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ORIGINAL PAPER

An assessment of inter-firm networks in a wood biomass industrial cluster: lessons for integrated policymaking

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Abstract Effective use of biomass is emerging in various agro-industries, offering new avenues for sustainable regional development. A case analysis is done on a wood industrial cluster in Maniwa, Japan to analyze the drivers and barriers for community-based actions in improving environmental performance of small businesses operating in the cluster. Wood processing businesses in Maniwa generate wastes such as wood trimmings and shavings. Community-based actions of various businesses in the supply chain realized the commercial value in such waste products and explored options of wood such as biomass fuel, extraction of ethanol, wood-based concrete and organic strawberry farming. Various technologies enabled the process to be carried out, and knowledge/information was brought in by local research institutes. Taking leadership and participation by business in community-based social networks increased the availability of market information and lowered its cost. It also led them to reach collective decisions and implement actions together. Evidences from a strength, weakness, opportunities and potential analysis of the Maniwa wood cluster revealed that stimulating community-based actions, providing enabling technologies, creation of social capital and policy integration are the pillars for transforming local industrial clusters into eco-friendly industrial clusters. Technical facts, policy experiences and findings suggest that grouping of biomass-based industries and developing joint actions for sound material flow represent a promising strategy to promote sustainable production and consumption while providing a new model for environment friendly regional development.

Keywords Industrial cluster · Community networks · Social-capital · Wood biomass

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Introduction

Effective biomass use is emerging in many parts of rural Asia offering new avenues toward energy independence and a more green local economy. The traditional use of biomass that includes firewood, charcoal, forest residues etc., is generally confined to small-scale household uses. Modern biomass relates to large-scale uses of commercial biomass and usually substitutes conventional fossil fuel energy sources where it is a cheaper option. The economics of use may include savings on the disposal costs of the biomass material in some way where it is a waste product of an industrial process. In Japan, wood industries located in rural fringe areas are one of the main agro-industrial activities in the recent years. In the past decade, there has been a steep increase in biomass utilization in Japan in response to growing environmental concerns, particularly the disposal of high-volume of biomass from agro-based industries. Wood biomass waste includes forest arising, wood process residues and energy crops of various tree species. In 2003, the total volume of waste biomass generated by wood industries totaled 15 million tons in Japan (MAFF 2006);