KEYNOTE

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LECTURES



Food for Brain

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More information is available at

- IWWG website www.iwwg.eu
- IWWG Secretariat info@iwwg.eu

Lecture #6

13:00 CET

June 2023

Wednesday 28th

CLIMATE NEUTRALITY IN WASTE MANAGEMENT - THE ROLE OF LANDFILLS

Solid waste disposal sites (SWDS) are major contributors of anthropogenic greenhouse gas (GHG) emissions. According to the latest IPCC report, the annual methane emissions from SWDS are accounting for up to 60 million tons, which equals approx. 11 % of the overall anthropogenic GHG emissions. Against the expectation of significantly increasing amounts of landfilled waste until 2050, it is obvious that today's existing landfills and future SWDS have to be designed and operated in a way ensuring maximum emissions reduction.

In a second step, landfills can be converted into a climate neutral stage by inclusion of all landfill phases such as site construction, waste collection, delivery and disposal, landfill closure, aftercare and afteruse. By optimizing individual landfill phases, direct and indirect savings of GHG emissions can be realized which opens up the possibility to achieve climate neutrality over the whole landfill lifetime. Direct GHG emission savings are associated with optimized waste transportation and LFG collection and utilization, whereas indirect savings can be realized through the production of renewable energy on site, both during landfill aftercare and afteruse.

One of the most innovative approaches for GHG emissions savings is the application of landfill in situ aeration, which aims to reduce 10 to 15% of the total GHG emissions and, at the same time, is a prerequisite for a high quality landfill afteruse. Landfill aeration projects are conducted in several European countries since 20 years ago and the Ministry for the environment in Germany recognizes their contribution to the reduction in GHG emissions through a financial support of such projects. Since it is unlikely that all decomposable waste will be diverted from landfills in future, practices for designing and operating landfills across all stages of their life cycle in an optimized manner — including in situ aeration — should be considered and implemented.



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Dr.-Ing. Marco Ritzkowski is division manager (innovation and R&D-projects) at HiiCCE – Hamburg Institute for Innovation, Climate Protection and Circular Economy GmbH (Germany) since 2020 and lecturer at the Hamburg University of Technology (TUHH) since 2008. Between 2005 and 2020 he worked as a project manager at TUHH, Sustainable Resources and Waste Management. In 2005 he received his PhD from the same University. He initiated and participated in several national and international research-projects regarding the landfill-behaviour of municipal solid waste, waste pre-treatment and aftercare of MSW landfills and he was the responsible researcher for the scientific attendance of the German R&D-project 'Aerobic in-situ stabilisation of landfills'. Since 2009 he was managing international projects in connection with the impact of climate change on water quality as well as aftercare of solid waste landfills. Marco Ritzkowski is Managing Director of the International Waste Working Group (IWWG) since 2011, member of the Scientific Advisory Panel of the IWWG and leader of the IWWG Task Group on Landfill Aeration since 2008. Since 2019 he is Associate Editor of the IWWG journal Detritus.