

Training school 2023

Sustainable Packaging and Circular Economy



RETHINKING

PACKAGING FOR CIRCULAR AND SUSTAINABLE FOOD SUPPLY CHAINS OF
THE FUTURE

www.circul-a-bility.org



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Technical University of Crete

Heraklion, June 22-24

DAY 1

Thursday, June 22

08:00-08:30	Registration and welcome Exact meeting point will be defined, bus meeting point
08:30-09:00	Depart from city centre to the archaeological site of Knossos For the technical visit to Knossos, see as follows a few articles that describe how societies used to manage their limited water resources in the Minoan era. We may realize that some of those practices we rediscover or reinvent today! https://doi.org/10.2166/ws.2017.006 ; https://doi.org/10.3390/su12124897 ; https://doi.org/10.2166/wst.2020.305
09:00-11:00	Guided tour to Knossos Palace, https://knossos-palace.gr/
11:00-11:30	Transfer to the industrial zone of Heraklion
11:30-13:30	Visit to the facilities of Plastika Kritis, https://www.plastikakritis.com/en
13:30-14:00	Transfer to the Technical Chamber of Greece
14:00-15:00	Light lunch
15:00-15:15	Welcome Spiros Papaefthimiou, TUC Georgios Tavernarakis, President of the Technical Chamber of Crete
15:15-16:00	How to make the transition to sustainable packaging Jacqueline Cramer
16:00-17:00	LCA of packaging Adisa Azapagic
17:00-18:00	Possible visit: Archaeological museum
19:00-	Social Dinner

DAY 2

Friday, June 23

08:30-09:00	Welcome
09:00-11:30	<p>Food packaging materials and waste streams (Lecture)</p> <p>SUSTAINABILITY: Global challenges, sustainability and resources, circular economy as a possible solution</p> <p>MATERIALS: The different packaging materials (glass, (bio)plastic, paper/board, metal), production, pro and contra</p> <p>WASTE MANAGEMENT: Waste streams, end-of-life scenarios, EOL, collection, sorting and recycling (theoretical, technical and actual recycling rates), Country specific information, Challenges</p> <p>Manuel Pfitzner FH Campus Wien, Researcher</p>
11:30-12:30	<p>Food packaging related targets for a circular economy (Lecture and workshop)</p> <p>Smarter product use and manufacture (Refuse, Rethink, Reduce)</p> <p>Extend lifespan of product and its parts (Reuse, Repair, Refurbish, Remanufacture, Repurpose)</p> <p>Useful application of materials (Recycle, Recovery)</p> <p>Victoria Krauter FH Campus Wien, Researcher</p>
12:30-14:00	Lunch break
14:00-15:30	<p>Recycling-friendly packaging design (Lecture)</p> <p>Packaging worst case examples: e.g. PET bottle sleeve or label, multilayer / end-of-life scenarios</p> <p>Packaging design for recycling</p> <p>Circular Packaging Design Guidelines, e.g.</p> <p>https://www.fh-campuswien.ac.at/en/research/kompetenzzentren-fuer-forschung-und-entwicklung/competence-center-for-sustainable-and-future-oriented-packaging-solutions/circular-packaging-design-guideline.html</p> <p>https://www.worldpackaging.org/wpo/45/#bottom</p> <p>Theoretical optimisation of packaging (material choice, material combination)</p> <p>Katharina Pavlovic FH Campus Wien, Researcher</p>

15:30-17:30	<p>Store check: In a nearby supermarket we buy different products</p> <p>Exercise: Material detection using an infrared detector; calculation of the theoretical recyclability of the packaging; elaboration of design suggestions</p> <p>Presentation and discussion</p> <p>Victoria Krauter, Manuel Pfitzner, Katharina Pavlovic FH Campus Wien, Researcher</p>
17:30-18:00	<p>Closing of day 2 and outlook to the next day</p> <p>Victoria Krauter, Maria Milousi</p>
20:00	<p>Dinner / Evening activity</p>

DAY 3

Saturday, June 24

9:00 – 11.30	<p>Online packaging market trends and drivers (Workshop)</p> <p>Konstantinos Tsagarakis</p>
11:30 – 12.00	<p>Coffe Break</p>
12:00 – 14.30	<p>Exploring public interest trends in packaging topics using Google search traffic data (Workshop)</p> <p>Amaryllis Mavragani</p>
14:30 – 15.30	<p>Lunch break</p>
15:30 – 16:30	<p>Challenges of contemporary plastic packaging (Lecture)</p> <p>This talk will delve into the challenges of plastic packaging focusing on its characteristics and functionality from a safe and sustainable angle. It will provide insights into recent advances in the chemicals on high-value plastics, such as PET and PE and will explain the realities at each stage of the plastics value chain.</p>
16.30 – 17:00	<p>Closing</p>

Invited Speakers

Adisa Azapagic

University of Manchester, UK



Adisa Azapagic MBE FEng is Professor of Sustainable Chemical Engineering at the University of Manchester where she leads the Sustainable Industrial Systems group. Her research interests include sustainable production and consumption, life cycle sustainability assessment and corporate sustainability. Adisa is the Founding Editor-in-Chief of Sustainable Production and Consumption.

Jacqueline Cramer

University of Utrecht, NL



Prof. dr. Jacqueline Cramer has always combined her academic career with being a change agent in sustainability. She has worked as a practitioner for 45+ years, serving as the member of 120+ Boards of government, industry and non-profit organizations. Cramer is presently for instance Chairman of the Supervisory Board of Holland Circular Hotspot, Chairman of the execution of the Sustainable Concrete and Construction Steel Agreements, Chairman of the Dutch Circular Textile Valley, and Patroness of the Plastic Soup Foundation. Cramer was professor at various universities since 1990 and is presently professor of sustainable innovation at Utrecht University. Before she was Minister of Housing, Spatial Planning and the Environment for the Netherlands (2007 –2010).

Eleni Iacovidou

Brunel University London, UK



Dr Iacovidou is a Senior Lecturer in Environmental Management at Brunel University London. She is an expert and thought leader in lifecycle sustainability assessment of waste and resource management systems using a systems-based approach. Her research involves assessments of the circularity of resources, the development of metrics for the evaluation of environmental, economic, social, technical, political and institutional aspects that govern both natural resource and waste management systems and the exploration and potential development of sustainable and safe by design principles. She has been leading and delivering a broad spectrum of interdisciplinary and industrial projects that involve the identification, mapping, analysis and assessment of the processes, stakeholders' structures and values of resources and waste systems that inform policy development and champion resource efficiency and circularity of resources. She is a member of the UK government working groups on Resource and Waste Data and Plastic Marine Litter Pollution, and the European platform on beverage packaging. She is a chemist by training with expertise in environmental engineering and environmental management and policy research following studies at the University of Crete and Imperial College London.

Manuel Pfitzner

FH Campus Wien, University of Applied Sciences, Vienna, AT



After his training to become an environmental engineer, Manuel Pfitzner studied environmental and bio-resource management and renewable raw-material technology at the University of Natural Resources and Life Sciences. During his studies he was active for the Austrian climate referendum. Manuel Pfitzner gained experience in operational sustainability management and environmental planning at a civil engineering office. At the FH Campus Wien he works at the department of packaging and resource management in research and teaching. He is co-leading the working group for circular economy and has the project lead of PET2Pack, a project which aims to close the loop in food and non-food PET-packaging in Austria.

Katharina Pavlovic

FH Campus Wien, University of Applied Sciences, Vienna, AT



Katharina Pavlovic, BSc. works as a research assistant at the FH Campus Wien, studied packaging technology and will complete her master's degree in Packaging Technology and Sustainability this year. In her master's thesis, she works on the development of recyclable high-barrier films, for which various barrier coatings are being tested. Her professional focus is on design for recycling and interfering substances/contaminants in recycling processes, which she already dealt with in detail during her bachelor's thesis. As part of her work in the Department, she leads workshops for high school classes with the aim of building a better understanding of packaging. Since 2020, Katharina has been responsible for the updates of the Circular Packaging Design Guideline, an important document for the packaging industry. In September 2022 she became the project leader of the FFG project Reflex, which aims to substitute non-recyclable multilayer flexible packaging films with recyclable monomaterial flexible packaging.

Organizers – Seminar speakers

Victoria Krauter

FH Campus Wien, University of Applied Sciences, Vienna, AT



After studying food and biotechnology at the University of Natural Resources and Life Sciences (Vienna), FH-Prof. Dr Victoria Krauter specialized in the subject of (food) packaging and sustainability in her professional career. At FH Campus Wien she works in the Department of Packaging and Resource Management in research and teaching. She is also head of the Competence Center for Sustainable and Future Oriented Packaging Solutions and was City of Vienna Endowed Professor for Sustainable and Future Oriented Packaging. In the COST project Circul-a-bility she leads working group 4, Cereals & Confectionary.

Maria Milousi

University of Western Macedonia, GR



Maria Milousi received her bachelor diploma in Mathematics from the University of Patras in Greece. She graduated from the MSc program "Applied Mathematics in Engineering Sciences" in the School of Production Engineering and Management of the Technical University of Crete. She is currently a PhD candidate in the Department of Chemical Engineering in the University of Western Macedonia, Greece. Her research interests focus on themes related to Circular Economy, Sustainability, Life Cycle Assessment, Renewable energy systems. Maria is a member of the Management Committee for the COST Action "Rethinking packaging for circular and sustainable food supply chains of the future" where she is co-

leader in the working group 4, Cereals & Confectionary.

Spiros Papaefthimiou

Technical University of Crete, GR



Spiros Papaefthimiou is a Professor in the School of Production Engineering and management at the Technical University of Crete and the Director of the Industrial, Energy and Environmental Systems Lab and. His research interests include mainly various aspects of renewables (assessment and implementation of technologies and especially photovoltaics and solar thermal systems, implementation of national policies related to renewables and financial and social incentive schemes, renewable energy heating and cooling applications, renewable energy auctions and market exchange, Life Cycle Assessment and environmental impacts analysis from large-scale deployment of renewable energy technologies). As part of his academic work he has published more than 60 papers in international peer-reviewed journals and has been cited more than 2800 times, with a current h-index of 30; additionally, he has actively participated in more than 50 research projects. Spiros is the President of the Hellenic Association for Energy Economics and a member of the top 2% of the world's top scientists for 2022 in the field of Energy, according to the "World's Top 2% Scientists" ranking published by Stanford University.

Konstantinos P. Tsagarakis

Technical University of Crete, GR



Konstantinos Tsagarakis is a Professor of "Economics of Environmental Science and Technology" in the School of Production Engineering and management at the Technical University of Crete. He holds a degree from the department of Civil Engineering of the Democritus University of Thrace, a BA degree from the Department of Economics of the University of Crete and a Ph.D. Degree in Public Health from the School of Civil Engineering from the University of Leeds, UK. His research interests include: circular economy, technical-economic project evaluation; environmental and energy economics; public health economics; environmental and energy behavior; big data; online behavior; environmental performance of firms; quantitative methods. He is Specialty Chief Editor in Circular Economy Section *Frontiers in Sustainability*, Associate Editor in *Water Policy and Healthcare Analytics*, Subject Editor in *Sustainable Consumption and Production* and has served as Guest Editor in several other journals.