
Bonnie Ram
Senior Researcher & Associate Director
University of Delaware, Center for Carbon-free Power Integration
bram@udel.edu

University Education

B.A. Geography and International Development
Clark University, Worcester, MA
1979

M.A. Environmental Science and Policy
Jesse Smith Noyes Foundation Fellowship,
Clark University.
1982

Professional Experience

University of Delaware (2012- present)
Danish Technical University-Wind Energy (2014-2016)
(Leave of absence from UD)
Ram Power, L.L.C. (2011- 2014)
Energetics Incorporated (1994-2010)
Advanced Sciences Incorporated (1988-1994)
Federation of American Scientists (1987-1988)
World Resources Institute (1986-1987)
Swedish Academy of Sciences (1983-1985)

PROFESSIONAL SNAPSHOT

Bonnie Ram is senior strategic analyst and policy advisor with 30 years experience in planning and directing multidisciplinary projects relating to environmental analyses, stakeholder engagement, and national energy use for a variety of research organizations, national laboratories, and government agencies. She has published in several different domains, including international development, environmental impact assessments, risk analyses, stakeholder engagement and public perceptions, and renewable energy. For over 20 years, Bonnie served as a program leader and corporate officer at two national consulting firms, managing up to \$10 million annual revenues & profit, winning and retaining government and commercial contracts, and supervising upwards of 50 professionals. Since 2010, she started her own consulting company and has co-directed a clean energy center at the University of Delaware. Bonnie has also written a number of award-winning and nationally-recognized federal government reports, published articles in peer-reviewed journals, and presented original research at numerous national and international conferences. In the past 15 years, she worked primarily on wind energy on the national & international levels, specializing in public policies, efficient regulations & project timelines, defining environmental risks & uncertainties, and community concerns & effective siting strategies. In 2014, she was invited as a Senior Researcher at the Danish Technical University exploring and building a new social science capability at the one of the largest wind energy departments. Her early career focused on water resource planning, sub-Saharan African energy use and sustainable development, and preparing environmental assessments and EISs (NEPA compliance) focusing on large federal construction projects, including managing nuclear waste legacies and recycling old Naval ships. She has traveled extensively in Europe, China, Southern Africa, South America, & the Pacific Islands.

Research Interests: Renewable energy public policies and community responses to utility-scale deployments; Siting strategies and decision science with sustained stakeholder engagement strategies; Integrating R&D technology pathways with environmental and social science areas for renewable energy technologies; Building the knowledge base for environmental and social risks/uncertainty analyses to support decision making and risk communication; Life-cycle and comparative energy pathways; Effective environmental permitting and efficient NEPA document preparation (environmental impact analysis).

Professional Societies: Society for Risk Analysis (US and European), Marine Technology Society, American Wind Energy Association (Chair, R&D Offshore Wind Subcommittee 2010-12), PADI Advanced Scuba Diving Certificates since 1995 (250 recorded dives).

Awards and Honors: American Wind Energy Technical Achievement Award for Leadership for the 20% Wind Energy by 2030 report, 2008; Certificate of Recognition for Best Paper at the Ocean Technology Conference 2006 “Energy from Offshore Wind;” Selected “Who’s Who of American Women”, 2007-2010; U.S Navy (NAVFAC) Best in Class for Environmental Compliance, 2002

Languages: Spanish (conversational), Hebrew (reading and writing)

Journal Reviews: *Risk Analysis, Energy Research and Social Science, and Journal of Renewable and Sustainable Energy.*

PROFESSIONAL EXPERIENCE

University of Delaware. (March 2012 – present with a leave of absence between 2012-2014)

Associate Director and Senior Researcher [Center for Carbon-free Power Integration](#) (CCPI)

Bonnie provides strategic advice and planning on offshore wind power for CCPI. She assisted in shaping research directions across disciplines including environmental analyses, public perceptions, and siting of offshore wind energy. In 2013-14, she led a series of strategic planning meetings with cross-disciplinary faculty involved with CCPI to identify a potential unifying technical concept that could shape collaborations and fundraising moving forward. Bonnie also mentors graduate students with research advice and assisted with a new curriculum for a [wind energy certificate](#) for professionals (with CCPI faculty).

She served as a strategic advisor to the [Atlantic Wind Consortium](#) (Principal Investigator, Willett Kempton) that involves 6 research initiatives (Department of Energy grants, US\$750K) involving curriculum development, wind resource characterization, and engineering analyses of gearboxes and turbine towers. She involved industry partners in the R&D process by coordinating a ten-member Industrial Advisory Board. She was the PI for the [Lewes Turbine](#) Bat Research and Curtailment Project with Delaware State University researchers (fall 2013-2014). This allows Bonnie to continue her decade long commitment to bat conservation alongside land-based wind energy siting

In summer 2013, she won a competitive National Science Foundation (NSF) grant under the Experimental Program to Stimulate Competitive Research (-17) program to support original research in integrated risk analysis for offshore wind deployments in the Mid-Atlantic region. The overarching research goals include: Applying an original integrated risk framework that characterizes significant risks and uncertainties, engages stakeholders throughout the process, and identifies management options for developers and decision makers; Expanding partnerships with state and federal agencies responsible for siting offshore wind; and Informing public policy developments through project outreach and dissemination activities. The first-year accomplishments involved an extensive annotated bibliography of EU related offshore wind studies on fisheries and marine mammals, about a dozen semi-structured interviews with experts in the field with a designed questionnaire on “ranking the risks,” collaborating with 2 graduate students, and leading an external advisory board meeting in March 2014.

In 2016-17, Bonnie completed the 2nd year of a NSF EPSCoR grant with a near shore case study in Denmark and lessons learned for prospective US offshore wind projects. This report “Public Engagement in Danish Near Shore Wind Projects: In Law and Practice” is posted on the [Wind2050.org/publications](#) and University of Delaware EPSCoR RII. She also made several presentations in the US and Europe related to the findings.

In 2017 she won a research grant from First State Marine Wind entitled, “Fostering Local Strategic Outreach: Wind Energy Challenges and Opportunities in Sussex County,” focusing on a better understanding of citizen groups and local decision makers in relation to renewable energy deployments. Also targeted the Sussex County Comprehensive Plan (revised every 10 years) and inserting language supportive of renewable energy industries.

Danish Technical University (DTU). (June 2014 – June 2016). [Wind Energy Department.](#)

Guest Senior Researcher

Bonnie was recruited by DTU senior management to explore how the institution may address the range of issues related to wind energy and society in Denmark and build up some capabilities. She assessed - both within Denmark and in the EU - the state of the science related to public engagement strategies and community responses to wind power. Also a much broader network of scientists and analysts in these technical areas was established. Bonnie recommended strategies to senior management for building capacity within DTU and for collaborating with other institutions and experts in the region. She led the

start-up of a task under the [European Energy Research Alliance](#) subprogramme on economic and social aspects of wind integration, prepared a white paper outlining potential steps for expanding into disciplines beyond traditional engineering and physical sciences, and disseminated these findings at various EU venues. Ram helped re-write and win a Danish proposal testing a radar system at the Østerild Test Site that incorporated an assessment of community concerns, design of a web-based survey, and evaluation of reducing potential impacts from flashing lights at night. She participated in the Danish-funded [Wind2050](#) developing case studies of social acceptability of land-based wind projects in Denmark and published a summary of relevant literature on risk perception and public engagement. She published a technical report on a near shore/offshore case studies with DTU and Copenhagen University. Bonnie also lectured at a DTU wind engineering class on 'Public Perception of Wind Energy Risks,' and Stakeholder Engagement Strategies' and participated in the first wind energy planning on-line course (MOOC). The first time social sciences were taught in these classrooms. Her lasting accomplishment is starting a new social science group that was self-funded after 12 months laying the groundwork for a strategic shift toward a multidisciplinary institution and sparking ongoing debates on these issues among the 243 employees.

Ram Power, LLC (January 2011 – 2014). President.

Bonnie is exploring opportunities for advancing sustainability and addressing the grand challenges of the changing global ecology and climate, society, and technology. She is providing strategic advice on the deployment of utility-scale renewable energy projects in North America and Europe and explored opportunities to link activities in China. She has provided expert advice to a number of Universities, consulting firms, and published articles in state-of-the-art fields, such as integrated risk analysis, stakeholder engagement, and gigawatt-scale renewable energy siting strategies. As a consultant to the University of DE, she provided strategic advice and technical direction for federal grants leading to a very successful win rate (6 wins out of 8 submissions). She was also a lecturer at the University of Massachusetts' [Wind Energy Center](#) (2011) assisting in kicking off their National Science Foundation IGERT award focusing on interdisciplinary training of PhD students. Selected activities (2011-2013) include: Investigating stakeholder approaches for marine spatial planning; developing materials for an interdisciplinary offshore wind course; and completed 4 publications for peer reviewed journals and a chapter in a book. In 2012, she completed a confidential marketing study on North American small wind manufacturing for a European client and provides strategic marketing advice for a German economic development agency focused on wind and solar power. In 2013-2014, she was a consultant to the University of Maryland (Baltimore) Physics Department on exploring opportunities for UMBC to find collaborators on resource characterization, translate complex wind modeling efforts for policy makers, and identifying opportunities for citizen science initiatives for boat captains and recreational boaters.

Energetics Incorporated (February 1994-October 2010). Assistant VP, Senior Analyst.

Bonnie was a senior analyst and Assistant VP for the Environmental Science and Policy Program where she had responsibility for a team of scientists, engineers and policy analysts supporting environmental and energy activities for the national government and private sectors. Over her 16 year history at Energetics, she addressed a wide range of subjects and technologies, including potential risks and benefits from land-based and offshore wind, regulating new ocean technologies and co-firing biomass plants, dismantling and disposing of old Navy ships and recycling the steel, managing hazardous and nuclear wastes at federal facilities, and responsible siting of liquid natural gas terminals.

From 2001-2010, she led a cutting-edge program area for the first offshore demonstration projects for wind and ocean energy in the U.S. supporting the U.S Department of Energy (DOE) Office of Wind and Hydropower Technologies and National Renewable Energy Laboratory (NREL). Bonnie provided technical support for several strategic areas, including gigawatt-scale wind deployments, ocean technologies (marine and hydrokinetic devices), environmental risk assessments, permitting and regulatory compliance, stakeholder engagement and siting strategies, and interagency collaborations. From 2001-2008, Bonnie managed a NREL task order subcontract focusing on environmental issues relating to offshore and land-based wind power. 2008-2010, Bonnie's team was transitioned to a DOE-HQ contract where the workload grew to about \$1 million per year with a diverse group of environmental and energy analysts, meeting planners, publications and graphics support.

She tracked activities relating to the newly formed Alternate Renewable Energy Program on the Outer Continental Shelf in the Department of the Interior [DOI] (Bureau of Ocean Energy Management), including comments on proposed regulation and reviews of Programmatic and Cape Wind Offshore Project Environmental Impact Statements. Bonnie's team was also instrumental in preparing the first Memorandum of Understanding between DOE and DOI focusing on offshore wind in the U.S. This MOU was a catalyst for forming several interagency working groups and studies that are ongoing, including environmental baselines and technology standards. Under contract with DOE (2008-2010), she had a leadership role in the environmental working group under this MOU and provided creative regulatory solutions to the Department of the Interior (DOI) for streamlining NEPA compliance requirements that led to new policy guidelines, reduction of NEPA document requirements, and reduced permitting timelines.

During her decade long service to the federal wind programs, she also helped build new directions in wind-wildlife issues beyond birds and bat mortality methods and Not in My Backyard (NIMBY) debates to risk and benefit analyses and public perceptions. She published several seminal papers in these areas, including the first integrated risk framework for offshore wind projects, and stood up one collaborative on bat conservation that is still the leading research group on wind energy and bats.

Providing strategic leadership and policy support to senior federal and state managers in the US and Europe in a nascent technology area, led to several "firsts" in these fields including; the first briefing on offshore wind to DOE senior managers (2001) and the first training workshop for federal managers (2003), the first collaborative research initiative on bats and wind power (2004), the first deep water wind energy workshops in the US with international and oil and gas experts (2004-2005), a co-author of the first technical annex within the International Energy Agency (IEA) relating to offshore energy issues that led to first ever code work on a 5MW reference turbine (Task XXIII, 2004), the lead coordinator of the first global marine renewable energy conference with the IEA, ocean trade association (OREC), and NREL (2005), co-author of the first national offshore wind assessments (2007 & 2010), co-manager and chapter co-author of the 20% Wind by 2030 Report (2008), and developed an integrated risk framework for gigawatt-scale wind deployments (2009).

Bonnie served as the co-manager of the [20% Wind Energy by 2030](#) Report, a collaboration between DOE, NREL and the American Wind Energy Association (AWEA), assessing the feasibility of integrating 20% wind power into the US electricity system. Bonnie coordinated seven task forces (5-10 members each), including technology, markets, environmental effects, and transmission, that assisted in evaluating the challenges and the benefits of increasing significantly wind power into our electricity system. Over the course of this 2-year effort, Bonnie facilitated dozens of task force meetings in order to shape the technical content and conclusions. Following the publication of this watershed publication, she coordinated two national workshops for DOE related to the 20% Wind Energy report, including a focus group on manufacturing supply chain issues (70 participants) and a broad workshop on shaping a pathway for a sustainable wind industry (150 participants). Both of these workshops informed the strategic R&D program of the DOE Office of Wind and Hydropower Technologies. Bonnie facilitated the larger breakout groups and was responsible for orchestrating both workshops and the final proceedings. This two-year effort was co-managed with Ed DeMeo from Renewable Energy Consulting under a NREL subcontract (managed by Brian Smith), AWEA senior leadership, and a dozen thought leaders under an advisory council.

Between 2008-2010, she facilitated and prepared proceedings of multiple technical workshops for a variety of other technical topics, including the Smart Grid Implementation Workshop for DOE's Office of Electricity Delivery and Energy Reliability, the Emergency Science Meeting on the [White Nose Syndrome](#)- a malady effecting bats in the Northeast and Mid-Atlantic regions for Bat Conservation International, and the [Bats and Wind Energy Cooperative's](#) Technical Workshop. She also facilitated at US-Canada Clean Energy Forum- Carbon Sequestration Breakout Group and a senior management Working Group for an EERE Five-Year Infrastructure Plan.

In 2007, she co-authored an NREL report, “Large-Scale Offshore Wind Power in the United States: Technical Assessment of Opportunities and Barriers” which was peer reviewed but not allowed to be released to the public. In April 2008, she was the lead organizer and agenda coordinator for the first [Global Marine Renewable Energy Conference](#) in NYC, in collaboration with the International Energy Agency-Ocean Energy Systems, NREL, and Ocean Renewable Association, with over 300 participants, including senior agency decision makers. She also presented a paper on her recent research on “[Environmental policies and siting challenges](#)” at this conference.

For Wind Powering America, Bonnie played a leadership role in preparing and disseminating materials and giving presentations relating to effects from wind power siting. She participated in framing the messages relating to environmental and social effects and served as an expert panel member for several years. These panels were part of the Annual State Summits at AWEA and stakeholder workshops in the Great Lakes and across the Mid-Atlantic states. She presented technical findings and reports to dozens of national, regional, and international conferences on behalf of DOE and/or NREL, including the Danish Energy Agency, International Energy Agency, American Wind Energy Association, World Renewable Energy Congress, Wind Powering America, and the National Wind Coordinating Committee (see selected list below).

For a private consulting company, Ms. Ram served as a strategic advisor to the team on the Long Island Offshore Wind Park EIS document preparation focusing on technology R&D, risk assessment, and interagency decisions and permits (this project was cancelled). In December 2004, she was the lead author of an [EPRI technical document](#) on the permitting issues relating to the demonstration of wave power technologies. This was the first time these issues were analyzed and summarized in a national report. Ms. Ram tracked the evolving legislation and R&D advances in the ocean technology area as it evolved into a newly-funded R&D area.

In November 2006, she was invited by the Danish government to serve on an international panel of experts on the lessons learned from the Danish environmental monitoring program. Her presentation focused on how the US could use the research and technologies developed for their offshore monitoring program using the before-after-control-impact (BACI) approach. Also in 2006, she attended workshops in Wisconsin and Ohio relating to a strategic approach to siting offshore wind in the Great Lakes. In 2006, she represented NREL at various conferences and workshops and presented an overview of offshore wind and potential environmental effects from siting and operations. She has drafted the environmental science and regulatory analysis chapters for an internal draft of a NREL white paper entitled, “Large Scale Offshore Wind Power in the United States.” In May 2006, Ms. Ram was awarded a certificate of Recognition for the Best Paper at OTC 2006, as a co-author of a paper entitled, “[Energy from Offshore Wind.](#)”

In September 2003, she organized and facilitated the first federally-sponsored [technical tutorial](#) on offshore wind power for over 70 federal and state regulators in Massachusetts, where one of the first projects is proposed off of Cape Cod. In collaboration with NREL, she assisted in organizing [two international deep water offshore wind energy workshops](#) (2003 and 2004) bringing together wind engineers from the U.S, several European nations, and representatives from the oil and gas industry. This first-of-its-kind workshop identified the R&D priorities for a nascent national offshore wind program.

Ms. Ram assisted the Chairman of the Wind Agreement for the International Energy Agency (2002-2005). In 2004, she was the lead author for the first offshore wind Annex within the IEA and presented the concept with her NREL colleague in 2004 in Denmark. This Annex was subsequently approved by the IEA and R&D work on deep water wind codes led to a final report on [Offshore Wind Code Comparative Collaborative \(OC3\)](#). This work continues under a new task 30. She also played a leadership role in organizing the first IEA workshop on [Ecology and Regulation](#) of offshore wind plants in the EU. Bonnie facilitated the strategic direction session of IEA Social Acceptance Task 28 Experts Meeting in Boulder, CO (2010).

In 2011, Bonnie was a technical reviewer of the IPCC [Special Report on Renewable Energy Sources and Climate Change Mitigation \(Annex 5\)](#).

Over the last 10 years, Bonnie was actively participating in the National Wind Coordinating Collaborative wildlife and siting committees, on behalf of DOE, focusing on bat and avian ecologies. She was called upon to design and facilitate two strategic meetings relating to bat mortality and wind sites in WV and PA. In 2003, surprise incidences of bat deaths at these two sites sparked concern and uncertainties about wind energy impacts on the landscape. With two weeks notice, Ms. Ram orchestrated the workshop involving representatives from industry, federal regulators, and national bat experts to discuss the problem. The meeting resulted in the formation of the [Bats & Wind Energy Cooperative](#) that is the now the leading scientific group carrying out and disseminating current research on potential bat impacts from operating wind turbines. In 2008, another [scientific meeting](#) was held, under Ms. Ram's leadership to evaluate progress and outline a new strategic R&D agenda.

Ms. Ram was the lead writer and coordinator of the [White House Report on Increasing Production of Renewable Energy on Federal Lands](#). She facilitated the Interagency Task Force involving DOE and the Department of the Interior, USDA, and DoD and gathered information on their renewable energy projects sited on federal lands. This report was prepared in response to the National Energy Policy recommendations on a quick response task and led to the first DOI forum on the same topic in Palm Springs, CA.

In 2006, Ms. Ram was asked to provide strategic advice to NYSERDA, in support of the Department of State, in relation to the FERC environmental impact statement for the Broadwater LNG terminal in Long Island Sound. She provided oversight on the technical contractor (Battelle) and assisted the NYSERDA project manager in reviewing the final products and highlighting areas of priority for the state agencies in relation to the LNG siting, including cumulative effects analysis and NEPA strategies on alternatives to the proposed action. She serves as a strategic advisor for the first offshore wind facility in New York providing advice on preparing an environmental impact statement and negotiating the permitting process for siting a 140MW plant on the coast of Long Island.

For the Office of Biomass Programs, Ms. Ram prepared a proposal to EPA's Project XL to identify areas for regulatory relief that would facilitate demonstration of biomass co-firing projects. Evaluating the barriers with air permitting requirements, DOE and EPA were attempting to promote R&D projects with biomass use at coal-fired plants for achieving cleaner power sources. Ms. Ram formed a working group to assist in streamlining the "modification rule" under the Clean Air Act for co-firing projects in order to facilitate installation of R&D equipment at coal-fired plants, reduce costs and lower emissions.

Ms. Ram prepared an Environmental Assessment (EA) to analyze the potential environmental effects of a proposal to provide Federal funds for construction of a plug-flow dairy digester at the Port of Tillamook Bay (POTB) Industrial Park using cow manure from about 2000 Holstein cows. The dairy digester would be located on about four acres within the 1,600-acre POTB Industrial Park. The EA involved interviews with several state and local agencies overseeing agricultural practices and public involvement procedures.

Ms. Ram was the first senior manager to collaborate on a competitive proposal to the U.S. Navy with VSE (Energetics' parent company) associated with a \$10 million pilot program for the U.S. Navy to dismantle and recycle obsolete Navy ships. For the U.S. Navy project, her responsibilities include the oversight of all hazardous materials associated with the remediation, dismantlement, and recycling of the ships components, including the removal and management of asbestos, petroleum-based products, PCBs, mercury thermometers, fluorescent lights, batteries (universal wastes) and other hazardous debris. Technical support services included developing Standard Operating Procedures (SOPs); preparing ship dismantling crew orientation (training) materials; and evaluating site-specific documentation (e.g., permits, notifications). She worked on-site at the San Francisco's Huntington shipyard.

From 1994-98, Ms. Ram had primary responsibility for managing a \$9 million contract in support of the DOE Office of NEPA Policy and Assistance. She was responsible for managing 8 multidisciplinary senior scientists and planners, task direction, budget tracking and controls, technical direction, reviews of NEPA documents, including environmental impact statements (EISs), and planning for national training meetings. Ms. Ram had management oversight for another DOE Headquarter contract for the Office of Environmental Policy and Guidance where her team was responsible for interpreting and translating complex environmental regulations into understandable guidance for various field offices around the country. Her group led efforts in new laws relating to PCBs, land disposal restrictions for wastes, Clean Air Act, Historic Preservation, Environmental Management Systems (EMSs) and NEPA compliance, and As Low As Reasonably Achievable (ALARA) radiological standards.

Advanced Sciences, Incorporated (July/1988-January/1994).

Served as the Operations Manager of the Arlington Office. In this capacity, she was responsible for project performance and customer satisfaction for 12 projects and over 100 staff. On the corporate level, she supervised personnel, tracked over \$10 million annual revenues, implemented quarterly budget projections and project reviews, and enforced quality control for deliverables.

As Director of the Regulatory Compliance Division, she was responsible for six nationwide environmental compliance projects providing support services to offices at DOE, DOT and DoD. In addition, Department responsibilities included; project performance, customer satisfaction, contract management (revenue value over \$5 million), staff supervision (varied from 3 to 50 technical people), technical direction/peer review, and cost & scheduling. For the U.S. Army Aberdeen Proving Ground contract, Ms. Ram was responsible for task planning and oversight for several work areas, including an Installation environmental assessment (EA), hazardous waste accumulation site inspections, and wetlands mitigation. As project manager for the Fort Detrick Army base, Ms. Ram was lead author for two NEPA documents. She assisted the customer in designing a site-wide EA for the base, thereby providing a useful environmental document for future actions, and prepared a second EA assessing the leasing of property off-base for biological research activities. The EA for leased property evaluated research functions for the U.S. Army Medical Research Institute of Infectious Disease --- the lead laboratory for the medical defense portion of the U.S. Army Biological Defense Research Program.

As project manager for DOE's Office of NEPA Oversight for four years, Ms. Ram was responsible for approximately 45 technical reviews of NEPA documents, including the New Production Reactor Draft EIS requiring a multidisciplinary team of experts ranging from physicists to ecologists to chemists. . Other tasks completed on this contract include: participating on two NEPA module environmental compliance (Tiger Team) audits at Pittsburgh Energy Technology Center and Stanford Linear Accelerator Center; and upgrading the archival database system that houses over 1000 historical NEPA documents. As project manager for DOE's Office of Special Projects, Ms. Ram was responsible for a \$3 million, 3 year contract supervising operation and production of 25 environmental compliance (Tiger Team) audits across the country. Ms. Ram served as project manager for the Environmental Office of the Air National Guard at Andrews Air Force Base responsible for preparing 18 environmental assessments under fixed price tasks over several years. These EAs focused on air space corridors, construction projects, petroleum leaks and spills, and upgrades of training facilities across the U.S. All tasks were completed on-time and within budget. Bonnie also served as Corporate Quality Control Officer for the Navy's Base Realignment and Closure (BRAC) Program for conducting quick response Phase I Audits at six BRAC sites around the country, including Charleston Naval Shipyard. Over 1000 audits were completed in six months with 75 staff deployed at field sites.

Federal of American Scientists (March/1987-June/1988).

Selected from a large field of competitors for a one-year fellowship as the Bernard Schwartz Fellow for Energy and Environment under Director Jeremy Stone. Succeeded in refocusing research efforts of 10 nuclear physicists to broaden their program goals to include environmental issues. Selected accomplishments included: Design and implementation of a new program focusing on clean-up and consolidation of DOE's nuclear production facilities; Developed the concept and orchestrated a national

press conference on the U.S. plutonium production program with a press event covered by national media; This involved a letter signed by U.S. Nobel Prize winners to the President calling for a cessation of plutonium production at DOE facilities and extensive coordination with the NGO community; Also tracked the international trade of hazardous wastes and presented expert testimony at Congressional Subcommittees.

World Resources Institute (March/1986-February/1987).

Designed new research program and funding proposal to study successful "green" and natural resource management projects in Sub-Saharan Africa. Accomplishments include: Preparing a viable fundraising proposal for private foundations; creating innovative project concept, and writing and publishing technical project papers on sustainable development in Sub-Saharan Africa. Resulted in \$2 million fundraising effort. Worked under the direction of Dr. Mohamed El-Ashry who is now the retired Director of the World Bank's Global Environmental Facility and Senior Fellow at the UN Foundation.

Beijer Institute of the Royal Swedish Academy Sciences (January/1983-June/1985).

Research Fellow and Project Co-Manager, Stationed in Harare, Zimbabwe

Co-directed \$1.5 million national energy study in-country for the Zimbabwe Ministry of Energy.

Accomplishments include the design and management of industrial and household national energy surveys, technical analyses of the data collected, management of a \$1.5 million budget, and project administration. Supervised 35 Zimbabwean and expatriate staff. Resulted in the publication of several books and ten PhD student dissertations.

PUBLICATIONS AND INVITED PRESENTATIONS

PEER REVIEWED ARTICLES, GOVERNMENT/TECHNICAL REPORTS, AND WORKSHOP PROCEEDINGS

Ram, B., H. T. Anker, N-E. Clausen, and T.R.L. Nielsen, "Public Engagement in Danish Near Shore Wind Projects: In Law and Practice." Wind 2050 Task 3, Copenhagen University, and University of Delaware EPSCoR RII. Also posted on Wind2050.org/publications.

Ram B. and J. Stephens, (2017) "Risk Conundrums of the Renewable Energy Transition: Can We Balance Opportunities, Optimism, and Challenges." Chapter in Risk Conundrums: Solving Unsolvable Problems. (R.E. Kasperson, Editor). Earthscan Routledge.

Kasperson, R.E., B. Ram, and S. Ratick (2017) How Can We be Sure We are Working on the Right Risks. Chapter in Risk Conundrums: Solving Unsolvable Problems. (R.E. Kasperson, Editor). Earthscan Routledge.

Ram, B., (2016) "Preparing for Challenges Already in Our Midst and Potential Future Surprises: Strategy Considerations for Building Social Science Capabilities at DTU Wind Energy" Final report to DTU Management (unpublished). Roskilde, Denmark. June 2016.

Ram, B. Commentary on "Risk Analysis for U.S. Offshore Wind Farms: The Need for an Integrated Approach" Accepted as Letter to the Editor. April 2016.

Ram, B. Book review. Wind Power. Politics and Policy Author: Scott Victor Valentine. *Energy Research and Social Science*. Volume 10, November 2015, Pages 298–299.

Ram, B. "Final White Paper on Wind Energy and Society" (2015). EERA Joint Programme on Wind Energy. EERA Sub-Programme on Economic and Social Aspects of Wind Integration. DTU Wind. Roskilde, Denmark.

Ram, B. “Public Engagement Strategies and Wind Energy,” Workshop Summary. [EERA Joint Programme on Wind Energy](#) – Sub-Programme: Economic and Social Aspects of Wind Integration. DTU Wind. Roskilde, Denmark. March 2015. <http://www.irpwind.eu/News/2015/03/EERA-Workshop-9-march-2015?id=084ed963-2ae6-4eaf-92e9-2ab46ffe3758>

Cronin, Tom, **Ram, B.**, Gannon, J., Clausen, N.E, Thuesen, C., Maslesa, E., Kreye, M., Gerald, J. (2015). ‘Public acceptance of wind farm development: Developer practices and review of scientific literature.’ DTU Wind Energy E-51, (ISBN: 978-87-92896-91-9), pages: 53. <http://www.wind2050.dk/Publications>

Tuler, Seth, B. **Ram**, and R. Kasperson. (2014) “Wind Energy Facility Siting: Learning from Experience and Guides for Moving Forward.” *Wind Engineering*. Volume 38, NO. 2, 2014.

Kasperson, R. and B. **Ram**. (2013). ”Transformation of Energy Systems and the Public.” Energy Delta Institute Quarterly (Volume 5, Issue 1). March 2013. Groningen, Netherlands.

Kasperson, R and B. **Ram**. (2013). “The Public Acceptance of New Energy Technologies.” Winter 2013. [Daedalus](#). American Academy of Arts and Sciences. Washington, D.C.

Kasperson, R. and B. **Ram**. (2013). “Rapid Transformation of the US Electric Power System: Prospects and Impediments.” Chapter in, [Toward Successful Adaptation: Linking Science and Practice in Managing Climate Change Impacts](#) (ed. Susanne Moser and Max Boykoff). 2013. Routledge.

Ram, B. “Assessing Integrated Risks of Offshore Wind Projects: Moving Towards Gigawatt-scale Deployments.” (2011). *Wind Engineering*. Volume 35. Number 2. Multi-Science Publishing. (Pages 247-265).

Musial W. and B. **Ram**. 2010. “Large-Scale Offshore Wind Power in for the United States: Assessment of Opportunities and Barriers,” National Renewable Energy Laboratory, Golden, Colorado, NREL/TP-500-40745. <https://www.nrel.gov/docs/fy10osti/40745.pdf>

“Creating an Offshore Wind Industry in the United States: A Strategic Work Plan for the U.S. Department of Energy, Fiscal Years 2011- 2015”. (Draft chapter author with DOE Wind and Hydropower Technologies Program Staff). Public document published February 2011 http://wind.energy.gov/pdfs/national_offshore_wind_strategy.pdf

Ram, B. “An Integrated Risk Framework for Gigawatt Scale Deployment of Renewable Energy: The Wind Energy Case Study,” April 2010. NREL Subcontractor Report (2009). NREL/SR-500-47129. <http://www.nrel.gov/docs/fy10osti/47129.pdf>

Ram, B. (2009). White-Nose Syndrome Proceedings. Science Strategy Meeting I. ([June 10, 2008. Albany, NY](#)) and White-Nose Syndrome. Meeting II. ([May 27-28, 2009. Austin, TX](#)) with Bat Conservation International and Boston University. Energetics Publication. Washington, DC.

Ram, B, L. Giles, and W. Wallace. “20% Wind Energy by 2030, Meeting the Challenges, Proceedings; October 6-7, 2008”, Draft, December 15, 2008, U.S. Department of Energy, Washington, DC.

Ram, B., L. Giles, and W. Wallace. “20% Wind Energy by 2030, U.S. Manufacturing Sector, Meeting Results; August 27/28, 2008”, Draft, November 15, 2008, U.S. Department of Energy, Washington, DC.

[20% Wind Energy by 2030: Increasing Wind Energy Contribution to U.S. Electricity Supply. May 2008.](#) (Served as lead contractor, report editor, and co-manager (with Ed DeMeo from Renewable Energy Consulting Services) U.S Department of Energy, Washington, D.C.

W. Musial and B. **Ram**, 2007. "Large-Scale Offshore Wind Power in the United States: Technical Assessment of Opportunities and Barriers." NREL Technical Report (NREL/TP-500-40745), National Renewable Energy Laboratory, Golden, CO (internal copy only).

Musial, W. and B. **Ram**. "Energy from Offshore Wind, Paper for Ocean Technology Conference 2006, Received Certificate of Recognition for Best Paper, Houston, Texas, May 14, 2006

Bedard, R., G. Hagerman, M. Previsic, O. Siddiqui, R. Thresher, and B. **Ram**. 2005. Offshore wave power feasibility demonstration project: Final summary report, Electric Power Research Institute Reports.

Ram, B. "[Permitting and Regulatory Issues for Wave Power Demonstrations in the US](#)", 2004. Electric Power Research Institute (EPRI) E2I project, December 2004.

Ram, B., Musial W. and Madsen P.H., Offshore Wind Power: Critical Issues for Development and Deployment, International Energy Agency (IEA) Annex XXIII. Prepared for NREL, April 2004, (approved by Executive Committee in May 2004, Chester, England).

[Bats and Wind Power Generation Technical Workshop Proceedings](#), with Ndeye Fall, Juno Beach, FL, for the NREL and DOE Office of Wind, February 2004.

"Environmental Statutes/Regulations Potentially Governing Offshore Siting of Wind Power Structures and Transmission lines", with Jace Cuje, unpublished manuscript, for NREL and DOE. January 2003.

[White House Report - In Response to the National Energy Policy Recommendations To Increase Renewable Energy Production on Federal Lands](#), (with Walter Cruikshank, Peter Goldman, & Lois Smith), DOE and the Department of the Interior, August 2002.

Ram, B. "Global Environmental Impacts of the Armed Forces," article in International Military and Defense Encyclopedia, (Col. Trevor N. Dupuy, USA (Ret.) Editor-in-Chief) Pergamon Brassey Press, London, 1995.

INVITED SPEAKING ENGAGEMENTS AND PRESENTATIONS --- SELECTED LIST

"Public Engagement and Danish Near Shore Projects." Presentation was part of a mini-symposium entitled, The Socio-technical Paradox of Wind Energy at the Wind Energy Science Conference. Co-Convener with N-E Clausen and C. Borch. Lyngby, Denmark. June 28, 2017.

"A U.S. Perspective on EU Energy Policies." Part of a symposium on No Energy Transition without the Social Sciences and Humanities: Why a PERSONal approach is needed. Brussels June 2017.

"Managing Systemic Risks of Wind Energy: A Comparative Case Study in Energy Transitions" Part of the Symposium, Interdisciplinary Perspectives on Systemic Risk Research Symposium (leader, Pia-Johanna Schweizer, IASS-Potsdam). At Society for Risk Analysis in Lisbon, Portugal. June 18, 2017.

"New interactive methods for engaging and understanding stakeholder views on siting strategies and spatial planning." (With Jeremy Firestone and Alison Bates). Invited panel presentation at the International Partnering Forum. Offshore Business Network. Annapolis, MD. April 21, 2017.

"Lessons from Denmark." Invited Presentation for the 15th Annual Ronald C. Baird Sea Grant Science Symposium. The Social Dimensions of American Offshore Wind Energy: Towards a Research Agenda University of Rhode Island, October 24, 2016.

"Lessons from Denmark for Risk Governance of Renewable Energies," Society for Risk Analysis. San Diego. December 2016. (with Niels-Erik Clausen, DTU).

“What the Social Sciences Can Offer DTU and the Broader Wind Communities?” DTU lecture series. Roskilde, Denmark. May 2016.

“Public acceptability in wind energy planning in Europe and US (Part 1 and Part 2): Promising areas.” DTU Internal Management Meeting. March and April 2016 (not published).

“Siting Facilities: Guides for Moving Forward.” Oral Presentation. Society for Risk Analysis. USA. Arlington, VA. December 8, 2015.

Panel Co-chair (with Kristian Blasche, DONG). Environmental Impact and Spatial Planning. Offshore R&D Conference. RAVE. Bremenhaven, Germany. October 14-15, 2015

Invited Keynote Speaker. “Wind Energy and Society: Is the Past Prologue?” European Wind Energy Academy PhD Seminar. Stuttgart, Germany. 23 September 2015.

Wind Turbine Noise: The Need for a Transdisciplinary Approach. Internal DTU workshop. Roskilde, Denmark. August 2015.

“Wind Energy in Denmark: Is the Past Prologue? Case Studies,” Oral Presentation. Society for Risk Analysis-Europe. Maastricht. 15 June 2015. Also Panel Co-Chair with Pia-Johanna Schweizer.

“Wind Energy and Society: Creating a DTU Roadmap.” Internal Management Meeting. June 2015.

“Sustaining Wind Energy in Denmark: Is the Past Prologue?” Invited Speaker. Cardiff University. 18 February 2015.

“An Integrated Risk Framework for Offshore Wind Energy,” Oral Presentation. EERA DeepWind'2015 Deep Sea Offshore Wind R&D Conference. Trondheim, 4 - 6 February 2015.

“Wind Energy in Denmark: Is the Past Prologue?” Invited Speaker, National Wind Technology Center, December 11, 2014, Denver, CO.

“An Integrated Risk Framework & Offshore Wind Energy,” Speaker at Society for Risk Analysis, December 7, 2014, Denver, CO.

“Social Acceptance and Wind Energy.” Speaker at the University of Stuttgart, EnergyTRANS project team. Stuttgart, Germany. November 18, 2014.

“Public Engagement Strategies for Wind Energy: Defining the Scope & Building a Network,” Invited Speaker to EERA Sub-programme kick-off meeting, November 2014, Roskilde.

Public Engagement Strategies for Wind Energy: Are We on the Right Track? Invited Speaker to EERA Sub-programme, September 2014, Amsterdam.

Wind Energy and Society; Hard Bob and Cool Jazz, Lecture for DTU Wind Energy Department, June 2014, Roskilde, DK.

“EU Joint Programme On Wind Energy: A Look at Social and Environmental Science Activities in the USA,” Invited Speaker. Danish Technical University. Wind Department. October 14, 2013. Roskilde, Denmark.

Panel Co-Chair (with Taber Alison) for [North American Wind Energy Academy](#). Environmental Sciences Panel. “Ecosystems and Wind Energy: A Climate Change Perspective. August 7, 2013, Boulder, CO.

Panel Co-chair (with Chris Hart) for AWEA Offshore Wind Power, You Decide: Advances in Technology. October 11, 2012. Virginia Beach, VA.

“Transforming the US Energy Systems: From Risk *du jour* to Integrated Risk Management.” Invited Speaker. Cornell Mechanical Engineering Department. May 3, 2012.

“National Wind Deployments: Making Decisions Under Uncertainty,” Invited Speaker. USGS Wind National Assessment. Shepherdstown, West Virginia. March 19, 2012.

“Grand Interdisciplinary Challenges in Offshore Wind Energy,” Invited Lecturer. University of MA-Amherst. Integrative Graduate Education and Research Traineeship (IGERT) program sponsored by NSF. Amherst, MA. January 19, 2012.

“Highlights of the NREL Report: Large-Scale Offshore Wind Power in the U.S.” Testimony to the Maryland House of Delegates. House Economic Matters Committee. Annapolis, MD. November 9, 2011.

The Global Wind Market and the U.S. Energy Transformation: Tortoise or Hare?” Invited Speaker. Delmarva Power Planning Association, Wilmington, Delaware. October 27, 2011.

“Offshore Wind Energy: The North American Opportunity.” Invited Speaker. Council of State Governments, Eastern Region Group. Halifax, Nova Scotia. August 6, 2011.
<http://www.csg-erc.org/policy-2011-annual-meeting-presentations-and-videos/>

“Integrated Risk Framework for Gigawatt Scale Deployment of Renewable Energy.” Invited Lecturer. Technical University of Lisbon, Portugal. (June 2011).

“Applying Integrated Risk Assessment to EU Environmental Studies. IEA Experts Meeting for Offshore Wind Annex at ECN in Petten, Netherlands (July 2010).

Strategies for Risk Assessment for Ocean and Tidal Energy. Energetics Incorporated. IEA Task 23 Workshop. Petten, Netherlands, 28-29 Feb 2008.

“Risk Assessment and Offshore Projects.” AWEA Offshore Wind Power Workshop, Atlantic City, NJ (Fall 2010),

“Integrated Risk Framework for Gigawatt Scale Deployment of Renewable Energy.” AWEA Offshore Wind Conference. Boston (2009) .

“Integrated Risk Assessment and Offshore Projects.” AWEA First Offshore Meeting in Wilmington, Delaware (September 2008).

“The Link between Risk Analyses and Public Acceptance.” IEA Social Acceptance Task 28. Experts Meeting, Boulder, CO (2010).

“Integrated Risk Analysis Application to the Great Lakes.” Invited Speaker. Great Lakes Renewable Energy Association (March 2009).

“Principles of Risk and Siting Strategies.” Invited Speaker. Governors Siting Council in Michigan (2009).

“Offshore Wind Risks: A Summary of Findings.” Wind Powering America State Summit, Chicago, IL (May 2009).

“Current Events in the U.S. Offshore Wind Market.” Offshore Wind and other Marine renewable Energy in Mediterranean and European Seas (OWEMES) conference in Brindisi, Italy (May 2009).

“Integrated Risk Framework for Gigawatt Scale Deployment of Renewable Energy.” 28th International Conference on Ocean, Offshore and Arctic Engineering (OMAE) in Honolulu, Hawaii (June 2009).

“Siting Strategies and Risk Analysis.” First Global Marine Renewable Energy Conference in NYC, NY (April 2008).

“Renewable Energy: Shaping a New Siting Paradigm” (with Roger Kasperson), Presented by co-author at the Second World Congress on Risk, Guadalajara, Mexico, June 8-11, 2008.

“Risk, Decision Making, and Ocean Technologies,” Presented at the first Experts Meeting of the International Energy Agency-Ocean Energy Systems, Messina, Sicily, October 17, 2008.

Danish Offshore Wind Energy Conference, “Final Results of Environmental Effects Studies,” Closing panel on the future prospects for BACI studies and methods in North America. Invited Panelist. November 2006. Helsingør, Denmark.

“Offshore Technologies on the Outer Continental Shelf (OCS),” Presentation at the MMS Public Hearing on the PEIS on Alternative Energy on the OCS, representing NREL, Trenton, NJ, May 23, 2006.

“Offshore Wind: Policy and Technology Assessments” Moderated and organized a panel for AWEA 2006. Pittsburgh, PA, June 7, 2006.

“Siting Offshore Wind: Issues and Experiences,” Presentation to the Wisconsin Public Utility Institute, June 14, 2006.

“Offshore Wind Energy Review”, Presented at the NREL Strategic Planning Meeting, Broomfield, CO, May 25, 2006.

“Current Offshore Wind and Wave Programs in the U.S.A.,” Presentation at the OWEMES European Conference, Rome, Italy, April 21, 2006.

Toledo Ohio Wind Working Group Meeting, Selected Offshore Expert Panel and presented on “Permitting Challenges in the Great Lakes,” April 4, 2006.

“Regulatory and Permitting Process for Offshore Wind Construction projects,” Presented at an internal MMS training and briefing workshop on wind and wave power technologies, February 17, 2006

“Synergies between Wave Power and Offshore Wind Energy”, with Robert Thresher, poster presentation at the American Wind Energy Association conference, Denver, CO, May 2005.

U.S. Offshore Wind and Ocean Energy Highlights”, with Stan Calvert and Mike Robinson, presentation for Energy Ocean 2005 Conference, Washington, DC, April, 2005.

“Offshore Wind Power --- Regulatory and Jurisdictional Issues”, paper and presentation for the World Renewable Energy Conference VIII, Denver, CO, August 30, 2004.

“US Offshore Wind Developments”, presented at the Technical Expert Meeting #43 of the IEA, Critical Issues Regarding Offshore Technology and Deployment, Fredericia, Denmark, March 2004.

“Offshore Wind Developments in the U.S. ---- Regulations and Jurisdictions”, NWCC Workshop Presentation, Washington, DC. July 1-2, 2003. Updated version presented at Birds and Bats Workshop, May 2004 and Biological Significance Workshop, November 17-18, 2004.

SELECTED NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) ANALYSES AND DOCUMENTS

Internal DOE Memorandum. “NEPA Compliance and Power Marketing Administrations: Needed Regulatory Reforms.” Submitted to the DOE Office of Wind and NEPA Compliance Office. 2007.

“A Programmatic Approach to NEPA – In a Nutshell,” with Matt McMillen, White Paper for the DOE Office of Biomass Programs, December 2002.

“Strategic Planning for the National Energy Technology Laboratory’s (NETL) Carbon Sequestration Program --- NEPA Compliance and Public Awareness”, Internal White Paper and Presentation to senior managers at DOE’s NETL, Pittsburgh, PA, September 2002.

“Yolo County Bioreactor Landfill NEPA document Analysis” (memo to file), NETL, Pittsburgh, PA, February 2002.

Environmental Assessment for the Methane Energy and Agricultural Development, Port of Tillamook Bay, Dairy Digester Project, Tillamook County, Oregon, with Matt McMillen, Department of Energy, National Energy Technology Laboratory, October 2001.
(See <http://tis.eh.doe.gov/nepa/ea/ea1402/ea-1402index.html>)

Biopower Co-firing Innovations Agreement for EPA’s Project XL, with Ray Costello, DOE Office of Biomass Programs, Final Draft, 2001.

“Environmental Issues and NEPA Compliance: Important Considerations for the Bioenergy Program,” with M. McMillen, Office of Biomass Programs, DOE, March, 12, 2001.

Cumulative Effects Chapter of the Brookhaven National Laboratory High Flux Beam Reactor EIS, with Mathew McMillen, Office of Nuclear Energy, DOE, Draft 2000.

Suffolk County Air National Guard Construction of a New Bulk Storage Facility Environmental Assessment, with K. Stroud and P. Miller. National Guard Bureau, Andrews AFB, MD. April 1993.

Suffolk County Air National Guard Land Transfer Environmental Baseline Survey, with K. Stroud. National Guard Bureau, Andrews AFB, MD. April 1993.

Tucson Air National Guard Aircraft Conversion Environmental Assessment, with B. Kemp. National Guard Bureau, Andrews AFB, MD. August 1992.

Puerto Rico Air National Guard Aircraft Conversion Environmental Assessment, with B. Kemp. National Guard Bureau, Andrews AFB, MD. September 1992.

Construction of Camp Ashland Major Training Area Environmental Assessment with B. Kemp. National Guard Bureau, Andrews AFB, MD. September 1992.

Basewide Environmental Assessment for Fort Detrick, with B. Kemp. DoD, Fort Detrick, Frederick, Maryland. January 1991.

Environmental Assessment for Biological R&D Laboratory Leased Facility, with Dr. Carol Linden. U.S. Army Medical Research Institute of Infectious Diseases, DoD, Fort Detrick, Frederick, MD. April 1990.

SELECTED PUBLICATIONS and PRESENTATIONS PRIOR TO 1994

"Natural Resource Management and Agricultural Development in the Arid Areas of East Africa," (co-authored with Mohammed El-Ashry), in Proceedings of the Second International Conference on Desert Development. Cairo, Egypt, Harwood Academic Publishers, 1991.

"Current Developments in the International Trade of U.S. Wastes," Testimony before the U.S. House of Representatives, Subcommittee on Environment, Energy and National Resources, July 14, 1988.

Do We Need an International Policy on Hazardous Waste Exports? in Public Interest Report. Federation of American Scientists, Washington, D.C., May 1988.

"DOE's View of Their Environment, Health & Safety Division," in Bulletin of Atomic Scientists. Special Issue, January/February 1988.

"Bedford, Massachusetts: Case Study," with H.E. Schwarz. Chapter in Planning for Groundwater Protection, (Editor, G. William Page), Academic Press, Inc., 1987.

"Sustaining Africa's Natural Resources," co-authored with M.T. El-Ashry, in Journal of Soil & Water Conservation. July-August, 1987.

Zimbabwe: Energy Planning for National Development, (Richard Hosier with Y. Katarere, D. Munasirei, J. Nkomo, B. Ram, and P. Robinson), Beijer Institute and Scandinavian Institute of African Studies, Uppsala, Sweden. Volume 9 of Energy, Environment and Development in Africa Series, 1986.

Zimbabwe: Industrial and Commercial Energy Planning for National Development, (Richard Hosier with Y. Katarere, D. Munasirei, J. Nkomo, B. Ram, and P. Robinson), Beijer Institute and Scandinavian Institute of African Studies, Uppsala, Sweden. Volume 10 of Energy, Environment and Development Series in Africa, 1986.