

CV 29/09/2018 - Peter D. LUND (b. 1957), Professor

Education

1980 M.Sc. in Engineering Physics (Nuclear Engineering and Reactor Physics)
Helsinki University of Technology in Finland (HUT)
1980 18th Graduate Study Programme, United Nations, Geneva
1981 Lic.Sc. in Technology (Engineering Physics) HUT
1984 D.Sc. in Technology (Engineering Physics) HUT
1989 Accelerated Development Programme (ADP1), London Business School

Areas of Specialization

New and renewable energy systems; Energy and innovation; Sustainable energy policy; Interdisciplinary issues in energy; Science-to-policy advice.

Previous Appointments

Professor in Advanced Energy Systems (Eng. Physics) at Aalto University (formerly Helsinki University of Technology, HUT) 1998-; 1992-98 Assoc.Prof.; Chair of Aalto Energy Science Initiative (2011-18), Multi-Disciplinary Energy Programme (2013-); Board member Aalto Energy Platform (2013-). Deputy and Head of Department (1998-2007). Director & coordinator of national new energy R&D for Finnish Funding Agency for Technology and Innovation (Tekes) (1988-98). Founding member & chairman of Energy Institute at HUT. Director of National Graduate School on Energy Science & Technology (2003-08). Chutian Chair Professor Hubei University (China 2014-17). Overseas Teacher Southeast University (China 2016-). TÜV Guest Professor Technische Universität Dresden (2015-16). Guest Professor Nanjing Xiaozhuang University (2017-20).

Professional Experience

EU: Chair of Advisory Group of Energy of the European Commission (2002-06). European Academies Science Advisory Council's Energy Panel (Chair 2013-17, member 2009-19). Steering committee member European Platform of Universities in Energy Research (2009-), Euro-CASE Energy Platform (2013-). Advisory roles to European Commission, Co-chair/Vice-Chair of E.C. Call Evaluations, EU Fuel Cell and Hydrogen Joint-Undertaking, European Institute of Innovation and Technology (EIT 2013, 16-17), ESFRI (2007-08).

Business: Board Member of Ahlstrom Capital Cleantech Management Ltd. (2010-), Fortum Foundation (2013-), Gasum Foundation (2004-18), Uniscience Ltd (1997-8). Founder Solpros (1994-). Co-founder (with Dr. X. Zhou) China-Finland Cleantech Business Platform (2017-). Co-founder (with Prof. B. Zhu, BGRIMM Ltd., 2017-) China-EU Open Joint @Lab on Adv. Fuel Cells

(中欧燃料电池联合开放实验室合作协议). Senior Advisor Finnish Innovation Fund SITRA (2015-16).

National/Nordic: Team Lead for Nordic Council of Ministers, Prime Ministers' Initiative on Excellence in Research and Innovation on Energy, Environment and Climate (2008); Member of specialists Finnish Gov. foresight report on long-term climate and energy policy (2007-09). Member of advisory board Finnish Gov. Strategic Programme for Environmental Operations (2011-15), Finnish Gov. Cleantech Str.Programme (2012-15), TEKES Foresight (2006), TEKES Climtech (2000-02). Chair of Science Council of Strategic Centre for Science, Technology & Innovation of Finnish Energy and Environment Cluster (2011-15). Co-chair of Finnish-Russian S&T cooperation on new energies (1996-2000) and Senior Officials energy efficiency group of Baltic Sea Region Cooperation (2004-05).

International R&D: IAB of Nat. Center of Excellence at King Fahd Univ. of Petroleum and Materials, Saudi Arabia (2011-13). Steering committee member of Research Council of Norway Energy Programme (2000-08), European Strategy Forum on Research Infrastructures, Energy (2007-11), Scientific Adv. Board of Austrian Arsenal Research Centre (2005-08), Instituto Madrileño de Estudios Avanzados Energia Spain (2007-11), Swedish fuel cell programme (STEM 2002-5). Executive Committee of IEA, solar R&D programmes (1987-2004), vice-chair (1989-93).

Academic/NGO: Member, Finnish Academy of Science and Letters (2018-), Swedish Engineering Academy in Finland (1998-). Member of advisory board Finland Futures Research Centre (2011-15), Lappeenranta Univ. of Technology REFLEX Platform (2018-), John Hopkins University ISEP (2017-). Board member Helsinki Institute of Physics (1999-06), Finnish Physical Society (1997-99), International Solar Energy Society (1996-99), Swedish Engineering Academy in Finland (2008-13), Finnish Solar Energy Society (1980-84) chairman (1984-85), WWF Finland vice-chair (2004-10) & board of trustees (2000-05). International Council for Thermal Energy Storage, chairman (1994-97); IEEE Technical Committee on Intelligent Green Production Systems, member (2006-); European Renewable Energy Research Centers EEIG, member (1995-2016).

Research/Prg. Evaluations: Participated in 70 international evaluations, 20 countries (1992-). Austria, Belgium, Canada, Denmark, Estonia, Finland, France, Germany, Hong Kong, Ireland, Israel, Kazakhstan, Norway, Portugal, Saudi-Arabia, Sweden, Switzerland, USA, IEA, European Commission, FP4-FP7, EIT/KIC, JU FCH, Horizon 2020, FET-Flagship.



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Academic evaluations: Austria, Australia, Belgium, Denmark, Estonia, Finland, India, Israel, Jordan, Latvia, Norway, Pakistan, Qatar, Sweden, Turkey, UK

Journals: Founding Co-Editor Global Challenges (Wiley, 2015-6, Exc. Adv. Committee 2017-); Co-Editor-in-Chief Interdisciplinary Reviews: Energy and Environment (Wiley, 2010-); Editor-Europe Energy Research (Wiley, 2004-); Associate Editor Nano Energy (Elsevier, 2014-5), Solar Energy (2001-5); Editorial board Applied Energy (Elsevier), Energy Sci.& Eng.(Wiley), Int. J. Low-Carbon Technologies (Oxford Univ. Press), Energies (MDPI), SCI (MDPI), Future Cities & Environment (Oxford). Guest Editor of several special issues. Reviewer of 45 journals.

Awards: World Society of Sustainable Energy Technologies Innovation Awards 2018 (Power Generation Technologies, jointly with Prof. B. Zhu), Jinling Friendship Award of Nanjing (China) 2016, Finnish Solar Industry Life-Work Award 2016, Poster Recognition Award (Nanoenergy 2017, Espoo; with M. Lin and group), Best Paper Award (World Society of Sustainable Energy Technologies, Geneva, 2014; with J. Lindgren), Finnish Nature League Award, 2014, Fortum Prize 2008, Lyceum Award of Pori City, 2006, Finnish Nature Conservation Society's Prize in 2004, ISES Löf-Duffie Award 1991. Knight, First Class, of the Order of the White Rose of Finland 2007.

Conferences: Chairman (10), session chair (34), international committee (56), invited talks (84).

Societal: He is a frequently asked expert in parliamentary hearings and public/social media (@LUND_ENERGY). Public and private sector consulting (1995-).

Teaching: Supervised > 150 doctoral and master students. University courses for 35 years (basics & advances in new energy, thermodynamics, fuel cells & H₂, solar, wind, multidisciplinary), visiting lectures. Executive education.

Recent Projects

EU 2020, Innovation pathways, strategies and policies for the Low-Carbon Transition in Europe; Strategic Research Council, Creative adaptation to wicked socio-environmental disruptions; Nordic Flagship, Flexibility for Variable Renewable Energy Integration in the Nordic Energy System; Academy of Finland, A novel single component fuel cell based on engineered nanocomposites, Decentralizing Finland's energy regime: The triggers & dynamics of transition. China-Finland collaboration.

Research Interests

Future and multidisciplinary energy issues: Energy transition, smart urban energy, nanoenergy.

Keywords: Large-scale VRE; nano in solar & fuel cells; distributed & urban systems; flexibility; modelling; innovation strategies; market penetration & diffusion; policy effectiveness & impact.

Publications

260 peer-reviewed journal articles, 500+ research papers. 24 book chapters and edited books.

Google-Scholar h-index 49; 8,775 citations.

Energy materials:

S. Yun, P.D. Lund, A. Hirsch. Stability assessment of alternative platinum free counter electrodes for dye-sensitized solar cells. *Energy Environ Sci* 8 (2015) 3495-3514. (IF=30.0)

A Tiihonen, K Miettunen, J Halme, P Lund, Perovskite solar cell ageing standards need reproducible data on failure mechanisms. *Science eLetter* 14.3.2018 <http://science.sciencemag.org/content/359/6374/388/tab-e-letters>

P.D. Lund et al. Standardized Procedures Important for Improving Single-Component Ceramic Fuel Cell Technology. *ACS Energy Letters* 2 (2017) 2752-2755. (IF=12.28),

B. Zhu, P. D. Lund, et al. Schottky junction effect on high performance fuel cells based on nanocomposite materials. *Adv. Energy Mater.* (2015). (IF=21.9)

M.I. Aghar, S. Jouttijärvi, R. Jokiranta, A.-M. Valtavirta, P. D.Lund. Wide bandgap oxides for low-temperature single-layered nanocomposite fuel cell. *Nano Energy* 53 (2018) 391-397. (IF=13.1)

Energy systems:

Lund, P., Mikkola, J., Ypyä, J., Smart energy system design for large clean power schemes in urban areas. *J Clean Prod.* 103, 437-445 (2015). (IF=5.7)

J. Salpakari, T. Rasku, J. Lindgren, P. D. Lund. Flexibility of electric vehicles and space heating in net zero energy houses: an optimal control model with thermal dynamics and battery degradation. *Applied Energy* (2017)190, 800-812. (IF=7.9)

J Wang, S Yang, C Jiang, Q Yan, P Lund. A novel 2-stage dish concentrator with improved optical performance for concentrating solar power plants. *Ren Energy* 108 (2017) 92-97 (IF=4.9)

Energy policy:

P.D. Lund. Energy policy planning near grid parity using a price-driven technology penetration model. *Technol Forecast Soc Change* 90 (2015) 389-399. (IF=3.1)

P.D. Lund: Effects of energy policies on industry expansion in renewable energy. *Ren Energy* 34 (2009)53-64

P.D. Lund. Impacts of EU carbon emission trade directive on energy-intensive industries – indicative micro-economic analyses. *Ecological Economics* 63 (2007) 799-806. (IF=3.89)

P. Lund. How fast can businesses in the new energy sector grow? An analysis of critical factors. *Ren. Energy* 66 (2014) 33-40. (IF=4.9)

P.D. Lund. Implications of Finland's plan to ban coal and cutting oil use. *Energy Policy* 108 (2017) 78-80. (IF=4.0)

