

22 February, 2019

# **Integrated robust management of food-energy-water-land use nexus for sustainable development**

## **Seminar of the IIASA-NASU Cooperation Project**

25-27 February, 2019, International Institute for Applied Systems Analysis (IIASA)

A-2361, Schlossplatz 1, Laxenburg, Austria

Organized by International Institute for Applied Systems Analysis (IIASA) and

National Academy of Sciences of Ukraine (NAS Ukraine)

### **Agenda**

<b>25 February (Monday): Scientific Seminar : Raiffa Room</b>	
<b><i>Models linkage and global-local modeling for robust food-energy-water-environmental (FEWE) systems NEXUS under increasing spatio-temporal interdependencies</i></b>	
<b><i>Chair: Anatolij Zagorodniy</i></b>	
09:30 - 10:00	Opening remarks: Dr. Elena Rovenskaya, ASA Program Director Opening remarks: Project PI, Prof. Dr. A.Zagorodniy, Vice President NASU, Deputy Chairmen of Ukrainian NMO; Opening remarks: Project PI (IIASA-ASA) Prof. Dr. Y.Ermoliev
10:00-10:20	Welcome remark: Dr. Albert van Jaarsveld, IIASA Director
10:20-10:50	Prof. Dr. Yuri Ermoliev Y., Project PI (ASA), T. Ermolieva (ESM): All practical problems are solves. The most important question – HOW: Advanced Systems Analysis Approaches to Why and How to manage NEXUSs and Systemic Risks. Example of IIASA-NASU cooperation projects
10:50-11:20	<b><i>Feedbacks from participants</i></b>  Dr. Elena Rovenskaya, Yuri Ermoliev, T. Ermolieva et al. Distributed (sectorial/regional) models linkage for food-energy-water-land security management under asymmetric information and inherent uncertainties <b><i>Feedbacks from participants</i></b>
<b>11:20-11:35</b>	<b><i>Coffee break</i></b>

<b>Chair: Yuri Ermoliev (Challenges of global- local models linkage and robust nonparametric data harmonization and rescaling for FEWE security)</b>	
11:35-12:05	Kyryzuk et al. Challenges of dynamic linkage of global land use models (GLOBIOM) and Ukrainian agricultural model(s) national for sustainable land use planning with regard for global trends and local technical-economic feasibility and resource constraints: Overview of case studies <b>Feedbacks from participants</b>
12:05-12:45	Aman Majid, T. Ermolieva, Y. Ermoliev, S. Parkinson, C. Zorn (Oxford), and J. Hall (Oxford) et al. Managing the energy-water systems NEXUS using the multi-commodity flow algorithm for robust operations and infrastructure planning <b>Feedbacks from participants</b>
<b>12:45-14:00</b>	<b>Lunch in the Schloss Restaurant</b>
<b>Chair: Tatiana Ermolieva (Challenges and case studies on FEWE security management)</b>	
14:00 – 14:30	Yuri Ermoliev, Steve Robinson, E. Rovenskaya, et al. Robust management of FEWE security with probabilistic and non-probabilistic distributions, machine learning and stochastic optimization: illustrative examples from case studies <b>Feedbacks from participants</b>
14:30-15:00	T. Ermolieva, J. Linerooth-Bayer (RAV), Y.Ermoliev, et al. Tisza river (Ukraine and Hungary) integrated flood risks management model (CRIM) for the design of a multilayer disaster insurance program in the form of a public-private partnership <b>Feedbacks from participants</b>
15:00-15:30	Taher Kahil (WAT), J. Pablo Ortiz-Partida et al. Robust management of multipurpose reservoirs under uncertainty <b>Feedbacks from participants</b>
<b>15:30-15:45</b>	<b>Coffee break</b>
<b>Chair: Sergij Kyryzuk</b>	
15:45-16:15	Dr. Lena Höglund Isaksson et al. (AIR): IIASA's GAINS model – an overview and illustrative examples with Ukrainian data <b>Feedbacks from participants</b>
16:15-16:45	Dr. Wilfried Winiwarter et al. (AIR). National Nitrogen Budgets: A Tool to Understand Environmental Nitrogen Cycles and to Support Scenario Development <b>Feedbacks from participants</b>

16:45-17:15	Dr. Gui-Ying Cao et al. (ESP) Application of IIASA methodologies in collaborative case studies with PostDocs and YSSPs on <i>FEWE</i> security: overview presentation <b><i>Feedbacks from participants</i></b>
17:15-18:00	Discussions of cooperation with IIASA Programs
<b>18:00-21:00</b>	<b><i>Social event</i></b>
<b>26 February (Tuesday): Scientific Seminar : Raiffa Room</b>	
Chair: Vasil Gorbachuk (Facets of robust decisions: Big and “small” data analysis for robust decisions)	
10:00-10:30	Prof. Dr. Pavel Knopov, Prof. Dr. Yuri Ermoliev. Robust nonlinear and non-parametric estimation under non-stationarity of agricultural production and trade data. <b><i>Feedbacks from participants</i></b>
10:30-11:00	Prof. Dr. Olena Borodina: Integrated robust pathways for sustainable development of Ukrainian agriculture through sustainable production intensification, innovative land use strategies, and proper crop diversification/rotation <b><i>Feedbacks from participants</i></b>
11:00-11:30	Tatiana Ermolieva, Y. Ermoliev, P. Havlik, E. Boere, M. Obersteiner, et al. Distribution-free data analysis for new interdependent multiscale food-water-energy-environmental problems: case studies with stochastic GLOBIOM model <b><i>Feedbacks from participants</i></b>
<b>11:30-11:45</b>	<b><i>Coffee break</i></b>
<b>Chair: Pavel Knopov</b>	
11:45-12:15	Dr. Vasil Gorbachuk et al. Measuring economic and energy efficiency for regions and countries <b><i>Feedbacks from participants</i></b>
12:15-12:35	Dr. Sergij Shulgenko et al. Power sector transformation pathways under increasing share of variable energy sources. The economy-environment-energy nexus <b><i>Feedbacks from participants</i></b>
12:35-13:05	Dr. Yuriy Kostyuchenko et al. Water pollution risk assessment using satellite data with fuzzy algorithm in framework of multi-model approach <b><i>Feedbacks from participants</i></b>
<b>12:35-14:35</b>	<b><i>Lunch</i></b>

<b>Chair: Yuriy Kostyuchenko</b>	
14:35-15:05	<p>T. Ermolieva, E. Boere (ESM), P. Havlik, M. Obersteiner, Y. Ermoliev (ASA) et al.: Policy-relevant studies: Uncertainties, risks, irreversibility of decisions: Examples with IIASA models: Stochastic GLOBIOM and new CAP policies</p> <p style="text-align: center;"><b><i>Feedbacks from participants</i></b></p>
15:05 -15:35	<p>E. Lopez-Canno (YSSP2017), Y. Ermoliev, et al. A strategic decision support system framework for energy-efficient technology investments under uncertainties, risks and systemic interdependencies</p> <p style="text-align: center;"><b><i>Feedbacks from participants</i></b></p>
15:35- 17:00	<p>Discussion: All practical problems are solved somehow. The main issue “HOW”: <b><i>Discussion on Publication: Theoretical, Practical, Software-related Issues (joint papers, next book); Future work</i></b></p>
<b><i>Theater (?), Excursion to night Wien(?)</i></b>	
<b>27 February (Wednesday): Scientific Discussions</b>	