

CAPACITY BUILDING WORKSHOP

22 November 2019

Via Bergognone 34, 20144 Milan, Italy

RFF-CMCC EIEE and PBL Netherlands Environmental Assessment Agency

Consortium meeting, capacity building	
11:00 – 13:00	<p>Capacity building – livestreamed and interactive</p> <ul style="list-style-type: none"> - <i>L Drouet</i>: "Introducing optimization techniques for decision making" (30 min) - <i>M Giuliani</i>: "Balancing competing multisector services via multi-objective optimization and a-posteriori decision making." (1 hour 30 min)
13:00 – 14:00	Lunch
14:00 – 16:15	<p>Capacity building – livestreamed and interactive</p> <ul style="list-style-type: none"> - <i>M Makowski</i>: Multiple-criteria analysis: enhancing power of optimization (1 hour 30 min) - <i>G Marangoni</i>: "Application of multi-objective solutions to dice" (30 min) - <i>D van Vuuren</i>: "Pitch: Model documentation, and final remarks" (15 min)

Speakers



Dr. Laurent Drouet - Head, Integrated Assessment Modeling Unit - Scientist at RFF-CMCC EIEE

Laurent Drouet is a scientist at EIEE. He holds a PhD in Economics and Social Sciences from the University of Geneva, Switzerland and a Master in Applied Mathematics from the Institute of Applied Mathematics of Angers, France. In 2006-2009, he was postdoctoral research fellow in the Research Lab of Economics and Environmental Management at the Ecole Polytechnique Federale de Lausanne (EPFL), Switzerland. In 2009-2012, he was a researcher at the Public Research Center Tudor, Luxembourg. From 2012 to 2018, he was a senior researcher at Fondazione Eni Enrico Mattei (FEEM). He developed algorithms to couple models of different kind (ie, economy vs climate, air pollution vs energy systems) in an optimization framework. He also developed an open-source energy systems model



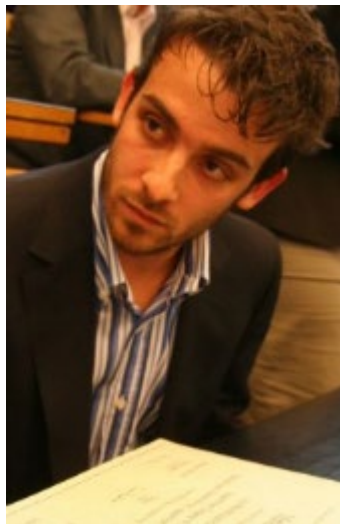
This project has received funding from the European Union under EC Service contract N° 21.02 07 01/2017/770447/CLIMA.C.1 (Modelling of national greenhouse-gas emission mitigation policies and the relationship with global low emission pathways)

EEM which he implemented for Luxembourg. He currently co-leads the development of the WITCH model. He was involved in the implementation of many model components: energy system, economy, land-use, climate, air pollution, mitigation options and impacts.



Dr. Giacomo Marangoni - Affiliated Scientist at RFF-CMCC EIEE

Giacomo is researcher in the Department of Management, Economics and Industrial Engineering at the Polytechnic University of Milan, Italy. He completed his PhD in 2017 in the same department, developing models for supporting investment decisions in the energy supply and demand sectors under uncertain technical change and sustainability concerns. For his Post-Doc, he moved to Penn State University, USA, to broaden his interests within the field of climate change risk management. There he focused on how to design robust climate policies optimizing conflicting environmental and economic objectives under deep uncertainty. Now he continues this research within Polytechnic of Milan and the RFF-CMCC European Institute on Economics and the Environment.



Prof. GIULIANI MATTEO - Assistant professor at Politecnico di Milano

Matteo Giuliani graduated with a double MSc degree in Environmental and Land Planning Engineering from Politecnico di Milano and Politecnico di Torino in 2010, and obtained the Diploma of the Alta Scuola Politecnica - V cycle in 2011. He received a PhD in Information Technology from Politecnico di Milano in 2014, after a visiting period at Penn State University (PA, USA). He was post-doctoral research fellow and, since November 2016, he is assistant professor in the Department of Electronics Information and Bioengineering of Politecnico di Milano. Since 2018, he is an Academic Guest at ETH Zurich for a collaboration with the Swiss Competence Center for Energy Research Supply of Electricity (SCCER-SoE).

Dr. Giuliani is co-author of 41 publications in international journals, 20 conference proceedings, and more than 100 contributions to international conferences. He is member of the IFAC Technical Committee TC8.3 on Modelling and Control of Environmental Systems and of the ASCE/EWRI Environmental & Water Resources Systems technical committee. He is Associate Editor of Journal of Water Resources Planning and Management and ICE Water Management. In 2014 and 2016 he was given an Outstanding Reviewer Award for his services to the Journal of Water Resources Planning and Management and in 2015 he was named outstanding AGU reviewer for his services to Water Resources



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Research. For his contribution to research, in 2018 he was awarded the Early Career Research Excellence Award by the international Environmental Modelling & Software society.



Dr. Marek Makowski - Systems Research Institute of the Polish Academy of Sciences, joined IIASA to work on the development and application of mathematical programming software. He is currently a Guest Research Scholar with the Energy Program.

Dr. Makowski graduated in 1970 with an Engineering and a Master of Science degree in the field of automatic control and computer sciences, received from the Faculty of Electronics of the Warsaw University of Technology; he also studied mathematics at the Warsaw University. Dr. Makowski received his PhD in 1976, from the Polish Academy of Sciences for his thesis on the optimization of environmental models. He was leader of the project on the development of decision support systems for various applications in Poland, and since 1976, he has been actively participating in joint projects with IIASA. From September 1989 to August 1991, he was Acting Project Leader of the Methodology of Decision Analysis (MDA) Project, then Senior Research Scholar with MDA, and from 1996 with the Risk, Modeling and Society Project; from 2006 to 2011 he was the leader of the Integrated Modeling Environment Project. He also led many long-term IIASA collaborative projects with Japan and Poland, as well as diverse work-packages in several EU-funded projects.

Thus the research interests cover a cluster of areas relevant to the adaptation (whenever possible) or development (when needed) of methodology, algorithms, and software for model-based decision-making support. This includes more specific topics in Operations Research (OR) such as: Multicriteria problem analysis, large scale optimization, optimization of badly conditioned problems, use of database management systems for complex models, decision analysis and support, user interfaces in decision support systems, effective treatment of uncertainty and risk. Specific activities focused on Structured Modeling Technology (SMT) developed to meet IIASA's needs for tailored modeling support for problems characterized by complex relations, huge amounts of data, and the demand for integrated model analysis. SMT supported interdisciplinary teams working at dispersed locations on model specification, collection and verification of data, definition of various model instances, and applying diversified methods of model analysis. Thus SMT provided a consistent management of all persistent elements of the whole modeling process.

The current focus is on further development and applications of modular tools for Multiple-Criteria Analysis (MCA). Two types of MCA methods and tools are developed. First, MCAA for MCA of discrete alternatives. Second, MCMA for MCA of models, especially for large models. Both MCA developed over decades and applied to diverse problems are now extended to effectively support analysis of large models that require substantial computational time. The recent applications focus on integrated analysis of energy policies.



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Prof. Dr. Detlef van Vuuren



Detlef van Vuuren (1970) is professor in Integrated Assessment of Global Environmental Change at the Faculty of Geosciences, Utrecht University and senior researcher at PBL Netherlands Environmental Assessment Agency leading the IMAGE integrated assessment modeling team. He has published more than 240 articles in refereed journals including Nature, Science, Nature Climate Change, Nature Energy, Nature Geosciences, PNAS, and Environmental Research Letters. He is listed among the most highly cited researchers worldwide.

He participates in various research organizations in the field of environmental research. He is member of the board of the Integrated Assessment Modelling Consortium (IAMC), the Working Group on Coupled Models of the World Climate Research Programme (WCRP), the Global Carbon Project and member of the steering board of ISIMIP. He participates in the editorial board of Climatic Change, Earth System Dynamics and Global Environmental Change.

Detlef van Vuuren has been active in various research projects and assessments. He had a coordinating role in the development of the Representative Concentration Pathways (RCPs) and Shared Socio-economic Pathways (SSPs) now used in the IPCC's assessments. Detlef van Vuuren has participated as (Coordinating) Lead Author in various assessments such the Millennium Ecosystem Assessment, UNEP's Global Environmental Outlook, the International Assessment on Agricultural Science and Technology Development, and the OECD Environmental Outlook. Detlef van Vuuren is also a member of the scientific boards of several DG Research projects.



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