

## KATHERINE V. CALVIN

### IPCC EXPERIENCE:

IPCC Synthesis Report AR6: Core Writing Team and Section Facilitator  
IPCC Special Report on Climate Change and Land (SRCCL): Coordinating Lead Author  
IPCC Working Group III AR6: Lead Author  
IPCC Special Report on 1.5C: Contributing Author  
IPCC Working Group III AR5: Contributing Author  
IPCC Scoping Meetings: SRCCL (2017), AR6 Synthesis Report (2019)  
IPCC Expert Meetings: Expert Meeting on Scenarios (Austria, 2015), Expert Meeting on Climate Change, Food and Agriculture (Ireland, 2015), Expert Meeting on Mitigation, Sustainability and Climate Stabilisation Scenarios (Ethiopia, 2017), Workshop on the Use of Scenarios in AR6 and Subsequent Assessments (Thailand, 2023)

### PROFESSIONAL EXPERIENCE:

1/2022-present      **National Aeronautics and Space Administration (NASA)**, Washington, DC:  
Chief Scientist and Senior Climate Advisor  
(On detail from the Pacific Northwest National Laboratory)

2/2008-present      **Joint Global Change Research Institute, Pacific Northwest National Laboratory**, College Park, MD: Earth Scientist

9/2001-9/2003      **Energy Information Administration, U.S. Department of Energy**, Washington, DC: International energy forecasting and analysis

### EDUCATION:

9/2003-1/2008      **Stanford University**, Stanford, California  
Ph.D. degree in Management Science and Engineering

9/2003-9/2005      **Stanford University**, Stanford, California  
M.S. degree in Management Science and Engineering

9/1999-5/2003      **University of Maryland**, College Park, Maryland  
B.S. degree in Mathematics  
B.S. degree in Computer Science

### SELECTED PUBLICATIONS:

*Total publications: >150; H-Index: 68 (Google Scholar)*

**Calvin, K.**, et al. (2022). Modeling land use and land cover change: using a hindcast to estimate economic parameters in gcamlan v2.0. *Geoscientific Model Development* 15 (2), 429-447.

Dolan, F., J. Lamontagne, **K. Calvin** et al. (2022). Modeling the economic and environmental impacts of land scarcity under deep uncertainty. *Earth's Future* 10 (2), e2021EF002466.

**Calvin, K.**, et al. (2021). Bioenergy for climate change mitigation: Scale and sustainability. *GCB Bioenergy*, 13 (9), 1346-1371.

Grassi, G. et al. (2021). Critical adjustment of land mitigation pathways for assessing countries' climate progress. *Nature Climate Change* 11, 425-434.

Ou, Y., C. Roney, J. Alsalam, **K. Calvin** et al. (2021). Deep mitigation of CO<sub>2</sub> and non-CO<sub>2</sub> greenhouse gases toward 1.5°C and 2°C futures. *Nature Communications* 12 (1), 6245.

Pereira, L., et al. (2021). Advancing a toolkit of diverse futures approaches for global environmental assessments. *Ecosystems and People* 17 (1), 191-204.

- Burrows, S.M., et al. (2020). The DOE E3SM coupled model v1.1 biogeochemistry configuration: overview and evaluation of coupled carbon-climate experiments. *Journal of Advances in Modeling Earth Systems* 12 (9), e2019MS001766.
- McElwee, P., **K. Calvin**, et al. (2020). The impact of interventions in the global land and agri-food sectors on Nature's Contributions to People and the UN Sustainable Development Goals. *Global Change Biology* 26 (9), 4691–4721.
- Smith, P., **K. Calvin**, et al. (2020). Which practices co-deliver food security, climate change mitigation and adaptation, and combat land degradation and desertification? *Global Change Biology* 26 (3), 1532–1575.
- Calvin, K. V.**, et al. (2019). GCAM v5.1: Representing the linkages between energy, water, land, climate, and economic systems. *Geoscientific Model Development* 12 (2), 677-698.
- Calvin, K. V.**, et al. (2019). Characteristics of human-climate feedbacks differ at different radiative forcing levels. *Global and Planetary Change* 180, 126.
- Calvin, K. V.** and B. Bond-Lamberty (2018). Integrated human-Earth System Modeling -- state of the science and future research directions. *Environmental Research Letters* 13 (6), 063006.
- Cui, R. Y., et al. (2018). Regional responses to future, demand-driven water scarcity. *Environmental Research Letters* 13, 94006.
- Iyer, G., **K. Calvin**, et al. (2018). Implications of sustainable development considerations for comparability across nationally determined contributions. *Nature Climate Change*, 8.
- Lamontagne, J. R., P. M. Reed, R. Link, K. V. Calvin et al. (2018). Large Ensemble Analytic Framework for Consequence-Driven Discovery of Climate Change Scenarios. *Earth's Future* 6 (3), 488-504.
- Rogelj, J., A. Popp, **K. Calvin** et al. (2018). Scenarios towards limiting global mean temperature increase below 1.5 °C. *Nature Climate Change* 8 (4).
- Calvin, K.** and K. Fisher-Vanden (2017). "uantifying the indirect impacts of climate on agriculture: an inter-method comparison. *Environmental Research Letters* 12 (11), 115004.
- Calvin, K.**, et al. (2017). The SSP4: A world of deepening inequality. *Global Environmental Change* 42, 284-296.
- Bauer, N., **K. Calvin**, et al. (2017). Shared Socio-Economic Pathways of the Energy Sector – Quantifying the Narratives. *Global Environmental Change* 42, 316-330.
- Popp, A., **K. Calvin**, et al. (2017). Land-use futures in the shared socio-economic pathways. *Global Environmental Change* 42, 331-345.
- Rao, Shilpa, et al. (2016). A multi-model assessment of the co-benefits of climate mitigation for global air quality. *Environmental Research Letters* 11 (12), 124013.
- Riahi, K., et al. (2017). The Shared Socioeconomic Pathways and their energy, land use, and greenhouse gas emissions implications: An overview. *Global Environmental Change* 42, 153-168.
- Thornton, P. E., **K. Calvin**, et al. (2017). Biospheric feedback effects in a synchronously coupled model of human and Earth systems. *Nature Climate Change* 7, 496-500.
- Calvin, K. V.**, et al. (2016). Agriculture, forestry, and other land-use emissions in Latin America. *Energy Economics* 56, 615-624.
- Calvin, K.**, S. Pachauri, et al. (2016). The effect of African growth on future global energy, emissions, and regional development. *Climatic Change* 136 (1), 109-125.
- Calvin, K.**, et al. (2016). Implications of uncertain future fossil energy resources on bioenergy use and terrestrial carbon emissions. *Climatic Change* 136 (1), 57-68.
- Calderón, S., et al. (2016). Achieving CO<sub>2</sub> reductions in Colombia: Effects of carbon taxes and abatement targets. *Energy Economics* 56, 575-586.
- Di Sbroiavacca, N., G. Nadal, F. Lallana, J. Falzon and **K. Calvin** (2016). Emissions reduction scenarios in the Argentinean Energy Sector. *Energy Economics* 56, 552-563.
- van der Zwaan, B., **K. Calvin** and L. Clarke (2016). Climate Mitigation in Latin America: Implications for Energy and Land Use: Preface to the Special Section on the findings of the CLIMACAP-LAMP project. *Energy Economics* 56, 495-498.

- Veysey, J., C. Octaviano, **K. Calvin**, et al. (2016). Pathways to Mexico's climate change mitigation targets: A multi-model analysis. *Energy Economics* 56, 587-599.
- Calvin, K.**, et al. (2015). The effects of climate sensitivity and carbon cycle interactions on mitigation policy stringency. *Climatic Change* 131 (1), 35-50.
- Calvin, K.**, et al. (2015). Global climate, energy, and economic implications of international energy offsets programs. *Climatic Change* 133 (4), 583-596.
- Gernaat, D. E. H. J., **K. Calvin**, et al. (2015). Understanding the contribution of non-carbon dioxide gases in deep mitigation scenarios. *Global Environmental Change* 33, 142-153.
- Iyer, G. C., et al. (2015). The contribution of Paris to limit global warming to 2 °C. *Environmental Research Letters* 10(12): 125002.
- Smith, S. J., et al. (2015). Acceleration in the Near-Term Rate of Climate Change. *Nature Climate Change* 5(4): 333-336.
- Zhou Y et al. (2015). A Comprehensive View of Global Potential for Hydro-generated Electricity. *Energy and Environmental Science* 8 (9), 2622-2633.
- Calvin, K.**, et al. (2014). Trade-offs of different land and bioenergy policies on the path to achieving climate targets. *Climatic Change* 123(3-4): 691-704.
- Hejazi, M., J. Edmonds, L. Clarke, P. Kyle, E. Davies, V. Chaturvedi, M. Wise, P. Patel, J. Eom and **K. Calvin** (2014). Integrated assessment of water scarcity over the 21st century under multiple climate change mitigation policies. *Hydrology and Earth System Sciences* 18, 2859-2883.
- Calvin, K** et al. (2013). Implications of simultaneously mitigating and adapting to climate change: initial experiments using GCAM. *Climatic Change* 117: 545-560.
- Calvin, K.**, M. Wise, D. Klein, D. McCollum, M. Tavoni, B. van der Zwaan and D. P. van Vuuren (2013). A multi-model analysis of the regional and sectoral roles of bioenergy in near- and long-term CO<sub>2</sub> emissions reduction. *Climate Change Economics* 4 (4), 32.
- Calvin, K.**, et al. (2012). The role of Asia in mitigating climate change: Results from the Asia modeling exercise. *Energy Economics* 34, S251-S260.
- Calvin, K.**, A. Fawcett and K. Jiang (2012). Comparing model results to national climate policy goals: Results from the Asia modeling exercise. *Energy Economics* 34, S306-S315.
- Meinshausen, M., S. J. Smith, **K. Calvin**, et al. (2011). The RCP greenhouse gas concentrations and their extensions from 1765 to 2300. *Climatic Change* 109, 213-241.
- Thomson, A. M., **K. Calvin**, et al. (2011). RCP 4.5: A Pathway for Stabilization of Radiative Forcing by 2100. *Climatic Change* 109, 77-94.
- Calvin, K.**, et al. (2009). 2.6: Limiting climate change to 450 ppm CO<sub>2</sub> equivalent in the 21st century. *Energy Economics* 31(S2), S107-S120.

#### COMMUNITY LEADERSHIP:

UNEP Emission Gap Report 2021: Contributing Author  
 National Research Council: Member of the Committee on Models of the World  
 National Climate Assessment 3: Lead Author  
 UNEP Global Environmental Outlook 6: Lead Author  
 U.S. Department of Energy's Biological and Environmental Research Advisory Committee (BERAC): Committee member [2020-2021]  
 Global Change Intersectoral Modeling System (GCIMS) Science Focus Area: Principal Investigator [2020-2021]  
 Energy Exascale Earth System Model (E3SM): Biogeochemistry Group Lead [2018-2021]  
 Land Use Model Intercomparison Project (LUMIP): Member of the Scientific Steering Committee  
 Asia Modeling Exercise: Coordinator  
 Latin American Modeling Project: Coordinator  
 Guest Editor for *Energy Economics* Special Issue on Asia (publication date: 2012)  
 Guest Editor for *Energy Economics* Special Issue on Latin America (publication date: 2016)

AWARDS:

2015 Ronald L. Brondzinski Early Career Exceptional Achievement Award (PNNL)  
2019 Piers J. Sellers Global Environmental Change Mid-Career Award (American Geophysical Union)  
2019 Award for extraordinary contributions to the field of integrated assessment modeling (Integrated Assessment Modeling Consortium)  
2018-Present Highly Cited Researcher (Clarivate)

OTHER RESEARCH EXPERIENCE:

6/2006-9/2006 **International Institute for Applied Systems Analysis (IIASA)**, Laxenburg, Austria: Young Summer Scientists Program