

Johannes Urpelainen

- 1. Current Position:** Director of Energy, Resources and Environment;
Prince Sultan bin Professor of Energy, Resources and Environment
Founding Director, Initiative for Sustainable Energy Policy
 - 2. Name of Firm:** Johns Hopkins School of Advanced International Studies
 - 3. Name of Staff:** Johannes Urpelainen
- Nationality:** Finland (U.S. Permanent Resident)

Key Qualifications

Professor Johannes Urpelainen, PhD is an expert in energy and environmental policy, with an emphasis on sustainable energy, and political economy in emerging countries. As one of the world's leading energy-environment experts, he has over 10 years of experience leading large-scale academic research projects and advising on projects for the private sector, government, civil society, and international organizations.

Professor Urpelainen has worked extensively on energy access and power sector policy in India. He led the design and execution of the ACCESS survey, the world's most detailed energy access survey with 8,500 households across six Indian states. He has managed multiple randomized controlled trials to inform market creation and impact assessment of rural electrification in India. He co-led a major research project in India's largest state, Uttar Pradesh, to develop practical strategies to improve the governance of electricity distribution companies and combat power theft. He also co-led a large-scale survey of both households and enterprises in rural India to evaluate rural energy demand and devise practical strategies for demand stimulation. He has advised multiple business on rural energy demand. He is currently conducting research on clean cooking fuels at the request of the Ministry of Petroleum & Natural Gas, and leading a new research program on electric vehicles in India. He is also building a major energy research and capacity building program in the state of Jharkhand.

In China, Professor Urpelainen has worked on the Belt & Road Initiative (BRI). He is researching the geopolitical drivers of BRI and developing pragmatic strategies for minimizing the environmental impact of China's outward investment. In this context, he is developing green finance strategies for Chinese development policy banks. In another project, he is evaluating the public health, climate change, and power system impacts of vehicle fleet electrification in China, with explicit comparisons to India.

Besides India and China, Professor Urpelainen has relevant experience in Brazil, Pakistan, Peru, Indonesia, Tanzania, and United Arab Emirates. In Brazil and Peru, he has conducted research on policies to combat deforestation with satellite technology and protected areas. In Pakistan, he is working with local academia to measure energy access in rural areas. In Indonesia, he is advising a distributed renewable energy company on impact evaluation for over 3,000 microgrids in the Papua archipelago. In Tanzania, he led a study of waste management practices in Dar es Salaam with support from the Embassy of Finland. In the United Arab Emirates, he conducted research on how the Gulf countries can use development assistance to support United Nations Sustainable Development Goal 7 on clean energy access for all.

Professor Urpelainen has doctoral training in Political Science and Economics. He applies microeconomic, game theoretic, econometric, statistical, causal inference, and computational social science methods in his research. At Columbia University and Johns Hopkins School of Advanced International Studies, he has taught doctoral and masters classes in quantitative methods from applied mathematics to game theory and statistical programming.

Professor Urpelainen holds a PhD in Political Science from the University of Michigan (USA, 2009) and Bachelor's and Master's Degrees in the Social Sciences from the University of Tampere (Finland, 2005/2006).

4. Education

PhD in Political Science, University of Michigan (United States), 2009

M.Soc.Sc. in International Relations, University of Tampere (Finland), 2006

B.Soc.Sc. in International Relations, University of Tampere (Finland), 2005

5. Membership of Professional Associations

N/A

6. Other Training

N/A

7. Countries of Work Experience

Brazil, China, Finland, Germany, India, Indonesia, Pakistan, Peru, Tanzania, United Arab Emirates, United States

8. Languages [Indicate "Good", "Fair", or "Poor"]

	<i>Speaking</i>	<i>Reading</i>	<i>Writing</i>
English	Good	Good	Good
Finnish	Native	Native	Native
German	Fair	Good	Poor
Swedish	Fair	Good	Poor
Hindi	Fair	Fair	Poor

9. Employment Record

Johns Hopkins School of Advanced International Studies, 2018 to present

Director of Energy, Resources and Environment, United States

Description of duties:

- Managed a program with over a hundred students, twenty faculty, and three staff members across three campuses (Washington DC, Bologna, Nanjing)
- Restructured faculty governance and program management
- Led program redesign: vision, learning outcomes, requirements, curriculum
- Developed an integrated research, teaching, and outreach strategy for the program

- Led development of the first online degree in the school

Contact information for references: *Dr. Vali Nasr, Dean, Johns Hopkins School of Advanced International Studies, vnasr@jhu.edu, (202) 663-5628*

Johns Hopkins School of Advanced International Studies, 2017 to present
Prince Sultan bin Abdulaziz Professor of Energy, Resources and Environment

Description of duties:

- Advised government and corporate clients on energy and environmental issues across the world
- Taught classes on quantitative methods and global energy challenges
- Conducted research on energy and environmental policy in emerging economies

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Initiative for Sustainable Energy Policy, 2017 to present
Founding Director

Description of duties:

- Founded a new research initiative without an endowment or core support
- Developed the vision, research strategy, and public profile of initiative
- Managed operations, finances, and communications of initiative
- Raised major grants and corporate sponsorship to support multi-year policy research initiatives in China and India
- Created a network of one hundred expert affiliates

Contact information for references: *Dr. Vali Nasr, Dean, Johns Hopkins School of Advanced International Studies, vnasr@jhu.edu, (202) 663-5628*

Columbia University, 2009-2017
Assistant and Associate Professor of Political Science

Description of duties:

- Advised government and corporate clients on energy and environmental issues across the world
- Taught classes on mathematical methods, international institutions, global environmental politics, and political economy of energy and environment
- Conducted research on energy and environmental policy in emerging economies

Contact information for references: *Dr. Timothy Frye, Chair, Department of Political Science, Columbia University, timothy.frye@columbia.edu, (212) 854-8590*

10. Relevant Experience

- **Electric Vehicles' Health and Climate Benefits, China and India 2019-Present** (Principal Investigator) – With funding from the Wellcome Trust and in partnership with Peking University, this project develops new integrated assessment models, scenarios, and open access tools for estimating the public health and climate mitigation benefits of electric vehicles in China and India. Professor Urpelainen is developing a robust set of substantively important and politically feasible scenarios

for technical analysis. He is also translating the results of the technical modeling into concrete, actionable policy recommendations that will create positive change in both China and India.

- **Geopolitical Perspectives on Energy and Environment in the Belt & Road Initiative, China** 2019-Present (Principal Investigator) – With funding from ClimateWorks Foundation and in partnership with Oxford University, Professor Urpelainen is leading a research project on geopolitical considerations in China's Belt & Road Initiative. The project seeks to understand how Chinese project developers and government agencies make project decisions and how the projects could be made more sustainable. The research includes a power mapping of Chinese agencies and in-depth analysis into host countries and their engagement with Chinese counterparts.
- **Estimating Implicit Subsidies in Indian Renewable Energy Auctions, India** 2019-Present (Principal Investigator) – In a partnership with the World Bank, Professor Urpelainen is leading a team of researchers to investigate implicit subsidies built into India's renewable energy auctions. The team has collected data on 60 solar power generation projects and built cutting-edge financial and econometric models to estimate the total value and competitive effects of these subsidies.
- **Building Research and Implementation Capacity for Clean Energy and Energy Access in Jharkhand, India** 2019-Present (Principal Investigator) – With support from the Oak Foundation, Professor Urpelainen is leading a team of researchers in the United States and India to assess and improve clean energy and energy access policy in the state of Jharkhand, India. The project consists of a large-scale survey with multiple rounds across all 24 Jharkhand districts, the creation of a civil society network on energy and environment in Jharkhand, capacity building for local policy analysts, and a series of reports and policy briefs to solve Jharkhand's energy access problems.
- **Evaluating Pakistan's Rural Electrification Progress with Satellite Imagery** 2019-Present (Principal Investigator) In collaboration with the Lahore University of Management Sciences, this project uses satellite imagery to estimate Pakistan's progress in rural electrification. The project uses household surveys in select areas to train a machine learning model and then uses the model to extrapolate rural electrification progress across Pakistan.
- **A Data-Driven Approach to Energy Access, India** 2018-Present (Principal Investigator) – Supported by MacArthur Foundation and in partnership with the Council on Energy, Environment and Water (New Delhi, India), Professor Urpelainen is leading a project to deploy hundreds of low-cost energy use monitors in rural and urban India. The project consists of energy use monitor deployment, machine learning analysis of energy use patterns, and three household surveys with a sample size of 16,000 across India's largest states.
- **The United Arab Emirates' Contribution to Sustainable Energy For All** 2018 (Principal Investigator) – Supported by the United Emirates Diplomatic Academy, this project developed policy guidelines for the UAE's role in meeting Sustainable Development Goal 7 on Energy for All. The project produced a public report with concrete policy recommendations for domestic energy policy and international engagement, in particular development assistance. I conducted the research and wrote the report, with editorial support from the Diplomatic Academy.

- **Increasing Efficiency while Reducing Costs for Mlinda Mini-grids, India** 2018-Present (Principal Investigator) – With support from Good Energies Foundation, Professor Urpelainen is leading a project that aims to improve the efficiency of solar mini-grids deployed by social enterprise Mlinda in Jharkhand, India. The project covers a wide range of operational dimensions from smart metering to battery storage and productive uses of energy. The goal is to increase the use of mini-grid energy in targeted villages with a host of technical and capacity building interventions. These interventions improve the technical performance of the mini-grids (higher utilization rates, better customer experience, lower technical losses) and encourage use of energy for productive activities, such as foodstuff manufacturing and handicrafts.
- **Impact Assessment of Mini-Grids in Sumba and Papua, Indonesia** 2018-Present (Principal Investigator) – In this project, Professor Urpelainen leads a team of researchers to assess the benefits of mini-grid energy access and mobile money for financial inclusion provided by Electric Vine Industries (EVI). The project conducts baseline surveys and tracks energy spending through EVI’s online portal to explore how access to energy in non-electrified islands contributes to appliance use, financial inclusion, and reductions in traditional energy (eg, kerosene) use.
- **Rural Electricity Demand, India** 2018-2019 (Principal Investigator) – This project was sponsored by Rockefeller Foundation in partnership with Smart Power India Foundation. The project team produced a database of energy use data across 10,000 households and 2,000 firms in 200 Indian villages. Professor Urpelainen led a team of researchers to design the data collection, collect the data, develop a methodology for energy use estimation, and write a comprehensive report.
- **Benefits of Solar Lighting in Rural India, India** 2018 (Principal Investigator) – In partnership with Solar Villages Project, this project conducted a randomized controlled trial to assess the social and economic benefits of solar lantern distribution to marginalized communities in North India. Professor Urpelainen managed the research design, experimental implementation, data analysis, and report writing.
- **Community Monitoring and Technology Transfer to Prevent Deforestation** 2018—Present (Principal Investigator) – With support from the United Kingdom’s Department of International Development, this project examines the benefits of the Rainforest Foundation’s intervention to help indigenous communities in the Amazonian rainforest monitor deforestation and enforce policy. The project is a large-scale randomized controlled trial. Professor Urpelainen supervises a team of junior researchers and is in charge of the overall strategy of the project.
- **Politics of Protected Areas in Brazil** 2018—Present (Principal Investigator) In this project, Professor Urpelainen leads a project to investigate political bias in the creation of protected areas in the Brazilian Amazon. Using satellite imagery and administrative data, the team investigates how electoral outcomes at the municipal level shape the creation of protected areas.
- **Improving the Viability of Power Sector in Uttar Pradesh, India** 2017-2018 (Principal Investigator) – With support from the Shakti Sustainable Energy Foundation and in collaboration with the Council on Energy, Environment and Water, this project explored measures to reduce power theft and improve governance of electricity distribution companies in the state of Uttar Pradesh, India.

Professor Urpelainen led the collection and analysis of household survey data on acceptance of power theft and advised on policy measures to improve governance.

- **Power Sector Reform Tracker, Global** 2015-2018 (Principal Investigator) – For this project, Professor Urpelainen led a team of researchers to collect data for the period between 2008-2013, on eight different types of power sector reforms in 142 non-OECD countries. The project produced an open access database and an academic article with insights into the drivers of reform across different types of countries.
- **A Global Database of Rural Electrification, Global** 2014-2017 (Principal Investigator) – In this project Professor Urpelainen supervised a large team of 12 researchers to collect comprehensive data on progress in rural electrification across all non-OECD countries since the year 1960. The project produced an open access database and several academic research articles on patterns of rural electrification.
- **Electricity Sector Reform in Uttar Pradesh, India** 2016-2017 (Principal Investigator) – In collaboration with the Global Subsidies Initiative, Professor Urpelainen led a research project that evaluated the viability of different power sector reforms in Uttar Pradesh. The project included a household survey, semi-structured interviews with commercial and industrial electricity consumers, and a report with policy recommendations.
- **Access to Electricity and Clean Cooking: A Survey of States** 2014-2018 (Principal Investigator) – In this project, supported by the Shakti Sustainable Energy Foundation and in collaboration with the Council on Energy, Environment and Water as well as the National University of Singapore, Professor Urpelainen led the design and execution of the ACCESS survey, the world's most detailed energy access survey with 8,500 households interviewed twice across six Indian states. The project has produced two major reports, several workshops for key policymakers, 10+ academic articles, and an open access database.
- **Impact Evaluation of Solar Micro-Grids in Uttar Pradesh, India** 2013-2014 (Principal Investigator) – This project, supported by Smart Power India Foundation and the International Growth Centre, assesses the economic benefits of basic energy access through solar micro-grids in the state of Uttar Pradesh, India. Professor Urpelainen developed the project concept, raised the funds, managed the randomized controlled trial, and supervised the data analysis and article writing. The project produced an open access article and was covered by 20+ major publications, including *The Economist*.
- **Understanding Waste Management Practices in Dar Es Salaam, Tanzania** 2013 (Principal Investigator) – With support from the Finnish Ministry of Foreign Affairs, this project examined the management of waste in Dar Es Salaam, Tanzania. Professor Urpelainen designed and supervised a household survey to understand how households disposed their waste. He also led the preparation of a policy report and academic article to inform Fenno-Tanzanian bilateral cooperation in this area under Finland's focus on smart cities in the global South.

11. Publications

Over 160 refereed articles in energy policy, environmental policy, political science, public policy, and interdisciplinary journals. Highlights:

- The Broad Impact of a Narrow Conflict: How Natural Resource Windfalls Shape Policy and Politics. 2018. *Journal of Politics* 80 (2): 630-646. [With Jasper Cooper and Sung Eun Kim]
- Does Basic Energy Access Generate Socio-Economic Benefits? A Field Experiment with Off-Grid Solar Power in India. 2017. *Science Advances* 3: e1602153. [With Michaël Aklin, Patrick Bayer, and S.P. Harish]
- Factors Affecting Household Satisfaction with Electricity Supply in Rural India. 2016. *Nature Energy* 1: 16048. [With Michaël Aklin, Chao-yo Cheng, Karthik Ganesan, and Abhishek Jain]
- It's All About Political Incentives: Democracy and the Renewable Feed-In Tariff. 2016. *Journal of Politics* 78 (2): 603-619. [With Patrick Bayer]
- Instruments of Political Control: National Oil Companies, Oil Prices, and Petroleum Subsidies. 2015. *Comparative Political Studies* 48 (3): 370-402. [With Andrew Cheon and Maureen Lackner]
- International Bureaucrats and the Formation of Intergovernmental Organizations: Institutional Design Discretion Sweetens the Pot. 2014. *International Organization* 68 (1): 177-209. [With Tana Johnson]
- Political Competition, Path Dependence, and the Strategy of Sustainable Energy Transitions. 2013. *American Journal of Political Science*: 57 (3): 643-658. [With Michaël Aklin]
- A Strategic Theory of Regime Integration and Separation. 2012. *International Organization* 66 (4): 645-677. [With Tana Johnson]

Five books with university presses:

- Escaping the Energy Poverty Trap: When and How Governments Power the Lives of the Poor. 2018. MIT Press. [With Michaël Aklin, Patrick Bayer, and S.P. Harish]
- Renewables: The Politics of a Global Energy Transition. 2018. MIT Press. [With Michaël Aklin]
- Activism and the Fossil Fuel Industry. 2018. Routledge. [With Andrew Cheon]
- Organizing Democracy: How International Organizations Assist New Democracies. 2018. Chicago University Press. [With Paul Poast]
- Cutting the Gordian Knot of Economic Reform: When and How International Institutions Help. 2014. Oxford University Press. [With Leonardo Baccini]

Extensive experience with reports aimed for policymakers and general public. Highlights:

- Rural Electrification in India: Customer Behaviour and Demand. Smart Power India and Initiative for Sustainable Energy Policy. 2019. [With Shalu Agrawal and Nidhi Bali]
- International Cooperation on SDG 7 on Affordable and Clean Energy for All. Emirates Diplomatic Academy. 2018.
- Access to Clean Cooking Energy and Electricity: Survey of States. Report for Council on Energy, Environment and Water. 2015. [With Abhishek Jain, Sudatta Ray, Karthik Ganesan, Michaël Aklin, and Chao-yo Cheng]

12. Certification

I, the undersigned, certify that to the best of my knowledge and belief, this CV correctly describes me, my qualifications and my experience.



Full Name of Staff Member: **Johannes Urpelainen**

Date: May 29, 2019