

Educational background

2014	African Programme on Rethinking Development Economics (APORDE)
1999-2001	Masters in Business Economics, University of Delhi, India
1996-1999	Bachelor of Arts (Honors) in Economics, St. Stephen's College, University of Delhi, India

Employment record

Mar 2017 – present	Associate, SQ Consult	
Sep 2016 – present	Independent energy and climate policy specialist	London, United Kingdom
2011 – Jul 2016	Lead Energy and Climate Economist World Wide Fund for Nature (WWF)	Johannesburg, South Africa
2008 – 2011	Senior Vice President: Policy Advisory Infrastructure Development Finance Company (IDFC) Limited	Mumbai, India
2004 – 2008	Manager ICRA Management Consulting Services Limited (IMaCS)	Delhi & Mumbai, India
2001 – 2004	Research Associate: Regulatory Studies & Governance Division The Energy & Resources Institute (TERI)	Delhi, India

Select professional experience

Policy Oriented Research

- *Energy Expert and Co-Project Manager: Various studies on scaling up of renewable energy in South Africa*
 - WWF South Africa and Trade & Industrial Policy Strategies (TIPS) study funded by the WWF-Nedbank Green Trust on integration of distributed /embedded renewable energy technologies in the City of Johannesburg.
 - Strategic industrial development opportunities for concentrated solar power in South Africa
 - Assessment of South Africa's Renewable Energy Independent Power Procurement Programme including review of local community development requirements under the Programme with funding from the Norwegian Agency for Development Co-operation
 - Potential for integration of distributed solar photovoltaic systems in Drakenstein municipality
 - Exploring the role of retirement funds in supporting large-scale renewable energy development and the development of a secondary market for financing of renewable energy with funding from the Norwegian Agency for Development Co-operation
 - South Africa's Department of Trade and Industry, South African Photovoltaic Industry Association and WWF South Africa's study on localisation potential of photovoltaics (PV) & a strategy to support large scale PV rollout.
- *Energy Expert to WWF South Africa: Study on The Role of South African Municipalities in Renewable Energy: A Review of Business Models funded by GIZ and conducted by Trade & Industrial Policy Strategies, Centre for Renewable and Sustainable Energy Studies, Stellenbosch University and World Wide Fund for Nature, South Africa*
 - Reviewed seven possible business models for South African municipalities to seize opportunities on renewable energy and minimise potential risks associated with the introduction of renewable energy technologies in the domestic electricity system
 - Analysed drivers of each business model, techno-economic potential and risks (regulatory, financial and socio-political) and provided recommendations for risk management
- *Energy Expert to WWF South Africa: WWF-Nedbank Green Trust funded study to investigate applications of renewable energy technologies within industrial processes in South Africa*
 - Examined the scope and potential for application of solar thermal for decarbonising industrial process heat
 - Assessed the socio-economic-environmental benefits associated with such applications
- *Co-Programme Manager: Food Energy Water Nexus programme for WWF*
 - Established the research and advocacy programme to explore the complex relationship between food, water and energy systems from the perspective of sustainable resource use and secure future for the South Africa.
 - Areas of investigation included agriculture and biofuels, impact of climate change on food energy and water security, energy and water energy implications of wasted food and waste disposal, role of energy and water in the food value chain, virtual water, and importance of water quality for food industry. All reports and papers available at http://www.wwf.org.za/what_we_do/food_energy_water_nexus/.
 - Investigated the energy–water nexus in South Africa as the entry point for green economic transition

- Assessed the need and benefits of Nexus Approach for achieving the objectives of the green economy in South Africa and identified trade-offs in the context of the green economy
- Investigated how the water-energy-food nexus approach can be a useful policy lens for achieving the Sustainable Development Goals in Southern Africa
- *Climate and Energy Policy Expert: Low-Carbon Development Frameworks in South Africa, 2-year WWF programme for South Africa's Department of Environmental Affairs (DEA) funded by the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety*
 - Analyse mitigation regimes in select countries to help DEA understand the pre-requisites for successful mitigation regimes and economic implications of climate policies
 - Develop the business case for potentially catalytic mitigation initiatives in energy sector
 - Investigate the implications of a low carbon transition in South Africa for jobs, poverty alleviation & inequality
- *Researcher: TERI project on independent regulation under UNDP's economic reforms project for Govt. of India*
 - Conducted study on institutional relationships for independent regulatory bodies and assessed the effectiveness, efficiency and impact of regulatory reforms in India's power and telecom sectors
- *Researcher: Regulation Research Programme on India funded by DFID and Center of Regulation and Competition, University of Manchester's Institute for Development Policy and Management*
 - Developed a 'Regulatory Impact Analysis Framework' to guide policy makers in India's power and telecom sectors for assessing the net benefits of regulations and adopting good practices in decision-making. Conducted a study to assess the impact of reforms in India's power and telecom sectors on economic growth.

Policy Advisory

- *Energy Specialist: USAID Southern African Regional Environment Programme's High level ministerial dialogue on socio-ecological resilience in Southern Africa*
 - Developed a discussion paper on 'energy security in Southern Africa', to provide an overview of the regional factors driving future social and ecological insecurity as part of the food energy and water nexus within southern Africa, determine the implications for profound social instability, state collapse, and the loss of ecological resilience, and assess the cumulative implications of a failure by Southern Africa countries to adapt to the impacts of climate change
- *Team leader: WWF SA's strategic advisory to South Africa's Department of Public Enterprises on Transition to a Low Carbon Economy in Relation to State Owned Companies (SOC) in South Africa*
 - Assessing impact of mitigation policies proposed under South Africa's National Climate Change Response Paper on SOC.
 - Advising on environmental sustainability aspects of Aviation Biofuels Programme of South African Airways.
 - Advising on low carbon transition strategies and development of a sustainability framework for SOC.
- *Team leader: WWF SA's research and advocacy on South Africa's proposed carbon tax to address the challenges of climate change*
 - Analyzed the role of the tax in meeting the objectives of decoupling economic growth from energy use and carbon emissions, diversifying energy sources, enabling technology shifts; evaluated impact of tax on South Africa's competitiveness, economic growth and social welfare, and evaluated revenue recycling options for tax.
 - Led the research and engagement with South African government departments and agencies; business; financial institutions; and civil society on impact & effectiveness of the tax
- *Economist: WWF SA's research and advocacy on South Africa's climate policy measures*
 - Analysis of and engagements on South African Government's climate policy proposals such as carbon budget, green house gas mitigation potential analysis and Desired Emission Reduction Outcomes
 - Led WWF SA's dialogues with International Missions of UK, Australia, Norway and Germany in South Africa on issues of energy, climate policy, and low carbon development
 - Hosted the civil society and labour engagement of Sir David King, the permanent Special Representative for Climate Change for UK Govt, during his visit to South Africa in November 2015 on behalf of the British High Commission (BHC) Pretoria

- *Energy Expert: Innovative Finance Initiative Access to Energy Project*
 - Assessed the landscape of efforts to bring clean, affordable, and distributed energy to the energy poor in East and Southern Africa.
 - Explored the issues and opportunities related to the financing of off-grid energy provision in Africa, primarily focusing on the provision of small home systems for individual households or through village microgrids.
 - Examined the different innovative finance models that are ready for implementation and those that could be tested further
 - Investigated the role of impact investment in transforming access to clean and safe energy in Africa with funding from Bertha Centre for Social Innovation and Entrepreneurship at the University of Cape Town's Graduate School of Business

- *Power Sector Specialist: Electricity Pricing, Policy and Regulation*
 - Advised Madhya Pradesh Power Transmission Corporation Ltd. (as part of SNC Lavalin Canada's consortium under DFID funded power sector reform programme) in India on institutional strengthening, assistance in the transition to wires business model, assistance adoption of multi year tariff principles, and benchmarking of operational parameters.
 - Advised state level electricity regulators in the states of states of Delhi, Himachal Pradesh, Karnataka, Maharashtra, Punjab, and Uttar Pradesh in India on issues of electricity pricing, models for procurement of electricity, power purchase agreements, and assessment of technical and commercial losses.
 - Implemented tasks related to electricity pricing, policy and regulation on behalf of the state owned electric utility between 2004 to 2008 under DFID funded power sector reform programme in Madhya Pradesh, India.

- *Energy and Infrastructure Policy specialist*
 - Responsible for WWF South Africa's analytical assessments & engagements around South Africa's energy plans & policies
 - Served on government task forces & expert groups on energy policy issues including South Africa's Integrated Energy Plan, Integrated Resource Plan 2010-2030 and Energy Scenarios 2015-2050 on behalf of WWF on invitation from South Africa's Department of Energy
 - Served on expert group of South Africa's National Business Initiative to develop scenarios for South Africa's energy future
 - Advisory to Government of India and electricity regulators in India on energy policy and planning, hydro power development, and challenges for development of renewable energy, removal of barriers to third party access to inter-state and intra-state transmission network and promoting competition in the Indian Power sector, problems in tariff based competitive bidding process for generation capacity addition in India an financial viability of the electricity distribution business in India.
 - Provided advice on Public Private Partnership options for Indian Railways and development of a PPP Policy for Indian Railways as part of the team of IDFC Ltd. assisting Railway Board, Govt. of India.
 - Examined options for financing urban infrastructure in India as part of the team of IDFC Ltd. assisting Govt. of India's High Powered Expert Committee on Urban Infrastructure.
 - Evaluation of India's National Solar Mission and advisory engagements with Government of India, Power Finance of Corporation of India, Indian Renewable Energy Development Agency (IREDA) and other financiers on implementation of the solar mission on behalf of IDFC Ltd.
 - Exploring the Use of Environmental Policy Instruments in India's infrastructure sector as part of the IDFC team advising Government of India

Business Engagement

- *WWF Corporate Partnerships*
 - Provide expertise on issues of energy, climate, and food energy water nexus as needed under WWF's engagement with business and WWF's corporate partnerships in South Africa. Specific partnerships for my regular engagement included:
 - Partnership with Nedbank Ltd., a Banking and Finance Institution in South Africa, to promote and enable sustainable agriculture in South Africa, especially in the country's priority places of biodiversity and strategic water source areas,
 - Partnership with Woolworths Ltd., a food retail, clothing and apparel company in South Africa, to influence sustainable supply chains
 - Support WWF's objective of facilitating a transition to a low carbon future in line with a below 1.5°C decarbonisation pathway by engaging with business in South Africa to seek adopting science based reduction targets for emissions, encouraging a switch to 100 per cent renewable energy and on best practices in corporate climate leadership

- *Cleantech Infrastructure Strategy for IDFC*
 - Focused on areas of lending, research and policy advocacy to develop a sustainable & long-term strategy for identification, financing and deployment of Cleantech Technologies.

- Primary projects and enablers in the areas of Energy (renewable power, renewable fuels, energy efficiency and energy storage), Water (purification, distribution and conservation), and, Materials (bio-materials, bio-chemicals, recycling and waste reduction).
- Developed strategy to engage the different businesses in Cleantech Infrastructure space by leveraging the ability to provide financial products across the capital structure as well as development and policy expertise.
- *Collaboration between IDFC and IDEACarbon (Carbon Rating Agency)*
 - Institutional tie-up for adoption of institutional ratings for environmental assets, collaboration in developing products and services for the Indian market in carbon and environmental assets.
 - Collaborating with a wider constituent base to develop CER Index – a tradeable instrument enabling hedging of risks on price of carbon.
 - Developing a detailed business plan for IDFC for Carbon Trading and co-operating on developing research and other education products.
- *Market Assessment Studies for private developers / investors, due diligence studies, project structuring options*
 - Assessed power market in 10 states in India and assessment of credit worthiness of utilities in these states on the basis of past performance for CLP Power India Pvt. Ltd., a wholly owned subsidiary of CLP Holdings, a leading investor-operator in the Asia-Pacific energy sector.
 - Analysed the policy, regulatory framework and market conditions for group captive sales and third party sales for wind energy in the states of Maharashtra & Gujarat and determined the net realizable tariff for these transactions for Accion Wind Energy Pvt Ltd., a subsidiary of Acciona Energy, a leading global wind farm developer & constructor.
- *Business Plans and Investment Strategies*
 - Formulated a contracting strategy for wind power plants by considering sale of wind energy through third party sale route, group captive route, trading and sale to distribution licensees for Suzlon Energy Ltd., a global leader in wind power.
 - Developed a strategy for strengthening the planning and management of hydropower in the state of Himachal Pradesh for Department of Power, State Government of Himachal Pradesh with funding from The World Bank.
 - Projected electricity tariffs for 10 years based on cost of service for Gujarat Gas Company Limited (BG Group), India's largest private sector players in natural gas transmission & distribution.
 - Formulated business plans for five government owned electricity distribution companies in the state of Uttar Pradesh in India on behalf of the State Government of Uttar Pradesh
 - Preparation of business plan for entry into power generation & rural electrification for Indian Farmers Fertilisers Cooperative Ltd.

Select Expert Engagements

- 2017 Chair and faculty of the International Centre for Parliamentary Studies' Professional Certificate Course in Strategic Sustainable Energy Planning to be held in London from Mar 6-10
- 2015 - 2016 Course lecturer on *Food Energy Water Nexus – The case for Nexus approach to the green economy* at the Green Economy Course run by Trade and Industrial Policy Strategies, a research organization based in Pretoria, South Africa
- 2014 - 2016 Member of South African Department of Energy's sub-committee on externalities under energy planning processes
- 2014 - 2016 Independent expert to Industry Water Task Team of South Africa
- 2013 - 2016 Served as reviewer for energy related proposals received by Water Research Commission of South Africa and served on reference group for energy related projects funded by Water Research Commission of South Africa
- 2015 Reviewer for International Renewable Energy Agency (IRENA) report on Renewable Energy In The Water, Energy & Food Nexus
- July 2013 Expert at G8 Climate Security Officials' Meeting on Security and international resilience in a world of growing climate and resource pressures on invitation from the UK Foreign and Commonwealth Office