

# Biennial International Workshop Advances in Energy Studies 2015

BIWAES 2015

## WORKSHOP PROGRAMME

Mon 4<sup>th</sup> May

8.45-9.30	<i>Registration</i>
9.30-10.00	<p><u>Welcome addresses</u>  <b>Olga Kordas</b>, Director Energy Platform, Kungliga Tekniska Högskolan (KTH), Stockholm, Sweden  <b>Sergio Ulgiati</b>, BIWAES workshop series Founder, Department of Science and Technology, 'Parthenope' University of Napoli, Napoli, Italy. Workshop Chairs</p> <p><u>Authorities</u>  <b>Her Excellency Elena Basile</b>, The Ambassador of Italy in Sweden  <b>His Excellency Arthur Winkler-Hermaden</b>, The Ambassador of Austria in Sweden  <b>Virginia Piombo</b>, Director, Italian Institute of Culture 'C.M. Lerici'  <b>Gunnar Söderholm</b>, Director, Environment and Health Administration, City of Stockholm</p>
Session Chair: <b>Brian Fath</b>	
10.00-10.45	<p>Opening lecture: "A Roadmap towards Smart Cities"  <b>Hans Schnitzer</b>, Technical University of Graz, Austria</p>
10.45-11.00	<i>Questions and Comments</i>
11.00-11.45	<p>"Innovation in the City: Energy and Resource Efficiency"  <b>Joseph A. Tainter</b>, Utah State University, Logan, USA.</p>
11.45-12.00	<i>Questions and Comments</i>
12.00-12.45	<p>"Energy Metabolism of Urban Systems"  <b>Mario Giampietro</b>, ICREA Research Professor, Universitat Autònoma de Barcelona, Spain</p>
12.45-13.00	<i>Questions and Comments</i>
13.00-13.30	<p><b>Poster Presentation</b>  (Plenary Lectures Hall). <i>Poster Authors describe their poster to the plenary session, before going to see the posters in the Poster Display Hall</i>  Chaired by: <b>Shu-Li Huang</b>, National Taipei University, Taiwan</p> <p>Shaping options and mechanisms for decentralized energy systems at different scales: an agent-based perspective.  Verena H. van Zyl-Bulitta, Christopher Watts, Alexander Mahr, Katharine N. Farrell</p> <p>Developing methods and tools for Local Target-Oriented Action Choice Studies in the transport system.  Markus Robert</p> <p>Energy demand in the oil extraction system of Ecuador.  Rony Parra</p> <p>A Comparison of the Metabolic Pattern of Urban Informal Settlements in Rio de Janeiro and Cape Town.  Victoria Emilia Neves Santos, Raul Figueiredo Carvalho Miranda, Zora Kovacic, François Diaz-Maurin, Mario Giampietro</p> <p>Global crisis: collapse with wars or prosperous decline?  Enrique Ortega, Rosana Corazza</p>

	Urban energy metabolism using LEAP and LCA model: A case study of Handan, China. Hang Zhou; Shi Lei, Song Haiyan, Ahmed Tazrin
13.30-15.00	<b>Poster Buffet</b> (Poster Display Hall)
15.00-17.00	<p><b>Parallel solution-oriented panels.</b> Four panels, each with four oral presentations by participants, followed by open discussion on the state of the problem, solutions, research and policy priorities. Results to be summarized by the panel coordinator. (Each presentation, 15 minutes; then one hour of brain-storming workshop)</p> <p><b><i>Panel 1: Urban Mobility</i></b> (Plenary Lectures Hall) Chaired by: <b>Amy Rader Olsson</b>, KTH, Sweden</p> <p><b>Oral Presentations:</b> Modelling Sustainability of the Urban Mobility System and its impact on Energy System Nibedita Dash, P. Balachandra</p> <p>Decomposition Analysis on Energy-related Carbon Emission of Transportation Industry in Beijing Fengyan Fan, Yalin Lei</p> <p>Analysis of the influence of the implementation of electric vehicle in the environmental and acoustic pollution and in the electric demand of the city of Zaragoza Angel A. Bayod-Rújula, Eduardo García-Paricio</p> <p>On the road: Non-fossil fuel deployment for the public bus fleet of Sweden Maria Xylia, Semida Silveira</p> <p><b><i>Panel 2: Waste management</i></b> (Poster Display Hall) Chaired by: <b>Mario Giampietro</b>, Universitat Autònoma de Barcelona (UAB), Spain</p> <p><b>Oral Presentations:</b> A Comparative Energy Analysis of Municipal Solid Waste Collection and Treatment Modelling Variable Source-Separated Collection and Transportation Rates Gengyuan Liu, Zhifeng Yang, Sergio Ulgiati</p> <p>Participatory Integrated Assessment of Urban Waste Management Systems Rosaria Chifari, Mario Giampietro</p> <p>Renewable Refined Biogenic Fuel (RRBF) from Municipal Solid Waste (MSW) for urban energy applications. A Life Cycle Assessment. Maddalena Ripa, Gabriella Fiorentino, Luigi Sergio, Viviana Cigolotti, Sergio Ulgiati</p> <p>Costs and benefits of energy efficiency and recycle patterns in urban wastewater and sewage sludge treatment. Elvira Buonocore, Salvatore Mellino, Gengyuan Liu, Giuseppe De Angelis, Linyu Xu, Antonio Puca, Gaetano Protano, Sergio Ulgiati</p>

**Panel 3: Food, water and commodity chains**

(Room E, 2<sup>nd</sup> Floor)

Chaired by: **Björn Frostell**, KTH, Sweden

**Oral Presentations:**

System behavior of a municipality in Brazil whose economy is based on agricultural commodities

Luz Selene Buller, Enrique Ortega

UrbanFood – Urban-Industry related food production and supply

Björn Frostell, Anders Kiessling, Anna Norström, Håkan Sandin, Gunnar Nordberg

The assessment of the groundwater ecological value of Beijing based on South-to-North water diversion project

Ling Wang, Shan-Mei Li

Residential and non-residential hot water use models for urban and regional energy integration

Alex Bertrand, Riad Aggoune, François Maréchal

**Panel 4: Biomass energy in cities**

(Room D, 2<sup>nd</sup> Floor)

Chaired by: **Jinyue Yan**, KTH, Sweden; Director of Future Energy Profile at Malardalen University (MDU), Sweden; Chief Editor of Applied Energy

**Oral Presentations:**

Wood-based bioenergy value chain in mountain urban districts: A case study in the Italian Alpine region.

Natasha Nikodinoska, Alessandro Paletto, Pier Paolo Franzese

Renewability and support area of electricity produced from different mixtures of biomass: a case study of Miajadas, Spain

Fabiana Morandi, Andreas Kamp, Hanne Østergård

Agriculture as net energy provider for urban systems exemplified by a model of energy self-sufficient dairy farms

Hanne Østergård, Mads V. Markussen

A review of city-countryside relationship for planning more food and energy resilient urban systems

Patrizia Ghisellini, Marco Casazza

*(Coffee and more, available during the working sessions)*

## Tue 5<sup>th</sup> May

Session Chair: <b>Hans Schnitzer</b>	
8.45-9.30	"Innovative Urban Energy Systems" <b>Jinyue Yan</b> , Royal Institute of Technology (KTH), Sweden, Director of Future Energy Profile at Malardalen University (MDU), Sweden, Chief Editor of Applied Energy
9.30-9.45	<i>Questions and Comments</i>
9.45-10.30	"Energy network science to assess social and ecological resilience and systemic health: Focus on ecosystems, economic systems, and urban metabolism" <b>Brian Fath</b> , Advanced Systems Analysis Program, IIASA, Laxenburg, Austria; Towson University, Maryland, USA; Chief Editor of Ecological Modelling.
10.30-10.45	<i>Questions and Comments</i>
10.45-11.00	<i>Coffee break</i>
Session Chair: <b>Enrique Ortega</b>	
11.00-11.45	"Urban transition and global environmental change" <b>Shu-Li Huang</b> , Director Center for Global Change and Sustainability Science, Graduate Institute of Urban Planning, National Taipei University, Taiwan
11.45-12.00	<i>Questions and Comments</i>
12.00-12.45	"European Energy Union and Energy Research Policies: focus on urban systems" <b>Riccardo Basosi</b> , Italian Permanent Representative H2020 Energy EU Programme and SET Plan Steering Committee; Department of Biotechnology, Chemistry and Pharmacy, University of Siena, Italy.
12.45-13.00	<i>Questions and Comments</i>
13.00-14.15	<i>Lunch buffet</i>
14.15-15.15	<b><u>Energy innovation – collaboration between academia and industry</u></b> (Plenary Lectures Hall) Chaired by <b>Piero Mazzinghi</b> , Scientific Attaché, Italian Embassy in Sweden  "Integrated Transport Research Lab: collaboration between academia and industry" <b>Peter Georén</b> , Director Integrated Transport Research Lab (ITRL), Royal Institute of Technology (KTH), Sweden  "Gamification of Energy Consumption" <b>Tanmoy Bari</b> , Co-Founder & CEO at Greenely, Stockholm, Sweden  "Pioneering change in sustainable energy" <b>Arshad Saleem</b> , Technology Expert Smart Grids & Storage at KIC InnoEnergy, Stockholm, Sweden
15.15-15.30	<i>Questions and Comments</i>
15.30-17.30	<b>Parallel solution-oriented panels.</b> Four panels, each with four oral presentations by participants, followed by open discussion on the state of the problem, solutions, research and policy priorities. Results to be summarized by the panel coordinator. (Each presentation, 15 minutes; then one hour of brain-storming workshop)

**Panel 5: Environmental constraints to urban energy uses**

(Poster Display Hall)

Chaired by: **Hanne Østergård**, Technical University of Denmark, DTU

**Oral presentations:**

Urban aerosol pollution: a by-product of energy consumption

Marco Casazza

Exploring the relationship between energy consumption and the CO2 emissions—A case study of Beijing–Tianjin–Hebei region

Yinghui Ding, Haizhong An, Xiaoliang Jia

Integrating ecosystem services in urban energy trajectories

Ulla Mörtberg, Brian Deal, Vladimir Cvetkovic, Berit Balfors, Juan Azcarate, Jan Haas, Xi Pang

**Panel 6. Energy supply and use (heat, electricity), smart grids**

(Room E, 2<sup>nd</sup> Floor)

Chaired by: **Marco Raugei**, Oxford Brookes University, United Kingdom

**Oral Presentations:**

An innovative urban energy system constituted by a photovoltaic/thermal hybrid solar installation: design, simulation and monitoring

Amaya Martínez Gracia, Alejo del Amo, Angel A. Bayod-Rújula

Urban Rooftop PV Electricity: Is this the answer to India's solar question?

Hippu Salk Kristle Nathan, Dilip R Ahuja

An Integrated Assessment of the Performances of Photovoltaic Power Stations for Electricity Generation

Samuele Lo Piano, Kozo Mayumi

Life Cycle Assessment and Net Energy Analysis: analysing scenarios of large-scale deployment of PVs in urban systems.

Enrica Leccisi, Marco Raugei, Christopher Jones, Paul Gilbert

**Panel 7: Decision making tools for urban energy management**

(Plenary Lectures Hall)

Chaired by: **Lena Neij**, Lund University, Sweden

Co-chaired by: **Omar Shafqat**, PhD student, KTH, Sweden

**Oral presentations:**

Developing urban energy scenarios – morphological analysis in the participatory backcasting framework

Kateryna Pereverza, Oleksii Pasichnyi, David Lazarevic, Olga Kordas

Sustainability Scenarios between Rural Farms and Urban communities: A dynamic Societal Metabolism Analysis.

Vanessa Armendariz, Alberto Atzori, Stefano Armenia

New Chautauqua: Designing the renewable city and region using e[m]ergy accounting

William W. Braham, Luke Butcher, Jill Sornson Kurtz, Mostapaha Sadeghipour

Urban Energy Poverty in India: A household level analysis

Lakshmikanth Hari, Hippu Salk Kristle Nathan

**Panel 8: Decarbonisation of the use of fossil fuels**

(Room D, 2<sup>nd</sup> Floor)

Chaired by: **Vito Comar**, University of Dourados, Brazil

**Oral Presentations:**

The study of carbon dioxide emission abatement quota mechanism in coal resource area of China

Kejia Yang, Yalin Lei

Energy independence in the Galapagos Islands

Rony Parra, Jaime Cevallos, Bolívar Quispe

The Evolution of International Fossil Fuel Trade Patterns: an Emergy and Network Analysis

Weiqiong Zhong, Haizhong An, Xiangyun Gao, Di Dong

Cost Optimization Model of Resued Flowback Distribution Network of Shale Gas Development: The Case of Bradford County of Marcellus Shale in Pennsylvania

Huajiao Li, Haizhong An, Wei Fang

*(Coffee and more, available during the working sessions)*

**Wed 6<sup>th</sup> May**

Session Chair: <b>Semida Silveira</b>	
8.45-9.30	“Financing Low Carbon Energy Systems in an Urban Context” <b>Eric Usher</b> , Head of UNEP Finance Initiative, Geneva, Switzerland
9.30-9.45	<i>Questions and Comments</i>
9.45-10.30	“An odyssey to sustainability: the urban archipelago of India” <b>B. Sudhakara Reddy</b> , Indira Gandhi Institute of Development Research, India
10.30-10.45	<i>Questions and Comments</i>
10.45-11.30	<i>Coffee break</i>
11.30-12.15	"Photovoltaic electricity - promise, limits and potential for powering our cities" <b>Marco Raugei</b> , Faculty of Technology, Design and Environment, \Oxford Brookes University, United Kingdom
12.15-12.30	<i>Questions and Comments</i>
12.30-13.30	<b>Special Sustainable City Panel</b> (Plenary Lectures Hall) Chaired by <b>Gengyuan Liu</b>  “Horizon2020 GrowSmarter Project” <b>Mika Hakosalo</b> , Site Manager, The Environment Department, City of Stockholm  “National Platform for Sustainable Cities” <b>Anette Persson</b> , Senior Adviser, Swedish Energy Agency
13.15-13.30	<i>Questions and Comments</i>
13.30-15.00	<i>Lunch buffet</i>
15.00-17.00	<b>Parallel solution-oriented panels and symposia.</b> Four panels, each with four oral presentations by participants, followed by open discussion on the state of the problem, solutions, research and policy priorities. Results to be summarized by the panel coordinator. (Each presentation, 15 minutes; then one hour of brain-storming workshop)  <b><u>Panel 9: Smart and eco-cities: ITC tools, networks, participatory strategies</u></b> (Plenary Lectures Hall) Chaired by: <b>Olga Kordas</b> , KTH, Sweden Co-chaired by: <b>Oleksii Pasichnyi</b> , PhD student, KTH, Sweden  <b>Oral Presentations:</b> Analysis of the urban environment problems based on the big data from urban municipal supervision and management information system Rencai Dong, Tianqi Jiang, Xiao Fu, Mingfang Tang, Siyuan Li  Improving recycling and reducing energy poverty by exchanging waste for electricity in Latin America Angelo Facchini, Renata Mele  Steps toward a working system for near-Zero Emission Building concept - Ideas and Reality in urban area in Romania Vasile Dogaru  The impacts of spatial organization and community based energy production on sustainable energy use Petra Wächter

**Panel 10: Urban growth and transition policies**

(Room D, 2<sup>nd</sup> Floor)

Chaired by: **David Lazarevic**, KTH, Sweden

Co-chaired by: **Kateryna Pereverza**, PhD student, KTH, Sweden

**Oral presentations:**

Size and the City – The potential of downsizing in reducing energy demand and increasing quality of life

Gesche M. Huebner, David Shipworth

Energy, Energy and the City

Erik Grönlund, Morgan Fröling, Torbjörn Skytt

Analysis and Simulation of Energy Flows of Urban Eco-economic Systems: Taking Beijing as a Case Study

Wei Fang, Haizhong An, Huajiao Li, Xiaoliang Jia, Xiaoqi Sun

Natural Energy Basis and Urban Development in Dourados County, Mato Grosso do Sul, Brazil.

Vito Comar

**Panel 11: Energy and urban growth**

(Room E, 2<sup>nd</sup> Floor)

Chaired by: **Semida Silveira**, KTH, Sweden

Co-chaired by: **Maria Xylia**, PhD student, KTH, Sweden

**Oral presentations:**

Negotiated Modeling and Simulation Framework for Quantitative Target Setting for Urban Energy Systems

Omar Shafqat, Per Lundqvist, Örjan Svane, Jaime Arias

Exergy Assess for Energy Efficiency of Qinghai, China

Rui Kong, Fang Fang Xue

Metabolic patterns of the industrial sector across Europe: studying the forgotten maker of Service Cities

Raúl Velasco Fernandez, Mario Giampietro

Energy efficiency and environmental sustainability of urban systems within the constraints placed by resource availability. The case of Napoli and Roma, Italy.

Dario Felice Civitillo, Silvio Viglia, Sergio Ulgiati

**Panel 12: Energy-related social and ethical issues**

(Poster Display Hall)

Chaired by: **Marco Casazza**, Parthenope University of Napoli, Italy

**Oral Presentations:**

Decoding Energy Inclusiveness for India 2015

Debash C Patra

An approach to the dynamic component of a sustainability assessment: Multi-Scale Integrated Analysis of Societal and Ecosystem Metabolism (MuSIASEM) framework testing from a System Dynamics (SD) perspective.

Vanessa Armendariz



	<p>Transmission Process Analysis of Energy Technology Spillover Effect Xiaoqi Sun, Haizhong An, Xuan Huang</p> <p>The impact of imported iron ore prices in China based on quantile regression model and pricing game. Wenhui Chen; Yalin Lei</p> <p><i>(Coffee and more, available during the working sessions)</i></p>
17.00-18.30	<p>"EU Horizon 2020 programme: practical discussion about joint project submissions" Chaired by: <b>Sergio Ulgiati</b> and <b>Riccardo Basosi</b></p>
18.30-20.00	<p><i>Visit to National Museum of Science and Technology (near Workshop Venue)</i></p>
20.30	<p><i>Social dinner (Workshop Venue)</i></p>

**Thu 7<sup>th</sup> May**

Session Chair: <b>B. Sudhakara Reddy</b>	
8.45-9.30	“Societal benefits by moving towards a circular economy” <b>Anders Wijkman</b> , Co-Director Club of Rome, Stockholm Environment Institute (SEI) and Department of Energy Systems, Linköping University, Swedish Royal Academy of Sciences.
9.30-9.45	<i>Questions and comments</i>
9.45-10.30	“Developing concepts of sustainable mobility in Curitiba, Brazil” <b>Semida Silveira</b> , Professor in Energy Systems Planning at Royal Institute of Technology, Stockholm.
10.30-10.45	<i>Questions and comments</i>
10.45-11.00	<i>Coffee break</i>
Session Chair: <b>Olga Kordas</b>	
11.00-11.45	“Energy and material flows in megacities” <b>Renata Mele</b> , Head of Sustainable Development and Innovation Research Area, Enel Foundation, Italy
11.45-12.00	<i>Questions and comments</i>
12.00-12.45	“Understanding the role of cities in the energy frame”. <b>Mark T. Brown</b> , University of Florida, USA
12.45-13.00	<i>Questions and comments</i>
13.00-13.30	Approval of a final Workshop statement. <b>Sergio Ulgiati</b> , University of Napoli, Italy  Farewell remarks. <b>Hon. Silvia Velo MP</b> , Undersecretary of State, Ministry of Environment, Italy <b>Hon. Yvonne Ruwaida MP</b> , Secretary of State for Climate and the Environment, Sweden
13.30	<i>Farewell buffet</i>