
Engaging the International Community: Research on ITS Applications to Improve Environmental Performance

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Outline

- **Background behind project creation**
- **Energy ITS Program in Japan**
- **European Commission projects**
- **Contrasts between U.S. and overseas situations**
- **Recommendations for AERIS activity**

Project Background

- **Japan's Energy ITS Program initiated outreach to Europe and U.S. for research coordination and collaboration on ITS for environment and energy**
 - **Tokyo, March 2009**
 - **Stockholm, September 2009**
 - **Amsterdam, March 2010**
 - **Tokyo/Busan, October/November 2010**
 - **Vienna, June 2011**
- **European Commission funded ECOSTAND project as a “coordinating action”, at €735 K for two years**
- **U.S. participation has been ad-hoc until now**
- **With higher levels of activity in the other countries, we need to become more engaged**

Japan's Energy ITS Program

- **Ministry of Economy, Trade and Industry (METI), funded at \$12 M per year, 5 years (now at 3.5 years)**
 - **90% for automated truck platooning**
 - **** 10% for modeling effects that ITS can have on reducing transportation CO₂ ****
- **Six working groups, seeking international participants from Europe and U.S.:**
 1. **Defining ITS applications that can reduce CO₂**
 2. **Traffic simulation modeling**
 3. **Emissions modeling**
 4. **Probe vehicle monitoring**
 5. **Model verification and validation methodology**
 6. **International traffic data warehouse**

Most Relevant Current EC Projects

- **eCoMove - €22.5 M from 2010 – 2013**
 - **Direct successor to CVIS and SAFESPOT**
 - **Diverse cooperative vehicle-related ITS services, for testing on 4 cars and 2 trucks:**
 - **Eco-driving, freight logistics, route guidance, adaptive cruise control, transmission shifting control**
 - **Both arterial and freeway traffic control**
- **In-Time - €4.5 M from 2009-2012**
 - **Multi-modal traffic and traveler information, to encourage mode shifts**
- **Freilot - €4 M from 2009 -2011**
 - **Freight movement efficiency through eco-driving, logistics, and improved green wave signal control**

Newer EC Initiatives on ITS for the Environment

- **CO₂ reduction is now the dominant motivation for ITS projects, ahead of safety and mobility**
- **€50 M this year for new proposals on low-carbon freight and multi-modal mobility**
- **€40 M next year for new proposals on:**
 - **Cooperative systems for low-carbon multi-modal mobility**
 - **European-Wide Service Platform for cooperative systems enabled services**
- **N.B.: “Green Car” initiative has already provided €60 M on Information and Communication Technologies (ICT) for the Fully Electric Vehicle**

Activities in China on ITS for the Environment

- Increasing urgency now that China is the leading CO₂ emitter
 - 2020 goal to reduce CO₂ by 40-45% per unit GDP from 2005 level
- Policies for low carbon transportation
 - Major urban and inter-urban rapid transit expansions
 - Subsidies for retiring older high emission vehicles
- ITS research in Ministry of Science and Technology, with indirect link to environment issues
 - Information sharing and connectivity
 - Multi-modal efficiency improvements
 - Advanced traffic management

Overseas Perspectives

- **Other industrialized countries ratified Kyoto and take its CO₂ reduction goals seriously**
 - **Drastic changes needed by 2050**
 - **Nobody has a solution to meet those goals**
- **CO₂ reduction becoming the dominant factor in transport policy, then reflected in transportation research priorities**
- **Others investing much more heavily in this than the U.S.**
- **Primarily research funding from agencies responsible for industrial competitiveness rather than transportation**

Immediate Imperatives Relative to Japan's Energy ITS Initiative

- Japan wants to define the evaluation metrics and procedures now, so everybody knows how ITS products will be evaluated for CO₂ savings (**METI initiative**)
 - **Their approach has serious technical limitations, where we could help**
- Japan has invited Europe and the U.S. to collaborate, but we have been slow to respond
- U.S. needs to get engaged in this, building on our strengths in transportation planning and operations and emissions modeling

Broader Implications for AERIS

- **Japan and EC investments in developing target systems dwarf the AERIS budget, making it hard to be competitive**
 - **Modeling effects of ITS on energy, CO₂ and criteria pollutants is a pre-competitive topic area where we could collaborate and benefit greatly**
 - **These models are needed to facilitate domestic ITS deployments anyway**
 - **The technical challenges are large enough to need the best international experts**
 - **ITS has already suffered from lack of adequate models (“Moving Cooler”)**
 - **Data needed from real deployments**
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Model Development and Validation Needs

- **Separate approaches, depending on the effects of ITS:**
 - Reducing demand for vehicle travel → regional transportation planning and travel demand models
 - Improving vehicle operational efficiency → microscopic models, with results extrapolated to regional and national levels
 - Improving infrastructure operational efficiency → newer integrated models needed, incorporating driver behavior and traffic phenomena
- **Separate short-term latent demand effects from long-term induced demand effects, based on real data rather than ideology**