

Online Symposium on Circular Economy and Sustainability

Alexandroupolis, Greece

1-3 July, 2020

Organized by

***INFER – International Network for Economic Research
Department of Environmental Engineering, Democritus
University, Thrace***

CONFERENCE PROGRAM



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Time refers to: **Central European Time**

Preparation time refers to: **A final check to Presenters' microphones and cameras.**

Wednesday, July 01, 2020

08:00 to 09:35 Session 1

Chair: Eleni Sardianou

08:00 to 08:10 Preparation time

08:10 to 08:30 Welcome, Ioannis Kostakis, Konstantinos P. Tsagarakis (Symposium Chairs)
 Maria Michalopoulou (Vice Rector of Democritus University of Thrace)

08:30 to 08:45 Nikou, V., Sardianou, E., Evangelinos, K., Nikolaou, I. ["Circular economy: An analysis of 139 definitions"](#)

08:45 to 09:00 Tanchovski, B., Tsagarakis, K.P., Kostakis, I., Trajanov, D. ["Identifying Indicators Relating to the Circular Economy Using Semantic Textual Similarity"](#)

09:00 to 09:15 Miniaoui, H. ["Circular Economy for Sustainable Development: An Appraisal of the Arab Gulf Region"](#)

09:15 to 09:35 Discussion

09:35 to 11:45 Session 2

Chair: Christian Oberst

09:35 to 09:50 Preparation time

09:50 to 10:05 Kuok, F., Promentilla, M.A.B., ["Public-Private Partnership for SMEs: Challenges and opportunities in Circular Economy"](#)

10:05 to 10:20 Sardianou, E., Paparas, D., Provataris, S., Kostakis, I., Saiti, A. ["Green Bonds -A change in investors preferences toward renewable energy, energy efficiency, sustainable agriculture? Empirical Evidence from the U.K."](#)

10:20 to 10:35 Ioannidis, F., Kosmidou, K., Kalaitzoglou, I., Papaefthymiou, S. ["Investing in bridging fuels: The unit commitment problem of public VS private ventures"](#)

10:35 to 10:50 Smol, M. ["Implementation of the Circular Economy \(CE\) model and the European Green Deal strategy - perspective of mineral resources management"](#)

10:50 to 11:05 Kalogiannis, A., Spyridonidis, A., Vasiliadou, I.A., Stamatelatou, K. ["Biogas production from chicken manure wastes using a two-stage LBR-CSTR system: The effect of zeolite as bulking and adsorbing agent"](#)

11:05 to 11:20 Oberst, C., Harmsen-van Hout, M.J.W. ["Adoption and Cooperation Decisions in Sustainable Energy Infrastructure: Evidence from a Sequential Choice Experiment in Germany"](#)

11:20 to 11:50 Discussion

11:50 to 13:00 **Session 3 (Keynote Presentations)**
Chair: Christian Oberst

11:50 to 12:00 Preparation time

12:00 to 12:30 **George Kremlis**, European Commission, President of the Circle the Med Forum and Honorary president of the International “Circular Clima Institute” of the European Public Law Organization (EPL0)
“Circular Economy Policies in Europe”

12:30 to 13:00 **Prof. Adisa Azapagic**, University of Manchester, Professor of Sustainable Chemical Engineering, Head of Sustainable Industrial Systems, Founding Editor-in-Chief of Sustainable Production and Consumption, Editor-in-Chief of Process Safety and Environmental Protection
“Understanding the life cycle implications of the circular economy”

13:00 to 15:15 **Session 4A - parallel session**
Chair: Elias Soukiazis

13:00 to 13:15 Preparation time

13:15 to 13:30 **Nguyen, H.Q., Chan, L., Rijke, J., Geerling, L., Koeblinger, W.**, [*“Demonstrating the Viability and Practicality of Integrating Plastic Wastes in Circular Economies in Vietnam”*](#)

13:30 to 13:45 **Soukiazis, E., Proença, S.** [*“Exploring the driving forces of waste generation in the Portuguese municipalities”*](#)

13:45 to 14:00 **Orfanidou, V.S., Rachaniotis, N., Tsoulfas, G.T.** [*“Green Public Procurement: Evidence from Greece”*](#)

14:00 to 14:15 **Di Foggia, G., Beccarello, M.** [*“Solid waste treatment industrialization and circular: economy goals: the Italian case”*](#)

14:15 to 14:30 **Bezirgiannidis, A., Chatzopoulos, P., Tsakali, A., Ntougias, S., Melidis, P.** [*“Anareobic digestion of sewage sludge derived from chemically enhanced primary treatment \(CEPT\)”*](#)

14:30 to 14:45 **Melgarejo, P.L., Molinos-Senante, M.** [*“Assessing the eco-efficiency of municipalities in the provision of solid waste services: An empirical application for Chile”*](#)

14:45 to 15:15 Discussion

13:00 to 15:15 **Session 4B - parallel session**
Chair: Joost Burman

13:00 to 13:15 Preparation time

13:15 to 13:30 **Karytsas, S., Theodoropoulou, E.** [*“A research on Greek energy communities: public awareness, intention to participate and invest”*](#)

13:30 to 13:45 **Kruse, H.W., Rocha, T.N., Turcu, C.** *“Infrastructure aid for resource trade? The crossroads of strategy and sustainable development”*

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- 13:45 to 14:00 Reganon, M.L., Ragu, V., Goette, L., Buurman, J., Leong, C., "[Singapore's Smart Shower Program: Real-Time Feedback and Water Conservation](#)"
- 14:00 to 14:15 Fragkos, S. "[Circular Economy and Sustainable Development - the case of viticulture and winemaking in Thessaly Region of Greece](#)"
- 14:15 to 14:30 Stathakis, E.D., Stambologlou E., Manoliadis, O., "[Ex post evaluation of developmental interventions in large scale infrastructure projects: The case of Vistonida rural area](#)"
- 14:30 to 14:45 Saidani, M., Yannou, B., Leroy, Y., Cluzel, F., Kim, H. "[How circular economy and industrial ecology concepts are intertwined? A bibliometric and text mining analysis](#)"
- 14:45 to 15:15 Discussion

15:15 to 18:00 **Session 5**
 Chair: Camelia Turcu

- 15:15 to 15:30 Preparation time
- 15:30 to 15:45 Turcu, C., University of Orleans, France,
 Head of INFER Organization, "[Welcome address from INFER](#)"
- 15:45 to 16:00 Chiaroni, D., Franzò, S., Urbinati, A. "[Enablers and Barriers for Circular Business Models: An empirical analysis in the Italian electric mobility industry](#)"
- 16:00 to 16:15 Silva, V., Mucha, A., Arenas, F., Calheiros, C. "[Green Roofs in coastal areas](#)"
- 16:15 to 16:30 Lemonakis, C., Alexopoulos, G., Garefalakis, A., Garefalakis, S. "[The Greek urban growth model: The effects of the convergence and the concentration](#)"
- 16:30 to 16:45 Ferreira, C.S., Gomes, G.M., Natalense, J.C., Roiz, G.A., Ometto, A.R., Gerolamo, M.C. "[Mapping organizational culture in the context of the circular economy: a case study of a Brazilian company](#)"
- 16:45 to 17:00 Tams, L., Calheiros, C., Nehls, T. "[Rethinking Green Roofs - Potential of Natural and Recycled Green Roof Materials to Improve their Ecological Footprint](#)"
- 17:00 to 17:15 Kedjar, M., Coll-Martinez, E. "[Assessing the intensity and spatial extent of knowledge spillovers for green technologies](#)"
- 17:15 to 17:30 Mutascu, M., Turcu, C., Zhang, Y. "[A Time-Frequency Study of Oil Price, Exchange Rate and Trade in China](#)"
- 17:30 to 18:00 Discussion

18:00 to 20:15 **Session 6A - parallel session**
 Chair: Andreea Stoian

- 18:00 to 18:15 Preparation time
- 18:15 to 18:30 Lanaras G., Tsalis T., Nikolaou E.I. "[A Framework to Evaluate Circular Economy Profile of Firms: An Evidence from Chemical Industry](#)"
- 18:30 to 18:45 Stoian, A., Iorgulescu, F. "[From sustainable development to sustainable finance](#)"
- 18:45 to 19:00 Siedschlag, I., Yan, W. "[Green Investments and Firm Performance](#)"

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- 19:00 to 19:15 Molinos-Senante, M. [“Urban sustainability in Chile: A composite indicator approach”](#)
- 19:15 to 19:30 Stauropoulou, A., Sardianou, E., Evangelinos, K., Nikolaou, I. [“SDGs and materiality assessment: Evidence from the European banking sector”](#)
- 19:30 to 19:45 Vargas-Hernández, J.G., [“Circular-green economy: Analysis based on the theory of resources and capabilities”](#)
- 19:45 to 20:15 Discussion
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- 18:00 to 20:15 **Session 6B - parallel session**
 Chair: Eleni Theodoropoulou
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- 18:00 to 18:15 Preparation time
- 18:15 to 18:30 Walker, A.M., Opferkuch, K., Lindgreen, E.R., Simboli, A., Vermeulen, W.J.V., Raggi, A. [“The relevance of social sustainability when assessing circular economy practices: answers from academia and industry practitioners”](#)
- 18:30 to 18:45 Bogush, A., Maadawi, Z.E., Uğural, B.K., Nudi, L.B., Hassan, J.M., Erden, S., Jones, A., Greenfield, D. [“Inspiring the Young Generation with Circular Economy: EduKid-CE transnational project as a case study”](#)
- 18:45 to 19:00 Gerasimenko, D., Mazerolle-Castillo, E. [“Awareness-led Social lab on Circular Economy in Switzerland: Exploring Serendipity”](#)
- 19:00 to 19:15 Oberst, C., Henger, R., Voigtländer, M. [“Mobility and Housing - New perspectives for urban development”](#)
- 19:15 to 19:30 Turrado Domínguez, E., Hernández López, R., Fernández López, M.A. [“The management of cities: Circular Economy and Sustainability”](#)
- 19:30 to 19:45 Razza, F., Ladu, L., Morone, P. [“An Integrated Assessment Tool for assessing the sustainability of bio-based products”](#)
- 19:45 to 20:15 Discussion

Thursday, July 02, 2020

10:00 to 12:15	Session 7 Chair: Spyros Papaefthimiou
10:00 to 10:15	Preparation time
10:15 to 10:30	Sotiropoulou, K.F., Vavatsikos, A.P. " <u>Wind Farms Suitability Analysis Using PROMETHEE II</u> "
10:30 to 10:45	Sakellariou, K.G., Konstandopoulos, A.G. " <u>Energy Storage in Circular Economy: Materials and reactor concepts for Thermochemical Energy Storage</u> "
10:45 to 11:00	Iordanidis, A., Asvesta A., Kapageridis, I., Vasileiadou, A., Koios, K. " <u>Reburning the coarse fraction of lignite bottom ash: Energy Source from Energy Waste</u> "
11:00 to 11:15	Vasileiadou, A., Zoras, S., Iordanidis, A. " <u>On the prediction of Gross Calorific Values of Municipal Solid Waste for Waste to-Energy applications</u> "
11:15 to 11:30	Kosmadakis, I., Elmasides, K., Koulinas, G., Tsagarakis, K.P. " <u>Cost and Energy Evaluation of PV-Battery Technologies in Greece</u> "
11:30 to 11:45	Ozturk, C., Yildisbazi, A., Arioz, Y. " <u>Blockchain and Sustainability</u> "
11:45 to 12:15	Discussion
12:15 to 13:30	Session 8 (Keynote Presentations) Chair: Spyros Papaefthimiou
12:15 to 12:30	Preparation time
12:30 to 13:00	Prof. Soteris Kalogirou, Cyprus University of Technology, Editor in Chief Renewable Energy " <u>Renewable Energy Systems: Current Status and Prospects?</u> "
13:00 to 13:30	Prof. Evangelos Voudrias, Democritus University of Thrace " <u>Management of healthcare waste from the Circular Economy point of view</u> "
13:30 to 15:45	Session 9A - parallel session Chair: Michael Saidani
13:30 to 13:45	Preparation time
13:45 to 14:00	Santos, B., A., De Jesus Oliveira, A.S., Rodrigues, L.B. " <u>Valorization of residues from the cassava starch industry: a review from the perspective of the Life Cycle Assessment and Circular Economy</u> "
14:00 to 14:15	Pearlmutter, D., Florentin, Y., Oannou, S., Ugolini, F., Gal, E. " <u>Development of sustainable biocomposite building materials for promoting the transition to a circular economy</u> "
14:15 to 14:30	De Jesus Oliveira, A.C., Rodrigues, L.B. " <u>Challenges and opportunities of Life Cycle Assessment in fruit processing</u> "

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- 14:30 to 14:45 Milousi, M., Souliotis, M., Papaefthimiou, S. “Approaching Circular Economy in solar thermal technologies via the [application](#) of Life Cycle Assessment and Eco-design principles”
- 14:45 to 15:00 Papadaki, D., Nikolaou, D.A., Tisov, A., Ritzen, M., Op’t Veld, P., Assimakopoulos, M.N. “[Circularity in the built environment: a case study in an apartment in Athens](#)”
- 15:00 to 15:15 Saidani, M., Yannou, B., Leroy, Y., Cluzel, F., Kim, H. “[Multi-tool methodology to evaluate action levers to close-the-loop on critical materials - Application to precious metals used in catalytic converters](#)”
- 15:15 to 15:45 Discussion

13:30 to 15:45 Session 9B - parallel session
 Chair: Josep-Maria Arauzo-Carod

- 13:30 to 13:45 Preparation time
- 13:45 to 14:00 Arauzo-Carod, J.M. “[Location determinants and sustainability: an exploratory approach](#)”
- 14:00 to 14:15 Maraveas, C. “[Environmental Sustainability of Plastic in Agriculture](#)”
- 14:15 to 14:30 Karytsas, S., Vardopoulos, I., Theodoropoulou, E. “[Adoption of microgeneration technologies in the residential sector: a comparison between two time periods](#)”
- 14:30 to 14:45 Chaves, R., Raufflet, E. “[Circular business model: understanding the concept and its applications](#)”
- 14:45 to 15:00 Ghosal, B.B. “[The Art of Selling the Circle - Popularizing Circularity with New-Age: Communication and Outreach](#)”
- 15:00 to 15:15 Argyrou, M.D., Tsipouri, L.J. “[Using Public Procurement of Innovation as an appropriate tool for the effective implementation of SSS for enhancing the CE: the case of Greece](#)”
- 15:15 to 15:45 Discussion

15:45 to 18:15 Session 10A - parallel session
 Chair: Ioanna Vasiliadou

- 15:45 to 16:00 Preparation time
- 16:00 to 16:15 Diamantis, V. “[Anaerobic co-digestion of sewage sludge and lipids enables energy neutral municipal wastewater treatment facilities](#)”
- 16:15 to 16:30 Campos, G.H., Mucha, A.P., Almeida, C.M.R., Calheiros, C.S.C. “[Floating Wetland Islands as engineered green systems](#)”
- 16:30 to 16:45 Vasiliadou, I., Tsagarakis, K.P. “[Carbon footprint analysis of wastewater treatment plants](#)”
- 16:45 to 17:00 Antão-Geraldes, A.M., Silva, F., Morais, T., Vale, P., Zavattieri, C., Albuquerque, A. “[From the reservoir to the city: A contribution to promote the sustainable use of water](#)”

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- 17:00 to 17:15 Palacios Miranda, H.D., Jaca C., [“Circular economy and industrial symbiosis development in Spain”](#)
- 17:15 to 17:30 Antão-Geraldes, A.M., Nogueira, B., Calheiros, C.S.C. [“Floating islands, a nature-based solution for the ecological integrity promotion in rivers? - The case of Fervença river \(NE Portugal\)”](#)
- 17:30 to 17:45 Preisner, M., Smol, M., Szoldrowska, D. [“Baltic Sea eutrophication in the Polish coastal zone: Analysis of wastewater and agricultural nutrient inputs”](#)
- 17:45 to 18:15 Discussion
- 15:45 to 18:15 Session 10B - parallel session
Chair: Iulia Siedschlag
- 15:45 to 16:00 Preparation time
- 16:00 to 16:15 Siedschlag, I., Yan, W. [“What Drives Firms’ Decisions to Spend on Environmental Protection?”](#)
- 16:15 to 16:30 Lemonakis, C., Petrakis, N. [“Impact of the European Central Bank’s monetary policy interventions on equity returns: the case of the Greek Banks”](#)
- 16:30 to 16:45 De Castro Leal, T.L.M., de Almeida Neto, J.A., Rodrigues, L.B. [“Sectoral agreements of reverse logistics as instruments to promote the circular economy and sustainable development”](#)
- 16:45 to 17:00 Sahni, G. [“Competitive advantage in circular economy business models via shared value”](#)
- 17:00 to 17:15 Lonca, G., Raufflet, E.B. [“Is material circularity enough to achieve environmental sustainability? Linking circular economy and planetary boundaries narratives”](#)
- 17:15 to 17:30 Mitoula, R., Economou, A. [“The contribution of primary production sector to sustainable development of the Greek regions”](#)
- 17:30 to 17:45 Calik, A. [“An Integrated Decision Model for Circular Supplier Selection under Pythagorean Environment”](#)
- 17:45 to 18:15 Discussion

Friday, July 03, 2020
08:00 to 10:15 Session 11
 Chair: Spyridon Ntougias

08:00 to 08:15 Preparation time

 08:15 to 08:30 Stefanakis, A. "[Using nature-based solutions for wastewater management and reuse in the circular water economy: examples from different industries](#)"

08:30 to 08:45 Ozcelik, N., Rodríguez, M., Lutter, S., Sartal, A. "A critical approach on agricultural water productivity assessment and policy development"

 08:45 to 09:00 Mavriou, Z., Alexandropoulou, I., Melidis, P., Karpouzas, D.G., Ntougias, S. "[Biotreatment of fludioxonil wastewater in a fixed-bed reactor under various hydraulic retention times](#)"

 09:00 to 09:15 Spyridonidis, A., Margellou, A., Vasiliadou, I.A., Triantafyllidis, K.S., Stamatelatou, K. "[Evaluation of biochemical methane potential from sunflower residues: effect of hydrothermal pretreatment](#)"

 09:15 to 09:30 Stamatelatou, K., Nikolaou, I., Martos, A., Rodriguez-Perez S., Esposito, G. "[Making value from wastes: valorization of open market wastes in Mediterranean countries](#)"

 09:30 to 09:45 Ervan, T., Küçüker, M.A., Cengiz, U. "[Preparation of Transparent Superhydrophilic Lactic Acid-TEOS Film via Sol-Gel Method for Reduction of Microalgae Adhesion on the Bioreactor Surface](#)"

09:45 to 10:15 Discussion

10:15 to 11:50 Session 12 (Companies)
 Chair: Paraschos Melidis

10:15 to 10:30 Preparation time

 10:30 to 10:45 Makios, A. "[From waste to value](#)"

10:45 to 11:00 Kafasis, P. "The Regional Integrated Waste Management System of Western Macedonia"

 11:00 to 11:15 Cominelli, M. "[Newsan IN - Triple Impact Initiative](#)"

 11:15 to 11:30 Desah B.V. "[Source-Separated Sanitation](#)"

11:30 to 11:50 Discussion

11:50 to 12:30 Session 13 (Projects)
 Chair: Paraschos Melidis

11:50 to 12:05 Lekawska-Andrinopoulou, L. "CIRC4Life A Circular Economy Approach for Lifecycles of Products and Services"

12:05 to 12:20 Sacco, P., Brozzi, R. "Digital tools for circular bio-based economy"

12:20 to 12:30 Discussion

12:30 to 14:45 Session 14A - parallel session
 Chair: Konstadinos Abeliotis

12:30 to 12:45 Preparation time

12:45 to 13:00 Gaidajis, G., Kakanis, I. ["Examining the potential carbon footprint reduction by implementing circular economy practices in a protected area with anthropogenic activities"](#)

13:00 to 13:15 Mathioudakis, D., Karageorgis, P., Papadopoulou, K., Lyberatos, G. ["Life Cycle Costing and Life Cycle Assessment of an innovative municipal food waste management circular economy concept based on separate collection and valorization"](#)

13:15 to 13:30 Yildizbasi, A. ["Barriers to a Circular Economy: A Case Study on Waste Electrical and Electronic Equipment \(WEEE\) Recycling in Turkey"](#)

13:30 to 13:45 Abeliotis, K., Moustakas, A., Sardianou, E., Lasaridi, K. ["Attitudes of Greek consumers on the planned obsolescence of electrical and electronic equipment"](#)

13:45 to 14:00 Pego, A. ["Circularity in Portugal, new business for new consumers"](#)

14:00 to 14:15 Di Lonardo, S., Giagnacovo, G. ["Selecting plant species within green infrastructure design for the energetic, environmental and social sustainability of cities"](#)

14:15 to 14:45 Discussion

12:30 to 14:45 Session 14B - parallel session
 Chair: Konstantinos Salonitis

12:30 to 12:45 Preparation time

12:45 to 13:00 Bonnet, J., Coll-Martinez, E., Renou-Maissant, P. ["Comparing Sustainable Development Performance: Evidence for French departments"](#)

13:00 to 13:15 Di Lonardo, S., Olivieri, S., Romani, A. ["Sustainability assessment of fiber nettle production in Central Italy through a life cycle approach"](#)

13:15 to 13:30 Gkadakis, D., Tsironis, L.K. ["Generator maintenance scheduling: A sustainability approach based on the optimal selection of maintenance instances"](#)

13:30 to 13:45 Pinto, L.C., Sousa, S., Valente, M. ["Forest bioenergy as a land and wildfire management tool: economic valuation under different informational contexts"](#)

13:45 to 14:00 Mitoula, R., Papavasileiou, A., Kaldis, P., Papagrigroriou, A. ["Co-working spaces in Greece after Covid 19 era"](#)

14:00 to 14:15 Okorie, O., Obi, M., Charnley, F., Salonitis, K. ["Circular economy implications of product cannibalisation and remanufacturing"](#)

14:15 to 14:45 Discussion

14:45 to 17:00 Session 15A - parallel session
 Chair: Dimitar Trajanov

14:45 to 15:00 Preparation time

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- 15:00 to 15:15 Kora, E., Kritikos, N., Antonopoulou, G., Ntaikou, I., Lyberatos, G. "[Continuous biohydrogen production from sugar-based wastewaters and exploitation of effluent for PHAs production](#)"
- 15:15 to 15:30 Mehmood, A., Viza, E., Bogush, A. "[Drivers and Barriers Towards Circular Economy in Agri Food Supply Chain](#)"
- 15:30 to 15:45 Leite, J.S., Pereira da Silva, M.L. "[The Importance of Wood in Production Cycle on Construction and Goods](#)"
- 15:45 to 16:00 Pournara, A., Mai, S., Kalavrouziotis, I., Sakkas, V. "[Circular Economy in the Ship breaking industry: Recovery of precious materials and opportunities of utilization by the industrial sector. Case study of steel](#)"
- 16:00 to 16:15 Milovanovikj, A., Tsagarakis, K.P., Kostakis, I., Trajanov, D. "[Exploratory approach to locate the causal effects of economic indicators on circularity in the European Union](#)"
- 16:15 to 16:30 Maia, L.R., Rodrigues, L.B. "[Global warming of baker's yeast production using sugarcane molasses](#)"
- 16:30 to 17:00 Discussion

14:45 to 17:00 **Session 15B - parallel session**
 Chair: Roido Mitoula

- 14:45 to 15:00 Preparation time
- 15:00 to 15:15 Ribeiro, T., Calheiros, C., Vasconcelos, C. "[Sustainability and Geoethics: the GOAL Erasmus+ Project contribution to higher education](#)"
- 15:15 to 15:30 Rodrigues, L.B., Ferraz, S.P., De Almeida Neto, J.A. "[Life Cycle Assessment in Environmental Management of Egg Production](#)"
- 15:30 to 15:45 Kone, A.C., Buke, T. "[Energy Indicators for Sustainable Development: Turkey View](#)"
- 15:45 to 16:00 Bhandari, B. "[Industry 4.0 Enabled Sustainable Manufacturing](#)"
- 16:00 to 16:15 Rodrigues, L.B., Carvalho, L.S., Willers, C.D., De Almeida Neto, J.A. "[Environmental Assessment in Conventional Semi-Intensive Brazilian Milk Production](#)"
- 16:15 to 16:30 Anthopoulos, L. "[Energy efficiency assessment models from an AI and big data perspectives: a review](#)"
- 16:30 to 17:00 Discussion

17:00 to 19:30 **Session 16**
 Chair: Konstantinos Christoforidis

- 17:00 to 17:15 Preparation time
- 17:15 to 17:30 Arioz, Y., Yildizbasi, A., Ozturk, C. "[Closed-Loop Recycling of Electronic Cards Contributing to Sustainability: A Case Study on a Circular Economy Perspective](#)"
- 17:30 to 17:45 Soto Bermudez, T., Stumpf, L., Schöggel, J.P., Baumgartner, R.J. "[Organizational requirements for implementing the circular economy in the European plastic packaging industry](#)"

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- 17:45 to 18:00 Skouloudis A., Tsalis T., Nikolaou I., Evangelinos K. “[Small & medium-sized enterprises, organizational resilience capacity and flash floods: Insights from a literature review](#)”
- 18:00 to 18:15 Christoforidis, K. “[Carbon management through Carbon recycling: production of high-added-value chemicals](#)”
- 18:15 to 18:30 Medeiros, D.L., Santos Soares, M.F., Queiroz, L.M., Kiperstok, A. “[Nutrient recovery from human urine: an economic analysis of logistics with alkaline, evaporation and reverse osmosis treatments](#)”
- 18:30 to 18:45 Maksimović, A. “[Trends in sustainability reporting in the period 2010-2020](#)”
- 18:45 to 19:00 Kostakis I., Tsagarakis, K.P. “[The role of socio-demographic determinants on materials recycling and circularity in Europe: An empirical investigation](#)”
- 19:00 to 19:30 Discussion
- 19:30 to 19:45 Closing the symposium

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CET	New York	Sao Paulo	Athens	Shanghai	Sidney		
Start	time	time	time	time	time		
time	-6	-5	1	6	8	July 1	
8:00	2:00	3:00	9:00	14:00	16:00	Session 1	
9:35	3:35	4:35	10:35	15:35	17:35	Session 2	
11:50	5:50	6:50	12:50	17:50	19:50	Session 3	
13:00	7:00	8:00	14:00	19:00	21:00	Session 4A	Session 4B
15:15	9:15	10:15	16:15	21:15	23:15	Session 5	
18:00	12:00	13:00	19:00	0:00	2:00	Session 6A	Session 6B
						July 2	
10:00	4:00	5:00	11:00	16:00	18:00	Session 7	
12:15	6:15	7:15	13:15	18:15	20:15	Session 8	
13:30	7:30	8:30	14:30	19:30	21:30	Session 9A	Session 9B
15:45	9:45	10:45	16:45	21:45	23:45	Session 10A	Session 10B
						July 3	
8:00	2:00	3:00	9:00	14:00	16:00	Session 11	
10:15	4:15	5:15	11:15	16:15	18:15	Session 12	
11:50	5:50	6:50	12:50	17:50	19:50	Session 13	
12:30	6:30	7:30	13:30	18:30	20:30	Session 14A	Session 14B
14:45	8:45	9:45	15:45	20:45	22:45	Session 15A	Session 15B
17:00	11:00	12:00	18:00	23:00	1:00	Session 16	

Supporting Partner



Academic Partner



Floating islands, a nature-based solution for the ecological integrity promotion in rivers? - The case of Fervença river (NE Portugal)

Ana M. Antão-Geraldes^{1*}, Bruno Nogueira¹, Cristina S.C. Calheiros²

¹ *Centro de Investigação de Montanha (CIMO), Instituto Politécnico de Bragança, Campus de Santa Apolónia, 5300-253 Bragança, Portugal*

² *Interdisciplinary Centre of Marine and Environmental Research (CIIMAR/CIMAR), University of Porto, Portugal*

**Corresponding author: gerald@ipb.pt*

Despite the existence of the Water Framework Directive (Directive 2000/60 / EC of 23 October, modified in 2019) and a set of “satellite legislation” advocating that water quality depends not only on the good physical-chemical state, but also on the good ecological status of freshwater ecosystems, these continue to be subjected of accelerated ecological degradation. Indeed, freshwater ecosystems are considered to be the most threatened ecosystems on the planet (Dudgeon et al., 2006). Urban rivers and streams are crucial to cities, because they provide environmental services that are essential to maintaining urban environmental quality (Hua & Chen, 2019). Nevertheless, many of the so called “urban river rehabilitation actions”, carried out either the past, either recently, promoted the regularization of the riverbeds and the riverbanks leading to riparian wood degradation and consequently to the entire riverine structure collapse.

The Fervença River, located into Portuguese part of the Douro basin (latitude: 41°47’N; longitude 6°46’W), is about 30 km long and it is regarded as an urban river, because flows through the city of Bragança (23,186 inhabitants). In the upper section, despite the existence of nonpoint sources of pollution, originated by agricultural activities, and point sources of pollution from some villages located in the vicinity, physical-chemical and biological data still indicate a good ecological integrity. The occurrence of a riverbank and a riverbed with low degree of artificialization, allowing the existence a relatively well preserved riparian wood, can explain the relatively good ecological status of this section (Rodrigues, 2013). The unpublished data obtained by Antão-Geraldes et al in 2018-2019 still confirm the previous existing status. Further downstream, in the core urban area, the riverbed was regulated, an artificial riverbank was created and the riparian wood was partially eliminated. In this area, mainly during the summer, algal blooms, generally occur. The water quality as well as the visual quality of the landscape is negatively impacted when these blooms occur (Figure 1). Nevertheless, in this river section still occur fish species, including endemic species of river Douro basin and water birds (e.g. *Gallinula chloropus*). Besides, the otter (*Lutra lutra*) occasionally visits this river section. Therefore, the renaturalization of this heavily artificialized and modified river section, can contribute to (1) reduce nutrient concentrations in the water and thus, the algal blooms; (2) recreation of lost fluvial habitats, contributing to the increase of the biodiversity levels.

Nature-based solutions may be defined as bioengineering technologies that aim to preserve, rehabilitate and assist the sustainable management of natural or artificial ecosystems. Besides, they are flexible and low energy cost, promoting ecosystem resilience, human population well-being, biodiversity conservation, adaptation to climate change and the participation of all territorial stakeholders (Tremolet et al., 2019). Thus, the objective of the present approach is to evaluate the technical and economic viability of the installation of Floating islands - one of bioengineering

technologies considered nature-based - in this highly modified section of the Fervença River. If viable, this solution could assist the improvement of ecological and visual quality of the surrounding urban area.



Figure 1: Fervença river section located in the core urban area (A-C). Point source of pollution (D); algal summer blooms (E,F).

Key words: urban rivers, nature-based solutions, floating islands, urban ecological integrity

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CERTIFICATE

This is to certify that

Ana Maria Antão -Geraldes

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