# Simplified Cost-Benefit Evaluation Tool for the Operation and Maintenance of Public Infrastructure and Services in Suburban Built-Up Areas

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## 1. Foreword

With the rapid aging and decline of the population in Japan, we have been seeing an increasing number of abandoned houses and vacant lots in the suburban areas of cities (see photos below), decaying local communities, a deterioration in the quality of life from the removal of facilities to enhance the convenience of life and other causes, and an increase in local governments' expenditures under severe fiscal constraints to support elderly care and welfare, as well as the operation and maintenance of public infrastructure, among other things. These and other urban problems may likely become increasingly more serious going forward. Given these circumstances, a shift in urban structure to a more centralized one is one of the major tasks of urban planning today. To support local governments' efforts to develop cities with a more centralized urban structure, NILIM is currently engaged in the development of a prototype Simplified Cost-Benefit Evaluation Tool regarding the operation and maintenance of public infrastructure and services at the district level, which NILIM believes is useful for reference when local governments consider the development of policies and plans for the downsizing or restructuring of suburban built-up areas.[1]

Photos: Examples of Increasing Number of Abandoned Houses and Vacant Lots in Suburban Built-Up Areas

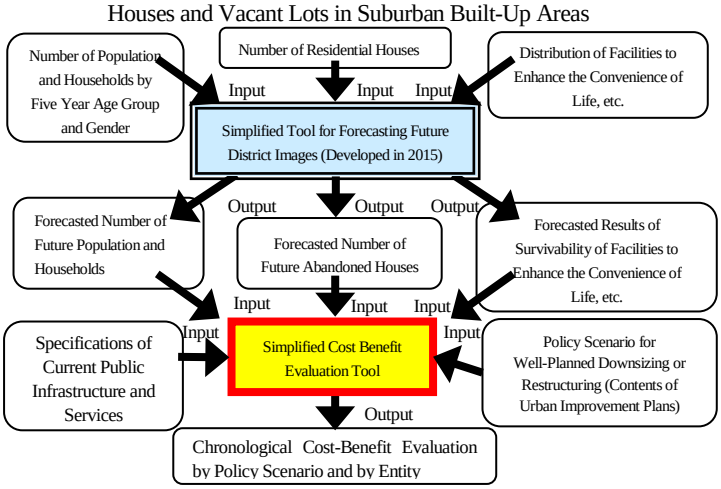


Figure. Image of Simplified Cost Benefit Evaluation Tool

## 2. Overview of Simplified Cost-Benefit Evaluation Tool

Based on the results of forecasting at a district level, the future population, number of households, and empty houses, and the survivability of facilities to enhance the convenience of life, among other things, by using the Simplified Tool for Forecasting Future District Images as developed by NILIM in 2015[2], specific information such as the specifications of public infrastructure (such as water supply and sewerage systems, roads, electricity and gas supply systems) and public services (such as garbage collection, bus, and snow removal) in each district, and a strategic policy scenario for each district (plans for the maintenance, downsizing, or abolition of public infrastructure and public services, among other things, with chronological factors and processes taken into account) is fed to the Simplified Cost-Benefit Evaluation Tool. With this, the Simplified Cost-Benefit Evaluation Tool makes it possible to calculate chronologically and then compare and evaluate costs to be required and benefits to be gained (such as lower transportation costs, incremental tax revenue, and reduction of carbon dioxide ($CO^2$) emissions) by scenario and by entity (such as local governments, district residents and business operators) (See the figure below). This tool is based on Microsoft Excel and is designed to ensure that input items are simple and that the interface and output evaluation results are easy-to-understand so that it is easy to use by local government officials and other related personnel.

## 3. Conclusion

This Simplified Cost Benefit Evaluation Tool is intended to help local governments make specific decisions and actions in the downsizing and/or restructuring of suburban built-up areas. It is expected that this tool will be utilized as one of the tools for studying the methods for objectively evaluating and selecting potential areas for downsizing or restructuring, as well as methods for the operation and maintenance of suburban built-up areas according to project phases.

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☞For further information, please visit the following websites:

1) Development of Methods for Operation and Maintenance as well as for Location Evaluation to Support the Well-Planned Downsizing or Restructuring of Cities
http://www.nilim.go.jp/lab/bcg/mailmag/pdf/ml177_1.pdf
2) NILIM's report of 2015 entitled "Easy Forecast Methods of Future District Images to Prepare for the Well-Planned Downsizing or Restructuring of Cities"
http://www.nilim.go.jp/lab/bcg/siryou/2015report/ar2015hp101.pdf