



## Bio-Energy in Circular Economics

Woodrow W. Clark II

Clark Strategic Partners, USA

### Abstract:

Circular Economics has been implemented in the EU (2016) and beginning in China (2018). Circular Economics is also being applied to “Bio-Energy” and related areas such as fuels.

Bio-energy can be utilized as the driving force, which overturns the charging mode of traditional electric driving and fixed charging facilities. Meanwhile, it can also make the vehicles directly utilize solar energy like chlorophyll, which satisfies travel demand and will not generate any pollution at the same time. Besides, at news conference, people can witness the world’s drivable bio-energy and fuel cars. The modules of bio-fuels are perfectly integrated into the vehicles, providing clean green energy for vehicles which greatly enhances environment protection and driving comfort of vehicles.

The Next Economics is Circular Economics (CE) which is being implemented now around the world as it includes areas from technology, science and energy to link together in order to be less expensive, have externalities that reduce as well as reverse climate change today (2019).

### Biography:

Woodrow W. Clark II, MA3 PhD short bio is that he has 80+ peer reviewed papers and over a dozen film documentaries on social issues today from over the last 3 decades, and is an internationally recognized, expert, author, lecturer, public speaker and consultant on global and local solutions to climate change. His core focus is on economics for smart green communities. During the 1990s, he was Manager of Strategic Planning for Technology Transfer at Lawrence Livermore National Laboratory (LLNL) with University of California and U.S. Department of Energy. He was one of the contributing scientists for United Nations Intergovernmental Panel Climate Change (IPCC), awarded 2007 Nobel Peace Prize and Researcher for UN FCCC. From 2000-2003, Clark was Advisor, Renewable Energy, Emerging Technologies & Finance to California Governor Gray Davis. In 2004, Clark Founded and manages Clark Strategic Partners (CSP). He was a Professor in the University of California at Davis, Riverside and last at UCLA (Los Angeles) retiring early to focus on books. Clark was a Research Professor in Economics at Pepperdine University Graziadio Business School where he focused on Qualitative Economics and Circular Economics as the key solutions to climate change.



### Recent Publications:

- 1— E. Shayan, V. Zare, and I. Mirzaee, “Hydrogen production from biomass gasification; a theoretical comparison of using different gasification agents,” *Energy Convers. Manag.*, vol. 159, no. December 2017, pp. 30–41, 2018.
- 2— Z. Yao, S. You, T. Ge, and C. H. Wang, “Biomass gasification for syngas and biochar co-production: Energy application and economic evaluation,” *Appl. Energy*, vol. 209, no. October 2017, pp. 43–55, 2018.
- 3— T., B. Reed, A. Das, and D. A. Reed TB, “Handbook of Biomass Downdraft Gasifier Engine Systems,” *SERI . U.S. Dep. Energy*, no. March, p. 148, 1988.
- P. R. Bhoi, R. L. Huhnke, A. Kumar, and S. Thapa, “Scale-up of a downdraft gasifier system for commercial scale mobile power generation,” *Renew Energy*, vol. 118, pp. 25–33, 2018.
- 5— A. Gagliano, F. Nocera, M. Bruno, and G. Cardillo, “Development of an equilibrium-based model of gasification of biomass by Aspen Plus,” *Energy Procedia*, vol. 111, pp. 1010–1019, 2017.
- 6— M. Mubashar, A. Munir, M. Ahmad, and A. Tanveer, “Downdraft gasifier structure and process improvement for high quality and quantity producer gas production,” *J. Energy Inst.*, pp. 1–11, 2017.
- 7— E. Biagini, F. Barontini, and L. Tognotti, “Bioresource Technology Development of a bi-equilibrium model for biomass gasification in a downdraft bed reactor,” *Bioresource Technol.*, vol. 201, pp. 156–165, 2016.

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