

Vaibhav Chaturvedi is a Research Fellow at the Council on Energy Environment and Water (CEEW). An economist and policy researcher, he leads the Council's work on Low-Carbon Pathways. His research focuses on energy and climate change mitigation policy issues, especially those impacting India, within the integrated assessment modelling framework of the Global Change Assessment Model (GCAM).

Vaibhav's recent work includes studies on pathways and policies for achieving India's Nationally Determined Contributions (NDCs) and Mid-Century Strategies within the context of sustainable development and national priorities, the climate policy–energy–water nexus, transportation energy and emission scenarios, HFC emission scenarios and mitigation policy, and nuclear energy scenarios for India.

Prior to joining the Council, he was a Postdoctoral Research Associate at the Joint Global Change Research Institute/ Pacific Northwest National Laboratory, USA. He has been actively involved in global model comparison exercises like the Asian Modelling Exercise (AME) and the Energy Modelling Forum (EMF).

Vaibhav has been a part of Government of India committees on energy and climate policy. He actively publishes in, and reviews articles for, leading international energy and climate policy journals.

He holds a Doctorate in Economics from the Indian Institute of Management, Ahmedabad, and a Master's degree in Forest Management from the Indian Institute of Forest Management, Bhopal.

## Publications

### Journal publications

- Paladugula AL, Kholod N, **Chaturvedi V**, et al. 2018. A multi-model assessment of energy and emissions from India's transportation sector through 2050. *Energy Policy* 116, 10-18
- Srinivasan S, Kholod N, **Chaturvedi V**, et al. 2018. Water for electricity in India: A multi-model study of future challenges and linkages to climate change mitigation. *Applied Energy* 210, 673-684
- Sharma M, **Chaturvedi V**, and Purohit P. 2017. Long-term Carbon Dioxide and Hydrofluorocarbon Emissions from Commercial Space Cooling and Refrigeration in India: A detailed analysis within an integrated assessment modelling framework. *Climatic Change*, 143: 503-517
- **Chaturvedi V**. 2016. Energy security and climate change: Friends with asymmetric benefits. *Nature Energy*. News and Views Article, 6 June 2016
- **Chaturvedi V** and Sharma M. 2016. Modelling long term HFC emissions from India's residential air-conditioning sector. *Climate Policy* 16 (7), 877-893
- **Chaturvedi V** and Kim S. 2015. Long term energy and emission implications of global shift to electricity based public rail transportation system. *Energy Policy* 81, 176-185
- **Chaturvedi V**, Hejazi M, Edmonds J, Clarke L, Kyle P, Davies E, Wise M. 2015. Climate mitigation policy implications for global irrigation water demand. *Mitigation and Adaptation Strategies for Global Change* 20, 389-407
- **Chaturvedi V**, Clarke L, Edmonds, J, Calvin K, and Kyle P. 2014. Electricity generation investment for emission mitigation: How much more do we need? *Energy Economics* 46, 267-278

- Hejazi M, Edmonds J, Clarke L, Kyle P, Davies E, **Chaturvedi V**, Wise M, Patel P, Eom J, and Calvin K. 2014. Integrated assessment of global water scarcity over the 21st century under multiple climate change mitigation policies. *Hydrol. Earth Syst. Sci.*, 18, 2859-2883
- **Chaturvedi V**, Eom J, Clarke L and Shukla PR. 2014. Long term building energy demand for India: Disaggregating end use energy services in an integrated assessment modeling framework. *Energy Policy* 64, 226-242
- Clarke L, Fawcett A, Weyant J, McFarland J, **Chaturvedi V**, and Zhou Y. 2014. Technology and US Emissions reductions goals: Results of the EMF 24 modeling exercise. *The Energy Journal* 35
- **Chaturvedi V**, Kim S, Smith S, Clarke L, Yuyu Z, Kyle P, Patel P. 2013. Model evaluation and hindcasting: An experiment with an integrated assessment model. *Energy* 61, 479-490
- **Chaturvedi V**, Shukla PR. 2013. Role of energy efficiency in climate change mitigation policy for India: Assessment of co-benefits and opportunities within an integrated assessment modeling framework. *Climatic Change* 123 (3-4), 597-609
- Hejazi M, Edmonds J, Clarke L, Kyle P, Davies E, **Chaturvedi V**, Wise M, Patel P, Eom J, Calvin K, Moss R, Kim S. 2013. Long term global water projections using six socioeconomic scenarios in an integrated assessment modeling framework. *Technological Forecasting and Social Change* 81, 205-226
- Zhou S, Kyle GP, Yu S, Clarke LE, Eom J, Lucknow P, **Chaturvedi V**, Zhang X, Edmonds, J. 2013. Energy use and CO2 emissions of China's industrial sector from a global perspective. *Energy Policy* 58, 284-294
- Hejazi M, Edmonds J, **Chaturvedi V**, Davies E, Eom J. 2013. Scenarios of global municipal water use demand projections over the 21st century. *Hydrological Sciences Journal* 58(3), 1-20
- Shukla PR and **Chaturvedi V**. 2012. Low carbon and clean energy scenarios for India: Analysis of targets approach. *Energy Economics* 34, S487-S495
- **Chaturvedi V**, Waldhoff S, Clarke L and Fujimori S. 2012. What are the starting points? Evaluating base year assumptions in the Asian modeling exercise. *Energy Economics* 34, S261-S271
- Krey V, O'Neill B, van Ruijven B, **Chaturvedi V**, Daioglou V, Eom J, Jiang L, Nagai Y, Pachauri S and Ren X. 2012. Urban and rural energy use and carbon-dioxide emissions in Asia. *Energy Economics* 34, S272-S283
- Clarke L, Krey V, Weyant J and **Chaturvedi V**. 2012. Regional energy system variation in global models: Results from the Asian modeling exercise scenarios. *Energy Economics* 34, S293-S305
- Shukla PR and **Chaturvedi V**. 2011. Sustainable energy transformations in India under climate policy. *Sustainable Development* 21 (1), 48-59
- **Chaturvedi V**, Kumar B and Dholakia R. 2009. Inter-Relationship between economic growth, savings and inflation in Asia. *Journal of International Economic Studies*, Hosei University, Japan. March 2009 issue
- **Chaturvedi V** and Bazaz AB. 2009. Meeting food crop demand in a changing climate: A case of Mehsana district in North Gujarat. *Agriculture Situation in India* 66, 257-264

## Reports

- Sridhar L and Chaturvedi V. 2017. Can India's Air-Conditioning Service Sector Turn Climate Friendly? Evaluating the Skill Gap. Council on Energy, Environment and Water, September 2017
- Bhasin S, Sridhar L and Chaturvedi V. 2017. Developing an Ecosystem to Phase-Out HFCs in India: Establishing a Research and Development Platform. Council on Energy, Environment and Water, September 2017

- Purohit P, Hoglund-Isacson L, and Bertok I, Chaturvedi V and Sharma M. 2016. Scenario Analysis for HFC Emissions in India: Mitigation Potential and Costs. CEEW and IIASA Report
- Chaturvedi V, Sharma M, Chattopadhyay S, and Purohit P. 2015. India's LongTerm Hydrofluorocarbon Emissions under the Reference Scenario: A detailed cross sectoral analysis within an integrated assessment modelling framework. CEEW and IIASA Report
- Chaturvedi V, Gupta V, Choudhari N, Mitra S, Ghosh A, and Sugam R. 2014. The State of Environmental Clearances in India: Procedures, Timelines, and Delays Across Sectors and States. CEEW Report
- Chaturvedi, V. 2005. Cost-Benefit Analysis of Watershed Development. Development Support Centre. Ahmedabad
- Chaturvedi, V. 2005. Maintenance of Physical Assets in Watershed. Development Support Centre. Ahmedabad
- Chaturvedi, V. 2004. Financial Viability of Irrigation Co-operatives. Development Support Centre. Ahmedabad

#### **Book Chapters/Working Papers/Briefs**

- Chaturvedi V, Shukla PR and Ganesan K. 2017. A perspective on the cost of nuclear energy. Chapter in upcoming book 'Resurgence of Nuclear Power: Challenges and Opportunities for Asia', Edited by Nanda Kumar J, G Pant, and RB Grover, Springer Nature Singapore Pte Ltd.
- Chaturvedi V, Deol B, Seidel S, Jaiswal A, Sah A, Sharma M, Kaur N and Anderson SO. 2016. Cooling India with Less Warming: Examining Patents for Alternatives to Hydrofluorocarbons. CEEW, NRDC, C2ES, and IGSD Issue Paper, October 2016
- Chaturvedi V and Sharma M. 2015. China's Role in Global HFC Emissions Matters for Phase Down Proposals. CEEW Policy Brief, August 2015
- Dilley S, Ghosh A, Jaiswal A, Chaturvedi A, and Deol B. 2015. Reducing Stress On India's Energy Grid: The Power Sector Benefits Of Transitioning To Lower Global Warming Potential And Energy Efficient Refrigerants In Room Air Conditioners. CEEW NRDC Interim Issue Brief, March 2015
- Chaturvedi V. 2015. The Cost of Climate Change Impacts for India. CEEW Working Paper 2015/11, March 2015
- Ray S, Chaturvedi V, Ganesan K, and Ghosh A. 2015. India's Intended Nationally Determined Contributions: Renewable Energy and the Pathway to Paris. CEEW Policy Brief, January 2015
- Witi J and Chaturvedi V. 2009. *Climate Change Mitigation Potential in South Africa: A National to Sectoral Analysis*. IIM Ahmedabad Working Paper Series

#### **Op-eds**

- Vaibhav Chaturvedi and Lekha Sridhar, 'The Kigali Breakthrough'. The Indian Express, 25<sup>th</sup> October 2016
- Arunabha Ghosh and Vaibhav Chaturvedi, 'Changing the Course of the Planet'. The Hindu, 19 October 2016
- Vaibhav Chaturvedi, 'Hurdles remain for global clampdown on hazardous refrigerants'. India Climate Dialogue, 1 August 2016
- Ankita Sah and Vaibhav Chaturvedi, 'Bio-medical waste: What lies in store?'. Deccan Herald, 4 April 2016
- Koyel Kumar Mandal and Vaibhav Chaturvedi, 'How India Can Factor Climate Change Into Its Growth Story'. Huffington Post India, 15 March 2016
- Vaibhav Chaturvedi, 'Prakriti Hogi Tabhi Dharti Rahegi, Tabhi Hum Rahenge'. Dainik Jagaran, 10 Feb 2016
- Arunabha Ghosh and Vaibhav Chaturvedi, 'For a few degrees more'. Business Standard, 22 December 2015

- Vaibhav Chaturvedi and Kanika Chawla, 'India's climate leadership at Paris'. Mint, 18 December 2015

**Important positions/engagements**

- Coordinator Author - Servicing Sector Chapter, National Cooling Action Plan, Government of India
- Member, Government of India expert committee to guide studies on 'Long term strategies for low carbon development in India' (constituted 21<sup>st</sup> February 2017)
- Member, Government of India committee to review the continuance of fiscal incentive scheme for implementation of HCFC Phaseout Management Protocol in its current form (constituted 26<sup>th</sup> May 2016)
- Expert panel member, IRENA report on 'Renewable Energy Benefits: Measuring the Economics- Phase II', under preparation
- Internal Steering Committee member, 'Inter-Model Comparison of Different Transportation Sector Policies in India', collaborative research under India-US Sustainable Growth Working Group, Ongoing
- Expert panel member, IRENA report on 'Renewable Energy Benefits: Measuring the Economics', 2016
- Expert reviewer for IEA's World Energy Outlook 2015 (India special edition)
- Expert reviewer for IRENA report on 'Renewable Energy in the Water, Energy and Food Nexus, January 2015
- Reviewer for high impact energy and climate policy journals (Climatic Change, Energy, Energy Policy, Nature Energy, etc.