Kavita Surana, Ph.D.

University of Maryland, School of Public Policy
Center for Global Sustainability, 3141 Van Munching Hall, College Park MD 20742
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Areas of Expertise: science, technology, and innovation policy | energy policy | sustainable development

Academic and Research Experience

2017 – **University of Maryland**, College Park MD, USA
School of Public Policy
Assistant Research Professor, Center for Global Sustainability (2019-)
Assistant Research Scholar, Center for Global Sustainability (2017-18)

2013 – 2017 **Harvard University**, Cambridge MA, USA
Kennedy School – Belfer Center for Science and International Affairs
Research Associate, Environment and Natural Resources (2016-17)
Postdoctoral Fellow and Associate, Science Technology and Public Policy (2013-16)

2008 – 2011 **Alternative Energies & Atomic Energies Commission (CEA)**, Grenoble, France
LETI-Minatec (Governmental research laboratory; Micro/Nano-electronics Campus)
R&D Engineer, Power and Photovoltaic Devices Group

2008 **TU Delft**, Netherlands
Delft ChemTech
Junior Researcher, Opto-electronics Group

Professional Experience

2015 – 2018 **The World Bank**, Washington DC, USA
Finance, Competitiveness, and Innovation Global Practice
Short-term Consultant (projects on local innovation systems in transition economies)
Energy and Extractives Global Practice
Short-term Consultant (project on competitive solar PV prices in developing countries)
Climate Change Cross-cutting Solutions Area
Short-term Consultant (projects on capacity building for climate change)

2016 – 2017 **Tambourine Innovation Ventures**, Vienna VA, USA
Independent Consultant (project on Asian market opportunities for US cleantech startups)

2012 – 2013 **ICF International**, New Delhi, India
Energy Advisory and Solutions
Associate, Wholesale Power Markets Team

2005, 2007 **The Energy and Resources Institute (TERI)**, New Delhi, India
Renewable Energy Technology Applications
Summer Intern (projects on off-grid and grid-connected solar photovoltaic deployment)

Education

Ph.D. **Institut Polytechnique de Grenoble (INP-Grenoble)**, Grenoble, France
Ph.D. in Materials Science & Engineering, September 2011

M.S. **University of Toulouse – Paul Sabatier**, Toulouse, France
M.S. in Energy Storage and Conversion, August 2008

B.Sc. **Delhi University, St. Stephen's College**, Delhi, India
B.Sc. (Honours) in Physics, July 2006

Fellowships, Grants, and Awards

National Science Foundation – Science of Science and Innovation Policy (NSF – SciSIP) (2018-2020)
Grant funding for project: "Co-location of manufacturing and innovation: drivers and impacts of technological innovation along the wind energy global value chain" (Principal Investigator)

Energy Futures Initiative (2018-2019)
Grant funding for project: "Regional factors in development and deployment of innovative low carbon technologies" (Co-Principal Investigator)

Belfer Center for Science and International Affairs, Harvard Kennedy School (2016-2017)
Postdoctoral fellowship in the Environment and Natural Resources Program

Belfer Center for Science and International Affairs, Harvard Kennedy School (2013-2016)
Postdoctoral fellowship (funded) in the Science, Technology, and Public Policy (STPP) program

Direction Générale de l'Armement (French Defense Procurement Agency) – DGA (2008-2011)
Merit-based doctoral funding for developing strategic technologies for national security

French National Institute for Nuclear Science and Technology – INSTN (2008-2011)
Merit-based funding for 'Technodoct' program (PhD program in technology and innovation management)

European Commission – Erasmus Mundus (2006-2008)
Merit-based full-tuition scholarship for 6-month rotational semesters in 4 EU countries: University of Toulouse, France; TU Warsaw, Poland; University of Cordoba, Spain; TU Delft, Netherlands

Research, Publications, and Patents

Selected work in progress

Co-location of manufacturing and innovation along the wind energy global value chain
with Claudia Doblinger, Laura Diaz Anadon, Nathan Hultman

Regional energy innovation ecosystems in the United States: a detailed assessment of state-wise energy innovation investment drivers, outcomes, and opportunities
with Ellen Williams

Peer-reviewed journal papers

S&T-based entrepreneurship for sustainable development goals: public policy for incubators in India
Surana K., Singh A., Sagar A.D.
Technological Forecasting and Social Change (planned submission). March 2019

Governments as Partners: The Role of Collaboration in U.S. Cleantech Startup Innovation
Doblinger C., **Surana K.**, Anadon L.D.
Research Policy (accepted with minor revisions). January 2019

The climate mitigation opportunity in global power transmission and distribution
Surana K., Jordaan S.M.
Nature Climate Change (under review). November 2018

The Price of Solar Energy: Comparing Competitive Auctions for Utility-Scale Solar in Developing Countries
Dobrotkova Z., **Surana K.**, Audinet P.
Energy Policy 118:133-148, July 2018

Public Policy and Financial Resource Mobilization for Wind Energy in Developing Countries
Surana K., Anadon L.D.
Global Environmental Change 35:340-359, November 2015

Toward a 1.54 μm Electrically Driven Erbium-Doped Silicon Slot Waveguide and Optical Amplifier
Tengattini, A., Gandolfi, D., Prtljaga, N., Anopchenko, A., Ramírez, J. M., Lupi, F. F., Berencén, Y., Navarro-Urrios, D., Rivallin, P., **Surana, K.**, Garrido, B., Fedeli, J.-M., and Pavesi, L.
Journal of Lightwave Technology 31: 391-397, February 2013

Film-thickness-dependent Conduction in Ordered Si Quantum Dot Arrays
Surana, K., Lepage, H., Lebrun, J. M., Doisneau, B., Bellet, D., Vandroux, L., Le Carval, G., Baudrit, M., Thony, P., and Mur, P.
Nanotechnology 23, No. 10, February 2012

Other publications

Romania Laser Valley: Development Scenarios
(contributor). Edited by Aprahamian, A.S.
Report. *World Bank Group*, Washington, D.C., September 2018.

Proposed New Capacity and Power Sector Decarbonization: Implications of Global Coal Power Development for the Paris Agreement
Cui Y., Hultman N., McJeon H., He L., Sen A., **Surana K.**, Tan X., Kennedy S.
Technical Report. *Center for Global Sustainability, University of Maryland*, April 2018

Enhancing S&T-based Entrepreneurship: The Role of Incubators and Public Policy
Surana K., Singh A., Sagar A.D.
Report. *Department of Science and Technology, Government of India*, June 2017

Technology Innovation and Energy
Surana K., Chikkatur A.P., Sagar A.D.
Book Chapter. *Reference Module in Earth Systems and Environmental Sciences*, *Elsevier*, 2014

Opto-electrical characterization of erbium-doped slot waveguides
Tengattini, A., Gandolfi, D., Marconi, A., Anopchenko, O., Prtljaga, N., Ramirez, J. M., Ferrarese Lupi, F., Berencen, Y., Navarro Urrios, D., Garrido, B., Fedeli, J.-M., Rivallin, P., **Surana, K.**, and Pavesi, L.
Conference Paper. *Silicon Photonics and Photonic Integrated Circuits III (SPIE),* 843118-843118–8, May 2012

Towards silicon quantum dot solar cells: comparing morphological properties and conduction phenomena in Si quantum dot single layers and multilayers.
Surana, K.
PhD Dissertation. *Institut polytechnique de Grenoble,* France. September 2011

Towards silicon nanocrystals based solar cells: Morphological properties and conduction phenomena
Surana, K., Lepage, H., Bellet, D., Le Carval, G., Baudrit, M., Thony, P., and Mur, P.
Conference Paper. *IEEE Photovoltaic Specialists Conference (PVSC)*, June 2010

Enhanced Conduction in Si Quantum Dot Superlattice in SiO2 Matrix
Surana, K., Lebrun, J. M., Lepage, H., Doisneau, B., Bellet, D., Le Carval, G., Thony, P., and Mur, P.
Conference Paper. *European Photovoltaic Solar Energy Conference and Exhibition (EU-PVSEC)*, September 2010

Implementation and Scope of a Pioneering Grid-Interactive Rooftop PV Program in India
Surana K., Mohanty P., Chaurey A.
White Paper. *The Energy and Resources Institute* (TERI), New Delhi, India, August 2007

Indian Rural Electrification with Off-Grid Photovoltaic Deployment
Surana K., Mohanty P., Chaurey A.
White Paper. *The Energy and Resources Institute* (TERI), New Delhi, India, June 2005

Patents

Method of Manufacturing an Optical Reflector with Semiconductor Nanocrystals
Surana K., Baudrit M., Mur P., Thony P.
Patent number US8815629B2, 2014

Method for the Characterisation of at Least One Layer of Material Comprising Semiconductor Nanocrystals
Baudrit M., Mur P., **Surana K.**, Thony P.
Patent number FR 2979431 B1, 2014; Patent number WO 2013/026861 A1, 2013

Selected Presentations

Non-financial returns on investment in energy innovation
US Department of Energy - Solar Energy Technologies Office. Washington DC. USA, 2019

Wind energy technology innovation in the manufacturing global value chain: exploring the impact of internationalization of component suppliers on innovation
Association of Public Policy Analysis and Management Fall Conference, Washington DC. USA, 2018

Regional Factors in Development and Deployment of Innovative Low Carbon Technologies
Energy Futures Initiative, Washington DC. USA, 2018

Energy Innovation Policy: Beyond and Between Academia and Industry
2018 Engineering Sustainability Day – Innovation and Industry. *University of Maryland College Park*. USA, 2018

Co-location of Manufacturing and Innovation in the Wind Energy Global Value Chain
Center for Global Sustainability. *University of Maryland College Park*. USA, 2018

Governments as Partners: The Role of Collaboration in Cleantech Startup Innovation
Global Sustainability Forum. *University of Maryland College Park*. USA, 2017

Enhancing S&T-based Entrepreneurship: The Role of Incubators and Public Policy
Workshop on Publicly Funded Incubators. *Indian Institute of Technology Delhi*. India, 2016

Public Policy and the Adoption of Renewable Energy Technologies: Wind Energy in China and India
Globelics International Conference. Addis Ababa, Ethiopia, 2014

The Development of Wind Energy Innovation Systems in China and India
Science, Technology, and Public Policy Program, Belfer Center for Science and International Affairs, *Harvard University*. Cambridge MA, USA, 2014

Wind Energy in India – Financing Challenges and Risk
Energy for Development, *Massachusetts Institute of Technology* (MIT). Cambridge MA, USA, 2014

Ordered Si Quantum Dot Superlattices for Solar Cells
European Materials Research Society (E-MRS) Spring Meeting. Nice, France, 2011

Towards Silicon Nanocrystals Based Solar Cells: Morphological properties and conduction phenomena
35th *IEEE Photovoltaic Specialists Conference* (PVSC), Honolulu, Hawaii, 2010

Participation in Workshops, Seminars, and Conferences

Participant, **Center for Strategic and International Studies**
Energy as a Source of Economic Growth and Social Mobility
Washington DC, USA. December 2018

Participant, **The Brookings Institution**, Cross-Brookings Initiative on Energy and Climate
Roundtable on Chinese Clean Energy Investments
Washington DC, USA. December 2018

Discussant, **Association for Public Policy Analysis and Management** Fall Research Conference
Energy Infrastructure for the Energy Transition: A Growing Need, Increasing Resistance, and Planning Complications
Washington DC, USA. November 2018

Participant, **University of Maryland**, USA
Workshop on Accelerating the Development and Deployment of Climate Mitigation Technologies
College Park, MD, USA. June 2018

Discussant, **Association for Public Policy Analysis and Management** Regional Student Conference
Using Technology to Inform Policy (panel with graduate researchers)
Washington DC, USA. April 2018

Moderator, Global Sustainability Forum, **University of Maryland**
Climate Change Risk and the Maryland State Retirement and Pension System
College Park, MD, USA. October 2017

Participant, **The Brookings Institution,** Cross-Brookings Initiative on Energy and Climate
Natural Gas Task Force Meeting
Washington DC, USA. November 2016

Co-organizer, **The World Bank** and **Korea Environmental Industry & Technology Institute**
Climate and Environment Capacity Building Workshop
Seoul, South Korea. June 2016

Discussant, **Globelics International Conference**
Innovation, Sustainable Development and Energy in the South
Addis Ababa, Ethiopia. October 2014

Teaching

Associate Instructor (Adjunct Professor), **University of Maryland**
Intersections of Technology and Policy in Modernizing the Energy System with Prof. Ellen Williams
Graduate-level class with ~20 students from science & engineering (60%) and public policy (40%)
Fall 2018
Fall 2017

Instructor, **The World Bank and Coursera** (Massive Open Online Course – MOOC)
Turn Down the Heat – From Climate Science to Action
Multi-level class (undergraduate, graduate, experienced, general audience) with ~4000 students
Spring 2016

Teaching Fellow, **Harvard University**
Introduction to Technology and Society with Prof. Venkatesh Narayanamurti
Undergraduate-level class with ~30 students from social sciences (70%) and science & engineering (30%)
Spring 2015
Spring 2014

Professional Service

Reviewer: Energy Policy, Energy Strategy Reviews, Energy Research and Social Science, Review of International Political Economy, Globelics

Coordinator of research seminars at Center for Global Sustainability, School of Public Policy
University of Maryland, USA

Mentor and advisor for graduate and undergraduate students in physics, engineering, and public policy
University of Maryland, USA

Mentor for graduate interns
Alternative Energies & Atomic Energies Commission, France

Mentor, **Higher Achievement**
Middle-school math mentor for public school students in low-income neighborhoods
Washington DC, USA. 2016 – 2018

Panelist, Harvard University Office of Career Services (OCS), **Harvard University**
Translating Science Research for Policy (career mentoring event)
Cambridge MA, USA. March 2014

Skills

Languages

English (native)
Hindi (native)
French (fluent)
German (basic)
Spanish (basic)

Software

R
Gephi
Advanced Excel, Word, Powerpoint.

Energy and innovation tools

Databases: i3 Cleantech, BNEF, IHS, IEA/OECD, SNL, Derwent World Patents Index, The Lens
Techno-economic modeling: Integrated Planning Model (IPM), wholesale power markets, asset valuations