

in cooperation with



**Università  
Bocconi**

**GREEN**  
Centre for Geography,  
Resources, Environment,  
Energy and Networks

# 3<sup>rd</sup> AIEE Energy Symposium



## **Current and Future Challenges to Energy Security** the energy transition



**Milan, 10-12 December, 2018  
Bocconi University**

[www.aieeconference2018milan.eu](http://www.aieeconference2018milan.eu)

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## Editorial Note

Dear Colleague,

The AIEE - Italian Association of Energy Economists (Italian affiliate of the IAEE - The International Association for Energy Economics) is organizing this international conference in cooperation with the Bocconi University - GREEN (Centre for Geography, Resources, Environment, Energy and Networks), of Milan to bring together energy experts engaged in academic, business, government, international organizations for an exchange of ideas and experiences on the present and future landscape of energy security.

The first two editions of the AIEE Symposium on Energy Security - Milan 2016 and Rome 2017, were an opportunity to explore new energy trends, challenges and creative solutions for the energy security, the availability of new technologies, the emergence of new market conditions and of new market operators.

Following up on the success of the past editions we are delighted to announce this third AIEE Energy Symposium to provide a fresh look on the major forthcoming issues offering an excellent occasion to continue the dialogue and to share best practice and experience with delegates from all over the world.

The energy situation is evolving in Europe as well as in the rest of the world, where new actors, the emerging economies, are taking the leading role. Political developments in several areas of the globe (North Africa and Middle East, the Caspian region, ASEAN countries) are reshaping the geopolitical situation, generating some worries about the security of supply in the EU countries.

Carlo Di Primio, AIEE President

Carlo Andrea Bollino, General Conference Chair, AIEE Honorary President

The concept of energy security is undergoing a rapid transformation. In the past, geopolitics and the supply of oil and gas were the dominant factors determining energy security. Today, a broader and more complex spectrum of elements are interacting to both stabilize and threaten energy security. The availability of energy sources, when we consider both fossil fuels and renewables, is increasing. In particular, a major source of change is the strong growth in the production and integration of renewable and distributed energy, which offers opportunities to diversify the energy mix and thus improve energy security by reducing physical reliance and price exposure to only a few sources and countries. At the same time, this paradigm of a new energy system has strong implications both on petroleum-producing countries and companies, with knock-on effects on geo-economic balance of powers and energy markets and on the security and reliability of the transmission and distribution networks.

The new challenges of the digital revolution that on one hand offers opportunities to improve efficiency, to have lower costs but on the other hand raises a whole new set of challenges and creates vulnerabilities we have never seen before so that energy is being viewed as a key part of national security.

While in the past the supply side was the dominant factor in energy security, with the critical element being the possibility of sourcing the products to produce electricity and provide mobility, now the energy security balance is changing.

## Organization

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*ORGANIZATION AND COORDINATION:* AIEE: **ANKA SERBU**, External Relations & Communication

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# Conference agenda

## Monday, December 10, 2018

- 16.00 - 18.00 **Registration**  
16:00 - 17.00 **Opening Welcome Address** (*Room N03 - ground floor*)
- Carlo Di Primio**, AIEE President  
**Carlo Andrea Bollino**, AIEE Honorary Presidente and General Chair  
**Michele Polo**, Bocconi University, Eni Chair in Energy Markets, President Green  
**Matteo Di Castelnuovo**, MaGER Director and Research Fellow GREEN, Bocconi University, Organization Committee Chair  
**Agime Gerbeti**, LUMSA University, Programme Committee Chair
- Keynote speaker*  
**Davide Crippa**, Under Secretary, Italian Ministry of Economic Development
- 17.00 - 18.30 **Welcome Cocktail** (*Venue Oval Hall*)

## Tuesday, December 11, 2018

- 08.30 - 17.00 **Registration**
- 08.30 - 10.30 **Welcome coffee** (*Venue Oval Hall*) **Offered by** 
- 09.00 - 10.30 **Concurrent Sessions (1-4)**
- 01 Energy efficiency in buildings** (*Room N02*)  
*Chair: Vittorio De Martino, AIEE, Italy*
  - 02 The gas market: new perspectives?** (*Room N03*)  
*Chair: Silvia Pariente-David, Center for Mediterranean Integration*
  - 03 The energy-environment nexus** (*Room N04*)  
*Chair: Fereidoon P. Sioshansi, Menlo Energy Economics, USA*
  - 04 The multiple paths of electricity: new challenges** (*Room N05*)  
*Chair: Lucia Visconti Parisio, Bicocca University Italy*
- 10.30 - 11.30 **Dual Plenary Sessions**
- EU towards 2030 and the energy security concerns*** (*Room N03*)  
*Chair: Agime Gerbeti, Adjunct Professor, LUMSA University, Italy*
- Regulatory challenges and market developments*** (*Room N02*)  
*Chair: Alessandro Ortis, President Stati Generali dell'Efficienza Energetica*
- 11.30 - 13.00 **Concurrent Sessions (5-8)**
- 05 Innovation for energy systems** (*Room N02*)  
*Chair: Alessandro Clerici, FAST and WEC Italy*
  - 06 Decarbonizing the gas sector** (*Room N03*)  
*Chair: Spiros Papaefthimiou, University of Crete, Greece*
  - 07 Energy security & climate change** (*Room N04*)  
*Chair: Mario Iannotti, Ministry of Environment, Italy*
  - 08 The Electricity market: risks and opportunities** (*Room N05*)  
*Chair: Elena Fumagalli, Utrecht University, The Netherlands*
- 13.00 - 14.00 **Lunch buffet** (*Venue Oval Hall*)
- 14.00 - 15.30 **Dual Plenary Sessions**
- Energy industry challenges to a low-carbon economy, the gas role in the transition*** (*Room N03*)  
*Chair: Carlo Di Primio, AIEE President, Italy*
- Sustainable mobility challenges for the transition targets*** (*Room N02*)  
*Chair: G.B. Zorzoli, President FREE*

15.30 – 17.00 **Concurrent Sessions (9-12)**

- 09 The energy-economy nexus** (Room N02)  
*Chair:* Luigi De Paoli, Bocconi University, Italy
- 10 The union of national energy markets** (Room N03)  
*Chair:* Silvana Stefani, Bicocca University, Italy
- 11 Global assessment of energy security, efficiency and sustainability** (Room N04)  
*Chair:* Ionut Purica, Romania Academy and AOSR, Romania
- 12 The market prospect of electric vehicles** (Room N05)  
*Chair:* Matteo Di Castelnuovo, Bocconi University, Italy

18.00 - 20.00 **Gala Cocktail** (*MORGANTE - cocktail & soul restaurant - address: Vicolo Privato Lavandai,2*)

## Wednesday, December 12, 2018

08.30 - 17.00 **Registration**

08.30 - 10.30 **Welcome coffee** (*Venue Oval Hall*)

Offered by



09.00 - 10.30 **Concurrent Sessions (13-16)**

- 13 The link between the growth of energy consumption, population and income levels** (Room N02)  
*Chair:* Reinhard Haas, Vienna University of Technology, Austria
- 14 The energy policies post Paris Agreement and the energy roadmap to 2050** (Room N03)  
*Chair:* Agime Gerbeti, LUMSA University, Italy
- 15 Integrating renewables in energy markets** (Room N04)  
*Chair:* Carlo Andrea Bollino, AIEE, Italy
- 16 Strategic contribution of energy storage to energy security** (Room N05)  
*Chair:* Silvana Mima, CNRS-GAEL, France

10.30 - 11.30 **Dual Plenary Sessions**

**Grid security and new technologies** (Room N03)

*Chair:* Carlo Andrea Bollino, Honorary President AIEE, Italy

**Europe Roadmap and the future strategies of the energy industry** (Room N02)

*Chair:* Vittorio D'Ermo, Vice President AIEE, Italy

11.30 - 13.00 **Concurrent Sessions (17-20)**

- 17 Energy supply and security** (Room N02)  
*Chair:* Vittorio D'Ermo, AIEE, Italy
- 18 Technology development - Grid management** (Room N03)  
*Chair:* Iain Staffell, Imperial College London, UK
- 19 The transition to renewable & smart energies and the decarbonization project** (Room N04)  
*Chair:* Francesco Gulli, Bocconi University, Italy
- 20 From Consumers to nonconsumers: How new behind-the-meter service options are disrupting utility business models** (Room N05)  
*Chair:* Nicola Sorrentino, University of Calabria, Italy

13.00 - 14.00 **Lunch buffet** (*Venue Oval Hall*)

14.00 - 15.30 **Concurrent Sessions (20-24)**

- 21 Current Oil Market Dynamics** (Room N02)  
*Chair:* Elisa Scarpa, Head of Market Analysis, Structuring & Pricing Edison, Italy
- 22 Technology development** (Room N03)  
*Chair:* Carlo Di Primio, AIEE, Italy
- 23 Perspectives of transport sector** (Room N04)  
*Chair:* Oliviero Bacelli, GREEN Bocconi University, Italy
- 24 European energy security strategies** (Room N05)  
*Chair:* Julia Vainio, Subject Matter Expert, NATO ENSEC COE, Lithuania

# Conference programme

Tuesday, December 11, 2018

## 09.00 - 10.30 Concurrent Sessions (1-4)

### 1 Energy efficiency in buildings (Room N02) Chair: Vittorio De Martino, AIEE, Italy

**An Assessment of Urban Energy Systems Focusing on the Cooling Energy Demand in Hot Summer Days by an Energy Network Model with 151 Subregions of Tokyo Koto Area**

*Presenter:* Shunsuke Mori, Tokyo University of Science, Japan  
*Authors:* Shunsuke Mori, Aya Kishimoto and Satoshi Ohnishi

**Heat cost allocation: an evaluation of benefits, on the basis of actual operation data**

*Presenter:* Giuseppe Dell'Olio, GSE, Italy  
*Author:* Giuseppe Dell'Olio

**Endogenous energy efficiency improvement of large-scale refurbishment in the Swiss residential building stock**

*Presenter:* Sergey Arzoyan, École Polytechnique Fédérale de Lausanne (EPFL), Switzerland  
*Authors:* Sergey Arzoyan, Quirin Oberpriller, Marc Vielle, Michel Zimmermann

**Residential solar pv investment: the role of beauty, budget and risk**

*Presenter:* Beatrice Petrovich, University of St. Gallen, Switzerland  
*Authors:* Beatrice Petrovich, Stefano Carattini, Rolf Wüstenhagen

### 3 The energy-environment nexus (Room N04) Chair: Fereidoon P. Sioshansi, Menlo Energy Economics, USA

**Low-carbon electricity generation scenarios for Tanzania: implications for the country's economy and the environment**

*Presenter:* Elena Fumagalli, Copernicus Institute of Sustainable Development, Utrecht University, Germany  
*Authors:* Elena Fumagalli, Matteo Rocco

**Real-time Carbon-emissions and consumer responsibility - a marginal approach for an open economy: The case of the Swiss Electricity Consumption**

*Presenter:* Eliot Romano, University of Geneva, Switzerland  
*Authors:* Eliot Romano, Pierre Hollmuller, Martin K. Patel

**Evaluation of environmental and economic feasibility of Renewable Energy Systems; A stochastic life cycle assessment and cost analysis approach**

*Presenter:* Maria Milousi, Technical University of Crete, Greece  
*Authors:* Maria Milousi, Manolis Souliotis, Emiliios Galariotis, Spiros Papaefthimiou, Georgia Makridou

**Areva, EDF, and the Economic Viability of the Closed Fuel Cycle**

*Presenter:* Ryan T. Brown, UN Economic Commission for Europe, The University of Texas at Austin  
*Authors:* Ryan T. Brown

### 2 The gas market: new perspectives? (Room N03) Chair: Silvia Pariente-David, Senior advisor and energy consultant, Center for Mediterranean Integration

**Development of LNG markets & its impact on valuation of natural gas resources in CEE countries**

*Presenter:* Robert Uberman, University of Rijeka, Poland  
*Authors:* Robert Uberman, Saša Ziković

**China's gas demand in low carbon transition: implications for the international natural gas markets**

*Presenter:* Silvana Mima, CNRS-GAEL, France  
*Authors:* Silvana Mima, Catherine Locatelli, Olga Garanina

**Emergence and Consolidation of a Hybrid Paradigm in the European Gas Market: A Computational Simulation**

*Presenter:* Arnaldo Orlandini, Universidad Complutense de Madrid, Spain  
*Authors:* Arnaldo Orlandini, Meliyara Consuegra

**Playing on two markets: investment evaluation of a biogas – bio-methane power plant in a Smart Grid environment**

*Presenter:* Marina Bertolini, University of Padova, Department of Economics and Management and CRIEP, Italy  
*Authors:* Marina Bertolini, Dimitrios Zormpas

### 4 The multiple paths of electricity: new challenges (Room N05) Chair: Lucia Visconti Parisio, Bicocca University Italy

**The value of security for Swiss residential electricity consumers – a discrete choice analysis**

*Presenter:* Alessandra Motz, Università della Svizzera italiana, Switzerland  
*Author:* Alessandra Motz

**The measurement of unobserved economy through electricity demand**

*Presenter:* Amedeo Argentiero, University of Perugia, Italy  
*Authors:* Amedeo Argentiero, Simona Bigerna, Maria Chiara D'Errico, Silvia Micheli, Paolo Polinori

**An econometrics analysis of residential energy demand satisfied by heat pumps: lessons from international experience**

*Presenter:* Sophia Kokoni, University of Surrey, UK  
*Authors:* Sophia Kokoni

**Market Design of an Energy Exchange: the case of Greece**

*Presenter:* Filippos Ioannidis, Aristotle University of Thessaloniki, Department of Economics, Greece  
*Authors:* Filippos Ioannidis, Kyriaki Kosmidou, Kostas Andriosopoulos

## 10.30 - 11.30 Dual Plenary Sessions

**EU towards 2030 and the energy security concerns**  
(Room N03)

*Chair:* **Agime Gerbeti**, Adjunct Professor, LUMSA University, Italy

**Kostas Andriosopoulos**, Executive Director, Research Centre for Energy Management (RCEM), Chairman, Hellenic Association for Energy Economics, Professor of Finance and Energy Economics, ESCP, Greece

**Samuele Furfari**, Professor of Geopolitics Université Libre de Bruxelles, Belgium

**Marco Falcone**, Government Relations and Issues Manager, Esso Italiana, Italy

**Giulio Volpi**, Policy Coordinator, Directorate General for Energy of the European Commission

**Regulatory challenges and market developments**  
(Room N02)

*Chair:* **Alessandro Ortis**, President Stati Generali dell'Efficienza Energetica, Past President of ARERA, Italy

**Giordano Colarullo**, General Manager, Federation of the Italian Utilities - Utilitalia, Italy

**Simona Ciancio**, Head of Market Regulation Terna, Italy

**Alessandro Ortis**, President Stati Generali dell'Efficienza Energetica, Past President of ARERA, Italy

**Pippo Ranci**, Catholic University of Milan and Advisor, Florence School of Regulation, Past President of ARERA, Italy

## 11.30 - 13.00 Concurrent Sessions (5-8)

### 5 Innovation for energy systems (Room N02) Chair: Alessandro Clerici, FAST and WEC Italy

#### Trends and long-run relations in electricity prices: why prefiltering is inevitable

Presenter: Matteo Pelagatti, DEMS, University of Milan Bicocca, Italy  
Authors: Matteo Pelagatti, Angelica Gianfreda and Lucia Parisio

#### Exploring pathways of solar PV learning in integrated assessment models

Presenter: Samuel Carrara, FEEM/University of California, Berkeley, Italy  
Authors: Samuel Carrara, Michela Bevione, Harmen-Sytze de Boer, David Gernaat, Silvana Mima, Robert C. Pietzcker, Massimo Tavoni

#### Valuing (in) security of electricity supply: A discrete choice experiment for Estonia, the Netherlands and Portugal

Presenter: Sergio Giaccaria, Joint Research Center–European Commission EU  
Authors: Sergio Giaccaria, Alberto Longo, Thijs Bouman, Tilemahos Efthimiadis

#### On the impact of wind feed-in and solar power generation on Nuclear electricity production: The case of France

Presenter: François Benhmad, Montpellier University, France  
Authors: François Benhmad, Jacques Percebois

### 6 Decarbonizing the gas sector (Room N03) Chair: Spiros Papaefthimiou, University of Crete, Greece

#### Towards renewable natural gas

Presenter: Giuseppe Ferrari, Bocconi University, Italy  
Authors: Giuseppe Ferrari, Iñigo del Guayo

#### Synthetic Natural Gas: an Option Complementing Renewable Energy and Supporting Decarbonisation?

Presenter: Simon Morgenthaler, Institute of Energy and Climate Research – System Analysis and Technology Evaluation (IEK-STE), Forschungszentrum Jülich GmbH, Germany  
Authors: Simon Morgenthaler, Christopher Ball, Wilhelm Kuckshinrichs

#### Decarbonizing the Gas Sector: is Renewable Gas a Serious Option?

Presenter: Andris Piebalgs, Florence School of Regulation, Latvia  
Authors: Andris Piebalgs, Maria Olczak

### 7 Energy security & climate change (Room N04) Chair: Mario Iannotti, Ministry of Environment, Italy

#### Big data analysis to seek climate change proof and its risk mitigation

Presenter: Ionut Purica, Romanian Academy and AOSR, Romania  
Authors: Ionut Purica

#### The main results of the G-20 peer review on fossil-fuel subsidies

Presenter: Mario Iannotti, SOGESID/Italian Ministry of Environment, Italy  
Author: Mario Iannotti

#### Management of natural & anthropogenic risks in energy infrastructure projects

Presenter: Prodromos Psarropoulos, National Technical University of Athens, Greece  
Authors: Prodromos Psarropoulos

#### A new Governance regulation to foster renewable cooperation post 2020

Presenter: Agime Gerbeti, LUMSA University, Italy  
Author: Agime Gerbeti

### 8 The Electricity market: risks and opportunities (Room N05) Chair: Elena Fumagalli, Copernicus Institute for Sustainable Development, Utrecht University, The Netherlands

#### Heading towards sustainable and democratic electricity system

Presenter: Reinhard Haas, Vienna University of Technology, Austria  
Authors: Reinhard Haas, Hans Auer

#### An intra-day analysis of electricity forward premia

Presenter: Kun Li, Beijing Normal University, Cina  
Authors: Kun Li

#### Behind and beyond the meter: How new BTM service options are disrupting utility business model

Presenter: Fereidoon P. Sioshansi, Menlo Energy Economics, USA  
Author: Fereidoon P. Sioshansi

#### Distribution network tariffs and active consumers: a bi-level equilibrium modelling approach

Presenter: Tim Schittekatte, Florence School of Regulation, Université Paris-Sud, France  
Authors: Tim Schittekatte, Leonardo Meeus



## 13.00 - 14.00 Lunch buffet (Venue Oval Hall)

Offered by **ExxonMobil**

## 14.00 - 15.30 Dual Plenary Sessions

### Energy industry challenges to a low-carbon economy, the gas role in the transition (Room N03)

Chair: Carlo Di Primio, AIEE President, Italy

**Alfredo Balena**, Adriatic LNG Public & Government Affairs Manager, Italy

**Marco Brun**, CEO Shell Italia, Italy

**Michele Mario Elia**, Country Manager Italia di TAP – Trans Adriatic Pipeline, Italy

**Camilla Palladino**, EVP Corporate Strategy and Investor Relations, Snam, Italy

**Giuseppe Ricci**, President Confindustria Energia (The Italian Industry Federation), Italy

### Sustainable mobility challenges for the transition targets (Room N02)

Chair: G.B. Zorzoli, President FREE

**Amela Ajanovic**, Associate Professor & Senior Research Scientist, Energy Economics Group, Vienna University of Technology, Austria

**Vittorio Chiesa**, Professor Polytechnic University of Milan, Italy

**Adil Gaoui**, Professor GEC Marrakech-École de Management, Delegate Africa–Middle East AAQIUS, STOR-H General Manager, Morocco

**Alberto Piglia**, Head of e-Mobility Enel X, Italy

**Emanuele Proia**, General Manager Italian Local Public Transport Association (ASSTRA), Italy

## 15.30 - 17.00 Concurrent Sessions (9-12)

- 9 The energy-economy nexus (Room N02)**  
*Chair:* Luigi De Paoli, Bocconi University, Italy

**Hedging rainfall exposure through hybrid financial instruments**

*Presenter:* Enrico Moretto, University of Insubria Varese, Italy  
*Authors:* Silvana Stefani, Gleda Kutrolli, Enrico Moretto, Adeyemi Sonubi, Vanda Tulli

**Development of dynamic scenarios: Depicting path dependencies and nonlinearities within storylines**

*Presenter:* Philip Mayer, TU Bergakademie Freiberg, Germany  
*Authors:* Philip Mayer, Stefan Vögele, Kristina Govorukha, Dirk Rübhelke

**Financial performance assessment of electricity companies: evidence from Portugal**

*Presenter:* Elisabete Neves, Polytechnic Institute of Coimbra, Portugal  
*Authors:* Elisabete Neves, Carla Henriques, João Vilas

**The energy performance contract (EPC) as an instrument of private public partnership for the energy requalification of public real estate assets**

*Presenter:* Francesco Scalia, University of Cassino, Italy  
*Authors:* Francesco Scalia

- 12 The market prospect of electric vehicles (Room N05)**  
*Chair:* Matteo Di Castelnuovo, Bocconi University, Italy

**The impact of electric vehicles on air quality related health costs**

*Presenter:* Raffaele Galdi, Bocconi University, Italy  
*Authors:* Gabriele Grea, Raffaele Galdi

**A Comprehensive view of electric mobility impact**

*Presenter:* Alberto Pincherle  
*Author:* Alberto Pincherle

**Energy Technology, case of electric vehicles, why is it so hard to change course?**

*Presenter:* Carolina Merighi, Intesa San Paolo Corporate and Investment Banking Madrid Branch  
*Authors:* Carolina Merighi

**On the environmental benignity and the market prospects of electric vehicles**

*Presenter:* Amela Ajanovic, Energy Economics Group, Vienna University of Technology, Austria  
*Authors:* Amela Ajanovic, Reinhard Haas

- 10 The union of national energy markets (Room N03)**  
*Chair:* Silvana Stefani, Bicocca University, Italy

**Division of powers between the EU and its member states: implications for energy security**

*Presenter:* Martin Svec, Masaryk University, Czech Republic  
*Authors:* Martin Svec

**Regulating Energy Markets: The Experience of South Eastern Europe**

*Presenter:* Sotirios Manolkidis, Hellenic Regulatory Authority for Energy (RAE), Grece  
*Author:* Sotirios Manolkidis

**Sector Coupling – the new EU Climate & Energy paradigm?**

*Presenter:* Maria Olczak, Florence School of Regulation, Poland  
*Authors:* Maria Olczak, Andris Piebalgs

**Competition and Regulation with Smart Grids**

*Presenter:* Marco Buso, University of Padua, Italy  
*Authors:* Marco Buso, Luciano Greco, Marina Bertolini

- 11 Global assessment of energy security, efficiency and sustainability (Room N04)**  
*Chair:* Ionut Purica, Romania Academy and AOSR, Romania

**Fuel Poverty Measurements in America. Who are the Most Vulnerable?**

*Presenter:* Michael Chesser, Dublin Institute of Technology, Ireland  
*Authors:* Michael Chesser, Jim Hanly, Damien Cassells

**Energy-Materials Nexus for a Low Carbon Energy System**

*Presenter:* Daisy de Selliers, UCL Energy Institute, U.K.  
*Authors:* Daisy de Selliers, Catalina Spataru

**Plastic to Fuel, an innovative solution for energy security**

*Presenter:* Gianluca Carrino, AIEE, Italy  
*Author:* Gianluca Carrino

**Is Energy Consumption Neutral to Economic Growth? An Empirical Analysis on Energy Conservation and Decoupling**

*Presenter:* Marco Martinez, Sant'Anna School of Advanced Studies and University of Pisa, Italy  
*Authors:* Marco Martinez, Francesco Lamperti, Mattia Guerini and Matteo Coronese

## 18.00 - 20.00 Gala cocktail



December 11, 2018 - h 18.00-20.00

### Gala cocktail

at the **MORGANTE - cocktail & soul restaurant**

*address:* Vicolo Privato Lavandai, 2

A very special moment in a restaurant-bar on one of the channels of the Navigli at 10 minutes walk from the venue.

At **Christmas** time it is all decorated by lights that reflect in the waters of the channel. The atmosphere of the **Navigli** is unique in the night - the Milan night-life goes here where many clubs open and offer fun and music for all.

**Navigli** is the ancient channel system of Milan, was built by **Leonardo da Vinci**. This hydraulic work originally provided to connect the Darsena in Milano (a kind of little Harbor in a city centre) with the Ticino river and reach the sea through the Po river. Leonardo da Vinci designed this set of channels in the **16<sup>th</sup> century**, the building was also implemented in the 17th century and completed during Napoleon dominion. The construction of the **Naviglio Grande** began in 1179 and in 1209 the canal arrived in Milan. The best engineers dedicated themselves to this project from the first day.

Still today the **Naviglio** is the most innovative system of the dams designed by Leonardo da Vinci in **15<sup>th</sup> century**.





## Wednesday, December 12, 2018

### 09.00 - 10.30 Concurrent Sessions (13-16)

#### 13 The link between the growth of energy consumption, population and income levels (Room N02)

Chair: Reinhard Haas, Vienna University of Technology, Austria

#### Energy demand and economic growth: panel data evidence from developing countries (ASEAN 4)

Presenter: Abd Aziz Azlina, University Malaysia Terengganu, Malaysia  
Authors: Abd Aziz Azlina, Mahirah Kamaludin, Azilah Hasnisah

#### Can oil based power companies improve the household welfare in Bangladesh economy? a DSGE analysis

Presenter: Sakib Amin, Durham University Business School, UK  
Authors: Sakib Amin, Laura Marsiliani, Thomas Renstrom

#### The study of the impact of economic and population growth on energy consumption: a statistical approach

Presenter: Mohammed AL-Otaibi, National Industrialization Company (Tasnee), Saudi Arabia  
Authors: Hamad M. Mudij, Mohammed AL-Otaibi

#### 14 The energy policies post Paris Agreement and the energy roadmap to 2050 (Room N03)

Chair: Agime Gerbeti, LUMSA University, Italy

#### Physical adequacy in power generation: Spain beyond 2020

Presenter: José Manuel Chamorro, University of the Basque Country UPV/EHU, Spain  
Authors: Luis María Abadie, José Manuel Chamorro

#### Consideration about Hydrogen and Fuel Cells in the Paris Agreement 1.5°C Perspective

Presenter: Mario Valentino Romeri, Energy consultant  
Author: Mario Valentino Romeri

#### Vision 2050 - A pathway for the evolution of the refining industry and liquid fuels

Presenter: Franco Del Manso, Unione Petrolifera, Italy  
Author: Franco Del Manso

#### Switch and defer options in renewable energy projects: evidences from Brazil

Presenter: André Luis da Silva Leite, Federal University of Santa Catarina – UFSC, Brasil  
Authors: André Luis da Silva Leite, Luis Eduardo Nunes, Marcus Vinicius Lima

#### 15 Integrating renewables in energy markets (Room N04)

Chair: Carlo Andrea Bollino, AIEE, Italy

#### How futures materialize: a case future frame of renewable energy the in Denmark

Presenter: Sietske Veenman, Radboud University, The Netherlands  
Authors: Sietske Veenman, Karl Sperling

#### Assessing the relevance of renewable generation localization through a spot market algorithm simulator: the case of Italy

Presenter: Silvia Concettini, Université de Tours – IRJI François Rabelais, France  
Authors: Silvia Concettini, Stanislao Gualdi, Anna Cret

#### Corporate renewable energy procurement through PPAs in the United States

Presenter: Monika Dimitrova, Bocconi University, Italy  
Authors: Matteo di Castelnuovo, Monika Dimitrova

#### The hydrogen production from RES impact on energy and fuel markets

Presenter: Gaetano Squadrito, Institute for Advanced Energy Technologies “Nicola Giordano” CNR-ITAE, Italy  
Authors: Agatino Nicita, Gaetano Maggio, Antonio P.F. Andaloro, Gaetano Squadrito

#### 16 Strategic contribution of energy storage to energy security (Room N05)

Chair: Silvana Mima, CNRS-GAEL, France

#### Valuing the impact on network reliability of residential battery storage

Presenter: Damian Shaw-Williams, Queensland University of Technology, Australia  
Author: Damian Shaw-Williams

#### Dispatch Auction Designs and Arbitrage Strategies for Energy Storage Units

Presenter: Olvar Bergland, School of Economics and Business Norwegian University of Life Sciences, Norway  
Author: Olvar Bergland

#### BESS for Primary Frequency Regulation in Support of Thermal Power Plants

Presenter: Silvia Canevese, Ricerca sul Sistema Energetico – RSE, Italy  
Authors: Silvia Canevese, Antonio Gatti

#### Rising flexibility needs in the power sector and the growing role of energy storage in the World Energy Outlook

Presenter: Claudia Pavarini, International Energy Agency -IEA  
Author: Claudia Pavarini

### 10.30 - 11.30 Dual Plenary Sessions

#### Grid security and new technologies (Room N03)

Chair: Carlo Andrea Bollino, Honorary President AIEE, Italy

Luca Bragoli, Head of International and Institutional Affairs ERG, Italy

Matteo Codazzi, Chief Executive Officer CESI, Italy

Salvatore Pinto, President Axpo, Italy

Agostino Re Rebaudengo, Vice President, Elettricità Futura, Italy

#### Europe Roadmap and the future strategies of the energy industry (Room N02)

Chair: Vittorio D'Ermo, Vice President AIEE, Italy

Massimo Bruno, Head of Institutional Affairs Italy ENEL, Italy

Dario Di Santo, Head Manager, Italian Federation for energy efficiency – FIRE

Felice Egidi, Federmanager - Federation of Italian Managers, Italy

Nicola Pedde, Director of the Institute for Global Studies, Editor of “Geopolitics of the Middle East”, Italy

## 11.30 - 13.00 Concurrent Sessions (17-20)

### 17 Energy supply and security (Room N02) Chair: Vittorio D'Ermio, AIEE, Italy

#### The geopolitical impact of Nord Stream 2

Presenter: Balázs R. Sziklai, Hungarian Academy of Sciences, Hungary  
Authors: Balázs R. Sziklai, László Á. Kóczy, Dávid Csércsik

#### How the increase of renewable energy sources will change our energy security landscape – a look on the Baltic Sea Region states

Presenter: Julia Vainio, NATO ENSEC COE, Lithuania  
Author: Julia Vainio

#### A risk-based evaluation of European natural gas supply security – The case of Nordstream 2

Presenter: László Á. Kóczy, Budapest University of Technology and Economics, Hungarian Academy of Sciences, Hungary  
Authors: László Á. Kóczy, Dávid Csércsik, Balázs R. Sziklai

### 18 Technology development - Grid management (Room N03) Chair: Iain Staffell, Imperial College London, UK

#### Distributed technologies in the energy markets: Welfare effects in legacy networks

Presenter: Anna Rita Bennato, Loughborough University, UK  
Authors: Andrew Burlinson, Anna Rita Bennato, Monica Giulietti

#### Optimality study of uplifts with a primal-dual solution approach for the Convex Hull Pricing problem

Presenter: Alvarez Cristian, Universidad Técnica Federico Santa María, Chile  
Authors: Alvarez Cristian, Alejandro Angulo, Pablo Escalona

#### Revealing Consumption Patterns from Meter Readings: a structural deep machine learning approach

Presenter: Olvar Bergland, School of Economic Sciences - Washington State University  
Authors: Olvar Bergland, Alan Love

#### Elecxit: The Impact of Barriers to Electricity Trade After Brexit

Presenter: Iain Staffell, Imperial College London, UK  
Authors: Joachim Geske, Richard Green, Iain Staffell

### 19 The transition to renewable & smart energies and the decarbonization project (Room N04) Chair: Francesco Gulli, Bocconi University, Italy

#### Smart energy transition – technology convergence of renewable energy and ICT sectors

Presenter: Hanna-Liisa Kangas, Finnish Environment Institute SYKE, Finland

Authors: Hanna-Liisa Kangas, Kimmo Ollikka, Kim Yukyeong

#### A proposal for assessing wind power systems in Europe

Presenter: Carla Henriques, Polytechnic Institute of Coimbra - Coimbra Business School – ISCAC, Portugal  
Authors: Carla Henriques, Patrícia Pereira da Silva, Nuno Figueiredo

### 20 From Consumers to nonusers: How new behind-the-meter service options are disrupting utility business models (Room N05) Chair: Nicola Sorrentino, University of Calabria, Italy

#### Power Cloud: a framework to implement a “nonuser” community

Presenter: Nicola Sorrentino, University of Calabria, Italy  
Authors: Nicola Sorrentino, Daniele Menniti, Anna Pinnarelli

#### Day-ahead demand management at microgrid level using Artificial Neural Network predictions and Genetic Algorithm optimisation

Presenter: Nikolas Kampelis, Technical University of Crete, Greece  
Authors: Nikolas Kampelis, E. Tsekeri, D. Kolokotsa, K. Kalaitzakis, D. Isidori, C. Cristalli

#### Customer stratification and different concepts of decentralization

Presenter: Dierk Bauknecht, Öko-Institute, Germany  
Authors: Dierk Bauknecht, Joß Bracker, Franziska Flachsbarth, Christoph Heinemann, Dominik Seebach, Moritz Vogel

#### Limits of traditional distribution network tariff designs and options to move beyond

Presenter: Tim Schittekatte, Florence School of Regulation  
Authors: Tim Schittekatte, Leonardo Meeus

## 13.00 - 14.00 Lunch buffet (Venue Oval Hall)

## 14.00 - 15.30 Concurrent Sessions (20-24)

### 21 Current Oil Market Dynamics (Room N02)

Chair: Elisa Scarpa, Head of Market Analysis, Structuring & Pricing Edison, Italy

#### Determinants of Volatility Smile: the Case of Crude Oil Options

Presenter: Vesa Soini, University of Stavanger, Norway  
Authors: Vesa Soini, Sindre Lorentzen

#### A comparison of various oil price forecasting methods with a large number of variables

Presenter: Krzysztof Drachal, Faculty of Economic Sciences, University of Warsaw  
Author: Krzysztof Drachal

#### Time and frequency dynamics of connectedness between renewable energy stocks and crude oil prices

Presenter: Syed Jawad Hussain Shahzad, Montpellier Business School, France  
Authors: Román Ferrer, Syed Jawad Hussain Shahzad; Raquel López; Francisco Jareño

### 22 Technology development (Room N03)

Chair: Carlo Di Primio, AIEE, Italy

#### Value of electricity supply security: a case study for Germany

Presenter: Thomas Schröder, Institute of Energy and Climate Research – Systems Analysis and Technology Evaluation (IEK-STE), Forschungszentrum Jülich GmbH, Germany  
Author: Thomas Schröder

#### Smart meters in Sweden- lessons learned and new regulations

Presenter: Yalin Huang, Energy Market Inspectorate, Sweden  
Authors: Yalin Huang, Elin Grahn

#### Potentials and limitations of photovoltaic-based cellular energy systems in southern Germany

Presenter: Matthias Kühnbach, Fraunhofer ISI, Germany  
Authors: Matthias Kühnbach, Stefan Pisula, Anke Eßer

#### Determined A Reference Price by CO2 Abatement Cost for Window Films

Presenter: Sheng-Dih Hwang, Institute of Nuclear Energy Research, Atomic Energy Council, ROC, Taiwan  
Authors: Sheng-Dih Hwang, Yu-Ching Huang

**24 European energy security strategies** (Room N05)  
*Chair:* Julia Vainio, Subject Matter Expert, NATO ENSEC COE, Lithuania

**Regulation and efficiency: which governance model for energy security after the Winter Package?**

*Presenter:* Marina Petri, Bocconi University, Italy  
*Author:* Marina Petri

**Ready for the next step? The human capital of German renewable energy cooperatives' management with a view to implementing new business models**

*Presenter:* Benedikt Rilling, Nuertingen-Geislingen University, ISR, Germany

*Authors:* Carsten Herbes, Benedikt Rilling, Lars Holstenkamp

**Anticipatory Strategies for Eastern European Natural Gas Security**

*Presenter:* Ryan T. Brown, UN Economic Commission for Europe, The University of Texas at Austin

*Author:* Ryan T. Brown

**Belt & Road initiative: Challenge or chance for the European energy security?**

*Presenter:* Maria Belka, Forschungszentrum Jülich, Germany  
*Authors:* Maria Belka

**23 Perspectives of transport sector** (Room N04)  
*Chair:* Oliviero Bacelli, GREEN Bocconi University

**Impact of Euro 6 diesel passenger cars on urban air quality compliance in Italy**

*Presenter:* Franco Del Manso, Unione Petrolifera, Italy  
*Authors:* Franco Del Manso

**The future of technologies for mobility, a model based approach**

*Presenter:* Gabin Mantulet, LPSC – CNRS, Laboratoire de Physique Subatomique & Cosmologie, France

*Authors:* Gabin Mantulet, Silvana Mima, Adrien Bidaud

**Current development and future potential of carsharing in Spain: insights from experts and users in-depth interviews**

*Presenter:* Alessandro Silvestri, Basque Centre for Climate Change (BC3), Spain

*Authors:* Alessandro Silvestri, Sebastien Foudi, Ibon Galarraga

**Prospects for the development of Polish electromobility**

*Presenters:* Wojciech Drożdż, Szczecin University/ENEA Operator and Jakub Dowejko, ENEA Operator, Poland

*Author:* Wojciech Drożdż

# The 4th AIEE Energy Symposium on Current and Future Challenges to Energy Security

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## Conference Secretariat

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# NOTES

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