DAY 2 – ENVIRONMENTAL SUSTAINABILITY
Date: 6th November

10:00 The Environment Module
Margarita Mediaville Pascual, Noelia Ferreras Alonso

The lecture is on the land module in an integrated assessment model, responsible for allocating land for various uses based on demands for food, urban development, and energy production. It assesses land stress, loss due to sea level rise, and calculates water stress by considering demand, availability, and climate factors.

Noelia Ferreras Alonso is a Chemical and Industrial Engineer. She collaborated with the group of Energy, Economy and System Dynamics of the University of Valladolid on the improvement of the climate module of MEDEAS system dynamics model. Since 2018, she works as a researcher engineer at CARTIF (Energy Division) in projects related to environmental and climate modelling with experience in carbon uptake and Greenhouse Gas (GHG) emissions estimation.
noefer@cartif.es

Margarita Mediavilla Pascual is a full professor in the Department of Systems Engineering and Automation of the School of Industrial Engineering of the University of Valladolid. Her research has focused since 2008 on systems dynamics applied to energy-economy-environment models and on the study of the transition towards renewable energies in the context of the depletion of fossil resources and change climate. Since 2016 she has been working on the European project MEDEAS which aims to create a new tool for decision-making in the transition of the European Union towards a sustainable energy system.
marga@EII.UVA.ES

10:50 The Energy Module
Lukas Eggler

The lecture introduces energy statistics, conversion processes, and various energy models. Additionally, it provides an overview of the WILIAM energy module, detailing key variables, feedback mechanisms, and sub-modules, along with an explanation of current energy policies and demonstrations of model mechanics.

Lukas Eggler *works in Austrian Energy Agency. He has been working on a wide variety of modelling projects, including projects modelling the transport sector of Austria, Demand Side Management (DSM) potentials for selected technologies, the dynamic simulation of high RES battery systems and regression analysis to quantify the effect of energy efficiency measures on corporate level. In recent years he is also increasingly involved in AEAs TIMES model of the Austrian energy system. He holds a M.Sc. in "Renewable Energy Engineering and Technology" from the University of Freiburg.*
lukas.eggler@energyagency.at

11:30 BREAK

11:40 The Resource Module
Ole van Allen

This module explores energy resources, reserves, Total Resource Endowment (TRE), and the need for minerals in renewable energy. It covers hydrocarbon models like WILIAM, detailing oil, coal, and gas dynamics, linking macroeconomics, energy systems, and pricing mechanisms. The second part focuses on material models, discussing metals, critical minerals, supply-demand dynamics, extraction processes, and their role in clean energy technologies.

Ole van Allen is a PhD researcher at the Faculty of Audiovisual Media and Creative Technologies Department of Game Development – The Game School (Campus Hamar).
ole.allen@inn.no

12:20 Lab Models Practice

The lab activity focuses on practical exercises related to environmental, material resources, and energy modules. It aims to assess comprehension of skills essential for modeling and analyzing intricate connections among energy resources, materials, and low-carbon transitions.