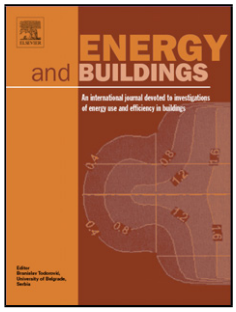

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Authors: Judith Drouilles, Sophie Lufkin, Emmanuel Rey

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ENERGY TRANSITION POTENTIAL IN PERI-URBAN DWELLINGS:
Assessment of theoretical scenarios in the Swiss context

Judith DROUILLES, Sophie LUFKIN, Emmanuel REY

Laboratory of Architecture and Sustainable technologies (LAST), Institute of Architecture (IA), School of Architecture, Civil and environmental engineering (ENAC), Ecole Polytechnique Fédérale de Lausanne (EPFL)

ABSTRACT

This paper investigates the theoretical capacity of the Swiss peri-urban dwelling stock to meet energy efficiency requirements through incremental scenarios. The notion of "typical dwelling" allows the assessment of housing energy efficiency at the country scale. The "2,000-watt society" concept and federal policies provide the assessment framework of the daily-mobility and housing operational energy demand along with embodied energies of the dwelling stock. The typical dwellings' current performance for several territorial entities highlight the extent of the challenge the peri-urban housing stock is facing today. Therefore, the paper investigates which conditions would allow the peri-urban typical dwelling to meet "2,000-watt society" intermediary targets. Eight incremental scenarios present theoretical improvements of mobility and housing. They assume an evolution of social practices and individual behaviours, as well as the development of improved technologies. Results show a drastic reduction of primary non-renewable energy (PNRE) demand and greenhouse gas (GHG) emissions for both mobility and dwelling-related consumption. The main findings are that the current MINERGIE-A label is sufficient to build energy efficient buildings, but the current mobility practices remain very far from targets. An optimization of trips and a broader recourse to low carbon conveyances are required to reduce the overall environmental footprint.

1. ABBREVIATIONS

A_E: energy reference area
ARE: Federal office for territorial development
D-EE: (dwelling) embodied energy
DHW: dwelling hot water
D-OE: (dwelling) operational energy
FSO: Federal statistical office
GHG: greenhouse gas
HAVC: heat, air ventilation and cooling
IDM: induced-daily-mobility
IDM-OE: induced-daily-mobility operational energy
IMT: motorized individual transport
LA: living area