



Eco-industrialism: The Potential for Inclusive Growth with Bio-Plastic Production in Brazil Using Sugarcane Ethanol

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Abstract

Eco-industrialism embraces the concept of spatially-concentrated and inter-connected industrial activities that collectively are eco-efficient in the use of resources, though not necessarily premised on renewable resources. One area of activity that has potential for renewable eco-industrialism is that of bio-plastics; specifically in this case the production of plastic feedstock from sugarcane ethanol along with downstream products manufactured from bio-plastic feedstock for industrial or consumer markets. Eco-industrialism, in addition, has little to say about the subject of inclusive growth – an important element in the social and economic dimensions of sustainability. Inclusive growth means bringing some of the wealth created by growth to the marginal elements of society. This paper examines the nascent sugarcane ethanol bio-plastic industry in Brazil with a view to understanding the potential of the sector for renewable eco-industrialism in general, and for inclusive growth to mitigate rural poverty in particular. It is concluded that while the sector and the underlying technology is only in the formative stages, there are reasons to suppose that there is potential for inclusive growth and alleviating rural poverty by broadening income flows and reducing income volatility risk to rural areas. The paper explains that the concept of eco-industrialism has thus far been limited in that it is not based on renewable resources per se. Hence in theoretical terms the paper seeks to explain the significance of two possible developments of the concept: a basis of on renewable resources; and an extension with ‘inclusive growth’. The analysis is grounded in an understanding of contemporary definitions of bio-plastic and why it might be important e.g. in the automotive industry. Information on the technology and scale of production, etc. is used to compare the bio-plastic sector with the mainstream petrochemical plastic sector. We then present a case study of Brazil in which it is shown that an embryonic bio-plastic industry exists, though it is far from being an eco-industrial cluster. The subsequent analysis argues that there is a strong sustainability basis for developing a Brazilian bio-plastic eco-industrial complex based on sugarcane ethanol, and outlines some potential policy frameworks to further encourage the development of such a sector. It is concluded that there are broad social and economic benefits, such as greater inclusive growth and higher retention of added value within Brazil, alongside the environmental advantages of using sugarcane such as lower carbon emissions. The wider theoretical conclusions are that eco-industrialism based on renewable resources could be the foundation of a new form of materialism in modern society.

Keywords: *Inclusive growth; sugarcane ethanol; eco-industrialism; ethanol; Brazil.*
