

Creating the Circular and Ecological Economy Focusing on Natural Capital and Social Capital

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[Abstract]

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Using the Aso region, we proposed a method to analyze the hierarchical units of a circular and ecological economy from three perspectives: economic activities based on the region's natural capital, community social capital relations, and material circulation focusing on biomass, to elucidate the multilayered nature of a circular and ecological economy that enhances regional resilience. We clarified a three-tiered approach to the hierarchical units of a circular and ecological economy, with the watershed area as the largest unit, the Aso region, and communities as the three-tier structure. The multilayered nature of the circular and ecological economy was applied to the Aso region, and how it functioned in the Aso earthquake and other disasters was clarified. Four scenarios were developed for grassland conservation based on land use projections and future population estimates for the Aso region. Measures to sustainably maintain grasslands were presented.

We aimed to propose a build back better method based on the restoration process and social capital at the community and municipal levels. Focusing on social capital at the community level, we proposed a feasible solution as a circular and ecological economy policy based on social surveys and dialogues with residents regarding public policies to make local resource management such as grassland and water source conservation function well in the Aso region. In addition, focusing on the fact that the relationship among residents during regular times and the community's social capital make a difference in the recovery process from natural disasters at the community level, we proposed a proposal to build back better on a community basis.

We presented a concrete image of a multilayered circular and ecological economy from the viewpoint of resource utilization centered on woody biomass and the restoration of the rural landscape. Based on interviews with entities involved in woody biomass, we were able to identify leverage points for forming a woody biomass feedstock supplier in the Aso region and present a mechanism for converting the procurement of unused wood into employment for residents and enhancement of local disaster prevention capability. By investigating the functions of water source recharge and disaster prevention capacity in various land surfaces in Aso and by simulating thinning using standing tree point data, we quantitatively demonstrated the effect of woody biomass utilization in improving disaster prevention capacity and inducing multifaceted added value.

[References]

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