

Inclusive Wealth Footprint for Cities of Japan: Regional clusters for Sustainable Development

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Abstract: Analyzing city-level sustainability requires measuring the spatial externalities of natural capital and its complex relationship with other socioeconomic capital. This study aims to create a nested Inclusive Wealth (IW) footprint database to study the sustainability of Japanese cities. Inclusive Wealth (IW) estimates natural, produced, and human capital stocks as the productive basis for intergenerational consumption. Footprint calculates capital values embodied in hierarchical value chains across cities and prefectures for the current consumption. We applied a municipal-level IW accounting matrix of 2015 to match a flexible high-resolution multi-region input-output (MRIO) database and created the Japanese IW extended nested MRIO. Estimation of the IW footprint includes 1894 cities and 47 prefectures. Three indicators were constructed to analyze the sustainability of Japan's cities: the footprint/endowment impact inequality index, the forward/backward participation index, and the IW footprint cluster index. The results show that in 2015, 39% of the inclusive wealth in Japanese cities was concentrated in value chains that span prefectures. The value chains of Tokyo Metropolis are responsible for most of the IW clusters in Japan. Still, several prefectures are independent and almost autarky on wealth. We observed evidence of devaluation of natural resources and scarcity of human capital in most prefectures. Based on the above results, we can conclude that improving the efficiency of natural capital use is critical to Japan's sustainability. At the same time, policymakers must carefully consider wealth redistribution in the value chains.

Keywords: Inclusive wealth Indicator (IWI), Natural capital, Nested municipal-level MRIO, Footprint analysis, Hierarchical value chains