**Nawa Baral**

Project Scientist, Lawrence Berkeley National Laboratory

[nrbaral@lbl.gov](mailto:nrbaral@lbl.gov)

**Education and Training**

Lawrence Berkeley National Laboratory, USA, Biological Systems and Engineering, Postdoc, 2017-2020

Colorado State University, USA, Mechanical Engineering, Postdoc, 2017

The Ohio State University, USA, Food, Agricultural and Biological Engineering, Ph.D., 2016

Tribhuvan University, Nepal, Renewable Energy Engineering, MSc, 2009

Tribhuvan University, Nepal, Mechanical Engineering, B.E., 2006

**Research and Professional Experience**

**Lawrence Berkeley National Lab, Berkeley, California USA**

**Project Scientist 2020-present**

Leading techno-economic analysis and lifecycle assessment modeling works in a variety of field-to-fuels or chemicals conversion routes. Serving major role in developing [BioC2G Model](https://lead.jbei.org/) for Rapid, Agile Assessment of Biofuel and Co-product Routes. Guiding joiner staff members and visiting scholar to achieve their renewable fuels or chemicals process model development goals.

**Institute of Engineering, Tribhuvan University, Nepal**

**Assistant Professor 2009-2012**

Serving in the leadership for the renewable energy system design projects, including solar electrification and water pumping system, biodiesel production from Jatropha curcas, biomass-gasification based electrification system, and improved metallic cookstove design. Supervising graduate and undergraduate student projects. Teaching undergraduate degree courses, including Thermodynamics, Heat transfer, Mechanical Engineering Design, Engineering Economics, Material Science, and Energy Resources.

**Lasersun Energy Pvt. Ltd., Nepal**

**Design Engineer 2006-2010**

Leading solar photovoltaic system and structural design in a variety of projects, including solar home system, solar water pumping system, and a large-scale solar electrification system.

**Selected Publications**

**Baral, N. R.**, Yang, M., Harvey, B. G., Simmons, B. A., Mukhopadhyay, A., Lee, T. S., & Scown, C. D. (2021). [Production Cost and Carbon Footprint of Biomass-Derived Dimethylcyclooctane as a High-Performance Jet Fuel Blendstock](https://pubs.acs.org/doi/abs/10.1021/acssuschemeng.1c03772). ACS Sustainable Chemistry & Engineering, 9(35), 11872-11882.

**Baral, N. R.**, Asher, Z. D., Trinko, D., Sproul, E., Quiroz-Arita, C., Quinn, J. C., & Bradley, T. H. (2021). [Biomass feedstock transport using fuel cell and battery electric trucks improves lifecycle metrics of biofuel sustainability and economy](https://www.sciencedirect.com/science/article/abs/pii/S0959652620336386). Journal of Cleaner Production, 279, 123593.

Vora, N., Christensen, P. R., Demarteau, J., **Baral, N. R.**, Keasling, J. D., Helms, B. A., & Scown, C. D. (2021). [Leveling the cost and carbon footprint of circular polymers that are chemically recycled to monomer](https://www.science.org/doi/full/10.1126/sciadv.abf0187). Science Advances, 7(15), eabf0187.

Magurudeniya, H. D., **Baral, N. R.**, Rodriguez, A., Scown, C. D., Dahlberg, J., Putnam, D., George, A., Simmons, B.A. & Gladden, J. M. (2021). [Use of ensiled biomass sorghum increases ionic liquid pretreatment efficiency and reduces biofuel production cost and carbon footprint](https://pubs.rsc.org/en/content/articlehtml/2021/gc/d0gc03260c). Green Chemistry, 23(8), 3127-3140.

**Baral, N. R.**, Dahlberg, J., Putnam, D., Mortimer, J. C., & Scown, C. D. (2020). [Supply cost and life-cycle greenhouse gas footprint of dry and ensiled biomass sorghum for biofuel production](https://pubs.acs.org/doi/abs/10.1021/acssuschemeng.0c03784?casa_token=yi4nBiuM28IAAAAA:iewQWDkO-rBn2MjPS6rq4xMF1lIbTCUanRIVJn2Swu6-MOLyzSv0DEB3Y8O2m5ih7s-plXdBQsBMRgpB). ACS Sustainable Chemistry & Engineering, 8(42), 15855-15864.

Yang, M., **Baral, N. R.**, Simmons, B. A., Mortimer, J. C., Shih, P. M., & Scown, C. D. (2020). [Accumulation of high-value bioproducts in planta can improve the economics of advanced biofuels](https://www.pnas.org/doi/abs/10.1073/pnas.2000053117). Proceedings of the National Academy of Sciences, 117(15), 8639-8648.

**Baral, N. R.**, Kavvada, O., Mendez-Perez, D., Mukhopadhyay, A., Lee, T. S., Simmons, B. A., & Scown, C. D. (2019). [Techno-economic analysis and life-cycle greenhouse gas mitigation cost of five routes to bio-jet fuel blendstocks](https://pubs.rsc.org/en/content/articlelanding/2019/ee/c8ee03266a/unauth). Energy & Environmental Science, 12(3), 807-824.

**Baral, N. R.**, Kavvada, O., Mendez Perez, D., Mukhopadhyay, A., Lee, T. S., Simmons, B. A., & Scown, C. D. (2019). [Greenhouse gas footprint, water-intensity, and production cost of bio-based isopentenol as a renewable transportation fuel](https://pubs.acs.org/doi/abs/10.1021/acssuschemeng.9b02928?casa_token=E3p21Mdn2JsAAAAA:kS1jxJQur9YaywIxcdTJTq8q_s-SKbp1uU8c2zxaeT30MuQznm1AS9kih60AkVjrOrXoLUIHlV781xi0). ACS Sustainable Chemistry & Engineering, 7(18), 15434-15444.

**Baral, N. R.**, Davis, R., & Bradley, T. H. (2019). [Supply and value chain analysis of mixed biomass feedstock supply system for lignocellulosic sugar production](https://onlinelibrary.wiley.com/doi/abs/10.1002/bbb.1975?casa_token=Ffco81JI84MAAAAA:CDQZYtd4dX1EAiGsFq8WFYxl4gVAlB1BI7g2wlldo7c8XtYelFZEpEFpY1__hBpeDxYQZOn3xaB9cvYk). Biofuels, Bioproducts and Biorefining, 13(3), 635-659.

**Baral, N. R.**, Quiroz-Arita, C., & Bradley, T. H. (2018). [Probabilistic lifecycle assessment of butanol production from corn stover using different pretreatment methods](https://pubs.acs.org/doi/full/10.1021/acs.est.8b05176?casa_token=Prg4Et9Tb-sAAAAA:dR9YYbdsEHLK04ygd_q9VCv3IWxgbd-fva_WkGKJ7NXaAXwx1bly1fYmAMrQW9JnLEbCnNZi3NgiEP4t). Environmental Science & Technology, 52(24), 14528-14537.

**Synergistic Activities**

* Conference organization committee member, Bioenergy Sustainability Conference, American Institute of Chemical Engineers (2019).
* Organized workshop to deliver training to investors interested in renewable biodiesel production (2011).
* Served in curriculum development team to update Mechanical Engineering undergraduate degree curriculum (2011-2012).
* Active reviewer for Applied Energy, Biotechnology for Biofuels, and Biofuels, Bioproducts and Biorefining Journals.
* Jury member, Inter College Robotics Competition (2009).