

## Yannis Sarafidis, Senior researcher NOA

### Personal data

PLACE/DATE OF BIRTH: Athens, 1968  
NATIONALITY: Greek  
TITLE: Dr. Chemical engineer  
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### Education

- 2003** **Ph.D.** in Chemical Engineering, National Technical University of Athens (NTUA) - Greece. Title of thesis: "*Development of an energy group decision support system*".
- 1991** **Diploma** in Chemical Engineering from the National Technical University of Athens. Diploma thesis: "*Modelling the Greek energy system. A linear programming approach*".

### Employment – Professional experience

- 2001 – to date:** Initially (2001 – 2005) *permanent scientific staff* at the Institute of Environmental Research and Sustainable Development (IERSD) of the National Observatory of Athens (NOA), then *Associate Researcher* (2006 – 2010) and since March 2010 *Senior Researcher* at IERSD. Researcher in the fields of energy planning & modelling and environmental management with emphasis on climate change related issues.
- 1999 – 2001:** Participation, as an external collaborator of the National Observatory of Athens, in scientific activities related to (a) Compilation of annual inventories of greenhouse gases emissions and emissions of other air pollutants and (b) Energy planning at national and regional level with emphasis on the assessment of policies and measures for climate change mitigation.
- 1993 – 1998:** External collaborator of the Laboratory of Industrial and Energy Economics, Department of Chemical Engineering at the National Technical University of Athens in research activities related to large scale deployment of renewable energy sources and the development of relevant decision support systems and databases.
- 1993 – 2000:** External collaborator of the Greek private consulting company SPEED Development Consultants S.A. in studies concerning regional energy planning and the promotion of renewable energy sources at regional / local level.

### Computer literate

Simulation of energy systems (ENPEP, GTMax); Mathematical programming with GAMS (General Algebraic Modelling System); Evaluation of climate change impacts (VINELOGIC, DSSAT); Statistical analysis (SPSS).

### Languages

English: fluently (Cambridge Proficiency)

### Research activities and experience

- ↳ GHG emissions and other gases inventories and projections

- ↪ Identification and assessment of policies and measures for tackling climate change (mitigation and adaptation)
- ↪ Assessment of climate change impacts on various sectors
- ↪ Short- and long-term energy projections
- ↪ Energy modelling – energy planning at national and regional level
- ↪ Decision support tools.

### **Participation in International Organizations as technical expert**

- ↪ Participation as Contributing Author in the 5<sup>th</sup> Assessment Report of IPCC (Working Group II)
- ↪ In 2005 and 2006, participation in the expert review of the new guidelines for the National Greenhouse Gases Inventories (2006 IPCC Guidelines for National Greenhouse Gas Inventories) prepared by the Intergovernmental Panel on Climate Change (IPCC).
- ↪ In 2005 and 2006, participation in the expert review of the 4th Assessment Report of IPCC (Working Group II: Climate change impacts, Adaptation and Vulnerability and Working Group III: Mitigation).
- ↪ Since 2001, participation in the expert reviews of Greenhouse Gases Inventories and National Communications under the United Nations Framework Convention on Climate Change (UNFCCC).

### **Representation of Greece in International Organizations**

- ↪ Since 2003, participation as a member of the Greek Delegation in Working Group 3 of the EU Climate Change Committee on issues related to EU Emissions Trading and the Kyoto Protocol Flexible mechanisms.
- ↪ In 2003, participation as a member of the Greek Delegation in the formal regular meeting of the Subsidiary Bodies (SBI, SBSTA) of the UNFCCC with the responsibility of technical consultant on the issues of reporting and accounting.
- ↪ During the period 2002 – 2003, participation as a technical consultant in the Informal Workshops of UNFCCC related to the implementation of adjustments in national inventories of greenhouse gases (GHG).
- ↪ Since 2001, participation as a member of the Greek Delegation in Working Group 1 of the EU Climate Change Committee on issues related to GHG inventories.
- ↪ Since 2001, participation as a member of the Greek Delegation in Working Group 2 of the EU Climate Change Committee on issues related to GHG Emissions projections and the assessment of policies and measures for the reduction of GHG emissions.

### **Other professional activities**

#### ***Member of Committees and organizations***

- ↪ Member of the Greek Technical Chamber
- ↪ Member of the Hellenic Association of Chemical Engineers

#### ***Reviewer of journals***

Energy Policy, Energy, Energy Economics, Energies

### Participation in research programs

Participation in 33 Research Projects funded by Hellenic Ministry of Development, Hellenic Ministry of Environment, Hellenic General Secretariat of Research & Technology, Centre of Renewable Energy Sources, European Commission, acting as:

- ↳ Project Leader in 3 projects.
- ↳ Senior Researcher in 30 projects.

### Publications

More than 50 publications (excluding technical reports), of which 27 in refereed journals (SCI h-factor: 15; Citations: 967, excluding self-citations)

#### Publications in Refereed Journals

1. Georgopoulou, E., Mirasgedis, S., Sarafidis, Y., Hontou V., Gakis N., Lalas D P, *Climatic preferences for beach tourism: an empirical study on Greek islands*, Theoretical and Applied Climatology (Article in press)
2. Georgopoulou E, Mirasgedis S, Sarafidis Y, Vitaliotou M, Lalas D P, Theloudis I, Giannoulaki K-D, Dimopoulos D, Zavras V, 2017, *Climate change impacts and adaptation options for the Greek agriculture in 2021-2050: A monetary assessment*, Climate Risk Management, 16, pp. 164-182.
3. Markaki M, Belegri-Roboli A, Sarafidis Y, Mirasgedis S, 2017, *The carbon footprint of Greek households (1995-2012)*, Energy Policy, 100, pp. 206-2015.
4. Georgopoulou E, Mirasgedis S, Sarafidis Y, Hontou V, Gakis N, Lalas D, Xenoyianni F, Kakavoulis N, Dimopoulos D, Zavras V, 2015, *A methodological framework and tool for assessing the climate change related risks in the banking sector*, Journal of Environmental Planning and Management, 58(5), pp.874-897.
5. Georgopoulou E, Mirasgedis S, Sarafidis Y, Gakis N, Hontou V, Lalas D P, Steiner D, Tuerk A, Fruhmann C, Pucker J, 2015, *Lessons learnt from a sectoral analysis of greenhouse gas mitigation potential in the Balkans*, Energy, 92, pp. 577-591.
6. Mirasgedis S, Georgopoulou E, Sarafidis Y, Papagiannaki K, Lalas D P, 2014, *The impact of climate change on the pattern of demand for bottled water and non-alcoholic beverages*, Business Strategy and the Environment, 23(4), pp. 272-288.
7. Mavrotas, G., Georgopoulou, E., Mirasgedis, S., Sarafidis, Y., Lalas, D., Hontou, V., Gakis, N., 2009, "Multi-objective Combinatorial Optimization for Selecting Best Available Techniques (BAT) in the Industrial Sector: the COMBAT tool", Journal of Operational Research Society, 60 (7), pp. 906-920.
8. Mirasgedis, S., Hontou, V., Georgopoulou, E., Sarafidis, Y., Gakis, N., Lalas, D.P., Loukatos, A., Gargoulas, N., Mentzis, A., Economidis, D., Triantafilopoulos, T., Korizi, K., Mavrotas, G., 2008, "Environmental damage cost from industrial activities in the greater Athens, Greece area and the resulting benefits from the introduction of BAT", Environmental Impact Assessment Review, 28(1), pp. 39 – 56
9. Georgopoulou, E., Hontou, V., Gakis, N., Sarafidis, Y., Mirasgedis, S., Lalas, D. P., Loukatos, A., Gargoulas, N., Mentzis, A., Economidis, D., Triantafilopoulos, T., Korizi, K., 2008, "BEAsT: A decision-support tool for assessing the environmental benefits and the economic attractiveness of best available techniques in industry", Journal of Cleaner Production, 16(3), pp. 359 – 373
10. Georgopoulou, E., Mirasgedis, S., Sarafidis, Y., Hontou, V., Gakis, N., Lalas, D.P., Loukatos, A., Gargoulas, N., Mentzis, A., Economidis, D., Triantafilopoulos, T., Korizi, K., Mavrotas, G., 2007, "A Decision-Aid Framework to Provide Guidance for the Enhanced Use of Best Available Techniques in Industry", Environmental Management, 40(3), pp. 413 - 429.
11. G. Mavrotas, E. Georgopoulou, S. Mirasgedis, Y. Sarafidis, D. Lalas, V.Hontou, N. Gakis, 2007, "An integrated approach for the selection of Best Available Techniques (BAT) for the industries in the greater Athens area using multi-objective combinatorial optimization", Energy Economics, 29(4), pp. 953 - 973

12. Diakoulaki, D., Georgiou, P., Tourkolias, C., Georgopoulou, E., Lalas, D., Mirasgedis, S., Sarafidis, Y., 2007, "A multicriteria approach to identify investment opportunities for the exploitation of the Clean Development Mechanism", Energy Policy, 35(2), pp. 1088-1099
13. Mirasgedis, S., Sarafidis, Y., Georgopoulou, E., Kotroni, V., Lagouvardos, K., Lalas, D. P., 2007, "A modeling framework for estimating the impacts of climate change on electricity demand at regional level: the case of Greece", Energy Conversion and Management, 48, pp. 1737-1750.
14. Balaras, C.A., Gaglia, G.A., Mirasgedis, S., Georgopoulou, E., Sarafidis, Y., Lalas, D.P., "Empirical assessment of the Hellenic non-residential building stock, energy consumption, emissions and potential energy savings", Energy Conversion and Management, 47, pp. 1160-1175.
15. Balaras, C., Gaglia, A., Georgopoulou, E., Mirasgedis, S., Sarafidis, Y., Lalas, D.P., 2007, "European residential buildings and empirical assessment of the Hellenic building stock, energy consumption, emissions and potential energy savings", Building and Environment 42(3), pp.1298-1314.
16. Georgopoulou, E., Sarafidis, Y., Mirasgedis, S., Lalas, D.P., 2006, "Next allocation phase of the EU emissions trading scheme: How tough will the future be?", Energy Policy, 34(18), pp. 4002-4023.
17. Mirasgedis, S., Sarafidis, Y., Georgopoulou, E., Lalas, D.P., Moschovits, M., Karagiannis, F. and Papakonstantinou, D., 2006, "Models for Mid-term Electricity Demand Forecasting Incorporating Weather Influences", Energy, 31(2-3), pp. 208-227.
18. Georgopoulou, E., Sarafidis, Y., Mirasgedis, S., Balaras, C., Gaglia, A., Lalas, D.P., 2005, "Evaluating the need for economic support policies in promoting greenhouse gas emission reduction measures in the Greek building sector", Energy Policy, 34(15), pp. 2012-2031.
19. Mirasgedis, S., Sarafidis, Y., Georgopoulou, E., Lalas, D.P., Papastavros, C., 2004, "Mitigation Policies for Energy-Related Greenhouse Gas Emissions in Cyprus: The Potential Role of Natural Gas Imports", Energy Policy, 32(8), pp. 1001-1011.
20. Mirasgedis, S., Georgopoulou, E., Sarafidis, Y., Balaras, C., Gaglia A., and Lalas, D.P., 2004, "CO2 Emission Reduction Policies in the Greek Residential Sector: A Methodological Framework for their Economic Evaluation", Energy Conversion and Management, 45(4), pp.537-557.
21. Bosioli, E., Sarafidis, Y., Georgopoulou, E., Mirasgedis, S., Lalas, D.P., and Pasmajoglou, S., 2004, "The Application of the RAINS Model for Greece", International Journal of Environment and Pollution, 21(2), pp.132-152.
22. Georgopoulou, E., Sarafidis, Y., Mirasgedis, S., Zaimi, S., Lalas, D.P., 2003, "A multiple criteria decision-aid approach in defining national priorities for greenhouse gases emissions reduction in the energy sector", European Journal of Operational Research, 146(1), pp. 199-215.
23. Sarafidis, Y., Mirasgedis, S., Georgopoulou, E., Lalas, D.P., 2002, "Economic Evaluation of CO2-emission Abatement Measures in the Greek Energy Sector", Journal of Environmental Planning and Management, 45(2), pp.181-198.
24. Mirasgedis, S., Sarafidis, Y., Georgopoulou, E., Lalas, D.P., 2002, "The Role of Renewable Energy Sources within the Framework of the Kyoto Protocol: the case of Greece", Renewable and Sustainable Energy Reviews, 6(3), pp. 247-269.
25. Diakoulaki, D., Zervos, A., Sarafidis, J. and Mirasgedis, S., 2001, "Cost Benefit Analysis for Solar Water Heating Systems", Energy Conversion and Management, 42(14), pp. 1727-1739.
26. Sarafidis, Y., Diakoulaki, D., Papagiannakis, L. and Zervos, A., 1999, "A regional planning approach for the promotion of renewable energies", Renewable Energy, 18(3), pp. 317-330.
27. Georgopoulou, E., Sarafidis, Y. and Diakoulaki, D., 1998, "Design and implementation of a group DSS for sustaining renewable energies exploitation", European Journal of Operational Research, 109(2), pp. 483-500.

**Publications in conference proceedings after full review**

1. Georgopoulou E, Mirasgedis S, Sarafidis Y, Gakis N, Hontou V, Lalas D P. Lessons learnt from a sectoral analysis of GHG mitigation potential in the Balkans within the LOCSEE project. 4th South East European Conference on Sustainable Development of Energy Water and Environment Systems – SDEWES, Ohrid 2014
2. Markaki M, Mirasgedis S, Belegri-Roboli A and Sarafidis Y, 2013, The environmental impact of clean energy investments on the Greek economy: an input-output analysis (2010-2020). 13th International Conference on Environmental Science and Technology CEST 2013, Athens
3. Mavrotas, G., Georgopoulou, E., Mirasgedis, S., Sarafidis, Y., Lalas, D., Hontou, V., Gakis, N., 2006, "Evaluation and Selection of Best Available Techniques (BAT) for the industries in greater Athens area using Multiobjective Combinatorial Optimization", Proceedings of the Mini EURO Conference on Operational Research Models and Methods in the Energy Sector (ORMMES 06), 6-8 September, Coimbra-Portugal.
4. Georgiou, P., Tourkolias, C., Georgopoulou, E., Mirasgedis, S., Sarafidis, Y., Lalas, D.P., 2005, "Multicriteria evaluation of investment opportunities for the exploitation of the flexible mechanisms of the Kyoto Protocol", Proceedings of the 9th Conference on Environmental Science G-NEST, pp. 479-484, Rhodes.
5. Papagiannaki, K., Mirasgedis, S., Georgopoulou, E., Sarafidis, J., and Lalas, D.P., 2003, "Estimate of Emissions Scenarios Effects on Climate Parameters in the Balkan Region", Proceedings of the 8th Conference on Environmental Science G-NEST, pp. 659-666, Lemnos.
6. Mirasgedis, S., Sarafidis, Y., Georgopoulou, E., Adamopoulou, N., Lalas, D.P., 2001: "Evolution of Baseline Energy Consumption and Energy Related CO<sub>2</sub> Emissions in Greece on the Basis of Alternative Energy Prices Scenarios", Proceedings of the 7th Conference on Environmental Science G-NEST, Vol. B, pp. 639-650, Syros.
7. Sarafidis, Y., Mirasgedis, S., Georgopoulou, E., 2001: "Economic Evaluation of CO<sub>2</sub> Emission Abatement Measures in the Greek Energy Sector", Proceedings of the 7th Conference on Environmental Science G-NEST, Vol. B, pp. 780-792, Syros.

**Publications in conference proceedings**

1. Mirasgedis S., Georgopoulou, E, Sarafidis Y., "The economic dimensions of climate change: from global to local scale", 1st Hellenic Conference on Climate Change, Regional Association of Thessaly municipalities, Karditsa 2017
2. Tigas K, Giannakidis G, Lalas D, Mirasgedis S, Sarafidis Y, Sakellaridis N, Nakos C, Mantzaris I, Campouris I. "Analysis of the Potential for RES and Energy Conservation Potential in the Greek Energy System in the Context of the EU Energy and Climate Package" RENES 2010, 4th National Conference: The Implementation of Renewable Energy Sources towards and Ambitious and Reliable National Action Plan. Athens, 2010
3. Mavrotas, G., Georgopoulou, E., Mirasgedis, S., Sarafidis, Y., Lalas, D., Hontou, V., Gakis, N., 2007: "An Integrated Approach for the Evaluation and Selection of Best Available Techniques in Attiki's Industries through Multi-criteria Mathematical Programming. 6th National Conference of Chemical Engineering, pp. 669-672, Athens, May-June 2007.

4. Gaglia, A., Balaras, K., Georgopoulou, E., Mirasgedis, S., Sarafidis, Y., Lalas, D., 2007: "Potential for energy conservation and emissions reduction in Greek buildings – Mitigation measures", 2nd Hellenic Conference of Mechanical-Electrical Engineering, 16-18 May, Athens (in Greek)
5. Diakoulaki, D., Dimitropoulos, G., Georgiou, P., Tourkolias, C., Georgopoulou, E., Mirasgedis, S., Sarafidis, Y., Lalas, D., 2006, "Promoting wind energy through the Flexible Mechanisms of the Kyoto Protocol", Proceedings of the European Wind Energy Conference (EWEC) – Business, Science & Technology, 27 February – 2 March, Athens
6. Diakoulaki D., Dimitropoulos G., Georgiou P., Tourkolias C., Georgopoulou E., Mirasgedis S., Sarafidis Y., Lalas D., Promoting wind energy through the flexible mechanisms of the Kyoto Protocol, Proceedings (CD) of the European Wind Energy Conference, Athens 2006
7. Lalas, D.P., Mirasgedis, S., Georgopoulou, E., Sarafidis, Y., 2001, "The role of Renewable Energy Sources in the Context of Kyoto Protocol", 2nd National Conference: RES Implementation: Priorities in a Liberalised Market, National Technical University of Athens / Unit for Renewable Energy Sources (RENES), March, Athens
8. Mirasgedis, S., Gonzelmann, G., Georgopoulou, E., Koritarov, V., and Sarafidis, Y., "Long-Term GHG Emissions Outlook for Greece: results of a detailed bottom-up energy system simulation", Proceedings of the 6th European Conference on Modeling in Energy Economics and Policy, International Association for Energy Economics (IAEE), Zurich 2004
9. Zervos, A., Diakoulaki, D., Sarafidis, Y., 1996, "Perspectives and conditions for the development of Renewable Energy Source", 5<sup>th</sup> National Conference on Renewable Energy Sources, Vol. B, pp. 430-439, Athens
10. Georgoulas N., Makatsoris Y., Sarafidis Y., Tsiligiridis G., 1996, "Assessment of the potential and the environmental benefits from the penetration of solar energy in the residential and tourist sectors", 5<sup>th</sup> National Conference on Renewable Energy Sources, Vol. B, pp. 430-439, Athens

### **Participation in research programs**

#### ***A. As project leader***

1. "Evaluation of monitoring plans under the EU Emissions Trading Scheme for the period 2013 – 2020", Commissioned by: Ministry for Environment, Energy & Climate Change, Undertaken by: National Observatory of Athens, Duration: 2013, Budget: 15,000 €.
2. "Allocation plan for the harmonized free allocation of emission allowances for the period 2013 – 2020", Commissioned by: Ministry for Environment, Energy & Climate Change, Undertaken by: National Observatory of Athens, Duration: 2012, Budget: 15,000 €.
3. "Energy model adjustment for the calculation of GHG emissions from Energy and estimation of the technical potential of GHG emissions reduction", Commissioned by: Center for Renewable Energy Sources, Undertaken by: National Observatory of Athens, Duration: 2011 – 2012, Budget: 17,500 €.

#### ***B. As senior researcher***

1. "South East Europe Energy Transition Dialogue", Commissioned by: Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, Duration: 2018 – 2020, Budget: 720,000 € (total), of which ~90,000 € for National Observatory of Athens
2. «Technical Assistance for renewable energies and energy efficiency», Commissioned by: Deutsche Gesellschaft Zusammenarbeit (GIZ) GmbH, Undertaken by: National Observatory of Athens, Duration: 2018, Budget: 19,500 €

3. «THESPIA II - Establish synergistic and integrated methodologies and tools for monitoring, managing and forecasting environmental parameters and pressures», Commissioned by: KRHPIS–EPAnEK 2014-2020, Duration: 2017-2019, Budget for National Observatory of Athens: 790.000 €.
4. «ACTRIS PPP - Aerosols, Clouds and Trace gases Preparatory Phase Project», Commissioned by: Ευρωπαϊκή Επιτροπή, Undertaken by: FMI, UHEL (Finland), CNR (Italy), CNRS (France), INOE (Romania), CHMI (Czech Republic), TROPOS, KIT (Germany), NOA (Greece), NILU (Norway), UPC, CSIC, UVA (Spain), UMAN, NERC, STFC (UK), KNMI (Netherlands), PSI, EMPA (Switzerland), Cyl (Cyprus), IGF PAS (Poland), ULund (Sweden), BIRA-IASB (Belgium), NUIG (Ireland), EULS (Estonia), AU (Denmark), INRNE (Bulgaria), JRC (EC), Duration: 2017 – 2019. Budget: ~4.000.000 € (total), of which 160.000 € for National Observatory of Athens
5. «Analysis of long-term energy scenarios to investigate the impacts of minimizing the contribution of lignite to the Greek electricity generation system», Commissioned by: WWF, Undertaken by: National Observatory of Athens, Duration: 2016 – 2017, Budget: 16.129 €.
6. "Simulation of the Greek energy system with equilibrium models for estimating the energy conservation potential". Source of funding: Centre for Renewable Energy Sources, Duration: 6/2011-6/2012, Budget: €17,500.
7. "*Support Actions for the national implementation of the EU Directive on Emissions Trading and the monitoring of measures for the reduction of GHG emissions from the energy sector*". Commissioned by: Greek Ministry for Development within the 3<sup>rd</sup> Community Support Framework – Operational Programme "Competitiveness", Undertaken by: National Observatory of Athens, EPEM S.A., LDK Ltd, KPMG Kyriacou Certified Auditors S.A., Duration: 2003 – 2006, Budget: 1.210.800 €
8. "*Support Actions for the fulfillment of national commitments under the UNFCCC and the Kyoto Protocol*". Commissioned by: Greek Ministry for the Environment, Physical Planning and Public Works within the 3<sup>rd</sup> Community Support Framework – Operational Programme "Environment", Undertaken by: National Observatory of Athens, Duration: 2003 – 2006, Budget: 748.800 €
9. "*Initiative on the assessment of climate change impacts in African developing countries*". Commissioned by: Greek Ministry of Foreign Affairs - Greek Ministry for the Environment, Physical Planning and Public Works, Undertaken by: National Observatory of Athens, Duration: 2003 – 2004, Budget: 125.000 €
10. "*Decision Aid Framework for the assessment of impacts from the introduction of Best Available Techniques in industry (DAF-BAT)*". Commissioned by: Greek General Secretariat for Research and Technology within the 3<sup>rd</sup> Community Support Framework – Operational Programme "Competitiveness", Undertaken by: National Observatory of Athens, EPEM S.A., LDK Ltd, Duration: 2003 – 2006, Budget: 1.787.200 €
11. "*Evaluating, monitoring and strengthening the environmental dimension of the Operational Program for Competitiveness*". Commissioned by: Greek Ministry for Development within the 3<sup>rd</sup> Community Support Framework – Operational Programme "Competitiveness", Undertaken by: National Observatory of Athens, Duration: 2003, Budget: 90.000 €.
12. "*The effects of environmental constraints in the electricity generation sector*". Commissioned by: Greek Public Power Corporation, Undertaken by: National Observatory of Athens, Duration: 2002 – 2003, Budget: 23.600 €
13. "*Planning of Support Policies and Measures for the Limitation of CO<sub>2</sub> Emissions in the Residential – Tertiary Sector*". Commissioned by: Greek Ministry for the Environment, Physical Planning and Public Works, Undertaken by: National Observatory of Athens, Duration: 2002, Budget: 88.000 €
14. "*Capacity building for climate change related activities in Bulgaria*". Commissioned by: Greek Ministry for the Environment, Physical Planning and Public Works, Undertaken by: National Observatory of Athens, Duration: 2001 – 2002, Budget: 200.000 €

15. "*Capacity building for climate change related activities in the Federal Republic of Yugoslavia*". Commissioned by: Greek Ministry for the Environment, Physical Planning and Public Works, Undertaken by: National Observatory of Athens, Duration: 2001 – 2002, Budget: 191.000 €
16. "*Capacity building for climate change related activities in Romania*". Commissioned by: Greek Ministry for the Environment, Physical Planning and Public Works, Undertaken by: National Observatory of Athens, Duration: 2001 – 2002, Budget: 200.000 €
17. "*Capacity building for climate change related activities in Albania*". Commissioned by: Greek Ministry for the Environment, Physical Planning and Public Works, Undertaken by: National Observatory of Athens, Duration: 2001 – 2002, Budget: 200.000 €
18. "*Capacity building for climate change related activities in Bosnia - Herzegovina*", Commissioned by: Greek Ministry for the Environment, Physical Planning and Public Works, Undertaken by: National Observatory of Athens, Duration: 2001 – 2002, Budget: 191.000 €
19. "*Capacity building for climate change related activities in FYROM*". Commissioned by: Greek Ministry for the Environment, Physical Planning and Public Works, Undertaken by: National Observatory of Athens, Duration: 2001 – 2002, Budget: 191.000 €
20. "*Formulation of the National Action Plan of Cyprus for the limitation of greenhouse gases emissions according to the requirements of the UNFCCC and the Kyoto Protocol*". Commissioned by: Ministry for Agriculture, Natural Resources and the Environment of Cyprus, Undertaken by: National Observatory of Athens, Duration: January 2001 – March 2002, Budget: 73.500 €
21. "*2<sup>nd</sup> National Programme for the reduction of greenhouse gases in Greece during the 2000-2010 time horizon*". Commissioned by: Greek Ministry for the Environment, Physical Planning and Public Works, Undertaken by: National Observatory of Athens, Duration: 2001 – 2002, Budget: included in the budget of the program "Climate Change" (see below)
22. "*Implications of flexible mechanisms under the Kyoto protocol for Europe*". Commissioned by: International Atomic Energy Agency, Undertaken by: National Observatory of Athens, Duration: 2001 – 2002
23. "*Facilitating the Kyoto Protocol Objectives by the Clean Development Mechanism in Small Island Developing States - CDMSIDS Project*". Commissioned by: European Commission / DG Environment, Undertaken by: Instituto Superior Técnico (IST), National Observatory of Athens (NOA), Secretariado Executivo Para o Ambiente (SEPA), CEA (Cape Verde), Duration: 2001, Budget: 75.000 € (total, of which NOA: 17.660 €)
24. "*Inventory of air emissions, solid and liquid wastes from industry and air emissions from central heating installations*", Commissioned by: Greek Ministry for the Environment, Physical Planning and Public Works, Undertaken by: Consortium "LDK Ltd., EPEM S.A., ENVECO S.A., SIVILA Ltd., EXERGIA S.A.", National Observatory of Athens (Technical Consultant), National Technical University of Athens (Technical Consultant), Duration: 2000 – 2001, Budget: 235.000 € (total, of which NOA: 52.000 €)
25. "*Climate Change*". Commissioned by: Greek Ministry for the Environment, Physical Planning and Public Works, Undertaken by: National Observatory of Athens, Duration: 1998 – 2002, Budget: 530.000 €
26. "*Optimal integration of environmental requirements, deriving from the Kyoto Protocol, in national energy planning for the next decade*", Commissioned by: Greek Ministry for Development, Undertaken by: National Observatory of Athens, Duration: 1999 – 2000, Budget: 143.000 €
27. "*Integration of solar water heating systems in new buildings*". Commissioned by: Greek Ministry for the Environment, Physical Planning and Public Works, Undertaken by: National Technical University of Athens, Duration: 1998
28. "*Implementing Large Scale Integration of Renewables (REPLAN)*". Commissioned by: European Commission, DG XII, APAS Programme, Contract No.: RENA-CT94-0005, Undertaken by: National



Technical University of Athens, Ecole Polytechnique Federal de Lausanne (Switzerland), CENET Ltd. (Germany), Duration: 1995 – 1996

29. "*Developing Decision Making Support Tools for the Integration of Renewable Energies in Integrated Systems at the Local Level (DRILL)*", Commissioned by: European Commission, DG XII, JOULE II Programme, Contract No.: JOU2-CT92-0190, Undertaken by: National Technical University of Athens, Aristotle University of Thessaloniki, Ambiente Italia (Italy), Ecoclub of Rome (Italy), Greek Centre for Renewable Energy Sources, Duration: 1992 – 1995
30. "*Database and decision-support tool for the combined local exploitation of renewable energies*". Commissioned by: General Secretariat for Research and Technology, Contract No.: 89-EK 35-1, Undertaken by: National Technical University of Athens, Aristotle University of Thessaloniki, Duration: 1992 – 1994

#### ***Γ. As technical expert***

1. "Financial Institutions: Preparing the Market for Adapting to Climate Change (ClimaBiz)" Commissioned by: DG Environment/ LIFE+ 2008, Contract Nr. LIFE08 ENV/GR/00052, Duration: 2010 – 2012, Budget: €924,445.
2. "Tools for sustainability: development and application of an integrated framework (SusTools)". Commissioned by: DG Research of the European Commission within the framework of EESD-ESD-3 ("Environment and Sustainable Development"), Duration: 2003 – 2004, Budget: €593,000.
3. "Externalities of Energy: Extension of accounting framework and policy applications (ExternE-Pol)", Commissioned by: DG Research of the European Commission within the framework of EESD-ESD-3 ("Environment and Sustainable Development"), Duration: 2002 – 2004, Budget: €969,000.