

ICT4EE 2010: Session on Transport Logistics

1. General

ICT-enabled logistics which are widely used in supply chain management and freight transport play a leading role in the optimization of logistics operations and services; thus, they are likely to lead to important improvements in energy efficiency and to mitigation of environmental impacts of these industrial sectors.

The session panel involved four speakers who presented an analysis of greening logistics in the UK (Green Logistics Research project - Prof. A. McKinnon), the 'GoGreen' strategic project of a major global stakeholder in logistics industry (Deutsche Post / DHL - Mr. P. Sonnabend), energy savings considerations of the maritime shipping sector (Institute of Shipping Economics and Logistics – Prof. F. Arendt), and the research prospects of ICT-enabled “Intelligent Cargo” in transport logistics (Insiel - Mr. P. Paganelli).

The session was chaired by Prof. G. Giannopoulos, Director of the Hellenic Transport Institute, having long-lasting experiences in logistics and ICT for transport.

It was overall acknowledged that ICT has a direct impact on the energy efficiency of logistics, that there is a broad range of energy-reducing / decarbonisation options in logistics. Integration of real-time telematics and vehicle routing offer significant potential for energy savings in logistics operations. It was also noted that electrification of freight transport with low carbon electricity is an option, in particular for urban logistics.

2. Details

Green transport is not only an image factor, but more and more regarded as a cost-saving opportunity. ICT plays already a major role for truck booking time and parking slots in terminals, for enabling better planning of ports and inland hub operations, for improving intermodality across transport modes and means. ICT-enabled operational efficiency and subsequently energy efficiency improvements are under exploration, but need to be properly reported and documented. A smaller carbon footprint for future transport models is urgently needed, next to other factors such as costs.

Regarding R&D, it was highlighted that market take-up can be faster if the benefits for professional users are demonstrated clearly via pilots. Targeted dissemination needs to be carried out to a wider industry that is unfamiliar with promising results of recent ICT research. Better concertation has to be set up between public, industrial and logistics stakeholders to govern priorities for change.

The panel raised among other the following questions:

- Industry & market needs vs. government initiatives and incentives;
- Need for definitive, specific targets to be set up;
- Business realities of small hauliers;
- Best practice examples stemming mainly from certain big industry players per sector;
- Implementation of R&D results necessitates a behavioural change;
- Need to agree a common roadmap since market is too diverse/fragmented;
- Need to support standardisation at least regarding document interchange;
- Need to explore options to deal with security in devices for future logistics, assuming increasing automation.

A question via web-streaming stressed the need to agree as soon as possible interim targets for the logistics sectors, the risk being that if targets are not set within the next 5 years, benefits may not be achievable anymore.

3. Orientations and conclusions

Transport logistics is crucial to environmental sustainability, and this session offered an opportunity to outline early evidence of measured and reported impacts on energy efficiency and carbon footprint, which are delivered by ICT-enabled logistics. The emphasis was on ICT-led freight transport operations from journey savings and route optimisation to vehicle improvements, co-modality and provision of incentives for eco-driving styles, taking into account constraints of the wider logistics chain from production and storage to distribution. Examples from operational approaches which could constitute promising business cases reconciling cost-effectiveness, energy savings and emissions reduction, were demonstrated.

Transport logistic operations have room for significant efficiency gains, and this session provided an opportunity for logistics and transport stakeholders to discuss possible actions to enhance measurability and reporting of energy efficiency and carbon footprints and to improve user information. The net benefits would be better product life cycle assessment, enhanced visibility of best practices and increased corporate social responsibility.

To achieve these objectives concertation of the different stakeholders' activities is urgently needed. Projects like Logistics for LIFE, a coordination action bringing together leading logistic companies, technology providers and research organizations, will facilitate widespread deployment of ICT-enabled services for enhanced sustainability. Public private partnerships will help to stimulate the roll-out processes.

4. Annex

Speakers

- **Alan McKinnon**

Director of Logistics Research Centre, Herriot-Watt University, Edinburgh [UK]

- **Peter Sonnabend**

Senior Expert, Environmental Strategy and Policy, Deutsche Post DHL, Bonn [DE]

- **Frank Arendt**

Director, Institute of Shipping Economics and Logistics, Bremen [DE]

- **Paolo Paganelli**

Coordinator of EURIDICE and Logistics for LIFE projects, INSIEL, Trieste [IT]

Questions and answers

The speakers had prepared written answers to the four key questions which had been prepared beforehand:

- (1) What is the expected impact of the most promising ICT solutions for the energy efficiency of freight transport?
- (2) Logistics research being a very diverse sector with general global players and numerous SMEs, how ICT-based services for energy efficiency can be implemented to obtain the higher impact? Would you rather recommend a top-down or a bottom-up approach?
- (3) Which are the essential elements of an ICT-enabled framework to be set up with the aim to measure and report the energy and environmental performance of the sector?
- (4) Technologies like RFID are ready for wider deployment; could you identify the next obstacles to overcome?

A copy of their individual answers was made available to session participants. During the discussion, each speaker summarised its position with respect to the questions asked.

All speakers noted the highly diverse, competitive and fragmented market of the logistics sector which includes numerous SMEs next to globally acting corporate stakeholders. By its very nature, the sector predominantly aims at the optimisation of logistics processes. ICTs enable among other better planning of load consolidation, vehicle routing and scheduling, and this leads to lower costs and improved energy efficiency, though very few ICT developments in this field have had a specific energy focus.

Currently used optimisation models and tools should be enhanced and upgraded to include, beyond time and cost aspects, energy efficiency and environmental performance (carbon footprint) factors. This requires the reliable identification of key drivers for energy consumption and environmental impacts, in line with ISO 14001 conventions, at a sufficiently detailed level.

To enhance transparency, a common data exchange mechanism needs to be developed which would generate auditable figures to an agreed calculation methodology, while preserving the commercial confidentiality of input data of individual participants.

Given the fragmentation of the sector, an ICT-based service for energy efficiency would rather stem from a bottom-up initiative, which may be gradually embraced by individual companies if it offers a clear cost and/or competitive advantage. However, in practice, mainstream developments are instigated through regulation or large logistics service providers who often set up a paradigm to be followed by smaller firms. Therefore, a concertation mechanism is advisable to be set up bringing together public and large private entities in order to make 'greening' better visible and to guide an appropriate and rapid adaptation of the actual processes.