KEYNOTE

MONTHLY

LECTURES



Food for Brain

season #2

EVERY MONTH…

ONE HOUR LECTURE…

ONE SPECIALIST…

ONE HOT TOPIC…

More information is available at

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

Lecture #4

13:00 CET

April 2023

Wednesday 26th

RECOVERY OF ORGANIC WASTE & RESIDUES

THE ROLE IN WASTE MANAGEMENT, ENERGY SYSTEM, BIOECONOMY & CLIMATE PROTECTION

Nowadays it is not only scientifically evident but also has become common knowledge in most parts of the globe: transformation into a climate-neutral society is a prerequisite for human existence on our planet. Simply put, this can only be achieved according to this formula:

Climate neutrality (CN) = Renewable energies (RE) + Circular economy (CE)

Germany still has a long way to go towards its 2045 goals. In 2021, the country emitted 762 Mg CO_2, and reduction rates compared with 1990 are back to below 39 %. On the one hand side, the share of RE in both primary energy consumption (PEC) – currently just under 16 % – and total final energy consumption (FEC, <20%) is still quite low. For PEC as well as for FEC, the share of bioenergy in total RE was about 60% in 2021. This means we must halve our current energy consumption as fast as possible. Both rigorous energy saving actions and substantial increases in energy efficiency will be required to achieve this. Germany's energy supply must switch to RE completely and in all sectors over the next decades. This will require a massive expansion and optimised integration of wind, solar, bio-, geothermal and hydro-energy for heating/cooling, electricity and transport. Bioenergy will primarily be required to close the gaps where other RE cannot guarantee security of supply. Moreover, energetic use of biogenic resides and wastes will continue to increase in importance. On the other hand side, our linear economic system must become a true circular economy. Currently, we are still far from achieving this. Organic raw materials for industry need be bio-based instead of petroleum-based, as far as possible. Again, an optimised use of biogenic residues and wastes for materials and energy will be key here. Such integration of biomass into a sustainable bioeconomy and energy system can only be realised in the long term if the former is used efficiently, in an environmentally compatible way and to a maximum total economic benefit. This will require new technological concepts, increased coupled and cascading usage as well as negative emissions, which are generated by storing "green" carbon.

The biomass must also come from biogenic residues and wastes, or from sustainable cultivation. The current technical potential of biogenic residues and wastes in Germany amounts to 85.6 to 139.6 Mt dry mass. Between 67 and 85 % of this are already being used for material or energy production. The DBFZ assumes that, one the one hand side, the existing usage can still be optimised, and on the other hand side, an additional 12.8 to 45.5 Mt dry mass could and should be mobilised for further processing.

These are also central research areas of the German Biomass Research Centre (DBFZ - Deutsches Biomasseforschungszentrum gGmbH) and the Chair of Waste and Resource Management at the University of Rostock.



Prof. Michael Nelles

University of Rostock - DBFZ

Germany

Michael Nelles is an environmental engineer and studied Technical Environmental Protection (Technical University of Berlin).

From 1994 to 1999 he was the Vice Director of the Department Waste Management of the Montanuniversität Leoben in Austria. From 2000 to 2006 he was Professor of Environmental Engineering of the University of Applied Science in Göttingen (Germany). Since 2006 he is full professor of Waste and Resource Management of the Faculty of Agricultural and Environmental Sciences of the University of Rostock, Germany. Since 2012 Prof. Nelles is also the Scientific Director of the German Biomass Research Center (DBFZ) in Leipzig.

His research activity is based on: fundamental and applied aspects of waste management with focus on technological, environmental and economic aspects to mechanical, biological and thermal treatment systems of waste and biomass in different recycling and recovery routes.

He is a member of national and international Advisory Boards of organisations in the field of waste management and biomass utilisation and also a Board-Member of different national and international conferences and journals.

He is author of over 400 articles and chapters in books and journals since 1994. His international activities focus on the Asian Region.