Determinant factors for energy consumption and perception of energy conservation clarified

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A research group led by Keishiro Hara, Specially Appointed Associate Professor, Center for Environmental Innovation Design for Sustainability, Osaka University performed large-scale questionnaire surveys in Suita City, Osaka in 2009 and 2013: before and after the required electricity conservation practice following the Great East Japan earthquake in 2011.

By the time-series analysis of factors associated with household energy use (electricity and gas) and perception of savings, "household income," "actual amount of energy consumption," and "perception of energy savings" were identified as three closely related elements. In addition, when compared with 2009, there was a large change in consumption behavior and perception of energy savings among the people of the city in 2013.

These results provide new knowledge regarding the understanding of the mechanisms of energy consumption behavior, and suggest important information which will contribute to the design of effective policies aimed at the promotion of energy-conservation in the household.

This research group, in collaboration with Suita City, carried out a comparative investigation into energy consumption behavior and perception of energy saving in 2009 and 2013. Using the results of this survey, this group compared the factors which determine household

energy use and perception of savings over the time period.

The results of this research provided essential knowledge on the determinant factors associated with the residential consumption and perception of savings of electricity and gas, while identifying "household income," "actual amount of energy consumption," and "perception of energy savings" as three closely related elements. Detailed analysis also revealed that households with high energy consumption and those with moderate consumption are becoming polarized within the city and that there was a growing gap between consumption behavior and the perception of conservation in 2013.

The results provide essential insight into the energy consumption patterns and perception of savings at the household level.

In future study, it is necessary to conduct thorough and objective validation on the reasons and specific mechanisms involved in such changes over the period examined, including the possible influences of the required electricity conservation practice following the Great East Japan earthquake in 2011, by carrying out continuing surveys not only in Suita city but also in other parts of Japan.

These research results were featured in the online edition of *Energy Policy* on September 24, 2015.

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