

The Role of Japan's Land-Use Planning in Farmland Conservation: A Statistical Study of Tokyo Metropolitan District

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Abstract : Strict land-use plan is issued based on city planning act for controlling urbanization and conserving semi-natural landscape. And the agrarian land resource in the suburbs has indispensable socio-economic value and contributes to the sustainability of the regional environment. However, the agrarian hinterland of metropolitan is witnessing severe farmland conversion and abandonment, while the contribution of land-use planning to farmland conservation remains unclear in those areas. Hypothetically, current land-use plan contributes to farmland loss. So, this research investigated the relationship between farmland loss and land-use planning at municipality level to provide base data for zoning in the metropolitan suburbs, and help to develop a sustainable land-use plan that will conserve the agrarian hinterland. As data and methods, 1) Farmland data of Census of Agriculture and Forestry for 2005 to 2015 and population data of 2015 and 2018 were used to investigate spatial distribution features of farmland loss in Tokyo Metropolitan District (TMD) for two periods: 2005-2010;2010-2015. 2) And the samples were divided by four urbanization facts. 3) DID data and zoning data for 2006 to 2018 were used to specify urbanization level of zones for describing land-use plan. 4) Then we conducted multiple regression between farmland loss, both abandonment and conversion amounts, and the described land-use plan in each of the urbanization scenario and in each period. As the results, the study reveals land-use plan has unignorable relation with farmland loss in the metropolitan suburbs at ward-city-town-village level. 1) The urban promotion areas planned larger than necessity and unregulated urbanization promote both farmland conversion and abandonment, and the effect weakens from inner suburbs to outer suburbs. 2) And the effect of land-use plan on farmland abandonment is more obvious than that on farmland conversion. The study advocates that, optimizing land-use plan will hopefully help the farmland conservation in metropolitan suburbs, which contributes to sustainable regional policy making.

Keywords : Agrarian land resource, land-use planning, urbanization level, multiple regression

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