

SEES Research Series

ESSAYS ON THE GREEN ECONOMY

The Green Economy and Tertiary Education

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This essay is reproduced from the SEES Research Series, which was originally published in 2013 through the School of Earth and Environmental Sciences, University of Guyana.

ISBN Number: 978-976-624-036-3

Publisher: Journal of Academic Research and Essays

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The Green Economy and Tertiary Education **By Therese Ferguson**

A 'green economy' model is now prevalent on the global policy agenda. It is seen as a critical factor in achieving sustainable development, and the necessary counter paradigm to the traditional 'brown economy.' A brown economy, an economy reliant on fossil fuels, has previously prevailed but has been characterised by unsustainable growth and consumption patterns, attendant widespread environmental degradation, as well as a failure to address economic and social inequities. The United Nations Environment Programme (UNEP) defines a green economy as one that results in "improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities" (UNEP, 2010). They state that "A green economy is low-carbon, resource efficient, and socially inclusive [with] growth in income and employment ... driven by public and private investments that reduce carbon emissions and pollution, enhance energy and resource efficiency, and prevent the loss of biodiversity and ecosystem services." It thus supports the social, economic and environmental tiers of sustainable development.

During his tenure in office, former President Bharrat Jagdeo posited that the green sector could emerge as the largest sector in Guyana's economy, and urged Guyanese to support the shift towards a green economy, citing this transition as key in moving Guyana towards equal economic footing with nations such as the United States. A green economy, therefore, is seen as significant for sustainable development within Guyana, as the development and expansion of green sectors opens up investment opportunities, stimulates growth, and enhances job creation whilst supporting environmental and social sustainability.

There are many enabling conditions that must be in place to facilitate the transition to a green economy, including national regulations, policies, subsidies and incentives, international market and legal infrastructure, and trade and technical assistance (UNEP, 2011). Alongside these conditions, education too is critical in shaping a green economy, with tertiary level institutions in particular having a pivotal role to play, with respect to activities in the areas of teaching, research, knowledge transfer and community education and engagement, as well as by serving as exemplars of sustainability.

Firstly, through their teaching and training activities, tertiary level educational institutions can train individuals for jobs in green sectors by equipping them with the requisite knowledge and skills. Additionally, they can enable their students to understand the critical and complex connections which underpin a green economy, including linkages amongst the environment, energy, the economy and social well-being. Students can also be made aware of complex, scientific

issues like climate change. The critical, analytical and systemic thinking that is needed to conceptualise, understand and address these linkages and issues are indeed the mandate of every higher education institute. Moreover, there is also the need for new attitudes towards sustainability and green issues, so that old ways of thinking, which perpetuate the status quo and unsustainable ways of living, do not prevail. Universities, then, can shape and inculcate these *new* ways of thinking.

Secondly, institutions of higher learning can facilitate research and development, and encourage innovation amongst its students. Research and development are mainstays of university education, as knowledge is produced, transformed into new ideas and disseminated. Innovation takes this a step further by transforming these new ideas into practice. Research, development and innovation, with respect to the development and growth of 'green' and low-carbon technologies and industries, underlie a green economy. Innovative thinking with respect to sectors such as energy, waste, water, transportation, housing, agriculture, forestry and fisheries, and areas such as engineering, green design and architecture, and product development, for instance, will be significant in the transition to a green economy.

As an extension of their activities in research, development and innovation, universities can also play a part through knowledge transfer with entities and sectors such as science, trade unions and non-governmental organisations (NGOs). Knowledge transfer encompasses the dissemination of research, the exchange of ideas and the sharing of experiences and skills between universities and other research bodies, business, government, the public sector and the wider community to support the development of new policies, services and products. It is a two-way process in which the capacities of universities and other entities are enhanced. Tertiary level institutions can partner with various sectors in finding and implementing solutions to problems in energy management, waste reduction, water conservation and more. Through knowledge transfer, the efficacy of teaching, research, and innovation are enhanced when actual and potential users in various sectors apply the end products of these activities in both policy and practice.

Universities also have a role to play with respect to education of, and engagement with, the wider communities within which they operate. Broad populace support is needed for a green economy to take root so that the rationale for a green economy can be understood and initiatives being developed can be supported. Additionally, tertiary education can partner with communities, catalysing realistic change, through, for instance, various pilot projects in energy, water or smart design at schools, community organisations and local businesses.

Finally, by serving as exemplars of sustainability principles and microcosms of the green economy, higher learning institutions can highlight in a visible and practical way the possibilities of the green economy. By initiating green projects on campuses, institutions of higher education can become pilot sites for green technologies, green design, and green services and products, and offer their students on-site opportunities for research and development, innovation, and skills development.

Moreover, pilot projects must be supported through university-wide policies that institutionalise green economic principles and sustainability within their management and operational procedures.

Guyana's premier tertiary institution, the University of Guyana, is involved in activities within the aforementioned areas. For instance, in the area of research, the Faculties of Agriculture and Forestry and Natural Sciences have been engaged in research surrounding the use of biochar in, for instance, the reclamation of mined out areas in Mahdia. Students also carry out research in relevant areas, with final-year undergraduates in Faculties/Schools such as the Faculty of Natural Sciences and the School of Earth and Environmental Sciences (SEES) undertaking studies in areas such as wastewater phytoremediation, renewable energy, and biofuels. In the area of professional training, the University has been involved in the development of a Certificate Course in Bioenergy, run earlier this year, aimed at building a 'critical mass' of bioenergy technicians, operators and demonstration Programmes.

Additionally, University staff have had input into a pilot project in the Wowetta community, funded by the Canadian International Development Agency (CIDA), executed by the Latin American Energy Organization (OLADE) and University of Calgary, in collaboration with the Guyana Energy Agency. Amongst other things, the project equipped homes in the community with solar power lighting and a village shop with a solar-powered freezer. This is by no means meant to be an exhaustive list, but a few examples to illustrate the ways in which Guyana's own institution of higher education may contribute to green economic sectors. Indeed, within the context of the country's Low Carbon Development Strategy (LCDS), and under the World Bank financed University of Guyana Science and Technology Support Project, which encompasses elements such as curricula reform, LCDS-related research and refurbishment of science laboratories, the nation's University is well poised to improve the employability and skills set of graduates for new jobs in emerging and growing green sectors.

Tertiary education has a critical role to play in establishing and developing professional skills for a green economy through initial and continuing training. It is institutions of higher learning that will play a key function in preparing the scientists, engineers, planners, architects and others who will lead the transition towards a green economy and create, transfer and apply knowledge in the various green sectors of the economy. Universities have to modify existing and develop new curricula to meet these new training needs, and drive research, development and innovation in order to serve as exemplars with respect to their operational principles and procedures. This will necessitate that tertiary institutions forge substantive partnerships with other academic bodies, science, business and industry, NGOs and funding agencies in order to enhance the effectiveness of their role. Through their teaching and research, knowledge transfer, community engagement, and operational principles and practices, universities can occupy a pivotal role at the forefront of the green economy.