

## ABSTRACT

This Research Report is made from the results of a series of my researches on improving the residential environment of small-lot residential areas (Minikaihatsu); basic researches in NILIM, "Research on improvement and incentive methods in mini-development residential districts" (2001), "Research on the Way of Leading the Reconstruction of Housing Stocks in Built-up Areas" (2002-2004), and the researches in former Building Research Institute, Ministry of Construction, and so on.

The small-lot residential areas widely developed in suburbs of metropolitan areas while the rapid economic growth era, 1960-70s, are matured, and neighbourhood environments such as daylight are getting worse because of the rebuilding of houses to high volume such as three story for the purpose of increasing living floor, and at the same time, the dwellers are getting old and the disaster prevention and livability are getting worse by slow rebuilding. This Research Report aims improving sustainability of the residential environment of existing suburban small-lot residential areas where effective projects are not carried out in urban planning and housing policy now. Clarifying changes of the actual conditions and the problem for improvement there, enquiring the thought of dwellers there and simulating building shape by calculating its shadow, it suggests the orientation of the improvement of residential environment, mainly controlling the rebuilding of house with the daylight on the houses surrounding it kept, considering the balance of living space, living environment and disaster prevention that are on the trade-off relation.

This Research Report consists of 4 parts; "Part1 Introduction," "Part2 Actual conditions," "Part3 Strategies for improving" and "Part4 Conclusion."

"Part1 Introduction" clarified the position, aim and subject to examine of this research.

"Part2 Actual conditions," first, analyzed the actual conditions of existing suburban small-lot residential areas on the macro-level and clarified that these areas are mostly included in the DID (Densely Inhabited District) spread within 15 to 40km from the center of Tokyo between 1960 and 1980, and that the typical lot size or designated floor-area-ratio is various, and that rebuilding of houses to three story is going on in the area where the designated building rules is not strict. This part, next, enquired the dwellers at several existing suburban small-lot residential areas as the micro-level analysis. As the result, it was clarified that rebuilding of houses tends to be active even at lots of about 50m<sup>2</sup> in the areas where floor-area ratio is designated as 200%, but the dwellers living next to the three-storied house feel the residential environment worse, such as worse of daylight or increase of oppression by the

house, and that rebuilding is not active at the lots of under 80m<sup>2</sup>, unable to build 80m<sup>2</sup> floor in the areas where floor-area ratio is designated as 100%, and there are many households that consist of only the elderly due to the independence of their children.

"Part3 Strategies for improving" investigated the goal image of houses according to their lot size and the way of controlling the rebuilding of house with the daylight on the houses surrounding it kept, through studying the daylight performance by simulating its shadow, in order to both increase its own floor and keep the daylight on the houses surrounding it. This part suggested the orientation, such as; i) to control the shape of building on every developed unit with the size of included lots is almost same, ii) in the areas where floor-area ratio is designated as 200%, to attach importance to increasing floor and premise rebuilding to three story at lots of under 60m<sup>2</sup>, to attach importance to coexistence of two and three story and control rebuilding to partly three story at lots of 60-80m<sup>2</sup>, to attach importance to conservation of residential environment and premise maintaining two story at lots more than 80m<sup>2</sup>, and to require rebuildings to three story semi-fire prevention structure, iii) in the areas where floor-area ratio is designated as 100%, to premise maintaining two story and support economically repair of houses, purchase of next lot, and house exchange, iv) to zone districts by a number of story of building for dissolving mismatches between the goal image of houses and needs of dwellers.

"Part4 Conclusion," considering above analyses, pointed out necessities for realization of controlling rebuilding; (i) revising building regulations (ex. diversifying menu of shadow regulation, preparing scheme for arranging building rules locally), (ii) improvement of running building regulations (ex. designating semi fire-proof area expandedly, running building regulations based on scientific and performatory study), (iii) foundation of supporting systems for purchasing next lot and house exchange within the same district, (iv) repletion of management system on improving residential environment (ex. training officers and setting up professional organization on improving residential environment, introducing comprehensive management system of residential area).

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