

# Smart Materials and Sustainable Technologies

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## A smart solution to smart cities: An advanced traveler general information system

Urban travel generally have significant adverse health and environmental impacts. Research studies found that transport users are becoming more aware of the necessity to reduce carbon emissions, however, they are not willing to change their travel behavior mainly because of the inability to perceive the associated social and private costs. In practice, fuel consumption and emissions costs have a minor effect, if any, on travel-choice behavior. The fundamental reasons are that drivers do not perceive fuel consumption costs as out-of-pocket costs and they usually do not have intelligible information about the substantial health-related implications of emissions. These costs can be perceived using an information communication system, called Advanced Traveler Information System (ATGIS). The system calculates, estimates and provides information regarding effects to different user groups. By raising the driver awareness

regarding the social and environmental consequences of travel, a carefully designed scheme can provide considerable benefits for large metropolitan areas, where small positive changes in travel behavior could save millions of dollars in time, fuel and emissions costs.

In this talk, I examine the influence of offering such information on individuals' travel decisions examining real-life driving patterns and a survey we conducted in Montreal, Canada. We found that urban travelers are generally unaware of the energy and environmental footprints of their travel. Over 80% are unable to estimate their fuel consumption, GHG social costs and health-related air pollution costs across different travel modes. A personalized information system could fundamentally influence travel decisions especially route choices. This research thread will also play an important role in efforts to estimate transport-related greenhouse gas (GHG) emissions from major metropolitan areas and to calculate annual national GHG inventory to meet UNFCCC obligations.



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Moreover, it would be beneficial to provincial governments and/or environmental agencies, as it indicates the feasibility of a low-cost energy management system that saves energy, preserves environment and induces sustainable energy consumption decisions.

### Biography

Professor Rouhani's expertise is in the area of transportation economics and transportation systems analysis. His research program focuses on: network design problems, road and congestion pricing; advanced traveler information systems; public private partnership projects, energy policy analysis; optimization techniques for transportation problems; and sustainable infrastructure systems.

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