



Research Notes Letter

*Research & Innovation for a sustainable
Baltic Sea Region*

Volume 4, Issue 3, 2021

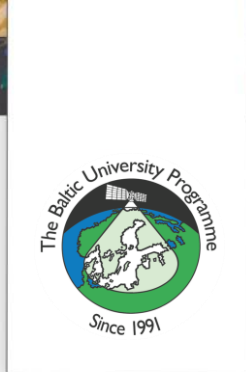
Recent Research from
BUP Participating Universities



UPPSALA
UNIVERSITET



**The Baltic University
Programme**



This issue of the Research Notes Letter contains 17 scientific abstracts on current research conducted at the BUP Participating Universities. The common denominator is the interest in a more sustainable development of the Baltic Sea Region. We want the Research Notes Letter to reflect the multi- and interdisciplinary science we believe is central to meet the Sustainable Development Goals indicated by the United Nations 2030 Agenda for Sustainable Development. All previous issues of the Research Notes Letter are possible to download from the BUP web page.

Submit to the Research Notes Letter

If you think we have missed the fantastic research you just got published, fill out the form for submission: <https://doit.medfarm.uu.se/bin/kurt3/kurt/23144> simply e-mail the BUP your information. The publication is **free of charge**.

The Research Notes Letter in short

We publish the Research Notes Letter three times per year and disseminate it in the network. The Research Notes Letter highlights abstracts on recent publications relating to the Baltic Sea Region and our ten BUP Themes. We promote research from our Participating Universities. The abstracts presented in the Research Notes Letter are accompanied by information on authors, information on their affiliation, abstracts, keywords, and citation.

Editor,
Ulrika Jansson Klintberg

Co-editor,
Evan Goss

Useful links

[Archive Research Notes Letter on the BUP web page](#)

[The 10 BUP Themes](#)

[Form for submission to the Research Notes Letter](#)

Content

Microscale socioeconomic inequalities in green space availability in relation to residential segregation: The case study of Lodz, Poland Łaszkiewicz, Kronenberg, Marcińczak.....	5
Stakeholder analysis in sustainable forest management: an application in the Yavoriv region (Ukraine) Pelyukh, Zahvoyska, Maksymiv & Paletto.....	6
How to build the legitimacy of regional integration on rational foundations: a case of epistemic communities in the Baltic Sea area Musiał, Šime.....	7
Extreme gas production in anthropogenic fibrous sediments: An overlooked biogenic source of greenhouse gas emissions Lehoux, Isidorova, Collin, Koestel, Snowball, Dahlberg.....	8
Public Perceptions concerning Responsibility for Climate Change Adaptation Persson, Knaggård, Eriksson.....	9
Poverty: A central barrier to the implementation of the UN Sustainable Development Goals Leal Filho, Orlovic Lovren, Will, Lange Salvia, Frankenberger.....	10
Microplastic pollution in surface water and sediments in the urban section of the Vistula River (Poland) Dąbrowska, Sekudewicz, Syczewski.....	11
The importance of adjusting contaminant concentrations using environmental data: A retrospective study of 25 years data in Baltic blue mussels Ek, Faxneld, Nyberg, Rolff & Karlson.....	12
Human capital and sustainability challenges for Airbnb Bed and Breakfast lifestyle entrepreneurs Griggio & Oxenswärdh.....	13
The Natural Gas as a Sustainable Fuel Alternative in Latvia Savickis, Ansone, Zemite, Bode, Jansons, Zeltins, Kopusovs, Vempere & Dzelzitis.....	14
PCA analysis of wind direction climate in the baltic states Pogumirskis, Sīle, Seņņikovs & Bethers.....	15
Mobilising post-political environments: tracing the selective geographies of Swedish sustainable urban development Adscheid & Schmitt.....	16
Integrating the green economy, circular economy and bioeconomy in a strategic sustainability framework D'Amato, Korhonen.....	17

Smart Asset Management for District Heating Systems in the Baltic Sea Region Grzegórska, Rybarczyk, Lukoševicius, Sobczak, Rogala.....	18
Business sector involvement in maritime spatial planning – Experiences from the Baltic Sea region Luhtala, Erkkilä-Välimäki, Qvist Eliassen, Tolvanen.....	19
Context and agency in urban community energy initiatives: An analysis of six case studies from the Baltic Sea Region Ruggiero, Busch, Hansen, Isakovic.....	20
World Heritage Sites in developing countries: Assessing impacts and handling complexities toward sustainable tourism Hosseini, Stefaniec, Parisa Hosseini.....	21

Microscale socioeconomic inequalities in green space availability in relation to residential segregation: The case study of Lodz, Poland

Authors: Edyta Łaszkiewicz¹, Jakub Kronenberg¹, Szymon Marcińczak¹

Affiliation: 1) University of Lodz

Type of publication: Article peer review



Abstract:

Socioeconomic disparities in urban green space (UGS) availability and environmental injustice may occur not only at the scale of whole cities, selected districts/neighbourhoods, but also at lower spatial scales, such as urban blocks or even individual buildings. The latter – microscale UGS disparities – reflect differences in UGS availability among inhabitants who belong to different socioeconomic status groups and inhabit different buildings or parts of buildings. This article evaluates whether disparities in UGS availability and environmental injustice may occur in microscale in cities characterized by low socioeconomic segregation in general, such as those located in Central and Eastern Europe. For this purpose, we identified microscale socioeconomic disparities in UGS availability in the central zone of Lodz (Poland) using the localized modelling technique. Then, using a spatial microsimulation experiment, we demonstrated that an increase of segregation in Lodz's central zone would increase disparities in UGS availability and the occurrence of environmental injustice there. We demonstrated that the way the patterns of segregation interplay with microscale disparities can be further linked with temporal evolution of housing stock and local housing policy. Our findings may be useful for urban planners to stimulate the spatio-social diversity of inhabitants by focusing on microscale UGS disparities.

Citation:

Edyta Łaszkiewicz, Jakub Kronenberg, Szymon Marcińczak, (2021). Microscale socioeconomic inequalities in green space availability in relation to residential segregation: The case study of Lodz, Poland. *Cities*, Volume 111, 2021, 103085, ISSN 0264-2751, <https://doi.org/10.1016/j.cities.2020.103085>.

Stakeholder analysis in sustainable forest management: an application in the Yavoriv region (Ukraine)

Authors: Oksana Pelyukh¹, Lyudmyla Zahvoyska¹, Lyudmyla Maksymiv¹, Alessandro Paletto²

Affiliation: 1) Ukrainian National Forestry University, 2) Research Centre for Forestry and Wood, Italy

Type of publication: Article peer review



Abstract:

In Ukraine, the timber volume harvested from sanitary cuttings is increasing, while the state of national forests is decreasing. These trends have focused the attention of public authorities and increased public debate on the role of forests for society. A forest policy reform process needs to build on a sound understanding of the relevant stakeholders, their mutual relationships and interests in the forestry sector. In this paper, a stakeholder analysis based on a network theoretical approach was implemented in a case study in Ukraine (Yavoriv region) to support the forest policy reform process. The study is based on experts' opinions and was structured in three stages: identification of the experts; questionnaire survey and identification of local stakeholders; classification of stakeholders. The results identified 15 stakeholders thus distributed: (1) eight stakeholders belong to the ecological coalition and seven to the economic coalition; (2) three are key stakeholders, four primary stakeholders, and eight secondary stakeholders. The proposed method of stakeholder analysis is aimed to balance the number of stakeholders from each coalition to include all interests at stake in the participatory process. The stakeholder analysis marks the first step in the implementation of sustainable forest management in the Yavoriv region and could serve as a model for the other Ukrainian regions.

Citation:

Oksana Pelyukh, Lyudmyla Zahvoyska, Lyudmyla Maksymiv & Alessandro Paletto (2019). Stakeholder analysis in sustainable forest management: an application in the Yavoriv region (Ukraine). *Bulletin of the Transilvania University of Braşov*. Series II: Forestry, Wood Industry, Agricultural Food Engineering. Volume 12 (61) No. 1 – 2019.
<https://doi.org/10.31926/but.fwiafe.2019.12.61.1.5>

How to build the legitimacy of regional integration on rational foundations: a case of epistemic communities in the Baltic Sea area

Authors: Kazimierz Musiał¹, Zane Šime²

Affiliation: 1) University of Gdańsk, 2) Latvian Political Science Association

Type of publication: Article peer review



Abstract:

In periods of uncertainty or during critical junctures, scientific advice may be in high demand to provide legitimacy for political decision makers. This article outlines the evolution of expert forms of knowledge and the way those have shaped Baltic Sea region building, including its consultative and collaborative frameworks of agenda setting. The selected cases include HELCOM, the Copenhagen School of international relations and the Baltic Science Network. This article offers an explanation of how these epistemic collectives have produced consensual knowledge, generated legitimacy, and engendered agency of scientific research findings and knowledge-based decisions in national, transnational, and macro-regional settings.

Citation:

Kazimierz Musiał & Zane Šime (2021) How to build the legitimacy of regional integration on rational foundations: a case of epistemic communities in the Baltic Sea area, *Journal of Baltic Studies*, 52:4, 483-501, <https://doi.org/10.1080/01629778.2021.1964995>

Extreme gas production in anthropogenic fibrous sediments: An overlooked biogenic source of greenhouse gas emissions

Authors: Alizée P. Lehoux¹, Anastasija Isidorova¹, Fredrik Collin¹, John Koestel², Ian Snowball¹, Anna-Karin Dahlberg²

Affiliation: 1) Uppsala University, 2) Swedish University of Agricultural Sciences

Type of publication: Article peer review



Abstract:

Fibrous sediments that originated from old pulp and paper industry emissions are recognized as a potential threat to the aquatic environment because they are highly contaminated. In addition, biogenic degradation of the organic material from so-called “fiberbanks” has a high potential to produce greenhouse gases (GHG). In this study, X-ray tomography, optical sensors and gas analyzers were used to identify and quantify the gas produced and released from samples of two different fiberbanks. We show that a finer fibrous structure allows the formation of larger gas bubbles and higher gas production rates compared to coarser material composed of wood pieces. High contents of methane (average 56% to 65%) and carbon dioxide (average 18% to 20%) were measured in the gas emitted from both types of fiberbank. Measured methane production rates from the fiberbanks samples are one to three orders of magnitude higher than previously reported rates from sediments within the studied temperature range (between 0.03 and 0.51 $\mu\text{m CH}_4/\text{h/g dw}$ over 4.7 to 20 °C). The potential for methane and carbon dioxide production in the fiberbank volume likely present in Sweden is estimated to correspond to 7% of Sweden's total known GHG emissions for 2019. These findings show that fiberbanks have the potential to be a significant emitter of GHG.

Citation:

Alizée P. Lehoux, Anastasija Isidorova, Fredrik Collin, John Koestel, Ian Snowball, Anna-Karin Dahlberg, (2021). Extreme gas production in anthropogenic fibrous sediments: An overlooked biogenic source of greenhouse gas emissions. *Science of The Total Environment*, Volume 781, 2021, 146772, ISSN 0048-9697, <https://doi.org/10.1016/j.scitotenv.2021.146772>.

Public Perceptions concerning Responsibility for Climate Change Adaptation

Authors: Erik Persson¹, Åsa Knaggård¹, Kerstin Eriksson²

Affiliation: 1) Lund University, 2) RISE Research Institutes of Sweden

Type of publication: Article peer review



Abstract:

For successful climate change adaptation, the distribution of responsibility within society is an important question. While the literature highlights the need for involving both public and private actors, little is still known of how citizens perceive their own and others' responsibility, let alone the moral groundings for such perceptions. In this paper, we report the results of a survey regarding people's attitudes towards different ways of distributing responsibility for climate change adaptation. The survey was distributed to citizens in six Swedish municipalities and completed by 510 respondents. A large number of respondents wanted to assign responsibility for making decisions about and implementing adaptation measures to local governments, but also to property owners, whereas the national government was raised as responsible for setting decision boundaries and for financial support. The most preferred principles for a fair distribution of responsibility among the respondents were desert, ability, efficiency and need, while the principle of equal shares found less support. All principles received some support, indicating that it is necessary to consider several principles when distributing responsibility for climate change adaptation. Compared to earlier studies, this study shows more nuanced perceptions on who should be responsible and on what moral grounds.

Citation:

Persson E, Knaggård Å, Eriksson K. (2021). Public Perceptions concerning Responsibility for Climate Change Adaptation. *Sustainability*. 2021; 13(22):12552.
<https://doi.org/10.3390/su132212552>

Poverty: A central barrier to the implementation of the UN Sustainable Development Goals

Authors: Walter Leal Filho¹, Violeta Orlovic Lovren², Markus Will³, Amanda Lange Salvia⁴, Fernanda Frankenberger⁵

Affiliation: 1) Hamburg University of Applied Sciences, 2) University of Belgrade, 3) University of Applied Sciences Zittau/Görlitz, 4) University of Passo Fundo, 5) Universidade Positivo

Type of publication: Article peer review



Abstract:

Poverty is one of the central elements in the transformative promise of the 2030 Agenda: leave no one behind. Ending poverty in all forms and everywhere is the first Sustainable Development Goal (SDG) and much can be discussed about its impact on several other sustainability elements. In this context, this paper explores the role of poverty and why it poses a central barrier in the implementation of the SDGs in developing countries. The research questions intended to assess: i) to which extent poverty is seen as a sustainability challenge and properly included in governance actions, ii) which are the SDGs most negatively affected by poverty, and iii) which are the main challenges for the implementation of SDG 1. An international survey was performed with researchers, professors, and representatives of administrative sectors in universities from 34 countries round the world. The vast majority of those taking part in the study consider poverty to be a threat to the implementation of the SDGs in their countries. Practically all goals are seen to be hampered, especially SDG 2 ‘Zero Hunger’, SDG 3 ‘Good Health and Well-being’, SDG 4 ‘Quality Education’ and SDG 6 ‘Clean Water and Sanitation’. The implications of this paper are twofold: it illustrates the need to pay a special attention to poverty reduction which may pose a central barrier to the implementation of the SDGs and describes a set of items needed, in order to foster the implementation of one of the key goals.

Citation:

Walter Leal Filho, Violeta Orlovic Lovren, Markus Will, Amanda Lange Salvia, Fernanda Frankenberger, (2021). Poverty: A central barrier to the implementation of the UN Sustainable Development Goals. *Environmental Science & Policy*, Volume 125, 2021, Pages 96-104, ISSN 1462-9011, <https://doi.org/10.1016/j.envsci.2021.08.020>

Microplastic pollution in surface water and sediments in the urban section of the Vistula River (Poland)

Authors: Agnieszka Monika Dąbrowska¹, Ilona Sekudewicz², Marcin Daniel Syczewski¹

Affiliation: 1) University of Warsaw, 2) Polish Academy of Sciences

Type of publication: Article peer review



Abstract:

The main hypothesis of this study was that the microplastic (MP) concentration would be higher in the city centre. The MP (<5 mm) abundance and distribution in the urbanized section of the Vistula River were examined. Samples were collected from three different sites: 1) the less urbanized part of the city, 2) the area close to the tributary outlet and wastewater treatment plant (WWTP), and 3) the city centre. The abundance of MPs in water ranged from 1.6 to 2.55 items L⁻¹, whereas in the sediments, it varied from 190 to 580 items kg⁻¹. The highest MP concentration was observed in the water collected in the city centre. However, in the case of sediments, the most polluted sample was collected from a sampling point located near the WWTP and tributary outlet. The diversity of the MPs abundance along the river was associated with the hydrological and sedimentological conditions, which was confirmed by the grain size analysis of sediments. The dominant type of MPs in both the water and sediment samples was fibre. The MPs were characterized by Raman spectroscopy as polystyrene (PS), polypropylene (PP), and a variety of other materials with different levels of deterioration. The images obtained by scanning electron microscopy (SEM) showed different disintegration features. Moreover, the SEM analyses revealed the occurrence of adhered particles and diatoms on the surface of MPs. The adsorption of various elements onto the MPs surface and the adhered particles was confirmed by energy-dispersive X-ray spectroscopy. The conducted studies emphasized the significance of the impact of large urban agglomerations, such as the Warsaw metropolitan area, on the concentration of MPs in rivers. Further studies are needed to better assess, for instance, the precise mode through which MPs in urban regions are transported by rivers to the seas.

Citation: Ilona Sekudewicz, Agnieszka Monika Dąbrowska & Marcin Daniel Syczewski,(2020). Microplastic pollution in surface water and sediments in the urban section of the Vistula River (Poland). *Science of The Total Environment*, Volume 762, 2021, 143111, ISSN 0048-9697, <https://doi.org/10.1016/j.scitotenv.2020.143111>.

The importance of adjusting contaminant concentrations using environmental data: A retrospective study of 25 years data in Baltic blue mussels

Authors: Caroline Ek¹, Suzanne Faxneld², Elisabeth Nyberg³, Carl Rolff⁴, Agnes M.L. Karlson¹

Affiliation: 1) Stockholm University, 2) Swedish Museum of Natural History, 3) Naturvårdsverket, 4) Stockholm University Baltic Sea Centre

Type of publication: Article peer review



Abstract:

To improve the statistical power of detecting changes in contaminant concentrations over time, it is critical to reduce both the within- and between-year variability by adjusting the data for relevant confounding variables. In this study, we present a method for handling multiple confounding variables in contaminant monitoring. We evaluate the highly variable temporal trends of Polycyclic Aromatic Hydrocarbons (PAHs) in blue mussels from the central Baltic Sea during the period 1987–2016 (data from 25 years during this period) using various regression analyses. As potential explanatory variables related to PAH exposure, we use mussel size and retrospective analyses of mussel $\delta^{15}\text{N}$ and $\delta^{13}\text{C}$ (representing large scale biogeochemical changes as a result of e.g. eutrophication and terrestrial inputs). Environmental data from concurrent monitoring programmes (seasonal data on Chlorophyll-a, salinity and temperature in the water column, bioturbation of sediment dwelling fauna) were included as variables related to feeding conditions. The concentrations of high-molecular-weight and low-molecular-weight PAHs in blue mussel were statistically linked to different combinations of environmental variables. Adjustment using these predictors decreased the coefficient of variation in all 15 PAHs tested and improved the statistical power to detect changes. Moreover, the adjustment also resulted in a significant downward trend for fluoranthene that could not be detected initially. For another PAH, benzo(g,h,i)perylene, adjustment which reduced variation resulted in the loss of an apparent downward trend over time. Hence, our study highlights the importance of using auxiliary data to reduce variability caused by environmental factors with general effects on physiology when assessing contaminant time trends. Furthermore, it illustrates the importance of extensive and well designed monitoring programmes to provide relevant data.

Citation: Caroline Ek, Suzanne Faxneld, Elisabeth Nyberg, Carl Rolff & Agnes M.L. Karlson, (2021). The importance of adjusting contaminant concentrations using environmental data: A retrospective study of 25 years data in Baltic blue mussels. *Science of The Total Environment*, Volume 762, 2021, 143913, ISSN 0048-9697, <https://doi.org/10.1016/j.scitotenv.2020.143913>.

Human capital and sustainability challenges for Airbnb Bed and Breakfast lifestyle entrepreneurs

Authors: Anette Oxenswärdh¹, Consuelo Griggio¹

Affiliation: 1) Uppsala University

Type of publication: Article peer review



Abstract:

The Swedish island of Gotland in the Baltic Sea is a well-known tourist destination, visited annually by almost 2 million tourists. Among the different types of accommodation available to visitors, Bed and Breakfast (B&B) on the Airbnb platform have become very popular. This exploratory study discusses how the human capital of some B&B lifestyle entrepreneurs affects their plans and practices of sustainability. Human capital theory (Becker, G. (1964). Human Capital. The University of Chicago Press.) is discussed by intersecting it with a sociological perspective represented by the two main Bordieuan forms of capital, namely cultural and social capital (1986 and 1992). The research is based on data collected between June 2017 and October 2020 through semi-structured interviews and field observation of fourteen rural B&B lifestyle entrepreneurs listed on Airbnb. Results show that participants' cultural capital is high and constantly developing through the acquisition of new knowledge on sustainable measures that can be applied to their businesses. Their current social capital in Gotland, on the other hand, is still quite underdeveloped.

Citation:

Consuelo Griggio & Anette Oxenswärdh (2021). Human capital and sustainability challenges for Airbnb Bed and Breakfast lifestyle entrepreneurs. *Scandinavian Journal of Hospitality and Tourism*, 21:3, 286-312, <https://doi.org/10.1080/15022250.2021.1927828>

The Natural Gas as a Sustainable Fuel Alternative in Latvia

Authors: Savickis, J.¹, Ansonē, A.², Laila Zemīte², Bode, I.², Jansons, L.², Zeltins, N.², Kopusovs, A.², Vempere, L.² and Dzelzītis, E.²

Affiliation: 1) ITERA, 2) Riga Technical University

Type of publication: Article peer review



Abstract:

Despite various benefits that the natural gas mobility can provide, CNG (hereinafter – compressed natural gas) and LNG (hereinafter – liquified natural gas) filling infrastructure both in Latvia and the Baltic States as a whole is still at the stage of active development. As a result, the natural gas fuelled vehicle fleet comprises less than 1 % of all registered road vehicles in the Baltics, but, with regards to transport and climate policies of the European Union (hereinafter – the EU), it has a significant potential for further growth. In order to estimate the perspectives of mobility of natural gas, including bioCNG and liquified biomethane (hereinafter – LBM), CNG has been chosen and analysed as a possible alternative fuel in Latvia with its environmental and economic benefits and payback distance for CNG vehicles compared to petrol and diesel cars. The review of various types of CNG filling stations is also presented, along with information on operating tax rates and currently registered vehicles divided by types of fuel in Latvia. It was established that with the Latvian fuel price reference of the late 2020, exploitation of CNG-powered vehicle was by 24 % cheaper per kilometre in comparison with diesel and by 66 % cheaper in comparison with petrol vehicles. CNG vehicles have smaller operational taxes, since they are based on carbon dioxide (hereinafter – CO₂) emissions, which are lower for CNG-powered vehicles. Calculation results also indicate that CNG vehicle payback time may fall within the warrant period, if at least 57650 kilometres as an alternative to a petrol vehicle or 71 531 kilometres as an alternative to a diesel vehicle are driven by it.

Citation:

Savickis, J., Ansonē, A., Zemīte, L., Bode, I., Jansons, L., Zeltins, N., Kopusovs, A., Vempere, L. & Dzelzītis, E.(2021). The Natural Gas as a Sustainable Fuel Alternative in Latvia. *Latvian Journal of Physics and Technical Sciences*, vol.58, no.3, 2021, pp.169-185. <https://doi.org/10.2478/lpts-2021-0024>

PCA analysis of wind direction climate in the baltic states

Authors: Maksims Pogumirskis¹, Tija Sīle¹, Juris Seņņikovs¹ & Uldis Bethers¹

Affiliation: 1) University of Latvia

Type of publication: Article peer review



Abstract:

Wind direction is one of the fundamental parameters of weather. In this study we investigate the wind direction climate 10 m above surface level in the Baltic States (Estonia, Latvia, Lithuania). The analysis of wind direction over larger regions is usually hindered by the fact that wind direction is a circular variable, which means that averaged values are meaningless. Here we show how Principal Component Analysis (PCA) can be applied to give a large scale overview of typical wind direction patterns in the region. Here we apply PCA to both observational and reanalysis data. The most significant wind direction patterns are detected in both synoptic scale and mesoscale, and we attempt to link the identified patterns with meteorological phenomena. In addition, the differences in the PCA results between observation and model data are analysed.

The results show that PCA method is successful in identifying and ranking the wind direction climate features, leading to a complete and thorough investigation for the whole region that would be not possible by human researchers analysing individual distributions of wind direction.

Citation:

Maksims Pogumirskis, Tija Sīle, Juris Seņņikovs & Uldis Bethers (2021). PCA analysis of wind direction climate in the baltic states. *Tellus A: Dynamic Meteorology and Oceanography*, 73:1, 1-16, <https://doi.org/10.1080/16000870.2021.1962490>

Mobilising post-political environments: tracing the selective geographies of Swedish sustainable urban development

Authors: Toni Adscheid¹ & Peter Schmitt²

Affiliation: 1) Trier University, 2) Stockholm University

Type of publication: Article peer review



Abstract:

This paper develops an analytical framework from which to understand the mobilisation of post-political urban environments across spatial and institutional contexts. Our analysis of two closely related cases from a Swedish context reveals the potential benefits of combining studies on urban political ecology and policy mobility. By utilising Actor-Network Theory (ANT) we illustrate how post-political environments that are shaped by mobile and mutating policies of sustainable urban development are stabilised through distinct discursive strategies, capital investments and the desire for increased influence within global frames of action and contribute to the creation of, what we call, selective geographies.

Citation:

Toni Adscheid & Peter Schmitt (2021) Mobilising post-political environments: tracing the selective geographies of Swedish sustainable urban development. *Urban Research & Practice*, 14:2, 117-137. <https://doi.org/10.1080/17535069.2019.1589564>

Integrating the green economy, circular economy and bioeconomy in a strategic sustainability framework

Authors: Dalia D'Amato¹, Jaana E. Korhonen²

Affiliation: 1) University of Helsinki, 2) KTH Royal Institute of Technology

Type of publication: Article peer review



Abstract:

The green economy, circular economy and bioeconomy are popular narratives in macro-level sustainability discussions in policy, scientific research and business. These three narratives offer three different recipes to address economic, social and ecological goals, thus promoting different pathways for sustainability transformations. We employ the well-known Framework for Strategic Sustainable Development (The Natural Step Framework) to comparatively identify the relative and integrated contribution of the three narratives for global net sustainability. We conclude that none of the three narratives, individually, offer a comprehensive 'package' of solutions. However, when considered jointly as collaborative narratives, they point towards a society and economy based on renewable/reproductive and biodiversity-based/benign processes, delivering material and immaterial benefits that fulfil the economic and social requirements of all people now and in the future. While the complementary understanding of the circular economy, bioeconomy and green economy provides important guidelines for sustainability transformations post-Covid-19, there is a need for more holistic, systems-wide and integrative research work on potentially competing or supplementary sustainability narratives. This type of work of clarification and synthesis is relevant to a wide range of scholars and professionals, since the conceptual understanding of sustainability narratives informs practical implementation through strategies, actions and monitoring tools, in public and private decision-making.

Citation:

D. D'Amato, J. Korhonen, (2021). Integrating the green economy, circular economy and bioeconomy in a strategic sustainability framework. *Ecological Economics*, Volume 188, 2021, 107143, ISSN 0921-8009. <https://doi.org/10.1016/j.ecolecon.2021.107143>.

Smart Asset Management for District Heating Systems in the Baltic Sea Region

Authors: Anna Grzegórska¹, Piotr Rybarczyk¹, Valdas Lukoševičius², Joanna Sobczak³ & Andrzej Rogala¹

Affiliation: 1) Gdansk University of Technology, 2) Kaunas University of Technology, 3) Research and Development Joanna Sobczak

Type of publication: Article peer review



Abstract:

The purpose of this review is to provide insight and a comparison of the current status of district heating (DH) systems for selected Baltic Sea countries (Denmark, Germany, Finland, Latvia, Lithuania, Poland, and Sweden), especially from viewpoints of application and solutions of novel smart asset management (SAM) approaches. Furthermore, this paper considers European projects ongoing from 2016, involving participants from the Baltic Sea Region, concerning various aspects of DH systems. The review presents the energy sources with particular attention to renewable energy sources (RES), district heating generations, and the exploitation problems of DH systems. The essential point is a comparison of traditional maintenance systems versus SAM solutions for optimal design, operating conditions, and controlling of the DH networks. The main conclusions regarding DH systems in Baltic Sea countries are commitment towards a transition to 4th generation DH, raising the quality and efficiency of heat supply systems, and simultaneously minimizing the costs. The overall trends show that applied technologies aim to increase the share of renewable energy sources and reduce greenhouse gas emissions. Furthermore, examples presented in this review underline the importance of the implementation of a smart asset management concept to modern DH systems.

Citation:

Grzegórska, A.; Rybarczyk, P.; Lukoševičius, V.; Sobczak, J.; Rogala, A. (2021). Smart Asset Management for District Heating Systems in the Baltic Sea Region. *Energies* 2021, 14, 314. <https://doi.org/10.3390/en14020314>

Business sector involvement in maritime spatial planning – Experiences from the Baltic Sea region

Authors: Hanna Luhtala¹, Anne Erkkilä-Välimäki², Søren Qvist Eliassen³, Harri Tolvanen¹

Affiliation: 1) University of Turku, 2) Centre for Maritime Studies, Finland, 3) Nordregio, Sweden

Type of publication: Article peer review



Abstract:

In the European Union, Maritime Spatial Planning (MSP) has been regarded as a means of promoting the sustainable growth of the blue economy. Consequently, where the planning outcomes affect the business operations in marine areas, commercial and industry stakeholders should have an important role in the planning process. However, the business perspective in MSP has gained little attention in stakeholder involvement literature. The aim of this study is to elaborate on the business sector's interest and involvement in MSP in the Baltic Sea region. The findings are based on the first-hand experiences of MSP authorities and experts. Furthermore, perspectives from two sea-use sectors, maritime transport and marine tourism, have been investigated using online questionnaires to discover their views. The study focuses on the questions of who to involve and what are the driving forces promoting business sector involvement. Even though MSP is a form of broad-scale planning, the results indicate that all spatial and organisational scales from local to international and from small enterprises to umbrella organisations should be considered when designing approach to business stakeholder participation. The planning authorities need to consider what are the benefits and challenges of involving different types of business stakeholders. Planners often rely on organisations that represent business stakeholders and individual companies. It is resource effective to interact with representatives as they are considered to have a wide and general knowledge of the respective sector's interests. However, in some cases it is beneficial to also integrate individual companies, especially in local or regional contexts.

Citation:

Hanna Luhtala, Anne Erkkilä-Välimäki, Søren Qvist Eliassen, Harri Tolvanen, (2021). Business sector involvement in maritime spatial planning – Experiences from the Baltic Sea region. *Marine Policy*, Volume 123, 2021, 104301, ISSN 0308-597X, <https://doi.org/10.1016/j.marpol.2020.104301>.

Context and agency in urban community energy initiatives: An analysis of six case studies from the Baltic Sea Region

Authors: Henner Busch¹, Salvatore Ruggiero², Teis Hansen¹, Aljosa Isakovic³

Affiliation: 1) Lund University, 2) Aalto University, 3) Kiel University

Type of publication: Article peer review

Abstract:

In this paper, we analyse community energy (CE) projects in urban settings. Building on insights from the literature on the geography of sustainability transitions, we examine how contextual conditions promote or hinder the development of CE. Furthermore, reflecting on calls for greater attention to agency in transitions, we investigated how actors engaged in urban CE projects exploit beneficial conditions or overcome obstacles related to some of the contextual conditions. Empirically, we draw on six case studies of CE projects from the Baltic Sea Region. To develop a thorough understanding of our cases we conducted 24 semi-structured interviews and analysed numerous secondary sources. Our results show that institutions as well as visions, e.g. plans for future energy generation, are important contextual features for urban CE projects. Local actors seek to overcome unfavourable contextual conditions for CE initiatives by building trust, appealing to their community's sense of identity, networking, and promoting demonstration projects. Based on the results, we recommend that local and national governments address the following four issues to strengthen the role of CE in the transformation of urban energy systems: 1) harmonising policies; 2) creating a culture for transitions; 3) developing visions for CE; and 4) promoting policy learning from experiments.

Citation:

S. Ruggiero, H. Busch, T. Hansen, A. Isakovic, (2021). Context and agency in urban community energy initiatives: An analysis of six case studies from the Baltic Sea Region. *Energy Policy*, Volume 148, Part A, 2021, 111956, ISSN 0301-4215, <https://doi.org/10.1016/j.enpol.2020.111956>.

World Heritage Sites in developing countries: Assessing impacts and handling complexities toward sustainable tourism

Authors: Keyvan Hosseini¹, Agnieszka Stefaniec¹, Seyedeh Parisa Hosseini²

Affiliation: 1) Södertörn University, 2) University of Science and Technology of China

Type of publication: Article peer review

Abstract:

The current study addresses several concerns regarding World Heritage Sites (WHSs) in developing countries. Using a novel super-efficiency parallel framework, this research firstly elucidates how WHS designation impacts the tourism sector in the 21 developing nations with the greatest number of WHSs from 2000 through 2016. The proposed parallel model assesses the tourism industry at both the macro level in the context of resource-oriented efficiency and the micro level in facility-oriented efficiency. The results demonstrate that the WHS brand positively impacts the tourism demand in developing countries and can be used as a promotional tool. Secondly, this work draws attention to the socio-ecological concerns related to WHSs in developing countries. It sets out a critical and factual discussion based on the current designation and conservation status of WHSs. The analysis highlights an unfair distribution of WHSs between developing and advanced economies and reveals negligence in their preservation, since around 94% of sites labeled In Danger are located in developing nations. The study concludes that the conservation of WHSs is a complex societal problem and offers policy implications for handling heritage inscription and preservation issues in developing countries. Finally, it explores pathways toward sustainable conservation of WHSs, based on United Nations sustainable development goals (SDGs) for safeguarding heritage and sustainable communities (SDG 11), for more effective institutions (SDG 16), and for fair and nonhegemonic partnership between advanced economies and developing countries (SDG 17). The outcomes may be of practical value to policymakers aiming to improve tourism and heritage management.

Citation:

Keyvan Hosseini, Agnieszka Stefaniec, Seyedeh Parisa Hosseini, (2021). World Heritage Sites in developing countries: Assessing impacts and handling complexities toward sustainable tourism. *Journal of Destination Marketing & Management*, Volume 20, 2021, 100616, ISSN 2212-571X, <https://doi.org/10.1016/j.jdmm.2021.100616>.