Joseph NOWARSKI, M.Sc. ME

Energy Efficiency, Renewable Energy, Green Development, Climate Change and GHG Mitigation Expert

Ministry of Energy Authorized Energy Conservation Surveys
Ministry of Energy Authorized Energy Efficiency Tests of Large Air Conditioning Installations
Ministry of Industry Authorized Renewable Energy Expert
UN FCCC (Climate Change Convention) CDM and JI Authorized Expert

PERSONAL

Country of origin:	Poland, emigration to Israel -1969
Born:	1945, Ukraine
Married, 3 children	
Languages:	English, Polish, Hebrew, partially Russian
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EDUCATION

1963-1969	Szczecin Institute of Technology (Politechnika Szczecinska) – Poland Faculty of Machine Building, Section of Energy & Shipbuilding M.Sc.: Refrigeration and Air-Conditioning
1973-2012	Computer and Internet languages: Fortran, APL, Oracle, SQL, Basic, Lotus, Advanced Excel, Autocad, Access, Novel, VB, html, VBscript, Java, PHP
1974	Course in Electric Control of Air Conditioning Systems
1983-1985	Courses in Business Management
1987-1988	Course in Systems Analysis (authorization)
1990-1993	Ph.D. phase I - Hebrew University in Jerusalem: Economic optimization of energy conservation measures. The studies did not conclude with the Ph.D. degree, but with computer program: Building Energy Simulation and Optimization – BESO. The studies included first year economics for economists.
2007-2012	UN Climate Change Convention (FCCC) Clean Development Mechanism (CDM) and Joint Implementation (JI) Training (UN FCCC – Bonn)

List of courses: https://sites.google.com/site/nowarski/courses

PROFESSIONAL EXPERIENCE

2004 to present	**UN FCCC (Climate Change Convention) CDM program (Clean Development Mechanism) – external expert.** Review of more than five hundreds CDM GHG mitigation technologies projects in developing countries all over the world, most of them Renewable Energy, Biomass and Energy Efficiency. Review of 11 CDM Methodologies. Participation in CDM and JI accreditation activities. Review of few GHG mitigation technologies projects in JI framework countries.
2004 to present	Energy conservation surveys in industry, hi-tech company, bio-tech industry, data centers, big hotels, commercial buildings, public institutions and TV studios (surveys are submitted to Ministry of Energy)

2017 to present	Energy efficiency tests of large air conditioning installations (tests results are submitted to Ministry of Energy)
2018 to present	Energy efficiency tests of large pumping installations (tests results are submitted to Ministry of Energy)
2020 to present	Corona-Virus stay-home applications Energy Efficiency Online: o Chiller Efficiency Online - COP of large air conditioning installations nowagreen.com/cop/ o Pumps Efficiency Online: nowagreen.com/pump/
2022 to present	Global Warming Datasets: o Global Surface Temperature Changes over Land Dataset researchgate.net/publication/359380611 o Global Surface Temperature Changes Datasets Converted to 1850-1900 Baseline researchgate.net/publication/359942697
2022 to present	Global Warming Online Calculators: o Global Warming Online Baselines Converter nowagreen.com/globalwarming o global surface temperature change above the 1850-1900 baseline nowagreen.com/globalwarming/2 o Cumulative Global CO2 Emissions in Selected YEAR nowagreen.com/globalwarming/3 o Cumulative Global CO2 Emissions Online Calculator in Selected PERIOD nowagreen.com/globalwarming/4
2014 to 2018	Consultant to the Israeli Government – Energy Conservation (Energy Efficiency and Renewable Energy)
2014 to 2018	Meydar Engineers: o Techno-economic evaluation and optimization of 1.6 MW PV project in Israel o Green solutions for waste and sewage o Energy Services Company – Analysis of activities and reorganization plan
2014-2015	Product File Package – Solar Power Plant
2011	Techno-economic evaluation of cool storage for load shifting (DSM) of large Air Conditioning installations
2010-2012	Peer reviews of CDM projects in Philippines
2010-2011	Renewable Energy and Energy Efficiency Partnership (REEEP) – external expert - projects assessments
2008-2009	UNDP and Government of China (UN Development Program + GEF) – International energy efficiency expert for commercial and residential sector in China
2006	Techno-economic evaluation of 5x100 MW Solar Thermal Power Plant in Israel (for private investment company)
2006	Techno-economic evaluation of PV projects

2005 Meydar Engineers
Report to the Israeli Ministry of Energy -
Energy conservation policies in EU countries:
- Sustainable development
- Renewable energies
- Energy in buildings
- Demonstration projects scheme

2004 Energy Conservation Consultant
Parliament of Israel – Environmental Lobby
Law drafts:
- Renewable Energies for Electricity Generation (PV oriented)
- Energy Conservation in Public Institutions

1983-- 2003 Israeli Ministry of Energy
Head of Energy Conservation Department
Legislation, national standards, green buildings standard.
Hundreds of demonstration projects:
- Heat and power cogeneration (including triple cogeneration)
- Solar energy for industry, commercial, public buildings and residential sector
- Solar Houses passive and active, Green buildings, "Green neighborhood", "Green village", "Zero energy village", cities energy efficiency management
- Cool storage
- Efficient lighting for commercial and public buildings and municipalities
- Tracks and transport
- Water pumps stations and networks
- Micro-hydro electric
- Geothermal energy for agriculture
- Wind energy
- Bio-energy from municipal, industrial and agricultural waste and sewage

Monitoring
Techno-economic evaluation
National energy policy analysis
Educational and training
Accreditation of external entities

1999 Government of Uzbekistan - First International Solar Energy Course in Uzbekistan
1996 Government of China - First International Solar Energy Course in China – 3 provinces
1994-1995 University of Haifa - **Senior lecturer**
Energy conservation course (200 hrs)
1988-1990 Tel Aviv University - **Senior lecturer**
- Energy Conservation Course
- Energy Surveys Course

1986-1993 **Head of Computers Unit – Ministry of Energy**
(in addition to position of Head of Energy Conservation Department)
1978 - 1983 Israeli Ministry of Energy - Energy Conservation Department
Senior Engineer and Deputy Director
- Responsible for Energy Conservation in Buildings
- Solar legislation (Nowarski's Law – the first solar legislation in the world)
- Energy managers legislation and education
- Energy surveys legislation and accreditation of auditors

1976-1978 - Koor Chemicals Ltd.
Project Manager - Solar Energy Products

- Research and development of new solar products
- Solar laboratory
- Testing prototypes of solar products
- Preparation for mass-production solar products

1975-1976 - Tadiran Ltd., Electrical Appliances Plant, Tel-Aviv

Project manager and production line manager

Split air conditioning unit according to U.S. Mil.Spec.

- Design of the unit
- Quality control procedures
- Design and construction of calorimetric room
- Tests of air conditioning units
- Bills of materials and prices
- Construction of production line

Techno-economic evaluations of new products

Import policy

1974-1975 - Herouth Ltd., Air Conditioning Department, Jerusalem

Site Engineer - large air conditioning installations:

- universities, hospitals, hotels, schools, museums, etc
- design of air conditioning systems and components

1969-1973 - Israel Shipyards Ltd., Haifa

Senior Engineer

- Design of engine rooms:
  - sizing and specifications of main engines
  - engine room layout
  - main engine fuel, lubrication and cooling water systems
  - automatic control systems
- Design of main propulsion
- Design of marine cranes
- General mechanical design
- Site supervision of assembling engine-room and piping systems
- Test cruises

OTHER PROFESSIONAL ACTIVITIES

- ASHRAE member.
- Former representative of the Minister of the Energy in the Israeli Standards Institute.
- One of the first Israeli members and Vice-Chairman of ISES (International Solar Energy Society).
- Member of Heat And Power Cogeneration Forum – Israel Institute of Technology.
- Member of "Sustainable Jerusalem" committee (NGO).
- Member MED-ENEC: EU - Energy Efficiency in the Construction Sector in the Mediterranean.

PUBLICATIONS

1. Central Solar Water Heating Installations (in Hebrew)
   Petroleum and Energy Institute of Israel
   pp.40, January 1979

2. Specification - Central Solar Water Heating Installations (in Hebrew)
   Ministry of Energy and Infrastructure
   pp21, 06.06.1978 and 01.05.1979

3. Solar Installations - Instruction Brochure (in Hebrew)
   Ministry of Energy and Infrastructure and
   The Israeli Consumers Council, pp.16, May 1979

4. Thermal Insulation (in Hebrew)
   Ministry of Energy and Infrastructure, pp21, May 1979

5. Energy Conservation Recommendations for Army Camps (in Hebrew)
   Ministry of Energy and Infrastructure, pp8, 10.10.1979

6. Specification of Hot Water Solar Installation in the Parliament Building (in Hebrew)
   Ministry of Energy and Infrastructure and Maintenance Dept of the Parliament, pp10, 15.10.1979

7. Thermosyphonic Solar Installations (in Hebrew)
   Engineering and Architecture - Electricity
   p. 41-47, 1982

8. Participation of the Israeli Government in the Field of Solar Energy for Water Heating
   Presented at Second Workshop of the CNRE –
   United Nations
   Naxos, Greece, June 1988

9. Dissemination of Solar Water Heating Systems
   United Nations CNRE Guideline No.4
   pp14, 09.02.1989

10. Energy Conservation in Households and Public Buildings (in Hebrew)
    Institute of Productivity
    pp.200, March 1990

11. Energy Conservation in Buildings and Systems (in Hebrew)
    Ha-Mif'al p. 26-30, August 1990

12. Efficient Simulation of Building Energy Systems
    First Joint Conference of International Simulation
    Zurich, p.674-678, 22-25.08.1994

13. Small Wind Turbines Demonstration (in Hebrew)
    Ministry of Energy and Infrastructure and IDF
    EC-09-95, pp19, August 1995

14. Small Wind Turbines Specification
    Ministry of Energy and Infrastructure and IDF
    EC 11-95, pp38, September 1995

15. Energy Conservation – Policy and Programs (in Hebrew)
    Ministry of Energy and Infrastructure
    Editions 1-8
    EC-05-96, pp71, 08.05.1997

16. Energy Conservation Policies in Various Countries
    Ministry of Energy and Infrastructure
    EC 07-99, pp27, 25 April, 1999

17. Energy Conservation in Israel
    Ministry of Energy and Infrastructure

EC-08-99, pp13, 16.05.1999

18. Non-CO2 Energies for Israel 1996-2050 (in Hebrew).
Ministry of Energy and Infrastructure
EC-05-99, pp150, 17.06.1999

19. Economic Evaluation of Thermal Insulation of Residential Buildings (in Hebrew).
Ministry of Energy and Infrastructure
EC-14-99, pp43, 04.08.1999

20. Solar Cells – Economic Evaluation Computer Program
Ministry of Energy and Infrastructure
pp 12 + computer program, 17.10.1999

21. Solar Israel – A Practical and legislative model
Renewable Energy World.
p. 92-99, Vol. 3 No 2, Mar-Apr 2000

22. Recommendations of Energy Conservation Audits in Industry and Institutions (in Hebrew)
Ministry of Energy and Infrastructure
EC-06-2000, pp133, 09.03.2000

23. Energy Conservation Measures Priorities - Expert System (in Hebrew)
Ministry of Energy and Infrastructure
EC-13-2000, pp18, 29.08.2000

24. Heat and Power Cogeneration Potential in Industry (in Hebrew)
Ministry of Energy and Infrastructure
EC-12-2000, pp25, 11.02.2001

25. Influence of Thermal Time Constant -TTC - on Temperatures and Energy in Buildings (in Hebrew)
Presented to Standards Institute of Israel
pp25, 10.03.2001

26. Electricity Peak Demand Reduction by Energy Conservation (in Hebrew)
Ministry of Energy and Infrastructure
EC-05-2001, pp28, 09.12.2001

27. Solar Power Station 5 x 100 MW, solar superheating, without cogeneration
Cost – benefit evaluation (in Hebrew)
Ministry of Energy and Infrastructure
EC-09-2001, pp23, 21.10.2001

28. Electricity Tariffs for Solar Power Station in Israel (in Hebrew)
Ministry of Energy and Infrastructure
EC-14-2001, pp11, 17.12.2001

29. Energy Conservation Targets for Israel 2003-2017 (in Hebrew)
Ministry of Energy and Infrastructure
EC-06-2002, pp11, 16.04.2002

30. Cost and Saving of Energy Conservation Measures
in Proposed Government Decision on Energy Conservation in Public Buildings (in Hebrew)
Ministry of Energy and Infrastructure
EC-08-2002, pp12, 16.04.2002

31. Greenhouse Gas Emissions of Jerusalem, Mitigation Technologies and Local CDM in Jerusalem

Presented at "Green Jerusalem" Workshop 23.01.2008 - Jerusalem Institute.
Publication: The Society of Senior Public Servants of Israel, publication No. 2008-01, pp19, 23.01.2008

32. Energy efficiency labeling for commercial and residential equipment
NDRC / UNDP / GEF / China End-Use Energy Efficiency Project
Ref: AITA6, Version 02, pp66, 16.11.2008

33. Renewable Energy in Israel and Guatemala
Presented at INTECAP Guatemala International Course
Ministry of Foreign Affairs - MASHAV Center for International Cooperation
pp.91, 25.05.2009

34. Energy and Thermal Time Constant in Buildings
ASIN: B01F18XGQK
pp.192, 2.05.2016

35. Hydro Electric Turbines Simulation and Optimization
academia.edu/31095810
pp.83, 27.01.2017

36. Energy Balance of Solar Water Heaters Thermosyphonic Systems
academia.edu/34457200
pp.58, 04.09.2017

37. Heat Transfer in Solar Water Heaters Pipes - Thermosyphonic Systems
academia.edu/34459205
pp.51, 04.09.2017

38. Circulation Pump Power for Solar Water Heater
academia.edu/34616648
pp.13, 20.09.2017

39. Uninsulated Pipes of Solar Water Heater
academia.edu/34616901
pp.68, 20.09.2017

40. Economic Optimization of PV Array Tilt Angle
academia.edu/35242726
pp.14, 24.11.2017

41. Optimization of PV Panels Spacing
academia.edu/35242810
pp.42, 24.11.2017

42. Dynamic Trendline of Air Temperature in Jerusalem
academia.edu/35892246
pp.18, 11.02.2018

43. Economy of Plug-In Charging of Hybrid Car
academia.edu/36222234
pp.18, 21.03.2018

44. Changes of Extreme Air Temperature in Jerusalem
academia.edu/40602629
pp.21, 9.10.2019

45. Hourly Efficiency of Solar Water Collector

DOI:10.5281/zenodo.6056058
researchgate.net/publication/358636249
pp.14, 17.09.2021

46. Air Temperature Changes in Jerusalem
DOI:10.5281/zenodo.6076476
researchgate.net/publication/358638185
pp.21, 14.01,2022

47. Solar Water Collector Hourly Energy Output
DOI:10.6084/m9.figshare.19168433
researchgate.net/publication/358638045
pp.15, 21.01.2022

48. Global Surface Temperature Changes over Land Dataset
DOI:10.5281/zenodo.6373255
researchgate.net/publication/359380611
xls, 21.03.2022

49. Global Warming Baselines Conversion Factors
DOI:10.5281/zenodo.6373058
researchgate.net/publication/359381334
pp.14, 21.03.2022

50. Global Warming Datasets Converted to 1850-1900 Baseline
DOI:10.5281/zenodo.6386179
researchgate.net/publication/359501990
pp.13, 26.03.2022

51. Global Surface Temperature Changes Datasets Converted to 1850-1900 Baseline
DOI:10.5281/zenodo.6461153
researchgate.net/publication/359942697
xls, 14.04.2022

52. Global Warming Online Universal Baselines Converter
DOI:10.5281/zenodo.6467315
researchgate.net/publication/360016023
pp.7, 18.04.2022

53. Thermal Time Constant – TTC v2.1.1
DOI:10.5281/zenodo.6530723
researchgate.net/publication/360463842
pp.5, 09.05.2022

54. Global Warming Acceleration v1.2.1
DOI:10.5281/zenodo.6616928
researchgate.net/publication/361465084
pp.17, 06.06.2022

55. Global Warming: Velocity and Acceleration of Change in Cumulative CO2 Emissions
DOI:10.5281/zenodo.6617814
researchgate.net/publication/361465544
pp.12, 06.06.2022

56. Global Warming and Cumulative CO2
DOI:10.5281/zenodo.6619550
researchgate.net/publication/361151729
pp.8, 07.06.2022

57. Global Warming Forecast using Acceleration Factors
DOI:10.5281/zenodo.6621042
researchgate.net/publication/361151735
pp.17, 07.06.2022

58. Cumulative CO2 Emissions of International Transport
DOI:10.5281/zenodo.7118649
researchgate.net/publication/364196276
pp9, 06.10.2022

59. CO2 Emissions per Capita
DOI:10.5281/zenodo.7264405
researchgate.net/publication/364936479
pp26, 30.10.2022

60. CO2 Emission per Capita Forecast 2020-2100
DOI:10.5281/zenodo.7264407
researchgate.net/publication/364936643
pp8, 30.10.2022

61. CO2 Emissions per GDP
DOI:10.5281/zenodo.7294873
researchgate.net/publication/365150991
pp16, 05.11.2022

62. CO2 Emission per GDP Forecast 2020-2100
DOI:10.5281/zenodo.7264413
researchgate.net/publication/364937088
pp14, 30.10.2022

63. Cumulative CO2 Emissions per Cumulative GDP 1990-2020
DOI:10.5281/zenodo.7264417
researchgate.net/publication/364937563
pp12, 30.10.2022

64. Necessary Change in CO2 Emissions per Capita to Reach 1.5°C - 2.0°C Climate Change Limit in 2100
DOI:10.5281/zenodo.7264419
researchgate.net/publication/364937814
pp14, 30.10.2022

65. Necessary Change in CO2 Emissions per GDP to Reach 1.5°C - 2.0°C Climate Change Limit in 2100
DOI:10.5281/zenodo.7264421
researchgate.net/publication/364937731
pp15, 30.11.2022

66. Proposed New CO2 Emissions Mitigation Mechanism
DOI:10.5281/zenodo.7270802
researchgate.net/publication/364958131
pp9, 04.11.2022

67. Climate Change Rating of Countries
DOI:10.5281/zenodo.10677134
researchgate.net/publication/378303133
pp14, 19.02.2024

68. Climate Change Rating Results 2020
DOI:10.5281/zenodo.10848666
researchgate.net/publication/379122174
pp13, 21.03.2024

69. Climate Change Rating of OECD 2020
DOI:10.5281/zenodo.10853093
researchgate.net/publication/379155377
pp10, 22.03.2024

70. Climate Change Rating of Countries 2021
DOI:10.5281/zenodo.10853428
researchgate.net/publication/379158394
pp16, 22.03.2024

71. Climate Change Rating of OECD Countries 2021
DOI:10.5281/zenodo.10855909
researchgate.net/publication/379182153
pp11, 22.03.2024

72. Changes in Climate Change Rating of Countries 2020-2021
DOI:10.5281/zenodo.10863775
researchgate.net/publication/379212171
pp7, 23.03.2024

73. Dataset: Hourly Solar Radiation at Tilt Angle and Direction in Tel Aviv
DOI:10.5281/zenodo.12804970
researchgate.net/publication/382496764
pp8, 24.07.2024

74. Simulation of Solar Water Collector Stagnation Temperature
DOI:10.5281/zenodo.13118534
researchgate.net/publication/382625732
pp15, 28.07.2024

75. Energy Balance of Solar Water Heater: Multi-Apartment Residential Buildings in Tel Aviv
DOI:10.5281/zenodo.13624408
researchgate.net/publication/383621029
pp58, 01.09.2024

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