

CONFERENCE FOR SUSTAINABLE ENERGY

BRAȘOV
October 19-21, 2017

PROGRAM

CSE 2017

Conference for Sustainable Energy, 5th Edition
Transilvania University of Brasov
RESREC Centre, 19-21 October 2017

Detailed Conference Program

Wednesday, October 18th, 2017

19:00 **Welcome party**

Thursday, October 19th, 2017,
R&D Institute of the Transilvania University, 10 Institutului str., Braşov

08:00 - 09:00 **Participants' registration**

09:00 - 09:30 **Opening ceremony**

Plenary sessions, Room L2-1

09:30 - 10:15 **PL1 - Renewable energy systems: Current status and prospects**

Kalogirou Soteris

Cyprus University of Technology

10:15 - 10:45 **PL2 - Nanostructured oxide photocatalysts and sensors for waste water treatment**

Zaharescu Maria

Member of the Romanian Academy, Institute of
Physical Chemistry, Bucharest

10:45 - 11:15 **Coffee break**

11:15 - 12:35 **Oral presentations: Topics 1, 2, 3 and 4**

12:35 - 14:00 **Lunch**

14:00 - 15:20 **Oral presentations: Topics 1, 3 and 5**

15:30 - 16:00 **Coffee break**

16:00 - 18:30 **Workshop 1 (European grants: COST BISTS, EST IN
URBA, SOLTRICOL) and**

Workshop 2 (M-ERANET grant: WaterSafe)

19:00 **Gala dinner**

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Friday, October 20th, 2017

R&D Institute of the Transilvania University, 10 Institutului str., Braşov

- 09:00 - 09:45** **Visit of the RESREC Centre**
Plenary sessions, Room L2-1
- 09:45 - 10:15** **PL3 - Research directions in photovoltaic conversion**
Badescu Viorel
Corresponding member of the Romanian Academy,
"Candida Oancea" Institute of the University
Politehnica of Bucharest
- 10:15 - 10:45** **PL4 - 100% Renewable energy system for
Southeastern Europe, how to make it and how to
profit locally from the transition**
Duic Neven
University of Zagreb
- 10:45 - 11:15** Coffee break
- 11:15 - 12:35** **Oral presentations: Topics 1, 2, 3 and 5**
- 12:35 - 14:00** Lunch
- 14:00 - 16:30** **Workshop 3: Nearly Zero Energy Communities
(nZEC)**
- 16:30 - 17:00** Coffee break
- 17:00 - 19:00** **Workshop 4 P.A.E.S. Housing Policies for Sustainable
Construction project: transfer of good practices**

Saturday, October 21st, 2017

- 09:00 - 11:00** **Visit of the RESREC Center on the Colina Hill,**
pick-up at ARO Hotel at 08:30
- 11:00 - 16:00** **Visit to Dracula Castle, Bran**

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TOPIC 1

NEARLY ZERO ENERGY BUILDINGS AND COMMUNITIES

Thursday, October 19th, 2017, 11:15 – 12:20

Room L2-1, Chairperson: Badescu Viorel

11:15 - 11:35 **Implementing renewable energy systems in nearly zero energy communities**
KN I-01

Ion Visa, Anca Duta, Macedon Moldovan, Bogdan Burduhos

Transilvania University of Brasov - RESREC Centre

11:35 - 11:50 **Building with the sun. passive solar day lighting systems in architecture**
I-06

Ana-Maria Dabija

"Ion Mincu" University of Architecture and Urbanism,
Bucharest

11:50 – 12:05 **Renewable energy systems for a multi-family building community**
I-10

Macedon Moldovan, Ion Visa

Transilvania University of Brasov - RESREC Centre

12:05 – 12:20 **EFDEN prototype - a sustainable and low energy consumption house presented at solar decathlon 2014**
I-05

Tiberiu Catalina, Mihai Baiceanu, Eduard-Daniel Raducanu, Mihai Toader Pasti, Claudiu Butacu

Technical University of Civil Engineering, Bucharest

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TOPIC 1

Thursday, October 19th, 2017, 14:00 – 15:20

Room L2-1, Chairperson: Duic Neven

- | | |
|----------------|---|
| 14:00 - 14:20 | Energy initiatives in Europe |
| KN I-07 | <i>Yoram Krozer</i>
University of Twente, The Netherlands |
| 14:20 – 14:35 | Renewable energy management using embedded smart systems |
| I-03 | <i>Viorel Miron Alexe, Iulian Bancuta, Nicolae Vasile</i>
"Valahia" University of Targoviste, ICSTM |
| 14:35 – 14:50 | The role of energy management systems in nZEB and nZEC |
| I-04 | <i>Bogdan Burduhos, Anca Duta, Macedon Moldovan</i>
Transilvania University of Brasov - RESREC Centre |
| 14:50 – 15:05 | Energy consumption in buildings. performance breakdown analysis considering the building services efficiency and the usage pattern |
| I-08 | <i>Eugen Mandric, Mugurel-Florin Talpiga, Florin Iordache</i>
Technical University of Civil Engineering Bucharest |
| 15:05 – 15:20 | On the problem of the contemporary building energy systems |
| I-09 | <i>Nicolay Mihailov, Ognyan Dinolov, Katerina Gabrovska-Evstatieva, Evstatiev Boris</i>
"Angel Kanchev" University of Ruse, Bulgaria |

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TOPIC 1

Friday, October 20th, 2017, 11:15 – 12:35

Room L2-1, Chairperson: Fara Laurentiu

11:15 – 11:35 **Materials from renewable sources as thermal insulation
for nearly zero energy buildings**
KN I-12

Cristian Petcu, Horia Petran, Vasilica Vasile, Mihai Toderasc

National Institute for Research and Development in
Construction, Urbanism and Sustainable Spatial
Development URBAN-INCERC

11:35 – 11:50 **Refurbishment solutions for public buildings towards
nearly zero energy performance**
I-02

Laura Aelenei, Helder Gonçalves

National Laboratory of Energy and Geology, Portugal

11:50 – 12:05 **Building with the sun. passive solar daylighting systems
in architecture**
I-11

Daniel Muntean, Viorel Ungureanu

Politehnica University Timisoara

12:05 – 12:20 **Evaluation of material compositions of sloping roofs
from environmental and energy perspectives**
I-13

Silvia Vilcekova, Eva Kridlova Burdova, Marek Kusnir

The Technical University of Košice, Slovakia

12:20 – 12:35 **Solutions to reduce energy consumption in buildings.
green roofs made up of succulent plant**
I-14

Ileana Nicolae, Sorina Petre

"Ion Mincu" University of Architecture and Urbanism,
Bucharest

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TOPIC 2

SOLAR HEATING AND COOLING IN BUILDINGS AND COMMUNITIES

Thursday, October 19th, 2017, 11:15 – 12:20

Room L2-2, Chairperson: Kalogirou Soteris

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|----------------------------------|---|
| 11:15 - 11:35
KN II-01 | Simulation-based investigation of the air velocity in a naturally ventilated BIPV system
<i>Rafaela Agathokleous, Soteris Kalogirou</i>
Cyprus University of Technology |
| 11:35 - 11:50
II-03 | Modelling and simulation of the solar - biomass base heating system for low energy buildings developed for rural area
<i>Sandor Bartha, Vajda Boglarka</i>
Green Energy Cluster |
| 11:50 – 12:05
II-04 | Closed sorption seasonal thermal energy storage with aqueous sodium hydroxide
<i>Mihaela Dudita, Xavier Daguenet-Frick, Paul Gantenbein</i>
HSR University of Applied Sciences Rapperswil, SPF
Institute of Solar Technology, Switzerland |
| 12:05 – 12:20
II-08 | Numerical assessment of a dynamic daily heating unit using both solar collector and heat pump coupled in a dynamic working
<i>Mugurel-Florin Talpiga, Eugen Mandric, Florin Iordache</i>
Technical University of Civil Engineering Bucharest |

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TOPIC 2

Friday, October 20th, 2017, 11:15 – 12:35

Room L2-2, Chairperson: Duta Anca

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| 11:15 – 11:35
KN II-02 | Design aspects of building integrated solar tile collectors
<i>Istvan Fekete, Istvan Farkas</i>
"Szent István" University, Institute for Environmental Engineering Systems, Hungary |
| 11:35 – 11:50
II-05 | Comparative analysis of the energy demand by standard method and the TRNSYS-weather data method
<i>Adrian Ilie, Ion Visa</i>
Transilvania University of Brasov - RESREC Centre |
| 11:50 – 12:05
II-06 | Development of black and red absorber coatings for solar thermal collectors
<i>Luminita Isac, Ramona Panait, Alexandru Enesca, Cristina Bogatu, Dana Perniu, Anca Duta</i>
Transilvania University of Brasov - RESREC Centre |
| 12:05 – 12:20
II-07 | A new approach on the protection against overheating of flat solar-thermal collectors
<i>Mircea Neagoe, Ion Visa, Anca Duta, Nadia Cretescu,</i>
Transilvania University of Brasov - RESREC Centre |

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TOPIC 3

SOLAR POWER IN BUILDINGS AND COMMUNITIES

Thursday, October 19th, 2017, 11:15 – 12:20

Room L2-3, Chairperson: Farkas Istvan

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|-----------------------------------|--|
| 11:15 - 11:35
KN III-01 | Optimized management for photovoltaic applications based on LEDs by fuzzy logic control and maximum power point tracking

<i>Dan Craciunescu, Laurentiu Fara, Paul Sterian, Andreea Bobei, Florin Dragan</i>

Romanian Academy, University "Politehnica" of Bucharest |
| 11:35 - 11:50
III-03 | Semiconductor graphenes for photovoltaics

<i>Doru Buzatu, Marius Mirica, Mihai Putz</i>

Laboratory of Renewable Energies-Photovoltaics, R&D
National Institute for Electrochemistry and Condensed Matter –INCEMC–Timisoara |
| 11:50 – 12:05
III-02 | Characterizing the variability of high resolution solar irradiance data series

<i>Robert Blaga, Marius Paulescu</i>

West University of Timisoara |
| 12:05 – 12:20
III-05 | Recycling silicon-PV modules in composites with PVC, HDPE and rubber wastes

<i>Mihaela Cosnita, Cristina Cazan, Anca Duta, Ion Visa</i>

Transilvania University of Brasov - RESREC Centre |

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TOPIC 3

Thursday, October 19th, 2017, 14:00 – 15:20

Room L2-3, Chairperson: Neagoe Mircea

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|-----------------------------------|---|
| 14:00 - 14:20
KN III-06 | Sizing and optimization of cost-efficient pv generator system at residential buildings in the region of Ruse, Bulgaria

<i>Katerina Gabrovska-Evstatieva, Boris Evstatiev, Ognyan Dinolov, Nicolay Mihailov</i>

"Angel Kanchev" University of Ruse, Bulgaria |
| 14:20 – 14:35
III-08 | The efficiency and the profitability of the photovoltaic panels as generator for household electricity in the region of Banat / Romania

<i>Stefan Pavel, Ioan Dobosi, Daniel Stan, Gabriel Fischer Sava</i>

The Polytechnic University of Timisoara, Romania |
| 14:35 – 14:50
III-04 | Deployable mobile units concepts for photovoltaic and solar thermal arrays

<i>Mihai Comsit, Macedon Moldovan, Mircea Neagoe</i>

Transilvania University of Brasov - RESREC Centre |
| 14:50 – 15:05
III-07 | Modular electrochemical reactivity for photovoltaics' machines

<i>Mirela Iorga, Marius Mirica, Mihai Putz</i>

Laboratory of Renewable Energies-Photovoltaics, R&D
National Institute for Electrochemistry and Condensed Matter –INCEMC–Timisoara |
| 15:05 - 15:20
III-09 | Extracting the I-V characteristics of the PV modules from the manufacture's datasheet

<i>Andreea Sabadus, Marius Paulescu, Viorel Badescu</i>

West University of Timisoara |

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TOPIC 3

Friday, October 20th, 2017, 11:15 – 12:20

Room L2-3, Chairperson: Burduhos Bogdan

11:15 – 11:35 **Development of a horizontal axis wind turbine for the
KN III-14 production of thermal energy**

*Viorel Bostan, Ion Bostan, Ion Sobor, Dulgheru Valeriu,
Vitalie Gladis*

Technical University of Moldova, Chisinau

11:35 – 11:50 **Life cycle assessment of the romanian electricity mix:
III-12 impacts, trends and challenges**

*George Barjoveanu, Carmen Teodosiu, Daniela Cailean (Gavrilescu)
"Gheorghe Asachi" Technical University of Iasi, Romania*

11:50 – 12:05 **PV-wind hybrid system for the energy supply of an
III-10 off-grid application**

*Codruta Jaliu, Radu Saulescu, Daniela Ciobanu,
Florin Panaite*

Transilvania University of Brasov - RESREC Centre

12:05 – 12:20 **Large conversion ratio DC-DC hybrid converters for
III-11 renewable energy application**

Nicolae Muntean, Octavian Cornea, Dan Hulea

The Polytechnic University of Timisoara

12:20 - 12:35 **Developing modified hydrodynamic rotor for flow small
III-13 hydro**

*Ion Bostan, Viorel Bostan, Valeriu Dulgheru,
Oleg Ciobanu, Vitalie Gladis*

Technical University of Moldova, Chisinau

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TOPIC 4

SOLAR ENERGY FOR WATER RE-USE

Thursday, October 19th, 2017, 11:15 – 12:35

Room L2-4, Chairperson: Zaharescu Maria

11:15 - 11:35 **Sustainable autonomous system for nitrites/nitrates and heavy metals monitoring of natural water sources (WaterSafe)**
KN IV-01

Mariuca Gartner, Carmen Moldovan, Marin Gheorghe, Anca Duta, Miklos Fried, Ferenc Vonderviszt

Institute of Physical Chemistry of the Romanian Academy,
Bucharest

11:35 - 11:50 **Design and development of TiO₂ based dispersions for photocatalytic fabrics**
IV-02

Cristina Bogatu, Dana Perniu, Luminita Isac, Maria Covei, Anca Duta

Transilvania University of Brasov - RESREC Centre

11:50 – 12:05 **Sustainable wastewater treatments for households in small communities**
IV-03

Alexandru Enesca, Luminita Andronic, Anca Duta, Ion Visa

Transilvania University of Brasov - RESREC Centre

12:05 – 12:20 **Compost based on biomass wastes used as biofertilizers or as sorbents**
IV-04

Ileana Manciu, Lucia Dumitrescu, Cristina Bogatu, Camelia Draghici, Dora Lucaci

Transilvania University of Brasov - RESREC Centre

12:20 – 12:35 **A comparative analysis of pollutants adsorption and photocatalysis on composite materials synthesized from fly ash**
IV-05

Maria Visa, Nicoleta Popa, Andrea Chelaru

Transilvania University of Brasov - RESREC Centre

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TOPIC 5

POLICIES, EDUCATION AND TRAINING ON SUSTAINABILITY

Thursday, October 19th, 2017, 14:00 – 15:20

Room L2-4, Chairperson: Visa Ion

- | | |
|---------------------------------|--|
| 14:00 - 14:20
KN V-01 | Extending production waste life cycle and energy saving by eco-innovation and eco-design – the case of packaging manufacturing

<i>Maria Gavrilescu, Teofil Campean, Dan Gavrilescu</i>
"Gheorghe Asachi" Technical University of Iasi |
| 14:20 – 14:35
V-06 | Maintenance of renewable energy systems - a challenge in academic education

<i>Sanda Budea, Carmen Safta</i>
University "Politehnica" of Bucharest |
| 14:35 – 14:50
V-07 | Sustainable buildings – technological innovation or a different way of interpreting the traditional house

<i>Teodora Raduca</i>
"Ion Mincu" University of Architecture and Urbanism, Bucharest |
| 14:50 – 15:05
V-02 | Sustainability - a principle of education in architecture (and not only)

<i>Ana-Maria Dabija</i>
"Ion Mincu" University of Architecture and Urbanism, Bucharest |
| 15:05 - 15:20
V-08 | Multifunctional products – a way to decrease the products environmental impact

<i>Anca Barsan, Lucian Barsan, Aurelian Leu, Larisa Zafiu</i>
Transilvania University of Brasov - RESREC Centre |

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TOPIC 5

Friday, October 20th, 2017, 11:15 – 12:35

Room L2-4, Chairperson: Gavrilescu Maria

11:15 – 11:35 **Sustainable energy in buildings academy massive open
KN V-03 online courses**

Carlos Silva, Laura Aelenei

National Laboratory of Energy and Geology, Portugal

11:35 – 11:50 **Competences development - towards an effective
V-04 implementation of nZEB in Romania**

Horia Petran, Marian Niculuta, Cristian Petcu

National Institute for Research and Development in
Construction, Urbanism and Sustainable Spatial
Development URBAN-INCERC

11:50 – 12:05 **P.A.E.S. Project and housing policies for sustainable
V-05 buildings**

*Olivito Renato, Mircea Neagoe, Petru Mihai, Nikolaos
Karanasios, Eva Kridlova Burdovà, Marco Della Puppa*

University of Calabria, Italy

12:05 – 12:20 **Using „Serious Game” for children and youth
V-09 education in sustainable energy field and environment
protection**

Mihaela Baritz,

Transilvania University of Brasov

12:20 - 12:35 **Solar education tools for Romanian and Swiss scouts**

V-10 *M. Dudita, C. Maissen., N. Shahor, F. Flückiger, A. Häberle*

Institute for Solar Technology, SPF, Switzerland

WORKSHOPS

WS 1 Building Integrated Solar-Thermal Systems

Thursday, 19 October 2017, 16:00 – 18:30, Room L2-1
Transilvania University of Brasov - RESREC Centre

- | | |
|-------------|---|
| 15:45–16:00 | Registration |
| 16:00–16:10 | Introduction and panelists presentation
<i>Ion Visa</i>
Transilvania University of Brasov - RESREC Centre |
| 16:10–16:50 | Trends in solar-thermal systems. integrating solar-thermal systems in the built environment. The COST BISTS project
<i>Soteris Kalogirou</i>
Cyprus University of Technology, Limassol, Cyprus |
| 16:50–17:20 | Novel solar-thermal collectors for integration in the built environment. The EST IN URBA project
Novel solar-thermal collectors for facades integration. The SOL_TRI_COL Project
<i>Ion Visa</i>
Transilvania University of Brasov - RESREC Centre |
| 17:20–18:20 | Interactive discussions <ul style="list-style-type: none">➤ Challenges in implementing solar-thermal systems in the built environment➤ How to best chose the solar-thermal system? Technical and economical issues➤ Optimal use of solar-thermal systems in the built environment.➤ How to extend the lifetime of solar-thermal systems |
| 18:20–18:30 | Conclusions |



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WS2 Sustainable Autonomous System for Nitrites/Nitrates and Heavy Metals Monitoring of Natural Water Sources

Thursday, 19 October 2017, 16:00 – 18:30, Room L2-4
Transilvania University of Brasov - RESREC Centre

15:45–16:00	Registration
16:00–16:15	Introductory word <i>Mariuca Gartner</i> "Ilie Murgulescu" Institute of Physical Chemistry
16:15–16:30	Electrical properties of spray deposited CZTS-based tandem structures for photovoltaic conversion <i>Anca Duta</i> Transilvania University of Brasov - RESREC Centre
16:30–16:45	Novel thin films used in solar cells embedded in energy autonomous systems and devices <i>Hermine Stroescu</i> "Ilie Murgulescu" Institute of Physical Chemistry
16:45–17:00	Materials used as counter electrode for DSSC <i>Marin Gheorghe</i> NANOM MEMS SRL
17:00–17:15	Engineering Heavy Metal Binding. Flagellin-Based Nanotubes for Sensing Layers <i>Hajnalka Jankovics</i> Centre for Energy Research, Hungarian Academy of Sciences
17:15–17:30	Ellipsometric characterization of carbohydrate and protein layers for biosensors applications <i>Andras Saftics</i> Centre for Energy Research, Hungarian Academy of Sciences
17:30–17:45	Fabrication of genetically modified bacterial filament coatings to develop sensor surfaces for detecting water pollution <i>Judit Nador</i> University of Panonia
17:45–18:00	Amperometric Microsensor for Nitrates/Nitrides detection <i>Bogdan Firtat</i> National Institute for Research and Development in Microtechnologies
18:00–18:15	Synthesis, structural and optical characterization of SnO₂ and SnO₂/CuO thin films <i>Mariana Chelu</i> "Ilie Murgulescu" Institute of Physical Chemistry
18:15–18:30	Conclusions



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GREEN ENERGY
Romanian Innovative Biomass Cluster



**CLUSTER
PRO nZEB**

WS3 Nearly Zero Energy Communities (nZEC)

Friday, 20 October 2017, 14:00 – 16:30, Room L2-1

Transilvania University of Brasov - RESREC Centre

13:45–14:00	Registration
14:00–14:10	Introduction and panelists presentation <i>Ion Visa</i> Transilvania University of Brasov - RESREC Centre
14:10–14:30	Solar energy and solar (waste)water treatment in nearly zero energy communities (SimPhotoAD, CB PhotoDeg, PhotocatFlow) <i>Anca Duta</i> Transilvania University of Brasov - RESREC Centre
14:30–14:50	Education and training on sustainable communities (BET, ELDON OPTIMTECH) <i>Dana Perniu</i> Transilvania University of Brasov - RESREC Centre
14:50–15:10	Preparing the market to implement the nZEB concept in Romania (BUILD UP Skills, Train-to-nZEB, Fit-to-nZEB) <i>Horia Petran</i> NIRD-INCERC
15:10–15:30	Community projects for sustainability <i>Lajos Vajda, Boglarka Vajda</i> GREEN ENERGY Cluster
15:30–15:45	Evaluation of small scale anaerobic digestion potential in urban context <i>Andre Rocha, Santino Eugenio Di Berardino</i> LNEG-Portugal
15:45–16:20	Interactive discussions: <ul style="list-style-type: none"> ➤ Challenges and opportunities to ensure coordination of Romanian energy efficiency and RES policies in buildings based on ongoing National and European projects; activating the relevant actors in the market for the transition to the nZEB; ➤ The need for increasing the competences and skills in construction sector and energy efficiency & RES for the implementation of nZEB buildings in Romania and key professional training programs; ➤ Possibilities for collaboration between the actors involved in the implementation of the NZEB concept in practice - the cluster concept as the solution for the development of the economy in Romania and for extending cooperation at regional, national and international level. ➤ Thinking towards a sustainable future – what it takes to make the step from nZEBuildings implementation to nZECCommunities?
16:20–16:30	Conclusions

WS4 P.A.E.S. - Housing Policies for Sustainable Construction project: transfer of good practices

**Friday, 20 October 2017, 16:30 – 19:00, Room L2-1
Transilvania University of Brasov - RESREC Centre**

16:30– 17:00	Registration and coffee break
17:00–14:15	Sustainable buildings <i>Renato Olivito, Marco Trozzo</i> University of Calabria, Italy
17:15–17:30	Greener materials for sustainable buildings <i>Petru Mihai, Laura Dumitrescu</i> "Gheorghe Asachi" Technical University of Iasi, Romania
17:30–17:45	Evaluation of materials compositions in sloping roofs from an environmental and energy perspective <i>Silvia Vilčeková, Marek Kušnir</i> Technical University of Kosice, Slovakia
17:45–18:00	The business perspective of sustainable housing <i>Nikolaos Karanasios, Argiro Dimoudi, Maria Daniil</i> Technological Educational Institute of Serres, Greece
18:00–18:15	Recognition of “Environmentally Sustainable Businesses” through a specific validation procedure <i>Marco Della Puppa, Alexandra Genni, Ioanna Papaioannou</i> The Greek-Italian Chamber of Commerce of Thessaloniki, Greece
18:15-18:30	Evaluation design for the e-learning courses <i>Dana Perniu, Liviu Perniu</i> Transilvania University of Brasov - RESREC Center
18:30-19:00	Discussions and debates
19:00	Dinner and networking