Building Dynamic Model : BDM

Application to Low Carbon Society toward 2050 Project

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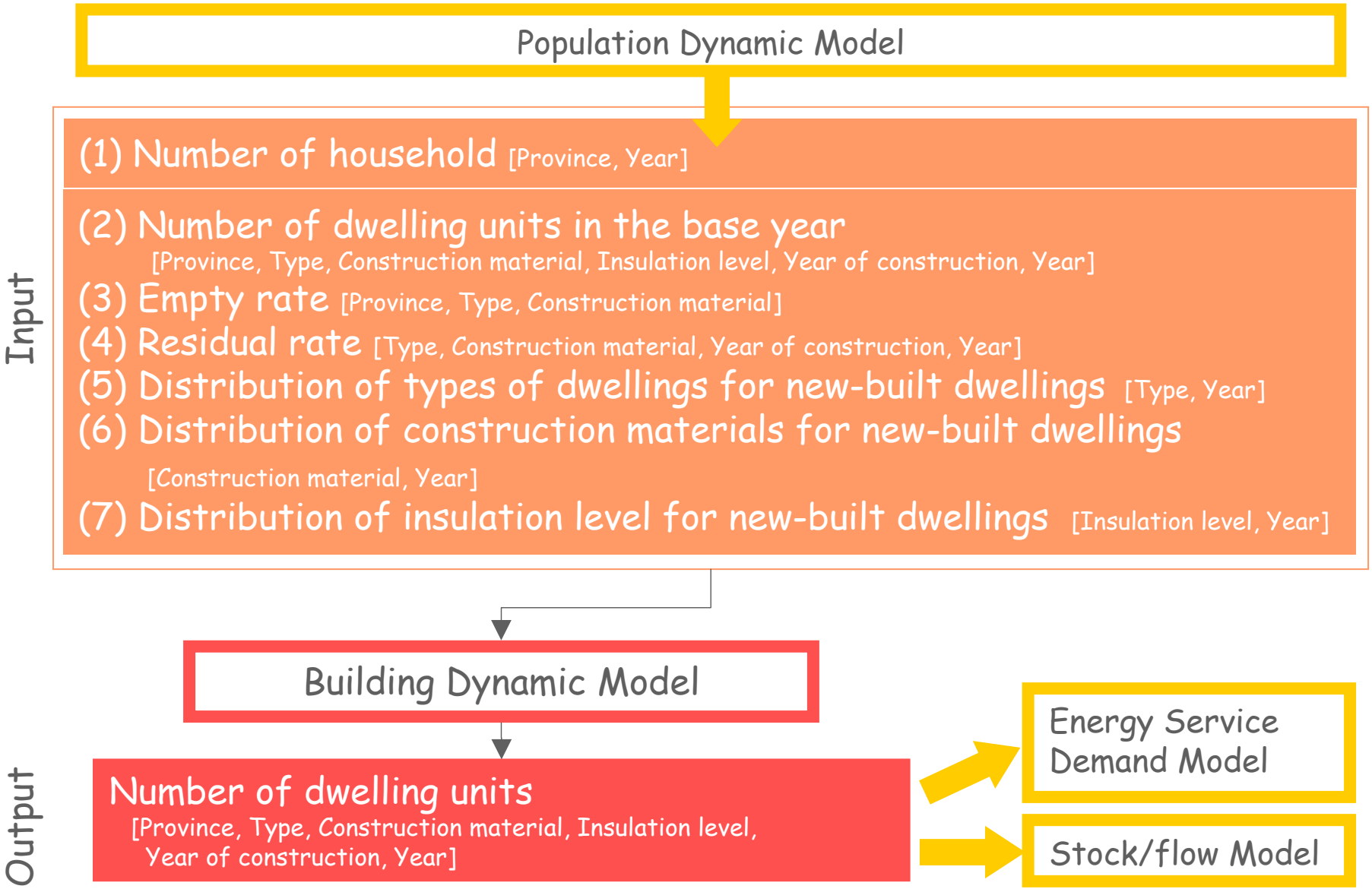
1. Background

- Number and types of dwelling units have been changing along with transition of population composition, economic growth and life style change. ▲
- Energy consumption in households especially for space heating and space cooling depends on dwelling types, insulation level and inhabited area.
- It's necessity to introduce countermeasures based on a long-term perspective because of its long lifetime.

2. Input/Output of BDM

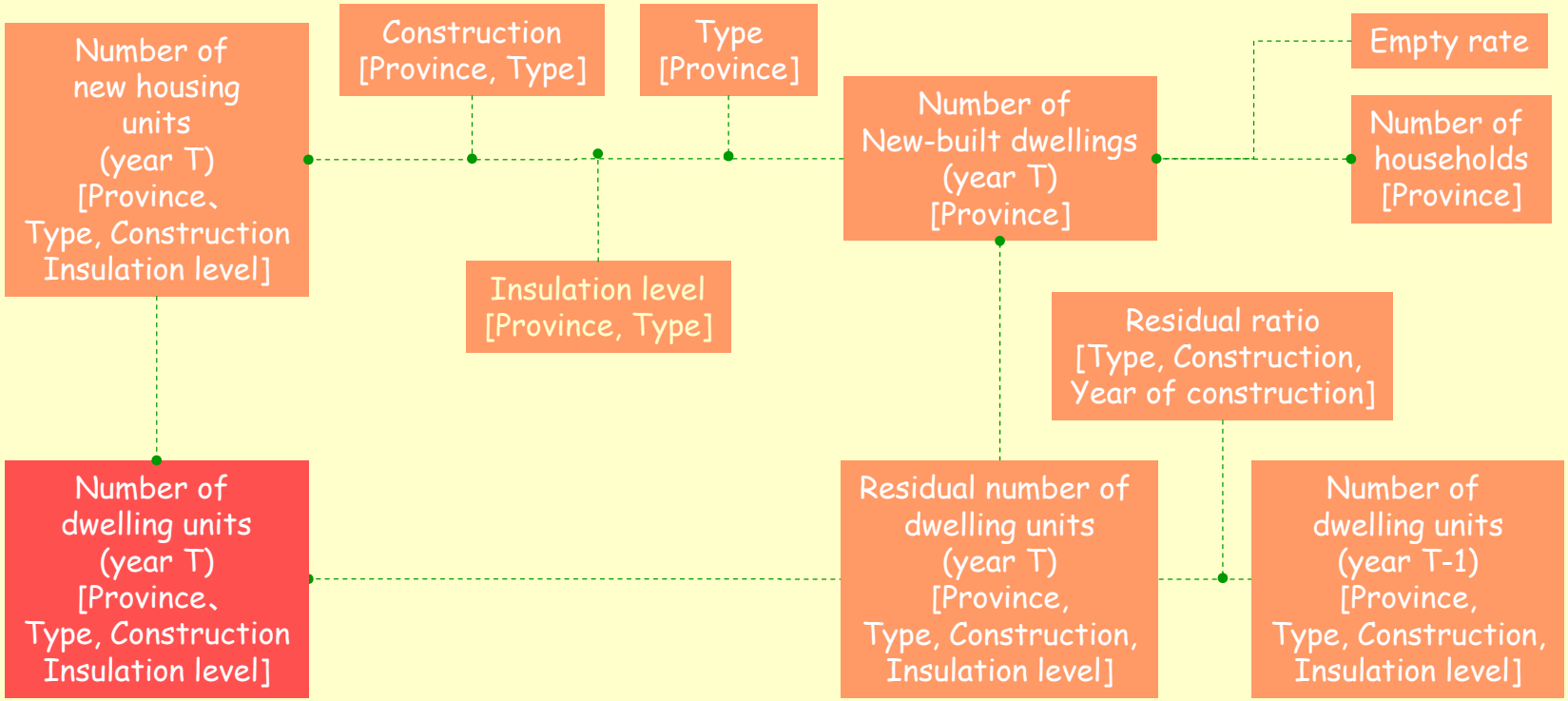


2. Input/Output of BDM

	Source
(2) Number of dwelling units in the base year	Statistics of MLIT, Architectural Institute of Japan
(3) Empty rate	Base year: Calculation from Statistics of MLIT Future: Value of the base year (fixed)
(4) Residual rate	Base year: Estimation from Statistics of MLIT Future: Value of the base year (fixed) ▲
(5) Distribution of types of dwellings for new-built dwellings	Base year: Statistics of MLIT Future: Scenario
(6) Distribution of construction materials for new-built dwellings	Base year: Statistics of MLIT Future: Value of the base year (fixed)
(7) Distribution of insulation level for new-built dwellings	Base year: Data of the government housing loan corporation Future: Scenario

MLIT: Ministry of Land Infrastructure and Transport

3. Logic of BDM

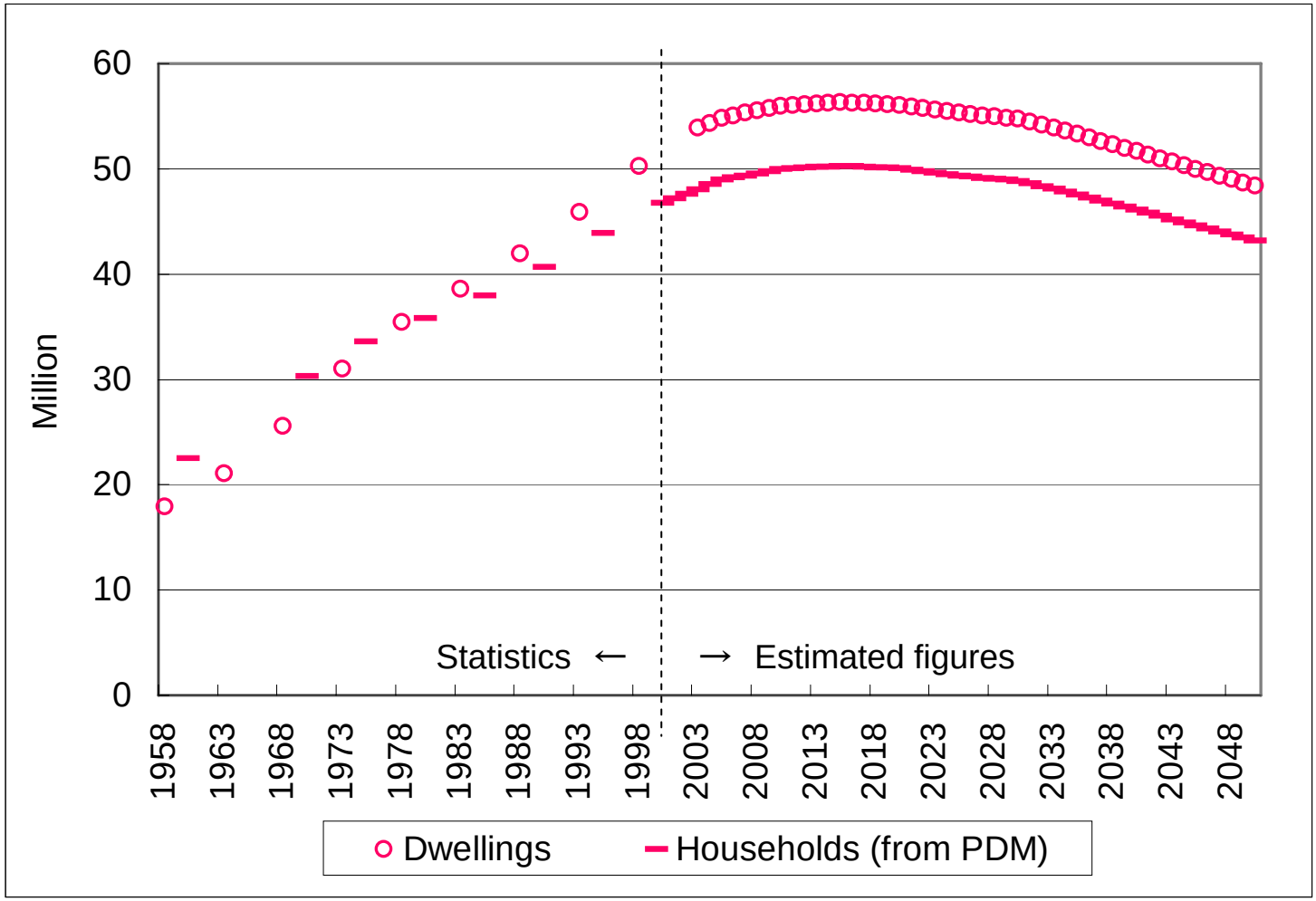


Type (2)
Detached houses, Apartment houses

Construction material (2)
Wooden building, Non wooden construction

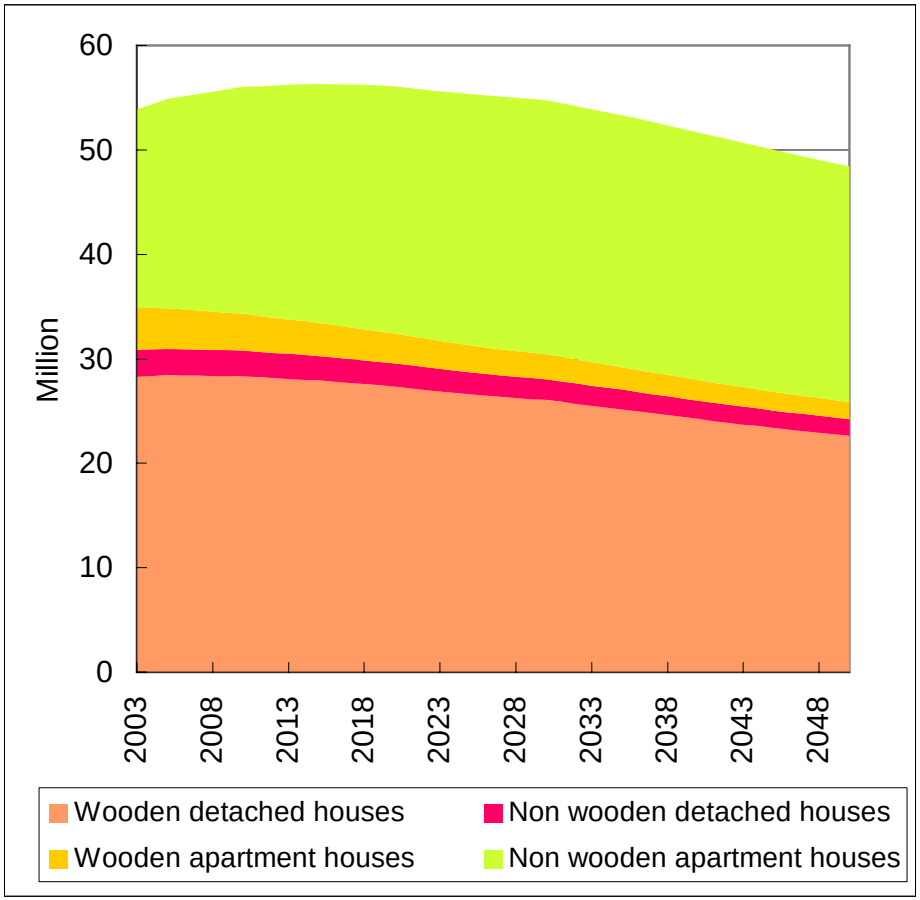
Insulation level(4)
Conventional, Former standard, New standard, Next-generation standard

4. Output of BDM

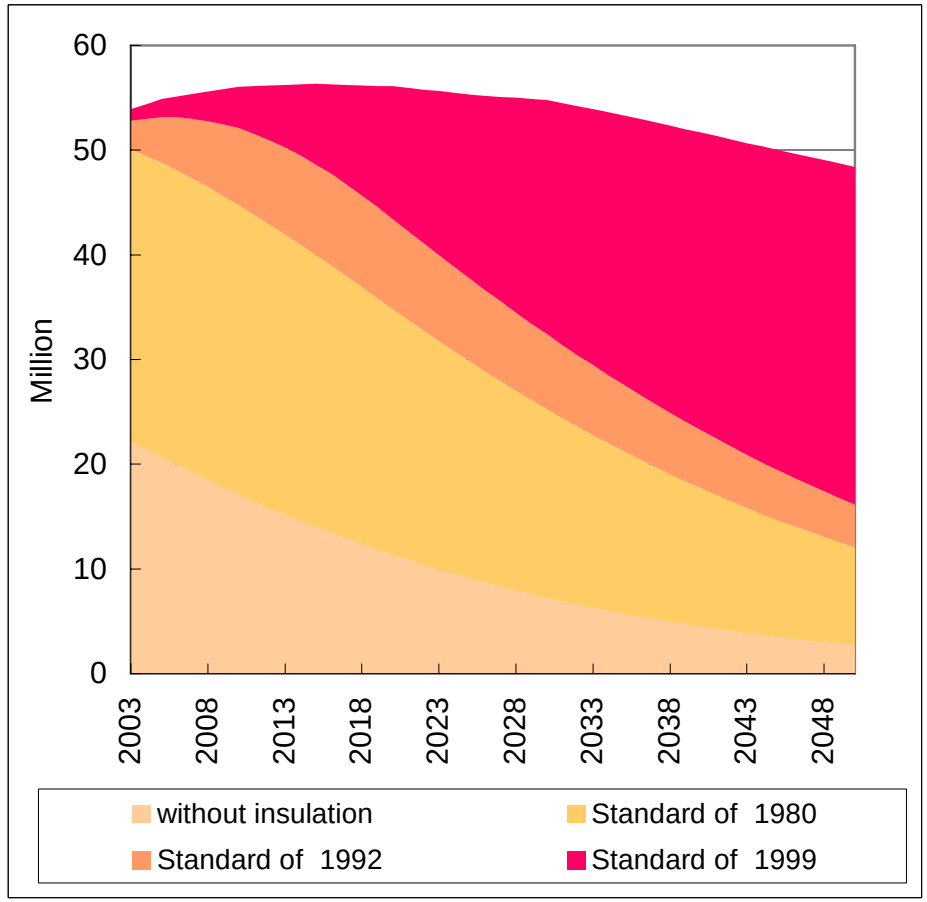


Number of dwelling units

4. Output of BDM



Estimated number of dwelling units (by construction)



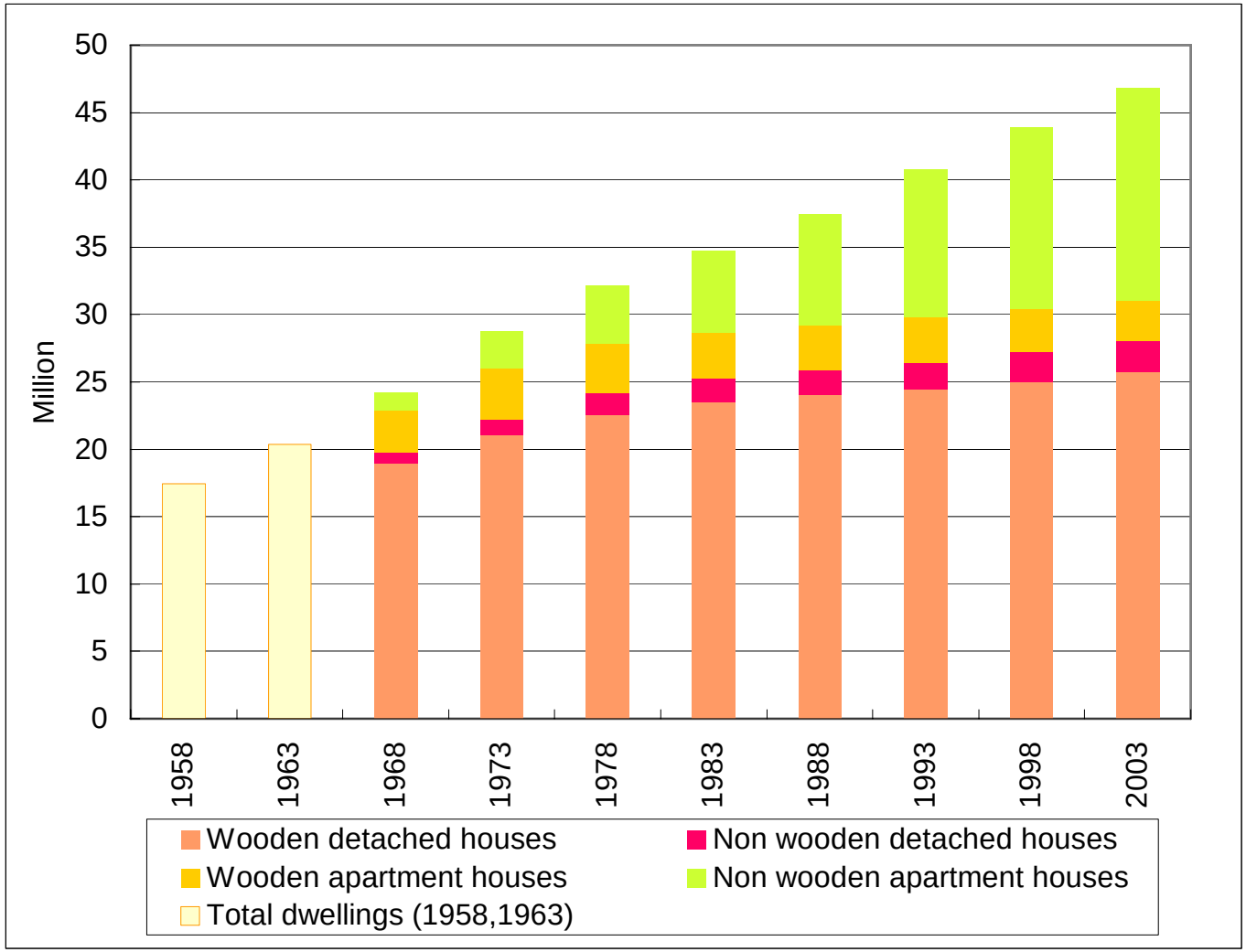
Estimated number of dwelling units (by Insulation level)

5. Future work

- Considering relationship between number of new-built dwellings and macro-economic data
- Investigation on relationship between household data and dwelling data
- Addition of flow for estimating private housing consumption

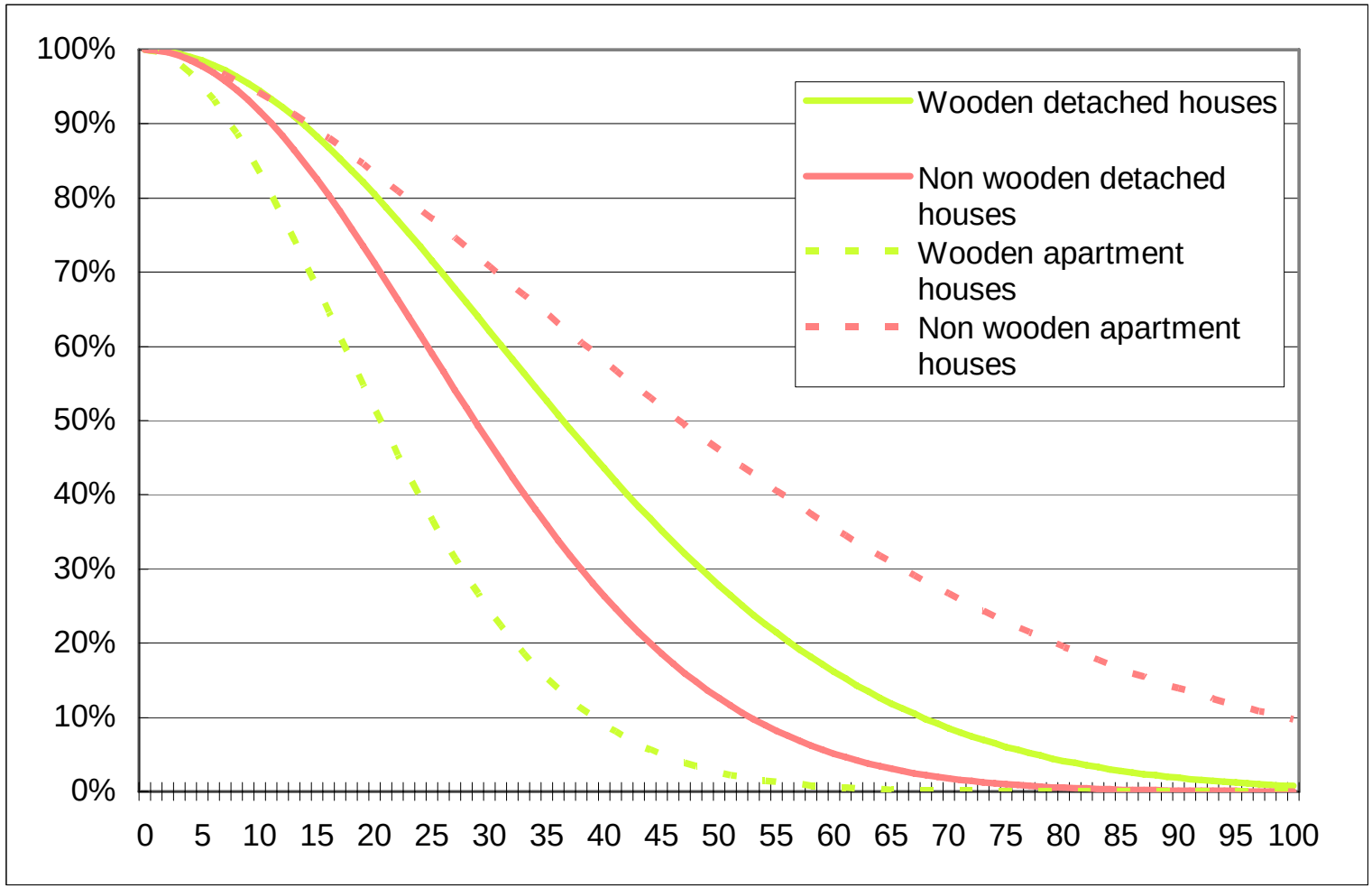
Thank you!

1. Background



Number of occupied dwelling units

2. Input/Output of BDM



Estimated residual rate