

# CURRICULUM VITAE

**ELENA DASCALAKI**  
Dr. Building Physicist

ATHENS

February 2022



## ELENA G. DASCALAKI

*Dr. Building Physicist, Research Director IERSD / NOA*

Group Energy Conservation (GREC)  
 Institute for Environmental Research and Sustainable Development (IERSD)  
 National Observatory of Athens (NOA)  
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 Tel: +30-210-8109143  
 Email: edask@noa.gr

Born: Heraklion, Crete



### RESEARCH INTERESTS AND ACCOMPLISHMENTS

Building Physics: Energy conservation and rational use of energy in buildings, building typologies, building stock modeling, life cycle analysis, technical guidelines and national software for EPBD transposition, numerical modeling of thermal energy systems, building thermal simulations, assessment of ventilation systems for building applications, computational fluid dynamics, indoor air quality.

Member of the Group Energy Conservation (GREC), Institute for Environmental Research and Sustainable Development (IERSD), National Observatory of Athens

### EDUCATION

<b>Doctor of Philosophy</b>	Building physics University of Athens, Dept. of Applied Physics Research topic: Natural ventilation of buildings	May 1998
<b>Master of Science</b>	Environmental Physics University of Athens, Dept. of Applied Physics Research topic: Atmospheric Pollution	March 1990
<b>Bachelor of science</b>	Physics University of Athens, Physics Department	July 1987

### DISTINCTIONS AND HONORS

2010-2013	Member of the Board of Directors of the Centre of Renewable Energy Sources ( <b>CRES</b> )
2012	Certificate of Excellence in Reviewing, Int. Journal of "Energy and Buildings"
1998-2000	National representative in Annex 35 of the International Energy Agency working on Hybrid Ventilation

### MEMBER IN TECHNICAL COMMITTEES

2017	Member of the Scientific Committee for the revision of the Technical Guideline ( <b>TOTEE 20701-4/2010</b> ) « <i>Guidelines and Forms for Building Energy Audits, Inspection of Boilers &amp; Heating Installations, and Inspection of Air-Conditioning Systems</i> », 1 <sup>st</sup> edition, for the Technical Chamber of Greece, November 2017 ( <a href="#">FEK 4003 B/17.11.2017</a> , p. 48879 - 49054, Official Journal of the Hellenic Republic).
2015-2016	Alternate Member of the National Steering Committee of the Hellenic Ministry of Environment & Energy ( <b>YPEN</b> ) for updating the national legislation according to the Energy Performance of Buildings - EPBD Recast, including Cost optimal building performance

- requirements, NZEB, Standards & Codes, Technical Guidelines, Software, (ΑΠ [170914/109/22.01.2016](http://www.nzef.gr/170914/109/22.01.2016) General Secretariat for Energy and Raw Materials).
- 2010,'12,'14 Member of the Scientific Committee for the preparation of the Technical Guideline (**TOTEE 20701-4/2010**) «*Guidelines and Forms for Building Energy Audits, Inspection of Boilers & Heating Installations, and Inspection of Air-Conditioning Systems*», for the Technical Chamber of Greece, 1<sup>st</sup> edition (July 2010), 2<sup>nd</sup> edition (March 2012), 3<sup>rd</sup> edition (November 2012).
- 2010,'12,'14 Member of the Scientific Committee for the preparation of the Technical Guideline (**TOTEE 20701-3/2010**) «*Hellenic Climatic Data*», for the Technical Chamber of Greece, 1<sup>st</sup> edition (July 2010), 2<sup>nd</sup> edition (March 2012), 3<sup>rd</sup> edition (November 2012).
- 2010-2011 Member of the Technical Committee for the development of the Educational Material of the Technical Chamber of Greece (TEE) for the Training of Energy Auditors.

## REVIEWER OF ARTICLES IN SCIENTIFIC JOURNALS & CONFERENCES

### Journals

- 1998-today Reviewer in International Journal "Solar Energy" (Elsevier)
- 1999-today Reviewer in International Journal "Energy & Buildings" (Elsevier)
- 2008-today Reviewer in International Journal "Building & Environment" (Elsevier)
- 2011 Reviewer in International Journal "International Journal of Ventilation" (Veetech)
- 2012 Reviewer in International Journal "Energy" (Elsevier)
- 2012 Reviewer in International Journal "Advances in Energy Research" (Techno Press)
- 2012-today Reviewer in International Journal "Energy Policy" (Elsevier)
- 2014 Reviewer in International Journal "Energy Research & Social Science" (Elsevier)
- 2015 Reviewer in International Journal "Journal of Cleaner Production" (Elsevier)
- 2016 Reviewer in International open-access Journal "Building Research & Information" (Taylor & Francis Group)
- 2016 Reviewer in International Journal "Energies" (Elsevier)
- 2016 **Guest Editor** Int. Journal "Energy & Buildings", Vol. 132, pp. 1-154 (November 2016), Elsevier Ltd <http://www.sciencedirect.com/science/journal/03787788/132>

### Conferences

- 2018-2019 Reviewer of abstracts & papers, **SBE19 Int. Conference** "Sustainability in the Built Environment for Climate Change Mitigation", Thessaloniki, Greece, 23-25 October 2019.
- 2017 Reviewer of abstracts & papers, **EinB2017 - 6<sup>th</sup> Int. Conference** "Energy in Buildings 2017", ASHRAE Hellenic Chapter and Technical Chamber of Greece (TEE), 21 October, 2017, Athens, Greece
- 2016-2017 Reviewer of abstracts & papers for the Int. Conference of IBPSA (International Building Performance Simulation Association) "**Building Simulation 2017**", San Fransisco, California, USA, 7-9 August, 2017
- 2016 Reviewer of abstracts & papers, **EinB2016 - 5<sup>th</sup> Int. Conference** "Energy in Buildings 2016", ASHRAE Hellenic Chapter and Technical Chamber of Greece (TEE), and **EinT2016 - 1<sup>st</sup> Int. Conference** "Energy in Transportation 2016", ASHRAE Hellenic Chapter, Hellenic Navy, Technical Chamber of Greece (TEE) and Attiko Metro, 12 November, 2016, Athens, Greece
- 2014-2015 Reviewer of abstracts & papers for the Int. Conferences of IBPSA (International Building Performance Simulation Association) "**Building Simulation 2015**", Hyderabad, India, 7-9 December, 2015.
- 2012-2013 Reviewer of abstracts & papers for the Int. Conferences of IBPSA (International Building Performance Simulation Association) "**Building Simulation 2013**", Chambéry, France, 25-30 August, 2013.
- 2010-2011 Reviewer of abstracts & papers for the Int. Conferences of IBPSA (International Building Performance Simulation Association) "**Building Simulation 2011**", Sydney, Australia 14-16 November, 2011.

## PARTICIPATION IN PhD DISSERTATION EXAMINATION BOARDS & SUPERVISION OF MSc DISSERTATION

- 2020 Member of the Examination Board for PhD Candidate **Panagiotis Chastas**, Aristotle University of Thessaloniki, Dept of Civil Engineering (June 2020).  
**Title:** Methodological/Computational approach of the effect of embodied environmental impacts on the cost optimal levels of nearly zero energy consumption buildings.
- 2015 Member of the Examination Board for PhD Candidate **Maria Konstantoglou**, University of Thessaly, Dept of Architecture (October 2015)  
**Title:** The role of dynamic natural lighting and shading systems in design. Their impact on the energy balance of the building, the thermal and optical comfort of users.
- 2008-2010 Supervision of MSc Thesis **Vasileios Sermpetzoglou**, M.Sc. in Energy, School of Engineering and Physical Sciences, Heriot-Watt University and Dept. of Mechanical Engineering, Technological Educational Institute of Piraeus (May 2010).  
**Title:** A performance assessment of the energy consumption, the indoor environmental quality and the potential for energy savings in a representative number of Greek School Buildings

## PARTICIPATION IN CONFERENCE SCIENTIFIC COMMITTEES & ORGANIZATION OF WORKSHOPS

- 2019 - Member of the Scientific Committee of the **SBE19 Int. Conference** "Sustainability in the built environment for climate change mitigation", Chair of the session "*Building Physics*", Thessaloniki, Greece, 23-25 October 2019.  
- Member of the International Scientific Committee of the **EinB2019 – 8<sup>th</sup> Int. Conference** "*Energy in Buildings 2019*", ASHRAE Hellenic Chapter and Technical Chamber of Greece (TEE), and **EinT2019 - 4<sup>th</sup> Int. Conference** "*Energy in Transportation 2019*", ASHRAE Hellenic Chapter and Technical Chamber of Greece (TEE) Hellenic Navy and Attiko Metro, 28 September, 2019, Athens
- 2018 Member of the International Scientific Committee of the **EinB2018 – 7<sup>th</sup> Int. Conference** "*Energy in Buildings 2018*", Ελληνικό Παράρτημα ASHRAE και Τεχνικό Επιμελητήριο Ελλάδας (TEE), και **EinT2018 – 3<sup>rd</sup> Int. Conference** "*Energy in Transportation 2018*", ASHRAE Hellenic Chapter and Technical Chamber of Greece (TEE) Hellenic Navy and Attiko Metro, 28 September, 2019, Athens
- 2016 Member of the Scientific Committee of the **SBE16 Int. Conference** "*Sustainable Synergies from Buildings to the Urban Scale*", Thessaloniki, Greece, 17-19 October, 2016.
- 2015 - Chair of the session "*Monitoring of building stocks - Lessons learned from data collection – a run through different approaches*" **International Experts Workshop "Towards an Energy Efficient European Housing Stock – Mapping, modeling and monitoring refurbishment processes"**, Brussels, Belgium, November 18, 2015.  
- Organization of **Hellenic EPISCOPE Workshop** "*Mapping, Modelling & Monitoring the Energy Performance of the Hellenic Building Stock*", during **EinB2015 – 4<sup>th</sup> Int. Conference** "Energy in Buildings 2015, ASHRAE Hellenic Chapter and Technical Chamber of Greece (TEE), 31 October, 2015, Athens, Greece

## FOREIGN LANGUAGES

- |         |                                  |
|---------|----------------------------------|
| English | Cambridge Proficiency in English |
| French  | Sorbonne I                       |

## PROFESSIONAL ACTIVITIES

Elected ASHRAE Member since 2014 (MBR: 8250347). ASHRAE Hellenic Chapter.  
ASHRAE **Technical Committees** – Corresponding Member: **TC 2.8** – Building Environmental Impacts and Sustainability (2014-present), **TC 4.7** Energy Calculations (2014-present), **TC 6.7** Solar Energy Utilization (2014-present), **TC 7.6** Building Energy Performance (2014-present).

# SCIENTIFIC ACTIVITY INDICATORS

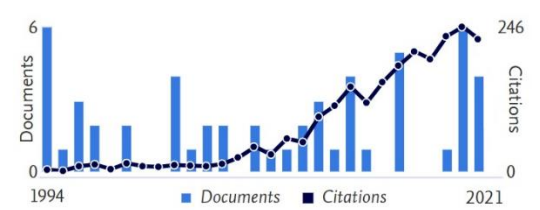
ID <https://orcid.org/0000-0003-3750-8126>
R<sup>6</sup> [https://www.researchgate.net/profile/Elena\\_Dascalaki](https://www.researchgate.net/profile/Elena_Dascalaki)

International Journals: 50	Hellenic Journals & Technical Magazines: 10
Books / Chapters in Books: 14	Scientific Publications : 22
International Conferences (Proceedings): 61	Workshops & Symposia: 42
National Conferences (Proceedings): 12	Technical reports: 56
Theses: 3	Citations: >1900
Scientific Responsible (# projects): 4	Participation in projects: 36

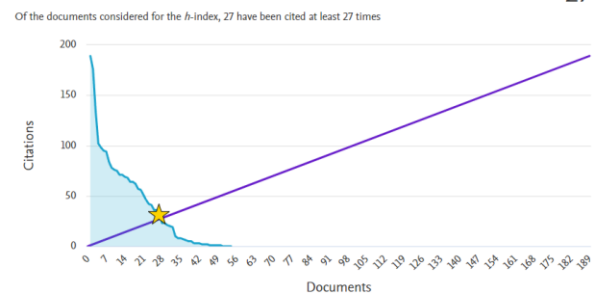
### Metrics overview



### Document & citation trends

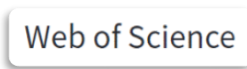
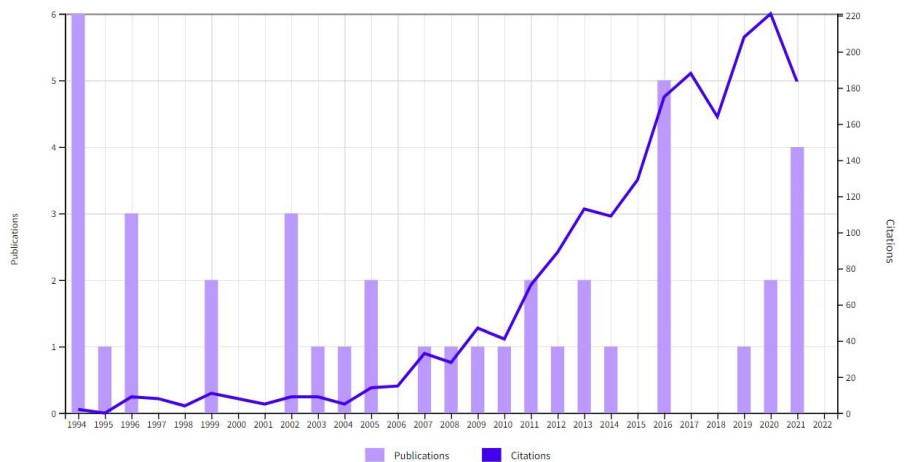


### These documents h-index



<b>Publications</b> <b>41</b> Total From 1900 to 2022	<b>Citing Articles</b> <b>1,583</b> <small>Analyze</small> Total <b>1,559</b> <small>Analyze</small> Without self-citations	<b>Times Cited</b> <b>1,920</b> Total <b>1,857</b> Without self-citations	<b>27</b> H-index
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Times Cited and Publications Over Time



<b>76,377</b> Reads	<b>2,929</b> Citations	<b>122</b> Recommendations	<b>2,082</b> Total Research Interest
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## PROFESSIONAL EXPERIENCE

**12/2021-today**

Research Director

Institute of Environmental Research &  
Sustainable Development  
National Observatory of Athens

Researcher (1<sup>st</sup> Grade) in IERSD. Member of the Group Energy Conservation (GREC). Participant in research projects.

**Participant** in European research projects: a) **EIFFEL**(2021-2024) – Revealing the role of GEOSS as the default digital portal for building climate change adaptation & mitigation applications” (H2020) b) **Sustainable MED Cities** (2021-2023) - Integrated tools and methodologies for sustainable Mediterranean cities (European Neighborhood Instrument (ENI) Cross-Border Cooperation (CBC) Mediterranean Sea Basin 2014-2020).

**Vice Chair** (2021-2023) of the **Scientific Advisory Council** (EGS) IERSD.

**3/2012 – 12/2021**

Senior Researcher

Institute of Environmental Research &  
Sustainable Development  
National Observatory of Athens

Researcher (2<sup>nd</sup> Grade) in IERSD. Member of the Group Energy Conservation (GREC). Participant in research projects.

**Scientist in charge** of the European project **EPISCOPE** - Energy Performance Indicator Tracking Schemes for the Continuous Optimization of Refurbishment Processes in European Housing Stocks (Executive Agency for Competitiveness and Innovation – EACI, European Commission) and of the programme **TEE-KENAK** for the development of the software in the framework of the implementation of the Hellenic Regulation for the Energy Performance Assessment of Buildings (KENAK / Technical Chamber of Greece).

**Participant** in the European IEE project **ISES** (2011-2014) - Intelligent Services for Energy-Efficient Design and Life Cycle Simulation (FP7 Seventh Framework Programme, Information Society and Media Directorate-General, European Commission) and **CESBA MED** (2016-2019) – Sustainable Mediterranean Cities (E.U. Interreg MED Programme, Regional Development Fund).

**Leader of WP4** “Modeling the Built Environment - Scenario Analysis Towards Achieving MediumTerm and Long-Term National Targets for Energy Savings & Emission Abatement) of the Hellenic program **THESPIA II** (2017-2020) – Foundations of synergistic and integrated management methodologies and tools for monitoring and forecasting of environmental issues and pressures (ESPA (2014-2020), General Secretariat for Research & Technology, Hellenic Ministry of Development & Investments).

**Participant** in the project **e-CODOMH** (2020-2022) - Cluster for Efficient and Sustainable Construction, buildings & infrastructure (ESPA (2014-2020), General Secretariat for Research & Technology, Hellenic Ministry of Development & Investments).

**Member of** the working groups of the Technical Chamber of Greece for the revision of the technical guideline (**TOTEE 20701-4/2017**) “Guidelines and Forms for Building Energy Audits, Inspection of Boilers & Heating Installations, and Inspection of Air Conditioning Systems”. Alternate Member of the **National Steering Committee** of the Hellenic Ministry of Environment & Energy (**YPEN**) for updating the national legislation according to the Energy Performance of Buildings - EPBD Recast. Participant in the promotional activities for GREC and IERSD. Participant as an Exhibitor & organizer of Forums in the international Expos **Building Green 2012 & 2013**.

**2006 – 3/2012**

Associate Researcher

Institute of Environmental Research &  
Sustainable Development  
National Observatory of Athens

Researcher (3<sup>rd</sup> Grade) in IERSD. Member of the Group Energy Conservation (GREC). Participant in research projects.

**Scientist in charge** of the European project **TABULA** (2009-2012) – Typologies for the energy performance assessment of the building stock (DG XVII, European Commission) and of the project **TEE-KENAK** (2010-2012) for the development of the software for the energy certification of the Hellenic buildings in compliance with the EPBD (Technical Chamber of Greece).

**Participant** in European IEE projects **EPA-NR** (2005-2007) for the energy performance assessment of non-residential buildings in the framework of the implementation of the EPBD, **DATAMINE** (2006-2008) for developing a harmonized data structure for collecting and analyzing data to monitor the energy performance of buildings, **HIGH COMBI** (2007-2011) for the implementation and optimization of technologies for solar heating and cooling with seasonal heat storage, and in the **International Energy Agency - IEA Task 38** (2006-2009) on solar cooling and air conditioning. Consulting activities for architectural and engineering firms (thermal simulations). Participant in the scientific committees of the Technical Chamber of Greece (2010) for the preparation of the technical guidelines **TOTEE 20701-3/2010** και **20701-4/2010**. Participation in the team for the development of the **TEE-KENAK software** (collaboration with the Technical Chamber of Greece), which is the national computational tool for performing all building energy audits, energy studies and issuing an energy performance certificate and for the energy ranking of new buildings.

**Participant** in the promotional activities for GREC and IERSD. Participant as an Exhibitor & organizer of Forums in the international Expos **Climatherm 2006, 2008, EnergyReS 2007, 2008, 2009, and Building Green 2008, 2012, 2013**.

**Organized a working meeting** (11/2011) with a delegation from the Department for Energy Efficiency at the Ministry of Economy-Montenegro, led by Mrs Dragica Seculic, Deputy Minister, accompanied by executives of EXERGIA S.A Energy and Environment Consultants, regarding the Hellenic EPBD transposition efforts. Follow-up communications with the Montenegrin government have supported their national efforts towards EPBD transposition.

*The **activities of the Group Energy Conservation** were included as **best practices** in relation to research, development and innovation ([Chapter V: Ten Year Framework of Programmes on SCP Patterns](#)) in the contribution of the General Secretariat for Research & Technology, Ministry of Education to the "National Reporting to the Eighteenth and Nineteenth Sessions of the Commission on Sustainable Development of the United Nations ([UN-CSD 18/19](#))", January 2011.*

**2001 – 2006**

Research Associate

Institute of Environmental Research &  
Sustainable Development  
National Observatory of Athens

Member of the Group Energy Conservation (GREC). Participant in research projects.

**Coordinator assistant** and participant in the European project **XENIOS** (2002-2003) for the development of an audit tool for Hotel buildings and the promotion of RUE and RES (ALTENER, Directorate General for Energy, DG XVII, European Union). Participant in European IEE projects **EPA-ED** (2002-2004) for the implementation of an Energy Performance Assessment Method for Existing Dwellings, **EPA-NR** (2005-2007) for the energy performance assessment of non-residential buildings in the framework of the implementation of the EPBD, and **DATAMINE** (2006-2008) for developing a harmonized data structure for collecting and analyzing data to monitor the energy performance of buildings. Thermal simulations, energy audits in buildings, assessment of ventilation systems using CFD modelling. Consulting activities for architectural and engineering firms for the assessment of the energy conservation potential in buildings through thermal simulations. Participant in the promotional activities for GREC and IERSD. Participant in the international Expo **Climatherm 2004**.

**1992 - 2000**

Research Associate

Dept of Applied Physics  
University of Athens

Member of the Group Building Environmental Studies (GRBES). Have participated in a number of research and educational projects. Assessment of rational use of energy systems and techniques in buildings, thermal simulations, development of computational models for the calculation of natural ventilation in buildings, experimental activities in test cells and existing buildings. Assistant coordinator in the European project OFFICE. Graduate level lecturer in seminars organized by the Center for Energy Education of the University of Athens; topics: energy conservation in buildings, indoor air quality and natural ventilation.

**1993 - 1995**

Research Associate

Institute of Meteorology and Physics  
of the Atmospheric Environment  
(IMPAE)  
National Observatory of Athens (NOA)

Participated in the European Research project "COMPASS-PASSLINK"

**1991 - 1992**

Consultant

Energy Department  
Institute of Technological Applications  
Greek Productivity Center

Coordinator of seminars for engineers and scientists. Supervisor during practical training periods at graduate level seminars.

**1988 - 1993**

Associate contractor

PROTECHNA Ltd.

Employed at Protechna, a firm for appropriate technologies involved in research, technical support and consulting services in the areas of alternative energy sources, energy conservation and policy. Participated in European projects: GREENHOUSES (world-wide documentation of passive solar agricultural greenhouses), PASSYS-II (Thermal and solar building research), Survey of innovative training centres in EEC, TEMPUS, and national projects for the General Secretariat for Research & Technology. Performed extensive thermal simulations of buildings. Co-author of publications on the principles of bioclimatic architecture, development of a database for passive solar greenhouses.

## RESEARCH EXPERIENCE

Participated in the following research, demonstration and technical projects with the corresponding affiliations:

- **National Observatory of Athens**
- **European Projects** (CESBA MED, EPISCOPE, ISES, TABULA, HIGH-COMBI, DATAMINE, EPA-NR, EPA-ED, XENIOS, INVESTIMMO, COMPASS-PASLINK)
- **National Projects** (Ministry for the Environment, Physical Planning and Public Works - Operational Programme for Energy, Hellenic Airports)
- **Projects with Industry** (ELVAL)
- **Collaborations with other Organizations and Consulting** (TEE-KENAK Technical Chamber of Greece; JEPA, projects with E/M and architectural offices)
- **University of Athens**
- **European Projects** (OPERATING ROOMS, AIRLIT-PV, OFFICE, Multimedia and Computer based Modular Teaching Material, Retrofitting of Museums for Antiquities in the Mediterranean Countries. Case Study: The Archaeological Museum of Delphi, AIOLOS, PASCOOL)
- **PROTECHNA Ltd.**
- **European Projects** (GREENHOUSES, TEMPUS, TRAINING CENTRES, PASSYS II)
- **National Projects** (General Secretariat for Research & Technology)



## **SUPERVISION OF NEW SCIENTISTS**

Supervision of new scientists in the frame of their participation in the project THESPIA II:

- Argyropoulou Poulia, Civil Engineer MSc, Development of the Hellenic Database on Embodied Energy and CO2 emissions for building construction elements and calculation of embodied energy intensity for typical Hellenic buildings through life cycle analysis – D4.2 (Jan 2018 – May 2019)
- Livanas Georgios, Dr. Mechanical Engineer, Optimization of algorithms and development of an interface for input-output data management in the building stock model BSM-*r*. D4.3a (Feb 2019-Jan 2020)

Supervision of a graduate student during her 2-month internship in IERSD:

- Psarra Ioanna, Dept. of Environmental Engineering, Democritus University of Thrace (Jul–Aug 2021)

## PARTICIPATION IN RESEARCH PROJECTS

- JOULE, DG XII for Science, Research and Development, European Commission

**TITLE:** **PASSYS II** - A common European outdoor test facility for thermal and solar building research (*JOUE-0022-C*)

**PERIOD:** 1989 - 1990

**OBJECTIVE:** Set up a computational model (using the ESP software package) to investigate the thermal performance of the PASSYS Test Cell.

**PARTICIPANTS:** Joint European Project. PROTECHNA Ltd (Hellas), University of Athens (Hellas), National Observatory of Athens (Hellas), Centre for Renewable Energy Sources (CRES, Hellas) and other organizations from Italy, Spain, France, Portugal, Germany, England, Belgium, Denmark, Holland.

- JOULE, DG XII for Science, Research and Development, European Commission

**TITLE:** **PASCOOL** - Passive Cooling for Buildings (*JOU2-CT92-0013*)

**PERIOD:** 1992 - 1995

**OBJECTIVE:** Tracer gas experiments in a test cell and in a real building to measure the natural ventilation efficiency. Development of a model for the estimation of the natural ventilation air flow rates in naturally ventilated buildings. Development of an algorithm for the calculation of the ventilation rates in single sided natural ventilation configurations. Contribution in the final deliverables of the project.

**PARTICIPANTS:** University of Athens (Project Coordinator), National Observatory of Athens (Hellas), Centre for Renewable Energy Sources (CRES, Hellas), CONPHOEBUS (Italy), ENTPE (France), CIEMAT (Spain), INETI (Portugal), University of Porto (Portugal), BBRI (Belgium), TNO (Holland), EPFL (Switzerland), University of Cambridge (UK), Architectural Association of London (UK), University of Strathclyde (Scotland).

- JOULE, DG XII for Science, Research and Development, European Commission

**TITLE:** **COMPASS** - Appropriate Testing and Evaluation of Passive Solar Components for Improvement of Thermal Comfort in Buildings (*JOU2-CT92-0216*)

**PERIOD:** 1993 - 1995

**OBJECTIVE:** Thermal simulations of the PASSYS Test Cell with integrated solar wall component using the ESP software package

**PARTICIPANTS:** National Observatory of Athens (Hellas), Centre for Renewable Energy Sources (CRES, Hellas) and other European Research Organizations.

- JOULE II, DG XII for Science, Research and Development, European Commission

**TITLE:** **NNE-JOULE C: Retrofitting of museums for antiquities in the Mediterranean countries** - Case study: the archaeological museum of Delphi (*JOR3-CT95-0013*)

**PERIOD:** 1995 - 1996

**OBJECTIVE:** Thermal simulations of the Delphi museum. Measurements for the assessment of the thermal comfort conditions in the museum of Delphi and in a number of museums in Greece.

**PARTICIPANTS:** Tombazis and Associates (Project Coordinator, Hellas), University of Athens, Bartenbach Lightlabor (Germany), University of North London (UK).

- JOULE II, DG XII for Science, Research and Development, European Commission

**TITLE:** **OFFICE** – Passive retrofitting of office buildings to improve their energy performance and indoor working conditions (*JOR3-CT96-0034*)

**PERIOD:** 1996 - 1998

**OBJECTIVE:** Assistant Coordinator. Thermal simulations for the office building of AGET Heraklis in Lykovrissi Attikis. Measurements of the thermal comfort conditions and long-term monitoring of the energy consumption for heating and cooling of the building. Ventilation measurements in selected rooms in the building. Preparation of the final deliverables of the project.

**PARTICIPANTS:** University of Athens (Project Coordinator), CNRS (France), Chalmers University of Technology (Sweden), ECD Energy and Environment (UK), ESBENSEN Consulting Engineers Ltd., (Denmark), Institut für Bau-, Umwelt- und Solarforschung GmbH (Germany), Technical University of Trondheim (Norway), LESO/EPFL (Switzerland), University of Florence (Italy).

- JOULE II, DG XII for Science, Research and Development, European Commission

**TITLE:** **AIRLIT-PV** – Development of a prototype façade unit integrating natural ventilation, daylighting, solar protection, intelligent local control and photovoltaic power (*JOR3-CT98-0280*)

**PERIOD:** 1998 - 2000

**OBJECTIVE:** Participation in the optimization of the design of the "intelligent" prototype window component. Experimental testing of the prototype through ventilation experiments in the test cell of the University of Athens. Proposals for its improvement.

**PARTICIPANTS:** AB Jacobson and Windmark (Sweden, Project Coordinator), BRE (UK), OSCAR FABER Group (UK), COLT International Licensing Ltd. (UK), University of Oxford Brookes (UK), University of Athens (Hellas), AMBER SA Computer Services (Hellas), Fraunhofer Institute (Germany).

- SAFE, DG for Public Health & Safety in the Working Environment, European Commission

**TITLE:** **OPERATING ROOMS** - Survey of Occupational Problems and Risks Related to Indoor Conditions in Hospitals Operating Rooms (*SOC 97 202362 05F05*)

**PERIOD:** 1998 - 1999

**OBJECTIVE:** In-situ measurements of the lighting conditions in 10 representative operating rooms in Athens. Proposals for improvement. Contribution in the Code of Good Practice with recommendations on how to improve the lighting conditions in operating rooms.

**PARTICIPANTS:** University of Athens (Hellas), National Observatory of Athens (Hellas), Ministry of Labor (Hellas, Project Coordinator), National Technical University of Athens (Hellas).

- GROWTH, DG for Research (DG XII), European Commission

**TITLE:** **INVESTIMMO** - A Decision-making Tool for Long-term Efficient Investment Strategies in Housing Maintenance and Refurbishment (*G1RD-CT-2000-00371*)

**PERIOD:** 2001 - 2004

**OBJECTIVE:** Participation in energy audits in multifamily buildings in Athens and Heraklion Crete. Documentation and analysis of results.

**PARTICIPANTS:** National Observatory of Athens (Hellas), Hellenic Ministry of State, CSTB & LF (France), EPFL (Switzerland), CUEH & ESTIA sarl (Switzerland), FhG/IBP & VdW (Germany), DIPARC & ENVIPARK (Italy), SBI & SBS (Denmark), KAPE & UZ (Poland).

- FP6 Sixth Framework Programme, DG for Energy (DG XVII), European Commission

**TITLE:** **HIGH-COMBI** - High Solar Fraction Heating and Cooling Systems With Combination of Innovative Components and Methods (*TREN/07/FP6EN/S07.68923/038659*)

**PERIOD:** 2007-2011

**OBJECTIVE:** Development of high solar fraction systems by an innovative combination of optimized solar heating, cooling and storage technologies. In the research phase, examine different configurations and optimize by detailed simulations. Construct demonstration plants, using different combination of technologies, components and control strategies. All demo plants achieve high solar fractions values with a sound economy; for some of the plants more than 70% of coverage for the space heating, domestic hot water and cooling loads. Examine innovative techniques, components and/or configurations (e.g. new storages, use of rejected heat during cooling, combined heating and cooling control etc.) Analyze demonstration plants' monitoring data, validate simulation and design tools and evaluate the plants' performance. Carry out market analyses to estimate the potential penetration of these systems in the European heating and cooling market. The sectors of implementation are all medium and large building end-users having heating and cooling loads throughout the year.

**PARTICIPANTS:** Centre for Renewable Energy Sources, National Observatory of Athens, Sole SA, Institute for Sustainable Technologies - AEE INTEC (Austria), Solarinstallation und Design GmbH – SOLID (Austria), Fraunhofer -Institut Solare Energiesysteme – ISE (Germany), Steinbeis Innovation GmbH (Germany), Politecnico Di Milano (Italy), Provincia di Milano - Direzione Centrale Risorse Ambientali (Italy), Sistemes Avançats D'energia Solar Termica – AIGUASOL (Spain), Societat Municipal d'Habitatge de Terrassa, S.A. (Spain), University of Oradea (Romania).

- FP7 Seventh Framework Programme, Information Society and Media Directorate-General, European Commission

**TITLE:** **ISES** - Intelligent Services for Energy-Efficient Design and Life Cycle Simulation (*288819/ FP7-ICT-2011-7*)

**PERIOD:** 2011-2014

**OBJECTIVES:** Develop Information and Communication Technologies (ICT) building blocks to integrate, complement and empower existing tools for design and operation facility management (FM) to a Virtual Energy Lab (VEL). The goal is to evaluate, simulate and optimize the energy efficiency of products for buildings and facility components in variations of real life scenarios before their realization, acknowledging the stochastic life-cycle nature of material properties, weather data and occupancy profiles. The focus of research, technology and development (RTD) is on multi-model design and testing, stochastic lifecycle analysis/simulation in combination with new supporting ontology and interoperability tools and services, and respective re-engineering of existing tools, making them more intelligent and smartly interoperable. Combine energy models with product development STEP (Standard for the Exchange of Product model data) models and operational characteristics in building information models (BIM). The VEL offers new computational tools (e.g. thermal simulation and CFD), facilitates the exchange of relevant data and information in the BIM model, facilitates the overview of results and provides the necessary computational power through cloud computing.

**PARTICIPANTS:** Technische Univeritaet Dresden (TUD) – Germany, OG – Finland, Univerza V Ljubljana (UL) - Slovenia, Sofistic Hellas AE (SOF) – Hellas, NMI – Island, EAA - Hellas, LAP – Germany, TRI – Slovenia.

## PARTICIPATION IN NATIONAL AND EUROPEAN PROGRAMMES

- Ministry of Industry, Research and Technology (YBET)

**TITLE:** **YBET** - Energy Conservation in Public and Commercial buildings

**PERIOD:** 1989 - 1992

**OBJECTIVE:** Participated in the survey of 1200 buildings, performed data analysis and compilation of the survey reports. Performed a preliminary assessment of the potential of energy conservation measures for heating, cooling and lighting in public and commercial buildings.

**PARTICIPANTS:** Ministry of Industry, Research and Technology / Hellenic Productivity Center

- THERMIE, DG XVII for Energy, European Commission

**TITLE:** **GREENHOUSES** - A Greenhouse Data Base, Resource Book on Solar Agricultural Greenhouses - Active and Passive Solar Greenhouses (*4.1000/E/91-05*)

**PERIOD:** 1991

**OBJECTIVE:** Prepared a computerised data base with a world-wide documentation of passive solar agricultural greenhouses

**PARTICIPANTS:** PROTECHNA Ltd.

- DG V for Employment, Industrial Relations, Social Affairs, European Commission

**TITLE:** **TRAINING CENTRES** - Innovative Training Centers in the European Community for Energy Conservation and the Use of Alternative Energy Sources in Buildings (*911210/31.XII.1991*)

**PERIOD:** 1991 - 1992

**OBJECTIVE:** Participated in the survey campaign for the identification of existing training centres, courses and programs for energy conservation in the more developed EU countries and in the evaluation of their effectiveness.

**PARTICIPANTS:** PROTECHNA Ltd, in collaboration with other European educational institutes.

- TEMPUS, Task Force Human Resources, Education, Training and Youth, DG XVII for Energy, European Commission

**TITLE:** **TEMPUS** - Trans-European Mobility Scheme for University Studies (*JEP-1802*)

**PERIOD:** 1991 - 1993

**OBJECTIVE:** Participation in the preparation of modular educational material in multimedia structure and computational tools for the assessment of the effectiveness of passive cooling and natural ventilation systems (PASSPORT PLUS, PASSPORT AIR) in buildings. Development of PASSPORT-Air software for multizone airflow modeling. Presentation of the material in seminars organized in Hungary and hosted by the Technical University of Budapest.

**PARTICIPANTS:** Joint European Project. PROTECHNA Ltd (Hellas) in association with the Architectural Association School of Architecture (UK), the Technical University of Budapest (Hungary) and the University of Ljubljana (Yugoslavia).

- SAVE, DG XVII for Energy, European Commission

**TITLE:** **PASSIVE COOLING** - Creation of an Educational Structure on the Energy Efficiency of Cooling Systems and Techniques for Buildings (*SAVE XVII/4.1031/93-071*)

**PERIOD:** 1993 - 1994

**OBJECTIVE:** Development of educational material for professionals involved in the design of buildings and in the teaching of building related topics (design of energy efficient buildings). Authored chapter 9 (Natural Ventilation) of the Handbook of Passive Cooling of Buildings.

**PARTICIPANTS:** Joint European Programme. Central Institution for Energy Efficiency Education (CIENE) – University of Athens, Universities and other organisations from several European countries.

- ALTENER, DG XVII for Energy, European Commission

**TITLE:** **AIOLOS** – Creation of an Educational Structure on the use of passive cooling ventilation techniques for buildings (*ALTENER XVII/4.1030/95-087*)

**PERIOD:** 1995 - 1996

**OBJECTIVE:** Assistant Coordinator. Development of educational material for professionals involved in the building design, with special emphasis on natural ventilation, the enhancement and optimization of its effectiveness. Authored chapters 3 (Prediction methods) and 8 (The software AIOLOS) of the handbook "Natural ventilation of buildings". Contribution in the development of AIOLOS software package.

**PARTICIPANTS:** University of Athens (Hellas, Project Coordinator), University of La Rochelle (France), CNRS (France), AICIA (Spain), BBRI (Belgium), CONPHOEBUS (Italy), University of Porto (Portugal).

- Ministry of Development, Operational Energy Programme

TITLE: **HELLENIC AIRPORTS** - Energy Conservation in Airports

PERIOD: 2000 – 2001

Total Budget: 60.000,000 €

OBJECTIVE: Investigation for energy conservation and for the improvement of indoor conditions in three Greek airports. Thermal simulations for the airports of Thessaloniki, Corfu and Chania. Investigation and evaluation of proposals for the rational use of energy and improvement of indoor environmental conditions.

PARTICIPANTS: National Observatory of Athens.

- ALTENER, DG XVII for Energy, European Commission

TITLE: **XENIOS** - Development of an audit tool for Hotel buildings and the promotion of RUE and RES  
(AL 4.1030/Z/01-135/2001)

PERIOD: 2002-2003

Total Budget: 158.396,000 €

OBJECTIVE: **Assistant Coordinator**. Contribution in the development of XENIOS methodology and software (ISBN 960-87905-3-0) for the analysis of the energy consumption, assessment of the energy savings and related background information and data on available technologies, legislation etc. Performed two Hellenic hotel audits and a pilot study implementation. Prepared energy conservation guides for hotel managers and guests. Contribution in the preparation the final deliverables of the project.

PARTICIPANTS: National Observatory of Athens (Hellas, Project Coordinator), Terra Nova Ltd. (Hellas), CSTB (France), CAATB (Spain), CONPHOEBUS (Italy), CALVIA (Spain), Municipality of Kalithea Rhodes (Hellas), GEDISA (Spain), AHPM (Spain), D.G. D'Energia (Spain).

- ALTENER, DG XVII for Energy, European Commission

TITLE: **EPA-ED** Development of and preparations for the implementation of an Energy Performance Assessment Method for Existing Dwellings to stimulate RUE and the use of RES in the existing dwelling stock in Member States (AL 4.1030/Z/01-142/2001)

PERIOD: 2002-2004

Total Budget: 86.233,000 €

OBJECTIVE: Development of a methodology and software for the energy performance assessment of existing residential buildings in Europe and the evaluation of different interventions for energy conservation and exploitation of renewable energy sources. Participated in the implementation of the methodology in two pilot studies in Hellas (a house and an apartment building). In the framework of the pilot studies the software was applied for energy audits and for the evaluation of the energy conservation potential in accordance with the European Directive for the energy performance of buildings.

PARTICIPANTS: National Observatory of Athens (Hellas), Damen Consultants BV (Holland), OTB (Austria), DBUR (Denmark), Austrian Institute for Applied Ecology (Austria).

- Intelligent Energy – Europe, DG XVII for Energy, European Commission

TITLE: **EPA-NR** Energy Performance Assessment for Existing Non Residential Buildings  
(EIE/04/125/S07.38651)

PERIOD: 2005-2007

Total Budget: 114.488,000 €

OBJECTIVE: Development of a methodology and software for the energy performance assessment of existing buildings of the tertiary sector in Europe and the evaluation of different interventions for energy conservation and exploitation of renewable energy sources. Participated in the implementation of the methodology in pilot studies in Hellas. In the framework of the pilot studies the software will be applied for energy audits and for the evaluation of the energy conservation potential in accordance with the European Directive for the energy performance of buildings.

PARTICIPANTS: National Observatory of Athens (Hellas), Damen Consultants BV (Holland), TNO (Holland), DBUR (Denmark), Arsenal and Austrian Institute for Applied Ecology (Austria), CSTB (France), Fraunhofer-IBP (Germany), ENEA (Italy).

- Intelligent Energy – Europe, DG XVII for Energy, European Commission

TITLE: **DATAMINE** Collecting DATA from energy certification to Monitor performance Indicators for New and Existing buildings (EIE/05/097/SI2.419651)

PERIOD: 2006-2009

Total Budget: 119.241,00 €

OBJECTIVE: Contributed in the development of the common evaluation data base. Collected, processed and analyzed national data on buildings and energy performance of 120 Hellenic residential and non-residential buildings, including offices, hospitals, schools, airports, sports centers. Performed analysis of specific energy performance indicators. Evaluated data collecting and evaluation processes and proposed improvements. Carried out dissemination activities on national level.

PARTICIPANTS: Institute for Housing and Environment IWU GmbH (Germany), National Observatory of Athens, Narodowa Agencja Poszanowania Energii S.A. NAPE (Poland), Energy for Sustainable Development Ltd. ESD (UK), EBM-Consult BV (Netherlands), Politecnico di Torino (Italy), Vito nv Energietechnologie (Belgium), Austrian Energy Agency (Austria), Slovenian Building and Civil Engineering Institute (Slovenia), Ecofys S.L. (Spain), Energy Action Ltd (Ireland), Sofia Energy Agency SOFENA (Bulgaria).

- International Energy Agency

**TITLE:** **IEA Task 38**, Solar Air-Conditioning and Refrigeration

**PERIOD:** 2007-2008

**OBJECTIVES:** International Energy Agency (IEA), Solar Heating & Cooling Programme, Task 38 "Solar Air-Conditioning and Refrigeration". Implement measures to accelerate the market introduction of Solar Cooling systems in each specific sector (i.e., residential, commercial and industrial) and to create the most favorable conditions for the realization of new research activities for the development of novel systems and concepts. Improve conditions for the market introduction of solar assisted air-conditioning systems devoted to the residential and small commercial sectors. Develop concepts and create tools for a proper implementation of Solar Cooling (air-conditioning and refrigeration) in large scale applications (e.g., large office and residential buildings, hotels, industry, etc). Facilitate the development of novel Solar Cooling concepts improving the response of the technology to the needs of the considered sectors through collaborative research activities.

**PARTICIPANTS:** Fraunhofer Institute for Solar Energy Systems ISE and national representatives from Australia, Austria, Canada, Denmark, France, Germany, Hellas (NOA), Israel, Italy, Luxembourg, Mexico, Netherlands, Poland, Portugal, Spain, Sweden, Switzerland.

- Intelligent Energy – Europe, Directorate General for Energy (DG XVII), European Commission

**TITLE:** **TABULA** Typology approach for building stock energy assessment (*IEE/08/475/SI2.528393*)

**PERIOD:** 2009-2012

Total Budget: 96.898 €

**OBJECTIVES:** **Scientific responsible for the Hellenic Team.** Create a harmonised structure for European building typologies, with an emphasis on residential buildings. The structure considers the different national construction types. The typology structure will be filled with national data by each partner, including typical values for: thermal envelope areas, U-values and g-values, performance of supply systems, frequencies of building and system types in the national stock, energy saving measures on two levels: "typical" and "advanced". Documentation for each participating country present an overview of the energy performance of typical buildings and the possible energy saving by refurbishment measures. The building typology data will be published by a special Building Typology Webtool. The [Hellenic typology](#) consists of 24 single family and multifamily houses which were analytically simulated to assess the effectiveness of energy saving interventions on the envelope, the systems and the incorporation of RES and their impact on the national energy balance. An internet application **eKIA** was developed using the Hellenic typology as a tool for the estimation of the energy performance of existing residential buildings as well as its potential for improvement through energy conservation scenarios.

**PARTICIPANTS:** Institute for Housing and Environment IWU GmbH (Germany), National Observatory of Athens, French Energy and Environment Agency ADEME (France), Narodowa Agencja Poszanowania Energii S.A. NAPE (Poland), Politecnico di Torino (Italy), Vito nv Energietechnologie (Belgium), Austrian Energy Agency (Austria), Slovenian Building and Civil Engineering Institute (Slovenia), Mälardalens university (Sweden), STU-K (Czech Republic), Energy Action Ltd (Ireland), Danish Building Research Institute (Denmark).

- European Regional Development Fund (ERDF) & Centre for Renewable Energy Sources (CRES)

**TITLE:** **IC-MED** - Inter-Clusters Mediterranée

**PERIOD:** 2009 - 2012

**OBJECTIVES:** Development of clusters for improving innovative and entrepreneurial actions. Investigate the potential of creating and formulating the proper conditions for the growth of Hellenic innovative clusters. Participate in the effort to develop a cluster on sustainable buildings.

**PARTICIPANTS:** Coordinator of Hellenic cluster: CRES, with voluntary participation of numerous organizations and companies. Project participants from 13 public and technology development organizations from French, Italian and Spanish regions.

- Technical Chamber of Greece (TEE)

**TITLE:** **TEE-KENAK – I.** Software Development for the Implementation of the National Regulation on the Energy Performance of Buildings

**TEE-KENAK – II.** Maintenance

**PERIOD:** 2010 - 2013

Total Budget: 73.800 / 18.450 €

**OBJECTIVES:** **Scientific responsible for the project.** Development of the official national software (**TEE-KENAK**) for building energy audits and labeling, and the inspection of boilers & heating systems and air-conditioning installations, in accordance to the European Directive on the Energy Performance of Buildings (EPBD), N.3661/08 and the national regulation (KENAK). Based on the experience gained from participation in the european project EPA-NR, the calculations are performed according to EN 13790 for preparing an energy performance certificate and assessing energy conservation measures, taking into account the national technical guidelines prepared by the Technical Chamber of Greece (TEE).

**PARTICIPANTS:** NOA

- Intelligent Energy – Europe, Executive Agency for Competitiveness and Innovation (EACI), European Commission

TITLE: **EPISCOPE** - Energy Performance Indicator Tracking Schemes for the Continuous Optimisation of Refurbishment Processes in European Housing Stocks (*EE/12/695/SI2.644739*)

PERIOD: 2013-2016

Total Budget: 114.599 €

OBJECTIVES: **Scientific responsible for the Hellenic Team.** Conceptual framework of national residential building typologies in the European housing sector in order to make the refurbishment actions more transparent and effective with the aim to ensure that the climate protection targets are achieved and that renovation actions can be taken in due time, if necessary. The project approach is to implement pilot actions at national, regional and local level, and to align and combine them by means of a common methodology. The conceptual framework is based on national residential building typologies developed during the TABULA project. An upgraded WebTool reflects the national interpretations of Nearly-Zero Energy Buildings (NZEB) in 16 participating European countries. The resulting methodology is the basis for the intended assessment and comparison of different refurbishment strategies and impacts. The monitoring procedure and the concerted set of energy performance indicators before and after refurbishment will enable key actors and stakeholders to ensure a high quality of energy conservation measures, the compliance with regulations, to track and steer the refurbishment processes in a cost-efficient way and to evaluate the actually achieved energy savings.

ROLE: Track the energy refurbishment progress of Hellenic residential buildings at local and regional level. The implementation rate of different refurbishment measures will be determined and compared with those activities which are necessary to attain the relevant climate protection targets. In addition, the actual measured energy consumption after refurbishment will be compared to the expected savings with the aim to verify predictions according to KENAK.

PARTICIPANTS: Institute for Housing and Environment IWU GmbH (Germany), NOA (Greece), Buildings Performance Institute Europe BPIE and Flemish Institute for Technological Research VITO (Belgium), Building and Civil Engineering Institute ZRMK (Slovenia), Danish Building Research Institute SBI (Denmark), Austrian Energy Agency AEA (Austria), Building Research Establishment BRE Ltd (UK), Politecnico di Torino POLITO (Italy), STU-K (Czech Republic), Energy Action EAL Ltd (Ireland), Budapest University of Technology and Economics BME (Hungary), Instituto Valenciano de la Edificación IVE (Spain), Cyprus University of Technology CUT (Cyprus), Technical University Delft TU Delft (The Netherlands), Pouget Consultants (France), Norwegian University of Science and Technology NTNU (Norway).

- Interreg MED Programme, European regional Development Fund

TITLE: **CESBA MED** - Sustainable MED Cities (*INTERREG MED 990/1MED15\_2.1\_M23\_207*)

PERIOD: 2016-2019

Total Budget: 192.175 €

OBJECTIVES: Develop a tool that combines performance indicators in an innovative decision making process that will support users to overcome complexities and facilitate synergies for preparing, monitoring and assessing large scale energy refurbishments of urban buildings and strategies for holistic sustainable urban development. One of the project's main objectives is to define a MED Passport for buildings and neighborhoods, which will also facilitate the implementation of the European Commission Communication EC COM (2014) 445 on Resource Efficiency Opportunities in the Building Sector, to harmonize the existing building assessment tools through the development of a core framework of common indicators. The project involves national local committees of stakeholders, pilots for testing the new CESBA MED Sustainable Neighborhoods Toolkit at local level, educational material in different languages, dissemination activities, seminars and training programs.

PARTICIPANTS: City of Torino (Italy), iiSBE Italia R&D srl (Italy), Municipality of Udine (Italy), EnvirobatBDM (France), Auvergne-Rhône-Alpes Énergie Environnement (France), Government of Catalonia (Spain), Municipality Sant Cugat del Vallès (Spain), University of Malta (Malta), National Observatory of Athens (Greece), Association of Common European Sustainable Built Environment Assessment (Austria), Energy Institute Hrvoje Požar (Croatia), Urban Community of Marseille Metropolitan Province (France).

- Strategic Development Action of Research and Technological Entities, ESPA (2014-2020), General Secretariat for Research & Technology, Hellenic Ministry of Development & Investments

TITLE: **THESPIA II - Building cooperative and complete methodologies and tools for monitoring, managing and predicting environmental parameters and pressures**

PERIOD: 2018-2021

Total Budget: 67.000 €

OBJECTIVES: **Leader of WP-4** «Modeling of the built environment – Scenario analysis for the achievement of the national medium and long term national targets for energy conservation & emissions reduction», of the project THESPIA II, in the frame of NOA's institutional project KRHPIS II. GREC's activities in THESPIA II aimed at: a) Upgrade existing knowledge on the energy related characteristics of the Hellenic building stock at its present state, through updated statistics and in-situ measurements to monitor the actual use and operation patterns of buildings in the residential sector and in representative categories of the non-residential sector (i.e. offices, schools); b) Develop basic tools for the calculation of the embodied energy and life cycle analysis for representative building types. Field studies in Hellenic production units to collect data on the environmental impact from the different production stages of construction materials and systems used in buildings. Develop a database with cost and simplified indicators of embodied energy per main building construction element and E/M system to be used in parametric life cycle analysis studies of the Hellenic building stock; c) Develop a building stock model for the dynamic assessment of energy conservation strategies to meet the national targets towards 2020, 2030 and beyond.

PARTICIPANTS: IESRD in NOA's institutional project (KRIPIS II).

- Strategic Development Action of Research and Technological Entities, ESPA (2014-2020), General Secretariat for Research & Technology, Hellenic Ministry of Development & Investments

**TITLE: e-CODOMH - Cluster for Efficient and Sustainable Construction, buildings & infrastructure**

**PERIOD: 2020-2022**

Collaboration platform

**OBJECTIVES:** The mission of the cluster is to upgrade entrepreneurship and to create an added value in the Greek construction industry, through the integration of innovation and its technological transformation with the ultimate goal of sustainable constructions. Its strategic initiative is the monitoring of modern international developments, changes and challenges in the field of construction and building materials and the successful transition of Hellenic companies in the sector.

**PARTICIPANTS:** EVETAM SA, with the participation of five large companies, twelve SMEs, eight research organizations including IERSD-NOA, and two professional and commercial chambers

- European Neighbourhood Instrument (ENI) Cross-Border Cooperation (CBC) Med Sea Basin Programme

**TITLE: Sustainable MED Cities - Integrated tools and methodologies for sustainable Mediterranean cities (C\_B.4.3\_0063)**

**PERIOD: 2021-2023**

Total Budget: 132.219,90 €

**OBJECTIVES:** In the Mediterranean, two thirds of the population are already living in urban areas. By around 2050, the United Nations Human Settlements Programme predicts that the urban population will grow to around 170 million in the countries on the northern shore and to over 300 million to the south and east. This fact generates serious challenges: growing number of slums, inadequate infrastructures and services (waste collection, potable water, mobility, etc.), health services. Cities play a major role in the joint challenge of achieving the UN Agenda 2030 Sustainable Development Goals. Accordingly, a new sustainable approach to spatial planning and management of Med cities, offering longer-term sustainable solutions, should be supported by innovative tools and methodologies, useful to enhance the decision-making and planning processes of local authorities, to deliver higher quality, coherent and consistent urban sustainability measures and accelerate reaching targets. The tools and methodologies should be able to adopt a Multi-Level Governance approach in planning and managing cities: the implementation of actions fostering horizontal and vertical integration of different governance levels, the joint application of the sustainability measures across local and regional authorities, the adoption of monitoring and verification schemes. Combining the capitalisation of the Interreg MED project "CESBA MED: Sustainable Cities" with the ENI MED project "GreenBuilding", Sustainable MED Cities will provide Mediterranean municipalities with a system of innovative tools and methodologies to develop effective policies, strategies and action plans in relation to the Mediterranean strategy for sustainable development 2016-2025. The project will also deliver innovative capacity-building programmes for Mediterranean cities to step up their capacity to drive the urban regeneration.

**PARTICIPANTS:** Government of Catalonia (Spain), iISBE Italia R&D (Italy), Municipality of Sousse (Tunisia), Moukhtara Municipality (Lebanon), Greater Irbid Municipality (Jordan), National Observatory of Athens (Hellas) in collaboration with the United Nations Environment Programme / Mediterranean Action Plan (UNEP/MAP) and the network of Mediterranean coastal cities (Medcities).

- H2020 - Building a low-carbon, climate resilient future: climate action in support of the Paris Agreement, European Innovation Council and Small and Medium-sized Enterprises Executive Agency (EISMEA), European Commission

**TITLE: EIFFEL - Revealing the role of geoss as the default digital portal for building climate change adaptation & mitigation applications (H2020-LC-CLA-2020-2-101003518)**

**PERIOD: 2021-2024**

**OBJECTIVES:** EIFFEL will offer the earth observation based community the ground-breaking capacity of exploiting existing Global Earth Observation System of Systems (GEOSS) and external datasets, with minimal new data collection activities. Added-value services interoperable with GEOSS will be designed, using cognitive search and metadata augmentation tools based on Artificial Intelligence (AI), including Natural Language Processing. These tools will leverage advanced cognitive features to extract meaningful information from and enrich GEOSS metadata. Moreover, novel methods (super resolution, data fusion) for augmenting the spatiotemporal resolution of explored earth observation data will be proposed, in order to address the needs of the diverse EIFFEL climate change adaptation and mitigation applications. The latter will cover: (i) a set of five different global earth observation societal benefit areas, namely in Water and Land Use Management, Sustainable Agriculture, Transport Management, Sustainable Urban Development and Disaster Resilience domains; (ii) various EU geographical and climatic regions, at local, regional, national, crossborder and pan-European scales. Further, the value of using explainable AI techniques for improving the credibility and comprehensiveness of such climate change applications, so that they can offer actionable insights to the decision makers, will be showcased. EIFFEL will foster the co-design of climate change adaptation policies and mitigation strategies and monitor climate change effects in the respective regions. EIFFEL complies with the framework of results-oriented GEOSS, to improve the delivery of applications tailored to decision making centres and will actively participate in the GEO Work Programme post-2019. It provides tangible proof of the value of GEOSS data for creating climate change applications and encourages projects and initiatives to offer their data through the portal.

**PARTICIPANTS:** Institute of Communication and Computer Systems (Hellas), National Observatory of Athens (Hellas), Prodevelop (Spain), Universitat Politècnica de Valencia (Spain), Draxis Environmental S.A. (Hellas), Stichting the Delft Institute for Water Education (Netherlands), Open Universiteit Nederland (Netherlands), Noord-Brabant Provincie (Netherlands), Libra MLI Ltd (UK), Diavalkaniko Kentro Perivallontos (Hellas), Autoritat Portuaria de Balears (Spain), Universidad Autònoma de Barcelona (Spain), Perifereia Attikis (Hellas), National Paying Agency (Lithuania), Schweizerisches Forschungsinstitut fuer Hochgebirgsklima Und Medizin In Davos (Switzerland), European Centre for Medium-Range Weather Forecasts (U.K.), Suomen Ymparistokeskus (Finland), Risa Sicherheitsanalysen GmbH (Germany), Edge in Earth Observation Sciences Monoprosopi IKE (Hellas).



## SERVICES TO THE PRIVATE SECTOR

- ELVAL – Hellenic Aluminium Industry S.A.

**TITLE:** **ELVAL I** - Evaluation of aluminium wall cladding on building facades

**PERIOD:** 2001-2002

**OBJECTIVES:** Preliminary evaluation of the potential energy conservation as a result of the use of aluminium wall cladding in existing and new buildings.

**ROLE:** Performed thermal building simulation and comparative analysis of conventional constructions and parametric analysis of various

parameters. Measured material's optical properties, in collaboration with a European organisation. Performed technical analysis of results. Constructed a demonstration model that was used by ELVAL for demonstration purposes.

**PARTICIPANTS:** National Observatory of Athens.

- ELVAL – Hellenic Aluminium Industry S.A.

**TITLE:** **ELVAL II** - Parametric investigation of Energy conservation as a result of aluminium wall cladding on building facades. Multimedia software & educational material.

**PERIOD:** 2002

**Total Budget:** 29.921 €

**OBJECTIVES:** Evaluation of the potential energy conservation as a result of the use of aluminium wall cladding in existing and new

buildings.

**ROLE:** Performed thermal building simulation and comparative analysis of conventional constructions and parametric analysis of various

parameters for different building geometries and constructions, at five climatic zones. Developed a multimedia software for the presentation of the simulation results. The software can be used for the preliminary assessment of potential energy conservation and normalisation of results for different building applications. Prepared educational material on energy conservation in buildings. The multimedia software and educational material were used for the international architectural competition organised by ELVAL and the International Union of Architects - UIA.

**PARTICIPANTS:** National Observatory of Athens.

- JEPA – Γ.Ε. Παπαγρηγοράκης & Συνεργάτες, Ηλεκτρολόγοι – Μηχανολόγοι Μηχανικοί – Σύμβουλοι

**TITLE :** **JEPA** - Θερμικές Προσομοιώσεις & Ενεργειακές Επιθεωρήσεις Κτιρίων

**PERIOD:** 2004-2009

**Total Budget:** 15.200 €

**OBJECTIVES/ROLE:** Investigate prevailing indoor conditions and the potential for energy conservation in new office buildings, residential buildings, and the Athens International Airport, using TRNSYS thermal simulations. Audits and assessment of refurbishment actions in existing office buildings, data analysis for energy balance and assessment of energy conservation measures.

**PARTICIPANTS:** National Observatory of Athens.

## CONSULTING

- I. PRINTAKOS and Associates

**TITLE:** **Heating and Cooling Load calculations**

**PERIOD:** 9/2004

**Total Budget:** 2.900 €

**ROLE:** Calculation of heating and cooling demand, sizing the heating and cooling installations for an office building and the computer center of the National Bank in Gerakas Attikis.

- Samourka Z. Architects

**TITLE:** **Thermal simulations & Solar Protection of Building**

**PERIOD:** 5-9/2006

**Total Budget:** 2.140 €

**ROLE:** Thermal simulations of residential building. Calculation of heating and cooling demand, sizing the heating and cooling installations.

## PUBLICATIONS IN SCIENTIFIC JOURNALS

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*Natural Convection Heat Transfer Coefficients from Vertical and Horizontal Surfaces for Building Applications*  
[Energy & Buildings](#), Vol. 20, p. 243-249, (1994).
- ❷ M. Santamouris, A. Argiriou, E. Dascalaki, C.A. Balaras, A. Gaglia  
*Energy Characteristics and Savings Potential in Office Buildings*  
[Solar Energy](#), Vol. 52, p. 59-66, (1994).
- ❸ M. Santamouris, E. Dascalaki, C.A. Balaras, A. Argiriou, A. Gaglia  
*Energy Performance and Energy Conservation in Health Care Buildings in Hellas*  
[Energy Conversion & Management](#), Vol. 35, p. 293-305, (1994).
- ❹ A. Argiriou, D.N. Asimakopoulos, C.A. Balaras, E. Dascalaki, A. Lagoudi, M. Loizidou, M. Santamouris, I. Tselepidaki  
*On the Energy Consumption and Indoor Air Quality in Office and Hospital Buildings in Athens, Hellas*  
[Energy Conversion and Management](#), Vol. 35, p. 385-394, (1994).
- ❺ M. Santamouris, C.A. Balaras, E. Dascalaki, A. Argiriou, A. Gaglia  
*Energy Consumption and the Potential for Energy Conservation in School Buildings, in Hellas*  
[Energy](#), Vol. 19, p. 653-660, (1994).
- ❻ M. Santamouris, C.A. Balaras, E. Dascalaki, M. Vallindras  
*Passive Solar Agricultural Greenhouses. A Worldwide Classification and Evaluation of Technologies and Systems Used for Heating Purposes*  
[Solar Energy](#), Vol. 53, p. 411-426, (1994).

### 1 9 9 5

- ❼ E. Dascalaki, M. Santamouris, A. Argiriou, C. Helmis, D.N. Asimakopoulos, K. Papadopoulos, A. Soilemes  
*Predicting single sided natural ventilation rates in buildings*  
[Solar Energy](#), Vol. 55, p. 327-341, (1995).

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- ❽ K.H. Papadopoulos, A.T. Soilemes, D.N. Asimakopoulos, M. Santamouris, A. Argiriou, E. Dascalaki  
*A Triple Hot-Wire System for Indoor Air Flow Measurements*  
[Journal of Solar Energy Engineering](#), p. 168-176, (1996).
- ❾ C.A. Balaras, E. Dascalaki, M. Santamouris, A. Gaglia  
*Educational and Training Activities in Renewable Energy in the European Union*  
[Int. J. Engineering Education](#), Vol. 12, p. 7-15, (1996).
- ❿ M. Santamouris, C.A. Balaras, E. Dascalaki, A. Argiriou, A. Gaglia  
*Energy Conservation and Retrofitting Potential in Hellenic Hotels*  
[Energy & Buildings](#), Vol. 24, p. 65-75, (1996).
- ⓫ E. Dascalaki, M. Santamouris, A. Argiriou, C. Helmis, D.N. Asimakopoulos, K. Papadopoulos, A. Soilemes  
*On the combination of air velocity and flow measurements in single sided natural ventilation configurations*  
[Energy and Buildings](#), Vol. 24, p. 155-165, (1996).

### 1 9 9 7

- ⓬ K. Limam, F. Allard, E. Dascalaki  
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