



RESEARCH NOTES LETTER

The Baltic University Programme 2 – 2018



UPPSALA
UNIVERSITET



RESEARCH NOTES LETTER

The Baltic University Programme 2 – 2018

Welcome to the BUP Research Notes Letter ***Research and Innovation for a Sustainable Baltic Sea Region***

A lot of interesting research on sustainable development is going on in the Baltic Sea region. This is the second issue of The Baltic University Programme Research Notes Letter, an initiative to spread research findings. We welcome scientific publications from year 2015 and forward: peer review articles, book chapters, conference proceedings, and dissertations regarding the following Themes: Climate Change, Renewable Energy, Sustainable Food Production & Consumption, Sustainable Water Resources, Urban-Rural development, Sustainable Transport, Circular Economy and Education for Sustainable Development (ESD).

The aim with the Research Notes Letter is to spread research findings and to get the knowledge on researchers and research groups in the Baltic Sea region as a service to BUP Member universities, participating universities and different stakeholders in society. We want to encourage you to contribute with your research findings to the BUP Research Notes Letter. This is an opportunity to both contribute to the development of BUP research efforts and co-operations, as well as a way for You to spread your research findings and information on you as a researcher/your research group.

You are very welcome to submit your contribution using this form:
<http://www2.balticuniv.uu.se/bup-3/index.php/51-research-notes-form>

Contents

Good real world example of wood-based sustainable chemistry	5
Negative CO ₂ emissions with chemical-looping combustion of biomass	6
Securing a port's future through circular economy	7
Opportunities for bioenergy in the Baltic Sea region	8
Explaining choices in energy infrastructure development as a network of adjacent action situations	9
Tolerance and potential for adaptation of a Baltic Sea rockweed under predicted climate change conditions	10
Degrowth in business	11
Towards integrated sustainability in higher education	12
Economic and environmental costs of replacing nuclear fission with solar and wind energy in Sweden	13
Energy requirements and life cycle assessment of production and product integration of silver, copper and zinc nanoparticles	14
Barriers to innovation and sustainability at universities around the world	15
Ecological Life Cycle Assessment of modified Novolaks waste used in industrial wastewater treatment	16
Anthropogenic and climatic impacts on a coastal environment in the Baltic Sea over the last 1000 years	17
Challenges and realities of political participation and civic engagement in central and eastern Europe	18
Baltic Sea region	18
Future forest landscapes of the Carpathians	19
The "Carbon-neutral University"	20
Geothermal energy resources in Poland	21
Approaches to the definition of the Baltic Sea region	22

Good real world example of wood-based sustainable chemistry

Authors

D. Grinshpan, T. Savitskaya, N. Tsygankova, S. Makarevich, I. Kimlenka, O. Ivashkevich

Corresponding Author

D. Grinshpan. Belarusian State University, Leningradskaya str., 14, 220030 Minsk, Belarus

Abstract

One of the principles of Green chemistry is the usage of biomass instead of crude oil for the production of chemicals and chemical goods. Wood refers to the term biomass along with agricultural residues, energy crops, and the biogenic part of waste such as solid municipal waste, landfill, sewage gas and farming waste. Wood is mainly composed of cellulose, lignin and hemicelluloses. Cellulose is the main component of wood and lignin is the main by-product of cellulose extraction. Our green approach to both of these polymers resulted in creating a new process for hydrocellulose fiber production and a new sorbent for oil spills removal based on hydrolysis lignin. It is worth pointing out that our approach provides the use of two main wood components in the frame of “cradle to cradle” cycle (Fig. 1) that supports the circular economy concept for research and process development (Clark et al., 2016).

Reference

Sustainable Chemistry and Pharmacy. Volume 5, June 2017 , Pages 1-13
<https://doi.org/10.1016/j.scp.2016.11.001>

Link

<https://www.sciencedirect.com/science/article/pii/S2352554116300286>

OPEN ACCESS

Negative CO₂ emissions with chemical-looping combustion of biomass

a nordic energy research flagship project

Authors

Magnus Rydén, Anders Lyngfelt, Øyvind Langørgen, Yngve Larring, Anders Brink, Sebastian Teir, Hallstein-Havåg, Per Karmhagen

Corresponding Author

Magnus Rydén, magnus.ryden@chalmers.se. Chalmers University of Technology, Gothenburg, Sweden

Abstract

The Nordic countries constitute a natural location for the development and deployment of Bio-Energy with Carbon Capture and Storage (BECCS). Finland, Sweden and Denmark are world-leading with respect to heat and power generation from sustainable biomass. Norway is world-leading with respect to Carbon Capture and Storage (CCS). The Nordic countries also have ambitious targets for reductions of their CO₂ emissions, host leading technology providers, and have large biomass potential per capita. System studies suggest that bioenergy could be the single largest energy carrier in the Nordic countries by 2050. Negative CO₂ Emissions with Chemical Looping Combustion of Biomass is a multi-partner project with the goal to develop new technology that: i) enables CO₂ capture and negative CO₂ emissions at the lowest possible cost, ii) is able to produce power and steam for industrial and other applications, iii) utilizes Nordic expertise in fluidized bed technology and iv) has potential to achieve improved fuel utilization. The technology capable of achieving these goals is Chemical-Looping Combustion of biomass (Bio-CLC). The article presents the project and features some early results from its implementation.

Reference

Energy Procedia. Volume 114, July 2017 , Pages 6074-6082
<https://doi.org/10.1016/j.egypro.2017.03.1744>
open access

Link

<https://www.sciencedirect.com/science/article/pii/S187661021731946X>

Securing a port's future through circular economy

Experiences from the Port of Gävle in contributing to sustainability

Authors

Angela Carpenter, Rodrigo Lozano, Kaisu Sammalisto, Linda Astner

Corresponding Author

Angela Carpenter, angela.carpenter@hig.se. University of Gävle, Sweden

Abstract

Ports are an important player in the world, due to their role in global production and distributions systems. They are major intermodal transport hubs, linking the sea to the land. For all ports, a key requirement for commercial and economic viability is to retain ships using them and to remain accessible to those ships. Ports need to find approaches to help them remain open. They must ensure their continued economic viability. At the same time, they face increasing pressure to become more environmentally and socially conscious. This paper examines the approach taken by the Port of Gävle, Sweden, which used contaminated dredged materials to create new land using principles of Circular Economy. The paper demonstrates that using Circular Economy principles can be a viable way of securing a port's future and contributing to its sustainability, and that of the city/region where it operates.

Reference

Marine Pollution Bulletin. Volume 128, March 2018, Pages 539-547
<https://doi.org/10.1016/j.marpolbul.2018.01.065>

Link

<https://www.sciencedirect.com/science/article/pii/S0025326X18300766>

Opportunities for bioenergy in the Baltic Sea region

Authors

Semida Silveira, Dilip Khatiwada, Sylvain Leduc, Florian Kraxner, Bharadwaj K. Venkata, Vita Tilvikine, Vilma Gaubyte, Francesco Romagnoli, Egle Tauraitė, Semjon Kundas, Dagnija Blumberga, Kaja Peterson, Katrina Utsar, Edgars Vigants, Alexander Kalinichenko

Corresponding Author

Semida Silveria, KTH Royal Institute of Technology, Stockholm, Sweden

Abstract

Sustainable, safe, secure and efficient logistics is of great importance for chemical supply chains to operate successfully. However, as most logistics operations in this sector are outsourced to logistics service providers (LSPs), chemical companies have to rely on LSPs and collaborate with them when working on logistics eco-efficiency. This paper takes an LSP's perspective. It aims to investigate the vertical as well as horizontal collaboration needed in making chemical logistics greener and safer, by shifting chemical road freight to inter-modal transport, combining modes, better transport planning, and energy and emission management. The research problem is analysed on the basis of a literature review and structured, in-depth interviews conducted with nine LSPs and twelve chemical companies operating in Poland.

The research is part of the "Promotion of Multimodal Transport in Chemical Logistics" project within INTERREG Central Europe Programme. The main findings from the research show that environmental regulations and targets in the EU Transport Whitepapers have resulted in LSPs' interest to work towards establishing more ecological strategies and operations, as well as new, greener services in response to the needs of chemical companies. There are many examples of vertical cooperation, even with elements of collaboration, among LSPs and their suppliers, and chemical customers in green logistics. However, this is not the case for horizontal cooperation among LSPs operating in Poland. They consider it to be very challenging and risky, and are reluctant to share their data with other LSPs. Nevertheless, environmental regulations, technological development and efficiency goals will soon force LSPs to consider working together with other LSPs, even competitors.

The research reported in this paper is limited in its scope. Even so, it does provide a platform from which more detailed research may be conducted. The managerial implications arising from the research suggest current practices in green logistics in general and green logistics in chemical industry in particular.

Reference

Energy Procedia. Volume 128, September 2017, Pages 157-164
<https://doi.org/10.1016/j.egypro.2017.09.036>

Link

<https://www.sciencedirect.com/science/article/pii/S187661021733878X>

Explaining choices in energy infrastructure development as a network of adjacent action situations

The case of LNG in the Baltic Sea region

Author

Daria Gritsenko

Corresponding Author

Daria Gritsenko, daria.gritsenko@helsinki.fi. University of Helsinki, Finland

Abstract

This paper contributes to the development of a polycentric perspective on energy infrastructure governance by developing the concept of network of adjacent actions situations (NAAS). Examining the case of LNG infrastructure development in the Baltic Sea region, it clarifies how choices made in interlinked policy areas may affect infrastructural policy output in a regional context. It is argued that LNG is expanding as a new major energy technology around the Baltic due to its capacity to fulfill policy expectations in three issue-areas: enhancing energy security, providing low-sulphur bunker fuel, and balancing renewables in the power sector. The analysis of linkages between these actions situations emphasizes the spatial, temporal, and discursive aspects of energy infrastructure governance at the regional level. The application of NAAS as an analytical tool to map out the unintended consequences of infrastructural choices is relevant in policymaking.

Reference

Energy Policy Volume 112, January 2018, Pages 74-83
<https://doi.org/10.1016/j.enpol.2017.10.014>

Link

<https://www.sciencedirect.com/science/article/pii/S0301421517306353>

Tolerance and potential for adaptation of a Baltic Sea rockweed under predicted climate change conditions

Authors

Luca Rugiu, Iita Manninen, Eva Rothäusler, Veijo Jormalainen

Corresponding Author

Luca Rugiu, luca.rugiu@utu.fi. University of Turku, Finland

Abstract

Climate change is threatening species' persistence worldwide. To predict species responses to climate change we need information not just on their environmental tolerance but also on its adaptive potential. We tested how the foundation species of rocky littoral habitats, *Fucus vesiculosus*, responds to combined hyposalinity and warming projected to the Baltic Sea by 2070–2099. We quantified responses of replicated populations originating from the entrance, central, and marginal Baltic regions. Using replicated individuals, we tested for the presence of within-population tolerance variation. Future conditions hampered growth and survival of the central and marginal populations whereas the entrance populations fared well. Further, both the among- and within-population variation in responses to climate change indicated existence of genetic variation in tolerance. Such standing genetic variation provides the raw material necessary for adaptation to a changing environment, which may eventually ensure the persistence of the species in the inner Baltic Sea.

Reference

Marine Environmental Research. Volume 134, March 2018 , Pages 76-84
<https://doi.org/10.1016/j.marenvres.2017.12.016>

Link

<https://www.sciencedirect.com/science/article/pii/S0141113617306013>

Degrowth in business

An oxymoron or a viable business model for sustainability?

Authors

Yaryna Khmar, Jakub Kronenberg

Corresponding Author

Jakub Kronenberg, kronenbe@uni.lodz.pl. University of Lodz, Poland

Abstract

Based on a review of literature connecting degrowth and business, we attempt to operationalize degrowth in the context of business activity, and consider what degrowth can add to the business models for sustainability discussed so far. In most discussions on degrowth, economic activity has been reduced to relatively marginal activities. We see a need to connect degrowth to more typical business activities, because business is an essential part of the modern world. We put forward seven criteria which can be used to assess whether a company follows the degrowth paradigm: (1) Alternative understanding of business; (2) From business activity to activism and social movement; (3) Collaborative value creation; (4) Democratic governance; (5) Corporate leaders' commitment to company values in personal life; (6) Reduction of environmental impacts at all stages of product/service life-cycle; (7) Making products that last and are repairable. We use these criteria to assess the performance of a case study company, Patagonia, which is known for its environmental and social record. Our assessment is not meant to be comprehensive, but to illustrate the relevance of the seven criteria. Our criteria offer guidance for aligning business activity with the broader degrowth objectives, and our analysis complements the recommendations made so far for degrowth in national and local policies.

Reference

Journal of Cleaner Production. Volume 177, 10 March 2018, Pages 721-731
<https://doi.org/10.1016/j.jclepro.2017.12.182>

Link

<https://www.sciencedirect.com/science/article/pii/S0959652617331669#!>

Towards integrated sustainability in higher education

Mapping the use of the Accelerator toolset in all dimensions of university practice

Authors

Dana Kapitulčinová, Alan AtKisson, Joanne Perdue, Markus Will

Corresponding Author

Dana Kapitulčinová, Dana.Kapitulcinova@czp.cuni.cz. Charles University, Prague, Czech Republic

Abstract

The role of individual change agents and the human dimension in general are increasingly being acknowledged as critical elements in sustainability integration at higher education institutions. Yet few studies focus on the use of tools and methods employed by change agents to promote systematic and institution-wide integration of sustainability principles at universities. To advance current knowledge, this article presents an overview of terminology used for integrating sustainability principles in higher education, as well as the tools, methods, frameworks or models, and approaches (TMFAs) available to change agents. It follows by introducing an integrated change agency approach encompassing a change management process and a supporting toolset – called the “Accelerator” – that has been used in higher education for over a decade but has not been previously covered in academic writings. The article reports on the toolset’s use, drawing on survey data from users spanning 17 institutions in 13 countries across 4 continents. The findings indicate that the Accelerator is a versatile toolset suitable for promoting sustainability integration in all dimensions of higher education practice. Yet, very few of the institutions are currently using the toolset in an integrated way across all dimensions of institutional practice. The full potential of the Accelerator in supporting effective change towards holistic and integrated planning for sustainability integration in higher education therefore remains to be further explored as more universities and colleges embark on testing the toolset alongside other established approaches.

Reference

Journal of Cleaner Production. Volume 172, 20 January 2018, Pages 4367-4382
<https://doi.org/10.1016/j.jclepro.2017.05.050>

Link

<https://www.sciencedirect.com/science/article/pii/S0959652617309757>

Economic and environmental costs of replacing nuclear fission with solar and wind energy in Sweden

Authors

Sanghyun Hong, Staffan Qvist, Barry W. Brook

Corresponding Author

Sanghyun Hong, Sanghyun.hong@utas.edu.au. University of Tasmania, Hobart, Australia

Abstract

Nuclear power is facing an uncertain future in Sweden due to political directives that are seeking to phase out this energy source over coming decades. Here we examine the environmental and economic costs of hypothetical future renewable-energy-focused cases compared with the current nuclear and hydroelectricity-centred mix in Sweden. We show that if wind and photovoltaics replace entire nuclear power while maintaining the current level of dispatchable backup capacity including hydroelectric power and peak gas power, 154 GW of wind power will be required and will generate 427.1 TWh (compared with the actual demand of 143.7 TWh) to reliably meet demand each hour of the year. As a consequence, the annual spending on electricity systems will be five times higher than the status quo. Increasing dispatchable power, increasing transmission capacities to other countries, and generating electricity from combined heat and power plants even when there is no heat demand, will together reduce the required capacities of wind and solar photovoltaic by half, but it will double the greenhouse-gas emissions during the combustion process. In conclusion, our economic and greenhouse-gas emissions analyses demonstrate that replacing nuclear power with renewables will be neither economic nor environmentally-friendly with regards to the climate.

Reference

Energy Policy. Volume 112, January 2018, Pages 56-66
<https://doi.org/10.1016/j.enpol.2017.10.013>

Link

<https://www.sciencedirect.com/science/article/pii/S0301421517306377>

Energy requirements and life cycle assessment of production and product integration of silver, copper and zinc nanoparticles

Authors

Martin Slotte, Ron Zevenhoven

Corresponding Author

Martin Slotte, martin.slotte@abo.fi. Åbo Akademi University, Åbo/Turkku, Finland

Abstract

The increased knowledge of metallic nanoparticle properties and production routes has raised the interest in large-scale nanoparticle production and integration into products. The goal of this paper is to evaluate the environmental impact of nanoparticle production using the arc/spark method compared to production of the metal itself and to evaluate the life cycle impact breakdown of the production of nanoparticle containing products. Nanometal-containing products with market potential were identified and three were chosen for assessment of their environmental impact using life cycle analysis. The three products were: nanoparticle zinc in polypropylene composite, copper nanoparticles in cooling water, and silver nanoparticles in textiles, respectively. The product case studies were based on previously made life cycle models for the production of the chosen metallic nanoparticles and then expanded to include the nanoparticle integration. Commercial SimaPro 7.3 software was applied using the Ecoinvent v2.2 database, besides supporting information from open literature. Energy input requirements as determined by the EU FP7 BUONAPART-E project partners are also reported and compared in this study. The specific electricity consumption for the nanoparticle production was: 0.63–0.99 kWh/g nanoparticle for silver, 0.13–0.28 kWh/g nanoparticle for copper and 0.016–0.029 kWh/g nanoparticle zinc with arc processes. For zinc nanoparticle in polypropylene the life cycle indicator contribution of zinc nanoparticle became significant at mass fractions >1 %-wt, for copper nanoparticle in cooling water the use of electricity for nanoparticle production gave the main impact, while for silver nanoparticle used in textiles the concentration of silver was so low that its life cycle indicator contribution was limited to a few percentage points compared to that for the textile. Analysis of the life cycle indicator results for the three nanoparticle metals used in product applications showed that the weight fraction of nanoparticle used in the products largely determined the energy input needed and environmental footprint. In the future, when sufficient input data becomes available the life cycle indicator study boundaries should be extended to include both the use and end of life phases for the products studied in this paper.

Reference

Journal of Cleaner Production. Volume 148, 1 April 2017 , Pages 948-957
<https://doi.org/10.1016/j.jclepro.2017.01.083>

Link

<https://www.sciencedirect.com/science/article/pii/S0959652617300975>

Barriers to innovation and sustainability at universities around the world

Authors

Lucas Veiga Ávila, Walter Leal Filho, Luciana Brandli, Colin J. Macgregor, Petra Molthan-Hill, Pinar Gökçin Özuyar, Rodrigo Martins Moreira

Corresponding Author

Walter Leal Filho, walter.leal@haw-hamburg.de, Hamburg University of Applied Sciences, Hamburg, Germany.

Abstract

This paper explores the link between innovation and sustainability in the context of higher education, with the purpose of investigating the fundamental barriers for innovation and sustainable development in universities around the world. The method used involves both a quantitative and a qualitative approach, gathering the views of 301 experts from 172 universities across all continents. The results show that there are similar barriers across different geographical regions that require greater support from university administrations and management. In particular, the willingness of leaders, policy makers and decision-makers to envisage a sustainable future inside universities is often missing. Yet, without the support of senior management within a university, bottom-up sustainable initiatives seem destined to fail in the longer term due to a lack of investment and administrative support. This study also identifies that in order to yield the anticipated benefits, the challenges listed should be taken seriously.

Reference

Journal of Cleaner Production. Volume 164, 15 October 2017 , Pages 1268-1278
<https://doi.org/10.1016/j.jclepro.2017.07.025>

Link

<https://www.sciencedirect.com/science/article/pii/S0959652617314531>

OPEN ACCESS

Ecological Life Cycle Assessment of modified Novolaks waste used in industrial wastewater treatment

Authors

Wioletta M. Bajdur, Anna Henclik, Radomir Ščurek, Kateřina Sikorová

Corresponding Author

Wioletta M. Bajdur, wiolawb@poczta.onet.pl, VŠB - Technical University of Ostrava, Czech Republic

Abstract

Ecological Life Cycle Assessment (LCA) applied in the assessment of the impact of products on the environment is a technique that allows for the evaluation of the environmental impact of polymeric flocculants used in industrial wastewater treatment. The possibility of conducting a full life cycle and thus manufacturing process analysis allows for reliable and accurate identification of the sources of environmental hazards and the impact of new products on the environment. Newly synthesized waste-based polymers are water soluble and possess the properties of flocculants, while reducing the parameters in industrial wastewater. In the paper, there are presented the results of the analysis conducted using LCA technique for the assessment of the impact of modified waste phenol formaldehyde resin (Novolak) on the environment. LCA technique was used to assess the impact of the new flocculant applied in the process of metallurgical wastewater treatment taking into account the environmental impact of the flocculant manufacturing process.

Reference

TRANSACTIONS of the VŠB – Technical University of Ostrava, Safety Engineering Series. Issue 1 (Mar 2017) , pp. 1-67
<https://doi.org/10.1515/tvsbses-2017-0006>

Link

<https://www.degruyter.com/view/j/tvsbses.2017.12.issue-1/tvsbses-2017-0006/tvsbses-2017-0006.xml>

Anthropogenic and climatic impacts on a coastal environment in the Baltic Sea over the last 1000 years

Authors

W. Ning, A. B. Nielsen, L. Norbäck Ivarsson, T. Jilbert, C. M. Åkesson, C. P. Slomp, E. Andrén, A. Broström, H. L. Filipsson

Corresponding Author

H.L. Filipsson, helena.filipsson@geol.lu.se, Lund University, Sweden

Abstract

Coastal environments have experienced large ecological changes as a result of human activities over the last 100–200 years. To understand the severity and potential consequences of such changes, paleoenvironmental records provide important contextual information. The Baltic Sea coastal zone is naturally a vulnerable system and subject to significant human-induced impacts. To put the recent environmental degradation in the Baltic coastal zone into a long-term perspective, and to assess the natural and anthropogenic drivers of environmental change, we present sedimentary records covering the last 1000 years obtained from a coastal inlet (Gåsfjärden) and a nearby lake (Lake Storsjön) in Sweden. We investigate the links between a pollen-based land cover reconstruction from Lake Storsjön and paleoenvironmental variables from Gåsfjärden itself, including diatom assemblages, organic carbon (C) and nitrogen (N) contents, stable C and N isotopic ratios, and biogenic silica contents. The Lake Storsjön record shows that regional land use was characterized by small-scale agricultural activity between 900 and 1400 CE, which slightly intensified between 1400 and 1800 CE. Substantial expansion of cropland was observed between 1800 and 1950 CE, before afforestation between 1950 and 2010 CE. From the Gåsfjärden record, prior to 1800 CE, relatively minor changes in the diatom and geochemical proxies were found. The onset of cultural eutrophication in Gåsfjärden can be traced to the 1800s and intensified land use is identified as the main driver. Anthropogenic activities in the 20th century have caused unprecedented ecosystem changes in the coastal inlet, as reflected in the diatom composition and geochemical proxies.

Reference

Anthropocene. Volume 21, March 2018, Pages 66-79
<https://doi.org/10.1016/j.ancene.2018.02.003>

Link

<https://www.sciencedirect.com/science/article/pii/S2213305416301291>

Challenges and realities of political participation and civic engagement in central and eastern Europe

Baltic Sea region

Authors

Joakim Ekman, Sergiu Gherghina, Olena Podolian.

Corresponding Author

Sergiu Gherghina, sergiulor@yahoo.com. Goethe University Frankfurt, Frankfurt, Germany

Abstract

The way in which citizens get involved in politics, as voters, activists or protesters, remains one of the most studied phenomena in social sciences. The actions and orientations of ordinary citizens generally define the acceptable boundaries of politics and demarcate the space within which political elites can resolve controversies. Research on the various forms of political involvement – political participation, civic engagement, protest behaviour, engagement in social movements and other forms of collective action – has for a long time focused mainly on Western democracies. The conventional wisdom has been that political participation and collective action, in comparison to the situation in western Europe, is a low-frequency phenomenon in central and eastern Europe (Bernhagen and Marsh 2007; Hooghe and Quintelier 2013; Kostelka 2014).

Yet, in recent decades we have witnessed a number of interesting developments throughout central and eastern Europe, where the actions of ordinary citizens have challenged the political order and where grassroots movements and diverse forms of mobilisation have challenged the notion of weak civil societies in central and eastern Europe, compared to civil societies in western Europe. More recently, scholars have thus argued that contemporary instances of political participation in such countries as Lithuania, Poland, Ukraine, Slovakia, Croatia and Russia represent a new phase in the development of the post-socialist civil societies (Jacobsson 2015).

In line with this, there have been a few attempts to expand the research agenda. In one of the previous special issues of East European Politics, the focus was on the development and applicability of “contentious politics” in studies of social movements and political participation in the post-communist region (Cheskin and March, 2015). The contributors basically argued for conceptual clarity by broadening the notion of contentious politics to include “consentful contention”, “dissentful contention”, “dissentful compliance” and “consentful compliance”. This special issue draws from a similar ambition to broaden the scope of research on political participation and collective action in central and eastern Europe, in two ways. First is to promote a wider understanding of what citizen involvement in politics and societal affairs entails, by analysing the relationship between civil society and the state including everything from consentful contention (e.g. pro-regime movements) to dissentful contention (e.g. anti-government demonstrations). Second is to contribute to the literature on political participation by presenting a number of studies based on empirical data from the post-communist region.

Reference

East European Politics 2016. Volume 32, - Issue 1: Political participation and civic engagement in Central and Eastern Europe
<https://doi.org/10.1080/21599165.2016.1141091>

Link

<https://www.tandfonline.com/doi/full/10.1080/21599165.2016.1141091>

Future forest landscapes of the Carpathians *vegetation and carbon dynamics under climate change*

Authors

Ivan Krühlov, Dominik Thom, Oleh Chaskovskyy, William S. Keeton, Robert M. Scheller

Corresponding Author

Abstract

Climate change will alter forest ecosystems and their provisioning of services. Forests in the Carpathian Mountains store high amounts of carbon and provide livelihoods to local people; however, no study has yet assessed their future long-term dynamics under climate change. Therefore, we selected a representative area of 1340 km² to investigate the effects of changing climate and disturbance regimes on (i) the spatial dynamics of the dominant tree species and forest types and (ii) the trajectories of the associated aboveground live carbon (ALC). We simulated 500 years of change under four Representative Concentration Pathway (RCP) scenarios, incorporating wind and bark beetle disturbances using the LANDIS-II forest change model. Our simulations revealed a lagged adaptation of the forest landscape to climate change. While *Picea abies* dominance declined in all scenarios, *Carpinus betulus* expanded at low elevations and *Acer pseudoplatanus* at mid-elevations. We also found a slow but continuous expansion of *Quercus petraea* and *Q. robur* at low elevations and of *Fagus sylvatica* at mid and high elevations. This change in species composition was accompanied by a significant reduction of ALC: on average over the simulation period, unmitigated climate change reduced ALC between -2.1% (RCP2.6) and -14.0% (RCP8.5), while disturbances caused an additional reduction of ALC between -4.5% (RCP2.6) and -6.6% (RCP8.5). Therefore, foresighted management strategies are needed to facilitate vegetation adaptation to climate change, with the goal of stabilizing carbon storage and maintaining economic value of future Carpathian forests.

Reference

Regional Environmental Change 2018
DOI10.1007/s10113-018-1296-8

Link

https://www.researchgate.net/publication/323120705_Future_forest_landscapes_of_the_Carpathians_vegetation_and_carbon_dynamics_under_climate_change

The “Carbon-neutral University”

A study from Germany

Authors

Erica Udas, Monique Wölk, Martin Wilmking

Corresponding Author

Abstract

Purpose: Nowadays, several higher education institutions around the world are integrating sustainability topics into their daily operations, functionality and education systems. This paper presents a case study from a pilot project implemented by the Ernst-Moritz-Arndt-Universität Greifswald (hereafter, Greifswald University), Germany on its way towards a “carbon-neutral university”. The purpose of this paper is to share an institutional process targeting a gradual transformation towards achieving carbon neutrality. This might be relevant to other higher education institutions striving for a systematic and progressive change from a traditional system to a low emission or carbon-neutral pathway. **Design/methodology/approach:** To achieve carbon neutrality, three major transformative strategies were adopted: carbon reduction, carbon offsetting and mainstreaming sustainable actions via teaching and research. **Findings:** A locally adaptable institutional framework on sustainability was successfully developed to: promote changes in daily operations, implement interdisciplinary research, incorporate sustainability into teaching and education and enhance outreach programs. Strong commitment from all stakeholders resulted in reduction of the university’s carbon footprint from 8,985 to 4,167 tCO₂e year⁻¹. Further, the unavoidable emissions could be locally offset through enhanced carbon sequestration on the university-owned forests. **Originality/value:** Based on the experiences of Greifswald University, this paper presents major challenges and success lessons learned during the process of gradual institutional transformation to achieve the target of carbon neutrality.

Reference

International Journal of Sustainability in Higher Education, October 2017. 19(2):00-00

Link

https://www.researchgate.net/publication/320643129_The_Carbon-neutral_University_-_A_study_from_Germany

Geothermal energy resources in Poland

Overview of the current state of knowledge

Author

Anna Sowizdzal

Corresponding Author

Abstract

Geothermal energy, which is one of renewable energy sources, is the internal heat of the Earth. Currently in Poland hydrogeothermal resources are utilized, for which the energy carrier is hot groundwater produced with the wells. Petrogeothermal energy resources, i.e. resources of heat accumulated in rocks for which the energy carriers are media injected through wells into the hot rock formations has not yet been utilized in Poland. However the research work tending to assess the possibility of utilization of this type of energy was carried out. The results are particularly important in the context of forecasts of geothermal energy sector development. Although technology of petrogeothermal resources utilization is in the experimental stage, is considered to be the technology of future. In Poland, low-temperature geothermal resources occurs, related mainly to sedimentary rocks – sandstones, limestones, dolomites, rarely with igneous rocks (crystalline, volcanic). Depending on the hydrogeothermal parameters these resources may be used for different purposes: first of all for heating, but also for therapeutic and recreational purposes. Research of the possibilities of using geothermal resources (both petro and hydrogeothermal) for electricity production are carried out. The article presents the actual state of knowledge about geothermal resources in Poland as well as possibility of them utilization for different purposes. In many parts of the Poland significant unused potential of geothermal waters and energy exist.

Reference

Renewable and Sustainable Energy Reviews. Volume 82, Part 3, February 2018, Pages 4020-4027
<https://doi.org/10.1016/j.rser.2017.10.070>

Link

<https://www.sciencedirect.com/science/article/pii/S1364032117314545>

Approaches to the definition of the Baltic Sea region

Authors

Klemeshev A. P., Valentin Korneevets, Palmowski T, Fedorov G. M., Fedorov G. M.

Corresponding Author

Abstract

The Baltic Sea region is one of the most developed and well-formed regions of international cooperation. It is a place for promoting collaboration between businesses, non-profits, public authorities, and municipalities of the countries located on the Baltic Sea coast and its adjacent territories. The Baltic Sea region has both unresolved problems and potential for development. This necessitates the identification of the Baltic Sea region territory having a capacity for the efficient development of mutually beneficial intergovernmental and international ties. A thorough overview of research literature, the implementation of international programmes and initiatives of international and intergovernmental organisations, and the application of the method of cartographic analysis have contributed to defining the territory of the Baltic region. The analysis shows three spaces that differ in the effect of the Baltic Sea on their territorial development. This approach proposes three definitions of the Baltic Sea region – a narrow, an extended, and a broad one, each serving a different purpose and being characterised by a different density of internal connections. According to the narrow definition, the region comprises the whole territories of Sweden, Denmark, Finland, Lithuania, Latvia, and Estonia and the coastal parts of Russia, Germany, and Poland. The extended definition adds the remaining part of Poland, most Russian and German regions, and Belarus and Norway. The broad definition of the Baltic region incorporates Iceland, some territories of Russia, Germany, the Czech Republic, Slovakia, and Ukraine

Reference

Baltic Region., Vol. 9, no. 4, p. 4—20. doi: 10.5922/2079-8555-2017-4-1.

Link

https://www.researchgate.net/publication/322128954_Approaches_to_the_Definition_of_the_Baltic_Sea_Region