. Klavins, V.L. Orlovic, The role of transformation in learning and education for sustainability, *Journal of Cleaner Production*, Volume 199, 2018, Pages 286-295

Link

<https://doi.org/10.1016/j.jclepro.2018.07.017>

Concentration of Micro- and Macro-Elements in Green and Roasted Coffee: Influence of Roasting Degree and Risk Assessment for the Consumers

OPEN ACCESS

Authors:

Július Árvay(1), Marek Šnirc (1), Martin Hauptvogel(1), Jana Bilíková (1), Alica Bobková(1), Lenka Demková(2), Marek Hudáček (3), Miroslava Hrstková(1), Tomáš Lošák(4), Martin Král (5), Anton Kovářík, Jana Štefániková(1)

University:

(1) Slovak University of Agriculture in Nitra, Nitra, Slovakia, (2) University of Prešov, Prešov, Slovakia, (3) Barzzuz spol. s r.o.Banská, Bystrica, Slovakia, (4) Mendel University in Brno, Brno, Czech Republic, (5) University of Veterinary and Pharmaceutical Sciences Brno, Brno, Czech Republic

Type of publication:

Peer review

Abstract

The aim of the present study was to determine concentrations of 15 macro- and micro-elements in 10 commercially available plantation Arabica coffee brands. The elemental concentration was studied in 50 samples of green and roasted coffee beans of various roasting degrees and their infusions. There were four different roasting degrees: City + (C+), Full city (FC), Full city ++ (FC++), and Dark (D). The attention was given to the impact of the roasting process on the elemental composition. Statistically significant differences were found between the green coffee beans and the different roasting degrees in both macro- and micro-elements. The results showed that roasting degrees affected the concentration of elements in resulting infusions. Dietary intakes for macro- and micro-elements based on RDA and PTWI (in the case of Al) were calculated. Based on the RDA values for macro- and micro-elements, it can be concluded that coffee infusions are not an important source of elements in nutrition. In the case of Al, consumption of coffee was considered non-hazardous based on the PTWI value.

Reference

Árvay, J., Šnirc, M., Hauptvogel, M. et al. Biological Trace Element Research (2018), vol. 12011 <https://doi.org/10.1007/s12011-018-1519-3>

Link

<https://link.springer.com/article/10.1007%2Fs12011-018-1519-3>

Experimentalist Governance to Foster Cooperation in the Baltic Sea Region: A Focus on the Turku Process

OPEN ACCESS

Author:

Savitri Jetoo

University:

Åbo Akademi University, Turku, Finland

Type of publication:

Peer review

Abstract

The Baltic Sea is one of the most severely polluted water bodies on earth, with stressors resulting from anthropogenic pressures of 85 million inhabitants in nine coastal countries. All are members of the European Union (EU) with the exception of Russia. This exception poses challenges for governing the Sea, as Russia is excluded as a member country from EU Baltic Sea governing policies, such as the EU Strategy for the Baltic Sea Region (EUSBSR). This added complexity has led to the emergence of new forms of cooperation to include Russia in the governing process. One such initiative is the Turku process, an initiative by the cities of Turku (Finland), Hamburg (Germany), and St. Petersburg (Russia) to promote cooperation, especially with Russian partners. Since its emergence in 2010, there has been no study of it in the literature. This study aims to bridge this gap by analyzing the history and evolution of the Turku process under the lens of experimentalist governance. It aims to illustrate the experimentalist governance perspective through the Turku process and to present the theoretical foundations of the concept. It does the former through key informant interviews with main actors in the Turku Process and the latter with the help of the literature on experimentalist governance. This study adds to the dialogue on governance in an especially challenging time when the Ukraine crisis has negatively impacted EU–Russia relations.

Reference

Jetoo, Savitri. 2018. Experimentalist Governance to Foster Cooperation in the Baltic Sea Region: A Focus on the Turku Process. *Sustainability* 10(8): 2685.

Links:

<https://doi.org/10.3390/su10082685>

Shipping and the environment: Smokestack emissions, scrubbers and unregulated oceanic consequences

OPEN ACCESS

Authors:

David R. Turner(1), Ida-Maja Hassellöv(2), Erik Ytreberg(2) and Anna Rutgersson(3)

University:

(1)University of Gothenburg, Gothenburg, Sweden, (2)Chalmers University of Technology, Gothenburg, Sweden, Uppsala University, Uppsala, Sweden

Type of publication:

Peer review

Abstract

While shipping has long been recognised as a very carbon-efficient transport medium, there is an increasing focus on its broader environmental consequences. The International Maritime Organisation is responsible for the regulation of ship emissions arising from fuel combustion. Their current regulations are, however, much less strict than those applying to land-based transport within the European Union. Five different groups of pollutant emission from ship smokestacks are addressed in this paper: sulphur oxides, nitrogen oxides, particulate matter, organic matter and metals. The reduction of sulphur oxide emissions into the atmosphere using scrubber technology adds another dimension to the discussion, as this approach results in focused discharge of some pollutants to the surface water. A scoping calculation shows that an open-loop scrubber on a medium-sized ship could discharge more copper and zinc daily to the surface water than the ship's antifouling paint. The use of antifouling paint in the European Union is subject to a prior risk assessment, but scrubber discharges are not subject to any such risk assessment. This situation presents a problem from the perspective of the Marine Strategy Framework Directive, as environmental monitoring programmes in some coastal areas of the Baltic Sea have shown that levels of both copper and zinc exceed environmental quality standards. To fulfil the Marine Strategy Framework Directive requirements and achieve Good Environmental Status, having knowledge of the magnitude of different anthropogenic pressures is important. Metal inputs from open-loop scrubbers have been largely neglected until now: some metals have the potential to serve as tracers for monitoring scrubber discharges.

Reference:

Turner, D.R., Hassellöv, I.-M., Ytreberg, E. and Rutgersson, A., 2017. Shipping and the environment: Smokestack emissions, scrubbers and unregulated oceanic consequences. *Elementa Science Anthropocene*, 5, p.45.

Link:

DOI: <http://doi.org/10.1525/elementa.167>

Evergreen issues of planning? Learning from history for sustainable urban-rural systems landscapes

OPEN ACCESS

Authors

Madeleine Granvik and Per Hedfors

University

Swedish University of Agricultural Sciences (SLU), Uppsala, Sweden

Type of publication

Peer review

Abstract

Contemporary planning for sustainable development has a main focus on sustainable urban areas. This paper highlights a systemic approach as well as integrated and contextual knowledge in spatial planning. Significant theorists within urban planning, landscape architecture and other related fields are faced with a search for knowledge that accommodates the development of sustainable societies. Our historical selected data (Sitte, Howard, Geddes, Migge, Mumford, and McHarg) was analysed in relation to the contemporary UN policy document The Habitat Agenda and the French architectural theorist Françoise Choay's theory on urban design and critical planning. We identify several issues that could be considered as fundamental and discuss their potential role in current spatial planning in a Scandinavian context. The results are discussed in relation to theory and current planning trends. The main contribution of the study is a tentative theoretical framework that supports urban-rural interaction in spatial planning, titled The Sustainability Approach. This framework is also suggested as a natural evolution of Choay's planning models.

Reference

Granvik, M. and Hedfors, P. 2015. Evergreen Issues of planning? Learning from history for sustainable urban-rural systems landscapes, *European Journal of Spatial Development*, Research Briefing No. 5.

Link

<http://archive.nordregio.se/Global/EJSD/Research%20briefings/article5.pdf>

Defining Terms for Integrated (Multi-Inter-Trans-Disciplinary) Sustainability Research

OPEN ACCESS

Authors

Paul Stock(1) and Rob J.F. Burton(2)

University

1) University of Otago, Dunedin, New Zealand. 2) Centre for Rural Research, Trondheim, Norway.

Type of publication

Peer review

Abstract

Our contemporary social and ecological problems, including climate change, peak oil and food security, necessitate solutions informed by multiple backgrounds that singular disciplines seem unable to provide, and possibly, are even incapable of providing. The increasing occurrence of multi-, inter- and transdisciplinary (MIT) research projects speak to the recognition of that necessity. But as the literature and our own experiences bear out, just calling a project “beyond disciplinary” or integrated does not necessarily yield the intended outcomes or make progress toward alleviating the hurdles of bridging disciplines. Here we examine the distinctions between three categories (multidisciplinary, interdisciplinary and transdisciplinary) of integrated research and offer reflections on how sustainability researchers can categorize their research to improve common understandings.

Reference

Stock, P. and Burton, R. J. F. 2011. Defining Terms for Integrated (Multi-Inter-Trans-Disciplinary). Sustainability Research. *Sustainability* 3, no. 8: 1090-1113.

Link

<https://doi.org/10.3390/su3081090>

Down the black hole: sustaining national socio-technical imaginaries of coal in Poland

OPEN ACCESS

Authors

Magdalena Kuchler(1) and Gavin Bridge(2)

University

1) Uppsala University, Uppsala, Sweden. 2) Durham University, United Kingdom.

Type of publication

Peer review

Abstract

This paper explores the socio-technical imaginaries surrounding infrastructures of coal mining and coal combustion in Poland. Contemporary policy makers in Poland mobilise a national imaginary inherited from communist times – encapsulated in the slogan ‘Poland stands on coal’ – that fuses infrastructures of coal extraction and combustion with the fate of the nation. This socio-technical imaginary provides support for coal futures, even in the face of contradictory evidence for domestic resource depletion, poor regional air quality, and global climate change. To examine this process, the paper brings research on socio-technical imaginaries into conversation with work on resource materialities. It highlights how certain materialities of coal (abundance, accessibility, energy density, location) were integral to the emergence of a national socio-technical imaginary of modernisation via coal; and how other materialities (declining resource quality, effects of emissions on respiratory health, coal as CO₂-in-waiting) now collide with the political strategies of a government determined to reassert ‘black gold’ as a bedrock of national development for years to come. The paper considers how contemporary political efforts to rehabilitate coal and secure its future in Poland draw selectively upon a socio-technical imaginary of coal-fuelled national modernisation.

Reference

Kuchler, M. and Bridge, G. 2018. Down the black hole: Sustaining national socio-technical imaginaries of coal in Poland. *Energy Research & Social Science*, 41: 136-147.

Link

<https://doi.org/10.1016/j.erss.2018.04.014>

Challenges of urban green space management in the face of using inadequate data

OPEN ACCESS

Authors

Marcin Feltynowski(1), Jakub Kronenberg(1), Tomasz Bergier(2), Nadja Kabisch(3), Edyta Łaszkiewicz(1) and Michael Strohbach(4)

University

1) University of Lodz, Lodz, Poland 2) AGH University of Science and Technology, Krakow, Poland, 3) Humboldt-Universität zu Berlin, Berlin, Germany 4) Technische Universität Braunschweig, Braunschweig, Germany

Type of publication

Peer review

Abstract

Effective urban planning, and urban green space management in particular, require proper data on urban green spaces. The potential of urban green spaces to provide benefits to urban inhabitants (ecosystem services) depends on whether they are managed as a comprehensive system of urban green infrastructure, or as isolated islands falling under the responsibility of different stakeholders. Meanwhile, different urban green space datasets are based on different definitions, data sources, sampling techniques, time periods and scales, which poses important challenges to urban green infrastructure planning, management and research. Using the case study of Lodz, the third largest city in Poland, and an additional analysis of 17 other Polish cities, we compare data from five publicly available sources: 1) public statistics, 2) the national land surveying agency, 3) satellite imagery (Landsat data), 4) the Urban Atlas, 5) the Open Street Map. The results reveal large differences in the total amount of urban green spaces in the cities as depicted in different datasets. In Lodz, the narrowly interpreted public statistics data, which are aspatial, suggest that green spaces account for only 12.8% of city area, while the most comprehensive dataset from the national land surveying agency reveals the figure of 61.2%. The former dataset, which excludes many types of green spaces (such as arable land, private and informal green spaces), is still the most commonly used. The analysis of the 17 other cities confirms the same pattern. This results in broader institutional failures related to urban green infrastructure planning, management, and research, including a lack of awareness of green space quality (e.g. connectivity) and benefits (ecosystem services), and the related political disregard for urban green spaces. Our comparison suggests that a better understanding of green space data sources is necessary in urban planning, and especially when planning urban green infrastructure.

Reference

Feltynowski, M., Kronenberg, J., Bergier, T. 2018. Challenges of urban green space management in the face of using inadequate data. *Urban Forestry & Urban Greening* 31: 56-66

Link

<https://doi.org/10.1016/j.ufug.2017.12.003>

The genetic prehistory of the Baltic Sea region

OPEN ACCESS

Authors

Alissa Mittnik(1,2), Chuan-Chao Wang(1,3), Saskia Pfrengle(2), Mantas Daubaras(4), Gunita Zari(5), Fredrik Hallgren(6), Raili Allmäe(7), Valery Khartanovich(8), Vyacheslav Moiseyev(8), Mari Tõrv(9), Anja Furtwängler(2), Aida Andrades Valtueña(1), Michal Feldman(1), Christos Economou(10), Markku Oinonen(11), Andrejs Vasks(5), Elena Balanovska(12), David Reich(13,14,15), Rimantas Jankauskas(16), Wolfgang Haak(1,17), Stephan Schiffels(1) och Johannes Krause

University

1) Max Planck Institute for the Science of Human History, Jena, Germany, 2) University of Tübingen, Tübingen, Germany, 3) Xiamen University, Xiamen, China, 4) Lithuanian Institute of History, Vilnius, Lithuania 5) University of Latvia Riga, Latvia 6) The Cultural Heritage Foundation, Västerås, Sweden 7) Tallinn University, Tallinn, Estonia, 8) Peter the Great Museum of Anthropology and Ethnography (Kunstkamera) St. Petersburg, Russia, 9) University of Tartu, Tartu, Estonia, 10) Stockholm University, Stockholm, Sweden, 11) University of Helsinki, Helsinki, Finland, 12) Research Centre for Medical Genetics, Moscow, Russia, 13) Harvard Medical School, Boston, USA, 14) Broad Institute of Harvard and MIT, Cambridge, USA, 15) Harvard Medical School, Boston, USA, 16) Vilnius University, Vilnius, Lithuania, 17) The University of Adelaide Adelaide, Australia.

Type of publication

Peer review

Abstract

While the series of events that shaped the transition between foraging societies and food producers are well described for Central and Southern Europe, genetic evidence from Northern Europe surrounding the Baltic Sea is still sparse. Here, we report genome-wide DNA data from 38 ancient North Europeans ranging from ~9500 to 2200 years before present. Our analysis provides genetic evidence that hunter-gatherers settled Scandinavia via two routes. We reveal that the first Scandinavian farmers derive their ancestry from Anatolia 1000 years earlier than previously demonstrated. The range of Mesolithic Western hunter-gatherers extended to the east of the Baltic Sea, where these populations persisted without gene-flow from Central European farmers during the Early and Middle Neolithic. The arrival of steppe pastoralists in the Late Neolithic introduced a major shift in economy and mediated the spread of a new ancestry associated with the Corded Ware Complex in Northern Europe.

Reference

Mittnik, A., Wang, C.-C., Pfrengle, S. et al. 2018. The genetic prehistory of the Baltic Sea region. *Nature Communications* 9:442

Link

<https://doi.org/10.1038/s41467-018-02825-9>

New generation EU directives, sustainability, and the role of transnational coordination in Baltic Sea maritime spatial planning

OPEN ACCESS

Authors

Björn Hassler(1), Nerijus Blažauskas(2), Kira Gee(3), Anne Luttmann(4), Andrea Morf(5), Joanna Piwowarczyk(6), Fred Saunders(1), Ignè Stalmokaitė(1), Helena Strand(5) and Jacek Zaucha(7)

University

1) Södertörn University, Huddinge, Sweden, 2) Coastal Research and Planning Institute, CORPI, Lithuania, 3) Helmholtz-Zentrum Geesthacht, Zentrum für Material-und Küstenforschung GmbH, Germany, 4) Leibniz Institute for Baltic Sea Research Warnemünde, Germany, 5) University of Gothenburg, Sweden, 6) Institute of Oceanology of the Polish Academy of Sciences, Poland, 7) Maritime Institute in Gdansk, Poland

Type of publication

Peer review

Abstract

The EU MSP Directive is an example of a so-called new generation directive, which gives Member States room for adaptation to national contexts. The main objective in this article is to identify and analyse potential obstacles to effective and efficient planning caused by the diversity among national MSP frameworks that the Directive's broad regulatory boundaries have led to. It is shown that planning approaches can differ substantially between neighbouring countries, which can make it challenging to coordinate across national borders. Divergence between national MSP frameworks can also emerge from how political, jurisdictional and, administrative systems and traditions are organised in different Member States. It is shown that neighbouring countries can diverge substantially in how the ecological, economic and social dimensions of sustainability are balanced, which can make transnational coordination challenging. Furthermore, it is shown that stakeholder consultations differ among Member States in terms of, for example, who were invited, how the consultations were undertaken, and the role they play in relation to political decision-making. Because of these, and other differences in how MSP frameworks are being developed in the Member States, it is suggested that regional integration should be promoted with discretion. From this perspective, it seems reasonable to embrace diversity, while simultaneously promoting the adaptive management of coordination problems at lower levels, when, or if, they emerge or can be foreseen. Thus, increased integration of national MSP frameworks should be viewed as an instrument to reduce concrete efficiency losses, rather than as an intrinsic good.

Reference

Hassler, B., Blažauskas, N., Gee, K. et al. 2019. New generation EU directives, sustainability, and the role of transnational coordination in Baltic Sea maritime spatial planning. *Ocean & Coastal Management* 169: 254-263

Link

<https://doi.org/10.1016/j.ocecoaman.2018.12.025>

A transnational and holistic breeding approach is needed for sustainable wheat production in the Baltic Sea region

OPEN ACCESS

Authors

Aakash Chawade(1), Rita Armonienė(2), Gunilla Berg(3), Gintaras Brazauskas(2), Gunilla Frostgård(4), Mulatu Geleta(1), Andrii Gorash(2), Tina Henriksson(5), Kristiina Himanen(6), Anne Ingver(7), Eva Johansson(1), Lise Nistrup Jørgensen(8), Mati Koppel, Reine Koppel(7), Pirjo Make-
la(6), Rodomiro Ortiz(1), Wiesław Podyma(9), Thomas Roitsch(10), Antanas Ronis(2), Jan T. Svensson(11), Pernilla Vallenback(5) and Martin Weih(1)

University

1) Swedish University of Agricultural Sciences (SLU), Alnarp, Sweden, 2) Lithuanian Research Centre for Agriculture and Forestry (LAMMC), Kedainiai, Lithuania, 3) Plant Protection Center, Swedish Board of Agriculture, Alnarp, Sweden, 4) Yara Crop Nutrition, Region Nordic, Malmö, Sweden, 5) Lantmännen Lantbruk, Svalöv, Sweden, 6) University of Helsinki, Helsinki, Finland, 7) Estonian Crop Research Institute, Jõgeva, Estonia, 8) Aarhus University, Slagelse, Denmark, 9) National Research Institute, Radzików, Poland, 10) University of Copenhagen, Copenhagen, Denmark, 11) Nordic Genetic Resource Center (NordGen), Malmö, Sweden

Type of publication

Peer review

Abstract

The Baltic Sea is one of the largest brackish water bodies in the world. Eutrophication is a major concern in the Baltic Sea due to the leakage of nutrients to the sea with agriculture being the primary source. Wheat (*Triticum aestivum* L.) is the most widely grown crop in the countries surrounding the Baltic Sea and thus promoting sustainable agriculture practices for wheat cultivation will have a major impact on reducing pollution in the Baltic Sea. This approach requires identifying and addressing key challenges for sustainable wheat production in the region. Implementing new technologies for climate friendly breeding and digital farming across all surrounding countries should promote sustainable intensification of agriculture in the region. In this review, we highlight major challenges for wheat cultivation in the Baltic Sea region and discuss various solutions integrating transnational collaboration for pre breeding and technology sharing to accelerate development of low input wheat cultivars with improved host plant resistance to pathogen and enhanced adaptability to the changing climate.

Reference

Chawade, A., Armonienė, R., Berg, G. et al. 2018. A transnational and holistic breeding approach is needed for sustainable wheat production in the Baltic Sea region. *Physiologia Plantarum* 164: 442-451.

Link

<https://doi.org/10.1111/ppl.12726>

Wood production and biodiversity conservation are rival forestry objectives in Europe's Baltic Sea Region

OPEN ACCESS

Authors

Per Angelstam(1), Vladimir Naumov(1), Marine Elbakidze(1), Michael Manton(2), Janis Priednieks(3) and Zigmars Rendenieks(3)

University

1) Swedish University of Agricultural Sciences, Skinnskatteberg, Sweden, 2) Aleksandras Stulginskis University, Kaunas, Lithuania, 3) University of Latvia, Riga, Latvia

Type of publication

Peer review

Abstract

The policy term green infrastructure highlights the need to maintain functional ecosystems as a foundation for sustainable societies. Because forests are the main natural ecosystems in Europe, it is crucial to understand the extent to which forest landscape management delivers functional green infrastructures. We used the steep west–east gradient in forest landscape history, land ownership, and political culture within northern Europe's Baltic Sea Region to assess regional profiles of benefits delivered by forest landscapes. The aim was to support policy makers and planners with evidence based knowledge about the current conditions for effective wood production and biodiversity conservation. We developed and modeled four regional level indicators for sustained yield wood production and four for biodiversity conservation using public spatial data. The western case study regions in Sweden and Latvia had high forest management intensity with balanced forest losses and gains which was spatially correlated, thus indicating an even stand age class distribution at the local scale and therefore long term sustained yields. In contrast, the eastern case study regions in Belarus and Russia showed spatial segregation of areas with forest losses and gains. Regarding biodiversity conservation indicators, the west–east gradient was reversed. In the Russian, Belarusian, and Latvian case study regions, tree species composition was more natural than in Sweden, and the size of contiguous areas without forest loss was larger. In all four case study regions, 54–85% of the total land base consisted of forest cover, which is above critical fragmentation thresholds for forest landscape fragmentation. The results show that green infrastructures for wood production and biodiversity conservation are inversely related among the four case study regions, and thus rival. While restoration for biodiversity conservation is needed in the west, intensified use of wood and biomass is possible in the east. However, a cautious approach should be applied because intensification of wood production threatens biodiversity. We discuss the barriers and bridges for spatial planning in countries with different types of land ownership and political cultures and stress the need for a landscape approach based on evidence based collaborative learning processes that include both different academic disciplines and stakeholders that represent different sectors and levels of governance.

Reference

Angelstam, P., Naumov, V., Elbakidze, M. et al. 2018. Wood production and biodiversity conservation are rival forestry objectives in Europe's Baltic Sea Region. *Ecosphere* 9(3):e02119

Link

<https://doi.org/10.1002/ecs2.2119>

Geopolitics and religion – a mutual and conflictual relationship. Spatial regulation of creed in the Baltic Sea Region

Author

Thomas Lundén

University

Södertörn University, Huddinge, Sweden

Type of publication

Peer review

Abstract

The geopolitical history of religion in the Baltic Sea area shows a development from the time of the Lutheran Reformation of a mosaic of states with very different jurisdictions of creed, from the tolerance under local containment of the Polish-Lithuanian Commonwealth to the strict Evangelical mono-religion of the Scandinavian countries. With seventeenth-century mercantilism, groups of skilled people of 'foreign' religion were invited to newly founded towns and ironworks in order to promote the economy. In the eighteenth-century enlightened absolute monarchs, defying both church and bourgeoisie, allowed groups of Catholics and Jews to Scandinavia under spatial restrictions on settlement. In Russia non-Russians of different religions were tolerated, while dissidents to the Orthodox Church were deported to peripheral places. With the Prussian territorial expansion in Germany, more groups were included into citizenship, including Jews. The last states to include groups of 'foreign' creed were the early nineteenth century semi-independent states of Norway and Finland.

Reference

Lundén, T. 2015. Geopolitics and religion – a mutual and conflictual relationship. Spatial regulation of creed in the Baltic Sea Region. *International Review of Sociology*, 25:2, 235-251.

Links

<https://doi.org/10.1080/03906701.2015.1039268>

The application of two-dimensional hydrodynamic models for underwater archaeological finds from the Vistula River in Warsaw, Poland

Authors

Hubert Kowalski(1), Artur Magnuszewski(1) and Artur Radecki-Pawlik(2)

University

1) University of Warsaw, Warsaw, Poland. 2) Cracow University of Technology, Kraków, Poland.

Type of publication

Peer review

Abstract

Low water levels occurring on the Warsaw section of the Vistula River during droughts in 2012 and 2015 stirred considerable interest by exposing parts of the riverbed. The river's low flow discharge created favourable conditions for archaeologists who, from the river's bottom, managed to salvage sculptures, architectural artefacts, and military accessories dating back to the middle of the 17th century. Literature shows that archaeological finds at the bottom of a major lowland river are unique and are attributed to very specific hydrological and geological conditions. Embankments and works meant to regulate the channel of the Vistula River in Warsaw narrowed the channel and accelerated the erosion of the river's bottom. A comparison of rating curves created between 1919 and 2015 shows that the river's bottom had lowered by 225 cm. The diameter of sediment particles that could be moved at maximum shear stress has been calculated using the Meyer–Peter and Muller formula. According to the calculated shear stress corresponding to the highest historical flood of 1844 particles smaller than 0.05 m were transported down the river, and it is true that artefacts of that size had not been collected at the site. Taking into consideration the very specific geological and hydrological conditions, we believe that finding so many 17th century artefacts with a well-documented history at a site at the bottom of major lowland river with intensive channel processes is indeed unique. Additionally, it is the first time that results of hydrodynamic modelling have been successfully used for archaeological survey to define the critical shear stress and the smallest diameter of artefacts, which could remain stable on a river's bottom.

Reference

Kowalski H, Magnuszewski, A, Radecki-Pawlik, A. 2018. The application of two dimensional hydrodynamic models for underwater archaeological finds from the Vistula River in Warsaw, Poland. *Hydrological Processes*, 32:2888–2900.

Link

<https://doi.org/10.1002/hyp.13234>

Sustainability performance in the Baltic Sea Region

Authors

Siarhei Manzhynskia(1), Nikolai Siniak(1), Alina Zróbek-Rózanska(2) and Sabina Zróbek(2)

University

1) Belarusian State Technological University, Belarus, 2) University of Warmia and Mazury in Olsztyn, Olsztyn, Poland

Type of publication

Peer review

Abstract

The importance of sustainable development issues requires the engagement of all stakeholders in decision-making processes, as well as developing tactics and strategies. The complexity of this task increases on regional and international levels, where a huge amount of interests intersect or even contradict each other. To develop proper policy measures towards sustainability, it is essential to use appropriate performance assessment. Regardless of the existence of some macro estimation methods, vast gaps in practical use still remain. In this paper, a set of methods for assessing the sustainability performance of countries is outlined and discussed. The main advantages and weaknesses of the prevalent approaches are considered. Using available statistical data from open sources, sustainability performance assessment in countries within the Baltic Sea Region in the years 2005–2010 is carried out according to different methods and discussed, thus obtaining the profile of sustainability performance for countries in the Baltic Sea Region. The results of the calculations may be used for sharing with communities, detecting sustainability gaps in the countries' economies, substantiating national and regional sustainable development strategies, and analyzing the investment attractiveness of the given region.

Reference

Manzhynskia, S., Siniak, N., Zróbek-Rózanska, A. and Zróbek, S. 2016. Sustainability performance in the Baltic Sea Region. *Land Use Policy*, 57: 489-498.

Link

<https://doi.org/10.1016/j.landusepol.2016.06.003>

Winner in the category of Social Sciences and Humanities

Sustainability for Dinner

An Ethnological Study of how Sustainable Eating is Practised in Everyday Life

Author

Matilda Marshall

University

Umeå Unniversity, Umeå, Sweden

Type of publication

PhD thesis

Abstract

Sustainability has become a conspicuous term in the public and political debate, as well as in the landscapes of consumption. This study focuses on how people understand and practice sustainability through food in their everyday life. The aim is to describe and analyse sustainability as a collection of meaning-making practices by studying households that in some sense actively aim for an environmentally friendly and sustainable food consumption. The ethnographic fieldwork, mainly interviews and participant observations, included fifteen households in a municipality in northern Sweden during 2012-15. The dissertation centres around reoccurring themes: organic food, local food, food as culture and materiality, morality and distinction. Through these themes it became evident that the participants related sustainable food practices to more than environmental issues. Socioeconomic relations within the locality and the global world, as well as cultural norms, traditions and values related to food, were important aspects of a perceived sustainable society. Although occasionally seeming inconsistent and contradictory in their meaning-making of and commitment to practices revolving around ideals of (ecological) sustainability, the participants balanced multiple sustainabilities simultaneously. Besides the ecological aspect, they also wished for sustainable localities, household economy, social relations and personal wellbeing.

Influenced by social practice theory the study pays attention to the competences, meanings and materials a practice is dependent on. The participants developed individual repertoires, or practice bundles, of sustainable food related practices that were meaningful in their everyday life. The development and expansion of such a bundle could be understood as a form of acquiring and maintaining green capital; a symbolic capital based upon shared green values which unite the possessors and distinguish them from those lacking such values. Green capital is expressed through green distinction, that is, using taste to differentiate between holders and non-holders of the symbolic capital. The participants separated themselves from both the large majority who did not yet understand or practise sustainability, and from "fanatics" who they perceived took sustainability in an extreme and unsound manner. A balanced approach to sustainability was favoured as the participants to a great extent valued a lifestyle adjustable to the preconditions of the contemporary Swedish society, such as social norms. The study shows how sustainability is constantly renegotiated and filled with new cultural meaning.

Link to fulltext (in swedish):

<http://umu.diva-portal.org/smash/get/diva2:1054841/FULLTEXT01.pdf>

Winner in the category of Natural Sciences and Engineering

Process retrofitting through Process Intensification a structured approach

Author

Magda Barecka

University

Lodz University of Technology, Lodz, Poland and TU Dortmund, Dortmund, Germany

Type of publication

PhD thesis

Abstract

Sustainability has become a conspicuous term in the public and political debate, as well as in the landscapes of consumption. This study focuses on how people understand and practice sustainability through food in their everyday life. The aim is to describe and analyse sustainability as a collection of meaning-making practices by studying households that in some sense actively aim for an environmentally friendly and sustainable food consumption. The ethnographic fieldwork, mainly interviews and participant observations, included fifteen households in a municipality in northern Sweden during 2012-15. The dissertation centres around reoccurring themes: organic food, local food, food as culture and materiality, morality and distinction. Through these themes it became evident that the participants related sustainable food practices to more than environmental issues. Socioeconomic relations within the locality and the global world, as well as cultural norms, traditions and values related to food, were important aspects of a perceived sustainable society. Although occasionally seeming inconsistent and contradictory in their meaning-making of and commitment to practices revolving around ideals of (ecological) sustainability, the participants balanced multiple sustainabilities simultaneously. Besides the ecological aspect, they also wished for sustainable localities, household economy, social relations and personal wellbeing.

Influenced by social practice theory the study pays attention to the competences, meanings and materials a practice is dependent on. The participants developed individual repertoires, or practice bundles, of sustainable food related practices that were meaningful in their everyday life. The development and expansion of such a bundle could be understood as a form of acquiring and maintaining green capital; a symbolic capital based upon shared green values which unite the possessors and distinguish them from those lacking such values. Green capital is expressed through green distinction, that is, using taste to differentiate between holders and non-holders of the symbolic capital. The participants separated themselves from both the large majority who did not yet understand or practise sustainability, and from "fanatics" who they perceived took sustainability in an extreme and unsound manner. A balanced approach to sustainability was favoured as the participants to a great extent valued a lifestyle adjustable to the preconditions of the contemporary Swedish society, such as social norms. The study shows how sustainability is constantly renegotiated and filled with new cultural meaning.