

Biennial International Workshop Advances in Energy Studies 2017

BIWAES 2017

WORKSHOP PROGRAMME

Version: September 23, 2017

(All events occur in the Plenary Room, unless otherwise indicated)

Sunday, 24th September

Registration of participants, from 16.00 to 19.00 - Hotel Paradiso, entrance lobby

Monday 25th September

8.00-9.00	<i>Registration and welcome coffee</i>
9.00-9.30	<i>Welcome addresses</i> Sergio Ulgiati , BIWAES workshop series founder, Department of Science and Technology, 'Parthenope' University of Napoli. Alberto Carotenuto , Rector, 'Parthenope' University of Napoli Laura Vanoli , co-Chair, DiCEM, Università degli studi di Cassino e del Lazio Meridionale
Session Chair: Riccardo Basosi , Department of Chemistry, University of Siena (Italy)	
9.30-10.15	<i>Opening lecture: Beyond growth: Economics as if the planet mattered</i> Mark T. Brown , Director of the "H.T. Odum" Center for Environmental Policy, University of Florida Sergio Ulgiati , Department of Science and Technology, 'Parthenope' University of Napoli.
10.15-10.30	<i>Questions and Comments</i>
10.30-10.45	<i>Coffee break</i>
10.45-11.30	<i>Keynote Lecture: Back to the Future</i> Gilberto Gallopin , Buenos Aires, Argentina. Independent Scholar and Associate Fellow of the Tellus Institute
11.30-11.45	<i>Questions and Comments</i>
11.45-13.30	<i>Poster Session 1 - Room Chapel</i> (with short Authors' presentations & questions/answers) <i>Chaired by: Massimiliano Lega</i> , Parthenope University, Napoli, Italy <ol style="list-style-type: none">Alejandro Del Amo, Amaya Martínez-Gracia, Angel A. Bayod-Rújula. Performance analysis and experimental validation of a solar-assisted heat pump fed by photovoltaic-thermal collectors.Gabriella Duca. Usability of in-home energy displays and energy saving: a design caseMarco Raugei and Patricia Winfield. Prospective LCA of the production and EoL recycling of a novel type of Li-ion batteries for electric vehiclesLuis Acevedo, Javier Uche, Fernando Cirez, Sergio Usón, Amaya Martínez-Gracia, Angel A. Bayod-Rújula. Experimental analysis of a domestic trigeneration scheme feed by photovoltaic/thermal (PVT) collectorsMassimiliano Lega, Marco Casazza, Vincenzo Severino, Pier Luigi Accardo. Energy demand and environmental impacts of an Italian slum: a preliminary analysis.Arno P. Clasen and Feni Agostinho. Energetic-environmental performance of the Brazilian offshore pre-salt oilRosa Anna Nastro, Maria Toscanesi, Fabio Flagiello, Edvige Gambino, Giacomo

	<p>Falcucci, Michele Arienzo, Luciano Ferrara, Elio Jannelli, Marco Trifuoggi. Microbial Fuel Cells (MFCs) remediation activity of marine sediments sampled at a dismissed industrial site: what opportunities?</p>
11.45-13.30	<p>Poster Session 2 - Room Posillipo (with short Authors' presentations & questions/answers) <i>Chaired by: Cecilia M. V. B. Almeida</i>, UNIP-Universidade Paulista, Sao Paulo, Brazil</p> <ol style="list-style-type: none"> 1. <u>Amalia Zucaro</u>, Annachiara Forte, Angelo Fierro. The environmental impacts of wheat straw-based lignocellulosic ethanol for transport sector in a biorefinery prospective. 2. <u>Dewei Yang</u>. Evaluating rural developing dynamics using a combined energy and niche method in a watershed 3. Enrique Ortega, José Maria Gusman-Ferraz, <u>Mariana Oliveira</u>, Anna Lewandowska-Czarnecka. A reflection about the Energy Analysis of Agricultural Systems by focusing on the agroecological transition process 4. Mirtes V. Mariano, Biagio F. Giannetti, <u>Cecilia M. V. B. Almeida</u>. Energy Assessment as a management tool for urban parks 5. Marco Casazza, Yan Gao, Xinyu Liu, Fanxin Meng, <u>Jinyan Xue</u>, Gengyuan Liu, Sergio Ulgiati. Water-Energy-Food urban planning: The Urban Circular Economy Calculator (UCEC) 6. <u>Anna Lewandowska-Czarnecka</u>, Agnieszka Piernik, Andrzej Nienartowicz. Sustainability indicators in different type of farms. A case study from Poland. 7. Karabee Das, Greeshma Pradhan, <u>Sanderine Nonhebel</u>. Quantifying Human energy expenditure in cooking systems in rural areas in developing countries. 8. <u>Vasile Dogaru</u>, Claudiu Brandas. A real (non-pseudo) spatial index for neutral CO2 for urban micro-zone in temperate continental climate
11.45-13.30	<p>Poster Session 3 - Room Mergellina (with short Authors' presentations & questions/answers) <i>Chaired by: Francesco Gonella</i>, Ca' Foscari University, Venice, Italy</p> <ol style="list-style-type: none"> 1. <u>Marco Casazza</u>, Paolo de Vingo, Wim Vandewiele, Sergio Ulgiati. Environmental resources, economy, regulations: a lack of Community-Based Adaptation for two Medieval monastic communities 2. <u>Riccardo Basosi</u>, Angelo Facchini, Antonio Scala, Renata Mele, Maria Laura Parisi, Luca Valori. Investigation of rebound effect in energy consumption of megacities 3. <u>Verena Helen van Zyl-Bulitta</u>, Jamen Gien Varney-Wong, William Stafford. A mapping and navigation approach for energy system option spaces on techno-, management- and socio-scales across the Global North-South 4. <u>Renato Francesco Rallo</u>. Candles in the dark: a review of environmental and sustainability indicators and their criticisms 5. <u>Francesco Spano</u>. Resilience indicators, energy limitations and leverage points: who controls the controllers 6. <u>Flavio Picone</u>, Elvira Buonocore, Riccardo D'Agostaro, Stefano Donati, Pier Paolo Franzese, Riccardo Chemello. Assessing ecosystem services in the Egadi islands marine protected area: an energy perspective 7. <u>Francesco Spano</u>. Land requirements for Mediterranean diet: standard agriculture vs new agroecology 8. Gloria Rea, Chiara Cagnazzo, <u>Angelo Riccio</u>, Vincenzo Artale. Planetary boundaries in a changing climate system: how the Antarctic ozone trend responds to stratospheric dynamics?
13.30-15.00	Lunch
15.00-17.30	Parallel research-oriented panels and symposia.

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, 20 minutes; then questions and comments).

Panel 1. Mobility of passengers and freight - Room Plenary

Chaired by: Angelo Facchini, IMT School for Advanced Studies Lucca and Shupe Huang, China University of Geosciences, Beijing, China

1. **Shupe Huang, Haizhong An, Shaobo Wen, Gabriella Fiorentino, Fabiana Corcelli, Wei Fang and Sergio Ulgiati.** Terrestrial transport modalities in China: a survey of monetary, energy and environmental costs.
2. **Silvio Cristiano and Francesco Gonella.** On the Emergy accounting for the evaluation of road transport systems: thoughts for an Italian case study
3. **Amela Ajanovic and Reinhard Haas.** Energy and mobility: Hydrogen as fuel for mobility and storage for renewable energy
4. **Louisa Jane Di Felice, Maddalena Ripa, Mario Giampietro.** Electric vehicles in the EU: between narrative and quantification
5. **Angelo Fierro, Annachiara Forte, Amalia Zucaro, Roberto Micera, Mario Giampietro.** MuSIASEM approach to evaluate the pertinence of the second generation bioethanol production system. The case study of ligno-cellulosic *Arundo donax* feedstock for the transport sector in Campania region, Italy.

Panel 2. Energy and urban systems - Room Chapel

Chaired by: Olga Kordas, Royal Institute of Technology, Stockholm, Sweden, and Vasile Dogaru, West University of Timisoara, Romania

1. **Hans Schnitzer.** Design of a Low-Carbon energy system for a new urban area in an industrial neighborhood
2. **William Braham, Evan Oskierko-Jeznacki, Jae Min Lee, Barry Silverman, Nasrin Khansari.** E[m]ergy Model of the greater Philadelphia Region
3. **Oleksii Pasichnyi, Jörgen Wallin, Hossein Shahrokni, Olga Kordas.** Data-driven building archetypes' generation for urban building energy modelling
4. **Marco Molinari and Olga Kordas.** ICT in the built environment: drivers, barriers and uncertainties
5. **Elena Mazzola, Tiziano Dalla Mora, Fabio Peron, Piercarlo Romagnoni.** The use of integrated energetic analyses on a Venetian historic building
6. **Laura Pérez Sánchez, Maddalena Ripa, Raúl Velasco-Fernández, Gonzalo Gamboa, Renato F. Rallo, Mario Giampietro.** Energy performance at city level – the societal metabolism of Barcelona

Panel 3. Food, energy, water and commodity nexus - Room Capri

Chaired by: Sanderine Nonhebel, University of Groningen, The Netherlands, and Rosa Anna Nastro, Parthenope University, Napoli, Italy

1. **Sanderine Nonhebel and Winnie Leenes.** Why becoming a vegetarian is not going to save the world, comparing land, energy and water footprints of a Dutch dish with meat and a modern vegetarian one.
2. **Fanxin Meng, Gengyuan Liu, Zhifeng Yang, Yuanchao Hu, Marco Casazza, Biagio F. Giannetti, Sergio Ulgiati.** Tracing urban carbon flow in the global economy system: Consumption vs production perspectives
3. **Luis Acevedo, Javier Uche, Fernando Cirez, Sergio Usón, Amaya Martínez-Gracia, Angel A. Bayod-Rújula.** Exergy analysis of the transient simulation of a renewable-based trigeneration scheme for domestic water and energy supply
4. **Heitor F. Marinho Neto and Feni Agostinho.** Sustainability diagnosis of goods and services: do they work in practice?

	<p>5. Judith Rodriguez Salcedo and Marina Sanchez De Prager. Assessment of the cultural heritage, in terms of eMergy, in agroecological systems of the region Valle del Cauca - Colombia</p> <p><u>Panel 4. The changing energy basis of economies: Declining fossil availability and transition management - Room Ischia</u> Chaired by: Silvio Viglia, Parthenope University, Napoli, Italy and Robert A. Herendeen, Gund Institute for Ecological Economics, University of Vermont, VT (USA)</p> <ol style="list-style-type: none"> 1. Umberto Perna. Reserves at risk: planning with deep uncertainty and high complexity 2. Fereidoon P. Sioshansi. How innovation and disruptions are reshaping the future of the power sector 3. Reinhard Haas. How to integrate large shares of variable renewables into the electricity system. 4. Robert Herendeen. 100% renewable: does this trump carrying capacity? 5. Cristina Madrid López. Shale Gas for a Low Carbon Economy? The limitations we have to consider. <p><u>Panel 5. Energy and ecological economics. Sustainable finance. New business models for energy. - Room Posillipo</u> Chaired by: Jesus Ramos-Martin, IKIAM University, Ecuador and Xi Ji, Peking University, China</p> <ol style="list-style-type: none"> 1. Gabriella Duca and Guglielmo Trupiano. Bioeconomy and the challenge of community centered design 2. Antonio Scala, Angelo Facchini, Umberto Perna. Portfolio analysis and allocation of renewable sources 3. Alessandro Sapiro. Exporting volatility through market integration: the case of Sardinia. 4. Juha Panula-Ontto, Jarmo Vehmas, Ying Chen, Jinxing Jiang, Jyrki Luukkanen, Jari Kaivo-Oja, Mikkel Stein Knudsen. Impacts of Main Economic Sectors on Energy Efficiency in the period 2015–2030 in China 5. Chang T. Chang, Michela Costa, Maurizio La Villetta, Adriano Macaluso, Daniele Piazzullo, Laura Vanoli. Thermodynamic and economic comparison of biomass drying systems coupled with different technologies of power generation <p><i>(Coffee and more, available during the working sessions)</i></p>
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Tuesday 26th September

Session Chair: Hans Schnitzer , Professor Emeritus, Technical University of Graz, Austria	
9.00-9.45	Keynote Lecture: Sustainability and Well Being: Energy, Technology, and Complexity Joseph A. Tainter , Utah University, USA
9.45-10.00	Questions and Comments
10.00-10.45	Keynote Lecture: Smart Energy Systems and the Plans for Renewable Energy. Perspectives for more Integrated National and European Planning Henrik Lund , Department of Development and Planning, Aalborg University, Denmark
10.45-11.00	Questions and Comments
11.00-11.15	Coffee break
11.15-13.00	Thematic, Design-oriented Working Groups on Energy Futures (thematic groups are not intended for presentation of personal research results, but instead as creative brainstorming and

	<p>designing sessions on hot topics characterized by special policy interest)</p> <ul style="list-style-type: none"> • Implementing energy efficiency, barriers and solutions. From theory to practice (<i>Chaired by: Mark T. Brown</i>, University of Florida and <i>Silvio Viglia</i>, Parthenope University, Italy) - Room Plenary • Renewable and nonrenewable energies between growth and de-growth patterns (<i>Chaired by: Barney Foran</i>, Charles Sturt University, Albury, Australia and <i>Robert A. Herendeen</i>, Gund Institute for Ecological Economics, University of Vermont, VT USA) - Room Ischia • Energy and cleaner production. Innovative designs and technologies (<i>Chaired by: Cecilia M. V. B. Almeida</i>, UNIP-Universidade Paulista, Sao Paulo, Brazil) and <i>Francesco Gonella</i>, Ca' Foscari University, Venice, Italy - Room Capri
13.00-14.30	Lunch
14.30-17.30	<p><i>Parallel research-oriented panels and symposia.</i> <i>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, 20 minutes; then questions and comments).</i></p> <p><u>Panel 6. Energy efficiency - Room Plenary</u> <i>Chaired by: Jarmo Vehmas</i>, University of Turku, Finland, and <i>Elvira Buonocore</i>, Parthenope University, Napoli, Italy</p> <ol style="list-style-type: none"> 1. <u>Oleksii Pasichnyi</u>, Jörgen Wallin, Fabian Levihn, Hossein Shahrokni, Olga Kordas. Energy Performance Certificates — new opportunities for data-enabled urban energy policy instruments? 2. <u>Gianluca Trotta</u>, Joachim Spangenberg, Sylvia Lorek. Energy efficiency in the residential sector: identification of promising policy instruments and private initiatives among selected European countries 3. <u>Tonino Castrichino</u>, Federico Balsani, Claudio Ferrari, Nicola Graniglia, Duccio Tempesti. Boosting energy efficiency in Public Administration. Study case: “Palazzo della Farnesina” 4. <u>Fabiana Corcelli</u>, Gabriella Fiorentino, Jarmo Vehmas, Sergio Ulgiati. Energy Efficiency and environmental performance indicators of papermaking from chemical pulp. A Finland case study. 5. <u>Jarmo Vehmas</u>, Jari Kaivo-Oja, Jyrki Luukkanen. Decomposition of Total Primary Energy Supply: Energy Efficiency Trends in the EU-28 Member States in 1990-2013 6. <u>Mauro Reini</u> and Melchiorre Casisi. Constructal Law and Thermoeconomic Optimization <p><u>Panel 7. Decision making tools for energy management. Stakeholders and participatory strategies. - Room Ischia</u> <i>Chaired by: Reinhard Haas</i>, Technical University of Wien, Austria and <i>Enrique Ortega</i>, Campinas University, Brazil</p> <ol style="list-style-type: none"> 1. <u>Jari Kaivo-Oja</u>, Jarmo Vehmas, Jyrki Luukkanen. Energy Intensity, Energy Consumption and Changes in Energy Intensity in the EU-28 Countries in 1995-2014 2. <u>Anders Nilsson</u>, Olga Kordas, David Lazarevic. Influencing Household Energy Consumption: Preliminary Results from a Residential Demand Response Program in Sweden 3. <u>Kateryna Pereverza</u> and Olga Kordas. Sustainability through stakeholder learning: participatory backcasting for the heating sector 4. <u>Chiara Vassillo</u>, Daniela Restaino, Remo Santagata, Silvio Viglia, Jarmo Vehmas, Sergio Ulgiati. Energy efficiency and stakeholders: Barriers, costs and benefits of implementation. The Naples case study in the EUFORIE Project

5. **Sylvia Lorek and Joachim Spangenberg**. Social innovation for energy sufficiency – methods, results and lessons learnt in the EUFORIE project

Panel 8. Matter and energy flows in the biosphere and human economy – Room Capri

Chaired by: Pier Paolo Franzese, Parthenope University of Napoli, Italy, and **Gilberto Gallopin**, Tellus Institute, Argentina - Room Capri

1. **Pier Paolo Franzese, Elvira Buonocore, Flavio Picone, Giovanni F. Russo**. Using environmental accounting to operationalize the Planetary Boundaries framework at local scale in marine ecosystems
2. **Marco Casazza, Joseph A. Tainter, Massimiliano Lega, Silvio Viglia, Gengyuan Liu, Sergio Ulgiati**. Energy features of human Socio-Ecological Systems relevant to the future of civilization
3. **Angelo Riccio, Antonino Staiano, Angelo Ciaramella, Francesco Camastra, Elena Chianese, Efisio Solazzo, Stefano Galmarini**. Ozone production and flows in the boundary layer and its impact on crop yields: an optimal ensemble estimation
4. **Ludmila Skaf, Elvira Buonocore, Stefano Dumontet, Roberto Capone, Pier Paolo Franzese**. Environmental costs and impact of food security in a changing world: The case of Lebanon
5. **Fabiana Zollo, Michela Del Vicario, Walter Quattrociocchi, Antonio Scala**. The Climate Change debate on Facebook: a clash of contrasting narratives beyond rationality
6. **Rony Parra, Mario Giampietro, Louisa Di Felice, Anderson Castro**. Evaluation of energy metabolism in the oil extraction in Ecuador from the application of Multi-Scale Integrated Analysis of Societal and Ecosystem Metabolism (MuSIASEM)

Panel 9. Transition to low-carbon and renewable energies - Room Posillipo

Chaired by: Maddalena Ripa, Autonomous University, Barcelona, Spain and **Marco Raugei**, Oxford Brookes University, UK.

1. **Verena van Zyl-Bulitta, Enrique Kremers, Ralf Otte**. Temporal mechanisms for energy system balancing across different socio-technical scales aligned to the current electricity grid state
2. **Marco Raugei, Enrica Leccisi, Gonzalo Ramirez, Rodrigo Escobar Moragas, Vasilis Fthenakis**. Net energy availability and environmental performance of the Chilean electric grids: potential improvements and opportunities
3. **Angel A. Bayod-Rújula, Luis Acevedo, Javier Uche, Amaya Martínez-Gracia**. Improved management of battery and RO demand in grid connected PVT systems in dwellings
4. **Mateusz Szubel, Beata Matras, Szymon Podlasek, Mariusz Filipowicz**. Development of air manifold for straw – fired batch boiler using experimental and numerical methods
5. **Charlie Gullstrom, Olga Kordas, Marco Molinari**. Sharing Spaces in the Sharing Economy: to save energy, increase well-being or boost innovation? How do new initiatives align with energy transition?
6. **Jaime Cevallos and Jesus Ramos-Martin**. Spatial assessment of the potential of renewable energy: the case of Ecuador

(Coffee and more, available during the working sessions)

19.00-22.00

Social Dinner and Concert

Wednesday 27th September

Session Chair: Olga Kordas , Royal Institute of Technology, Stockholm, Sweden	
9.00-9.45	Keynote Lecture: Optimized resource management through circular economy patterns: Challenges in free-market contexts Andrea Genovese , Logistics and Supply Chain Management Research Centre, Management School, The University of Sheffield, UK
9.45-10.00	Questions and Comments
10.00-10.45	Keynote Lecture: Advanced renewable polygeneration systems producing electricity, heat, cool and water: dynamic simulations and thermo-economic optimization. Francesco Calise , University Federico II – Naples, Italy
10.45-11.00	Questions and Comments
11.00-11.15	Coffee break
11.15-13.00	<p>Thematic, Design-oriented Working Groups on participatory tools and roadmaps for energy futures (thematic groups are not intended for presentation of personal research results, but instead as creative brainstorming and designing sessions on hot topics characterized by special policy interest).</p> <ul style="list-style-type: none"> • Internet of things and the energy sector in urban and industrial systems (chaired by: Raffaele Montella, Parthenope University, Napoli and Marco Molinari, KTH, Stockholm, Sweden) - Room Capri • Socio-economic variables in designing local energy policies (chaired by: Joachim Spangenberg, SERI, Sustainable Europe Research Institute, Germany and Maddalena Ripa, UAB, Barcelona, Spain) - Room Plenary • Stakeholders and energy planning (chaired by: Sylvia Lorek, SERI, Sustainable Europe Research Institute, Germany and Kateryna Pereverza, KTH, Stockholm, Sweden) - Room Ischia
13.00-14.30	Lunch
14.30-17.30	<p>Parallel research-oriented panels and symposia. <i>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, 20 minutes; then questions and comments).</i></p> <p><u>Panel 10. Energy and industrial cleaner production – Room Plenary</u> <i>Chaired by: Hans Schnitzer, Technical University of Graz, Austria, and Amalia Zucaro, Federico II University, Napoli, Italy - Room Plenary</i></p> <ol style="list-style-type: none"> 1. Jingyan Xue, Gengyuan Liu, Marco Casazza, Mark T. Brown. LCA-based Energy Analysis of the Aluminum Production Chain in China 2. Mikkel Stein Knudsen and Jari Kaivo-Oja. Lessons from European Energy Research and Energy RIs: Towards a European Science of Research Organizations? 3. Francesco Calise, Simona Di Fraia, Adriano Macaluso, Nicola Massarotti, Laura Vanoli. Wastewater sludge dryer coupled with an ORC system powered by geothermal energy. 4. Ashraf A. M. Abdelrahim and Ali M. A. Seory. Wind turbine aerodynamics analysis 5. Krzysztof Sornek, Mariusz Filipowicz, Maciej Żołądek, Radosław Kot, Małgorzata Mikrut. Comparative analysis of selected thermoelectric generators operating with small scale heating appliances. <p><u>Panel 11. Energy related airborne emissions, air quality and monitoring tools – Room Chapel</u> <i>Chaired by: Fereidoon P. Sioshansi, Menlo Energy Economics, CA USA, and Marco Casazza, University of Naples ‘Parthenope’ - Room Chapel</i></p> <ol style="list-style-type: none"> 1. Massimiliano Lega, Dan Jaffe, Marco Casazza, Sergio Ulgiati. Complex source

components assessment: Criteria for 3D environmental scenario analysis in the case of an urban port area, Naples (S Italy)

2. **Xi Ji, Yixin Yao and Xianling Long.** What causes PM2.5 pollution? Cross-economy empirical analysis from socioeconomic perspective
3. **Wei Fang, Haizhong An, Xiangyun Gao, Huajiao Li, Shupe Huang.** Urban energy consumption and CO2 emissions by means of energy and system dynamics model: Taking Beijing as a case
4. **Angelo Facchini.** The urban metabolism of Lima: perspectives and policy indications for GHG emission reductions
5. **Giuseppina De Luca, Salvatore Fabozzi, Nicola Massarotti, Laura Vanoli.** Optimization criteria to evaluate the switching process from an individual heating to a district heating strategy for the city of Pompei.

Panel 12. Innovative concepts and frameworks for effective energy strategies - Room Capri

Chaired by: Francesco Gonella, Ca' Foscari University, Venice, Italy and **Hossein Shahrokni,** KTH, Stockholm, Sweden - Room Ischia

1. **Massimo Zucchetti and Raffaella Testoni.** Most advanced technological innovation as a part of simple solutions for the world energy problem.
2. **Corrado Giannantoni.** "Energy, Economy, Environment, Wellbeing". The Role of Formal Languages for Finding and Implementing Solutions.
3. **Enrique Ortega, José Maria Gusman-Ferraz, Mariana Oliveira, Ana Carolina Assis, Gilmar Barreto, Rosana Corazza, Paulo Fracalanza, Luciana T. de Almeida.** Energy and Wellbeing in Latin America: Political and Cultural issues
4. **Aram Mäkivierikko, Hossein Shahrokni, Olga Kordas.** Overcoming the Engagement Barrier in Demand-side Management with Social Influence
5. **Vasile Dogaru.** Segmentation of urban energy using Roegenian partial processes with borders
6. **Maddalena Ripa, Raúl Velasco-Fernández, Michele Manfroni, Mario Giampietro.** A closer look at national energy metabolism: multiscale integrated analysis of energy end uses

Panel 13. Biomass for energy and bio-based materials – Room Ischia

Chaired by: Angelo Fierro, Federico II University, Napoli, Italy and **Gabriella Fiorentino,** Parthenope University of Napoli, Italy - Room Capri

1. **Elvira Buonocore, Natasha Nikodinoska, Alessandro Paletto, Pier Paolo Franzese.** Life cycle assessment of wood-based bioenergy production: A case study in Northern Italy.
2. **Michelle M. Arnold, Joseph A. Tainter, Deborah Strumsky.** Productivity of Innovation in Biofuel Technologies
3. **Gabriella Fiorentino and Sergio Ulgiati.** Towards an energy efficient chemistry. An assessment of fuel and feedstock switching.
4. **Paola Di Donato, Ilaria Finore, Annarita Poli, Barbara Nicolaus, Licia Lama.** Extremophiles' relevance for the production of second generation bioethanol
5. **Ciro Florio, Rosa Anna Nastro, Fabio Flagiello, Mariagiovanna Minutillo, Domenico Pirozzi, Stefano Dumontet, Vincenzo Pasquale, Angelo Ausiello, Giuseppe Toscano, Elio Jannelli.** Biohydrogen production from Solid Phase-Microbial Fuel Cell (SPMFC) spent substrate: a preliminary study

Panel 14. Developed and Developing economies in the energy market. New actors and new strategies – Room Posillipo

Chaired by: Tommaso Luzzati, University of Pisa, Italy, and **Verena Helen van Zyl-Bulitta,** University of Leipzig, Germany - Room Posillipo

	<ol style="list-style-type: none"> 1. Tommaso Luzzati, Gianluca Gucciardi, Marco Orsini. A multiscale analysis of the EKC for energy use and CO₂ emissions 2. Kamia Handayani, Yoram Krozer, Tatiana Filatova. Assessment of the renewable energy expansion in the Java-Bali Islands, Indonesia 3. Silvio Cristiano and Francesco Gonella. Building within environmental boundaries, between need and choice: low-energy, frugal technologies. Learnings from vernacular solutions – a Sudanese case study. 4. John Polimeni and Raluca Iorgulescu. An Analysis of Energy Poverty in Romania 5. Kateryna Pereverza, Oleksii Pasichnyi, Olga Kordas. Strategic energy planning in different contexts: a modular approach to the participatory backcasting <p><i>(Coffee and more, available during the working sessions)</i></p>
21.00	Guided tour to underground Napoli (Tunnel Borbonico, Vico del Grottone, 4, Napoli – close to Piazza Plebiscito)

Thursday 28th September

Session Chair: Sanderine Nonhebel , Center for Energy and Environmental Sciences, University of Groningen, The Netherlands	
9.00-9.45	Keynote Lecture: Energy in wastewater treatment: consumption, benchmarking, performance assessment and improvement of efficiency Nicola Massarotti , Department of Engineering, University of Naples ‘Parthenope’ and Laura Vanoli , DiCEM, Università degli studi di Cassino e del Lazio Meridionale
9.45-10.00	Questions and comments
10.00-10.45	Keynote Lecture: Energy and food, between complexity and fragility. Sanderine Nonhebel , Center for Energy and Environmental Sciences, University of Groningen, The Netherlands.
10.45-11.00	Questions and comments
11.00-11.15	Coffee break
11.15-12.00	Keynote Lecture: Energy and Urban Systems: How smart, how big, how sustainable? Olga Kordas , Royal Institute of Technology, Stockholm, Sweden
12.00-12.15	Questions and comments
12.15-13.00	Summing up, Conclusions and Proposal for a final Workshop statement. Sergio Ulgiati , Parthenope University of Napoli, Italy
13.30	Farewell buffet