

Energy efficiency equals cost efficiency: engaging sectoral organisations as champions and messengers to reduce energy use in freight transport

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Abstract

Recently, the EU project INTERACTION has started. INTERACTION stands for INternational Transport and Energy Reduction ACTION. The main objectives of the project are:

- to promote the reduction of energy use in freight transport via industry associations;
- to identify best practice approaches in different countries and exchange information among the different participating countries;
- to realise a sustainable focus on energy reduction in freight transportation on the EU level by the creation of a strong network of stakeholders in this field throughout the EU and different industries.

Recent experiences in different countries (e.g. the sectoral approach in the Transport Reduction Programme in The Netherlands in 2005) show that a sectoral approach towards energy use reduction in freight transport is very successful. Actual practice has shown that – on average – *reduction potentials of 15%* exist. INTERACTION will directly work on energy use reduction potential identification and implementation in 3 sectors of industry per country and 5 active companies per sector. In total 6 countries are involved (The Netherlands, Finland, Greece, Germany, Czech Republic, Bulgaria as well as one region: the Baltic Sea area), consequently 90 companies will be directly involved.

The project will be concluded in December 2008. Subjects that are already available to be published and disseminated are:

- The set-up of INTERACTION;
- Types of efficiency measures and expected impacts;
- The common framework, offering guidance on engaging sectoral organisations and companies and the implementation process.

Case studies from The Netherlands (2005 and 2006), which sketch the results of a number of Dutch companies that have already taken action to reduce energy use in freight transport in practice.

Introduction

Energy use reduction has become an important topic in policy and industry during the last few years. This is on the one hand due to the increased focus on the global greenhouse gas issue and the Kyoto-agreements that forces countries to take action, and on the other hand due to the issue of natural gas and oil sources that are expected to become more scarce in the future, which also enforces governments and businesses to develop alternatives and to increase energy efficiency. Finally, many industries are constantly under cost pressure, meaning that the strive for efficiency has become central in their strategies. This certainly goes for energy: especially in energy-intensive sectors only a slight reduction of energy use may lead to significant cost reductions.

Historically, the focus in energy reduction policies has been on heavy industry and household energy consumption. How-

Table 1. Efficiency measures in freight transport and their reduction potential

Measure	Reduction potential
Geographical consolidation of shipments to different customers within a region	5-25 %
Increase of load per loading unit	4-15 %
Reduction of delivery frequency	4-20 %
Implementation of a hub-spoke structure with efficient long distance line hauls	15 %
Direct delivery from production facility to customer	15 %
Bundling of loads of different shippers	15 %
Modal shift	>50 % (in terms of road kilometres)
Use of larger vehicles	10 %
Monitoring of fuel usage	15 %
Awareness regarding sustainable fuel usage and driving behaviour	5-15 %

Source: Various Dutch freight transport programs, such as Transaction Modal Shift, CO₂-reduction Programme Freight Transport, Transport Prevention

ever, during the years it has become clear that also in freight transportation a large share of energy use and related emissions of e.g. CO₂ is being caused, that has increased over 30 % in the last fifteen years and is expected to grow even faster. In several countries in Europe, like Sweden, Finland, Germany and The Netherlands several programmes have been developed and carried out aiming at reducing the energy use in freight transportation. Within these programmes, it has become clear that many and various measures could simply be applied and the (potential) reduction is significant.

On average, a reduction potential of as much as 15 % (!) is assumed. However, it also has become clear that it is difficult to reach individual companies with the right message and the right triggers for taking real action in such a way that the full potential is exploited. The INTERACTION project, funded by the European Commission (Intelligent Energy Europe), is aiming to bridge this gap between individual company strategy and energy use reduction in freight transportation. This is done by linking energy efficiency to cost efficiency and engaging sectoral organisations.

In this paper the INTERACTION project is first briefly introduced. Hereafter an insight is being given in the common framework based on which all participating countries work on realising the objectives of the project in practice. Also insight is provided in the process of selecting the branches and companies that participate in the project. Finally, practical examples are being presented of companies that have already booked results through this approach.

The INTERACTION project

INTERACTION stands for INternational Transport and Energy Reduction ACTION. The main objectives of the project are:

- to promote the reduction of energy use in freight transport via industry associations;
- to identify best practice approaches in different countries and exchange information among the different participating countries;
- to realise a sustainable focus on energy reduction in freight transportation on the EU level by the creation of a strong network of stakeholders in this field throughout the EU and different industries.

The project is funded by the STEER programme of the European Commission as well as co-funded by several national Ministries of Transport, showing that it is regarded as an important project on EU and national levels.

The execution of the project is carried out by a consortium of 11 energy agencies and specialised consultancies from The Netherlands, Germany, Greece, Finland, Czech Republic and Bulgaria. Buck Consultants International from the Netherlands is acting as the project coordinator. Founding father of the project is the Dutch energy agency SenterNovem, who took the initiative to expand a Dutch initiative in this field (in 2005) to the international level.

The approach in INTERACTION, just as in the earlier Dutch programme, is centered on the sectoral (branch) organisations. These organisations represent individual companies on the branch level. INTERACTION 'contracts' the branch organisations in selected branches to participate in INTERACTION and reaches the individual member companies in that way. In each of the 6 participating countries 3 branches will be selected and contracted. Within each branch at least 5 companies will participate actively in the project and will thus aim to realise energy reduction in their freight transportation in practice. This way within the project duration a total of 90 individual companies will be reached. Furthermore in each country there will be a lot of effort towards anchoring the concept of INTERACTION so that a sustainable development towards other companies is being started which will last after the project itself has ended.

The INTERACTION Common Framework

In this chapter the common framework of INTERACTION is presented. In our view, the common framework offers good guidance on engaging sectoral organisations (sectoral approach) and the implementation process of efficiency measures in freight transport. Not only to the partners of INTERACTION, yet to any (national) body (i.e. energy agency, region, employer association) that is considering an effective way of realizing cost and energy reduction in freight transport.

The common framework consists of five phases. These phases are:

- National Strategy Plan
- Creating Awareness

Table 2. Performance and success indicators of the INTERACTION project

Performance indicator	Quantification of success
Number of sectors of industry active	3 per country; 18 in total
Number of individual companies active	90 in total
Identified energy use reduction potential	15 % overall, meaning an average reduction of fuel use per participating company, so an effect of in total 15% on the total transport flows which are directly reached through the project
Realized energy use reduction potential during INTERACTION duration	8 % overall (including non-implementation companies)
Green Fleet awards	At least 21 green fleet awards (3 per country) will be awarded during the INTERACTION project
Reaching energy agencies outside the consortium through newsletter and other active communication	30 agencies reached via newsletter and on request
Successful meetings with stakeholders in the different participating countries	At least 5 relevant stakeholders per meeting
Successful final dissemination event in Brussels	At least 100 relevant visitors at the event
Initiatives of national ministries and/or energy agencies to set up programmes regarding energy use in freight transport, e.g. linked to long-term industry agreements on energy	At least 3 countries where this is put on the agenda
Active website as central place for information on this subject will exist after INTERACT	Website, comprising at least: (1) measure database, (2) industry action plans and (3) relevant contacts archive. The website is expected to be consulted at least 200 hits per month.
Cost reduction for companies	Energy reduction actions should bring companies also a transport cost reduction of 10-15% in order to raise their commitment and interest
Signed Letters of Intention of watching industries intending to start carrying out the sectoral approach after the INTERACTION duration	At least 15 sectors signing a Letter of Intent with the local energy agency or the government at the end of INTERACT

Source: EIE-STEER project proposal INTERACTION

- Selection of Industries and companies
- Identification of measures
- Embedding and dissemination

Activities and deliverables of each phase are explained in the following paragraphs.

NATIONAL STRATEGY PLAN

Table A.

Before actually starting the sectoral approach in one's country, it is important to develop a strategy plan regarding the selection of industry associations in the national (regional) situation. For instance, there might be other programs and/or actors which could be used to involve sectoral organisations or any other established networks. Also, characteristics and possibilities of the industries themselves are of major importance. You can either choose to:

- enhance the Logistic Freight Control of organisations within control of the own organisations (*intracompany approach*);

- enhance the Collaboration in Logistics, such as Supply Chain Cooperation and Collective Measures (*intercompany approach*).

Naturally, it is possible to combine these two approaches in your national approach. In your communications towards the industry associations, however, it is important to be clear about what type of industry projects you are after.

Looking for industry projects that have a high reduction potential regarding kilometres and energy/CO₂-emission is an important first step in the national sectoral approach. So, start thinking about what types of measures you would like to focus on in the industry projects. Three levels of efficiency can be distinguished:

Table B.

A further selection of sectors of industries can be made on criteria such as transport volumes, openness towards change, experience within sectors of industry regarding transport efficiency.

Table A.

Deliverables	Effects
1. National Strategy Plan, including actors to involve, preliminary selection of industry (sector) associations, measures and criteria for the national 'Sustainable Logistics Award'.	A clear strategy for the national sectoral approach is available, that structures the activities to follow.

Table B.

Level	Effect
Goods efficiency	more product or kg/m ³
Logistics efficiency	less km/product or kg
Transport efficiency	less fuel/km

Table C.

Deliverables	Effects
2.1 Communication products for creating awareness	Communication products are available to support an effective and efficient communication
2.2 Communication activities implemented	Chosen actors are willing to participate

Table D.

Deliverables	Effects
3.1 Lead list with all contacts	Possible cross-chain connections can be identified, overview of possibilities is available
3.2 Intake forms filled out	Final list of highly interested industry associations and their characteristics (transport volumes, type of goods, number and type of member companies, etc.)
3.3 A number of industry projects are formulated - including signed letters of commitment from these industry associations	Industry associations are committed to start an industry project <i>and to communicate results among their members</i>
3.4 A number of watching industries have been selected	Industry associations are committed to start an industry project after the successful completion of the previous industry projects

Implementing a National ‘Sustainable Logistics Award’ is a useful way of stimulating industry associations as well as companies to be active in the field of energy efficiency and sustainability. Already start thinking about criteria, such as innovativeness, energy/cost reduction and possibilities for transposing and scaling-up.

CREATING AWARENESS

Table C

Creating awareness is important for finding industry associations and companies that are willing to participate in the project, therefore communication products need to be developed and distributed to relevant actors. We recommend distinguishing between two types of target groups, and consequently, developing at least to promotional papers/leaflets:

- leaflet about the sectoral approach in general, directed at Ministries and other policymakers and industry associations, *to inform and generate support*;
- leaflet with in-depth information, potential results and gains, process, time schedule, etc. directed at the industry association and companies, *to make them actually participate in the project*.

When available and appropriate use other media as well (electronic newsletters, professional magazines, network groups, events and meetings, etc.).

SELECTION OF INDUSTRIES

Table D

The deliverables in this phase speak for themselves. It is of major importance to involve watching industries in an early stage to realise continuation of the project. These industries will be included in communication structures and will participate in workshops, resulting in a Letter of Intent at the end of the project.

For both types of industries (active and watching) the central industry association will be the primary partner to start discussions and, eventually, to make firm agreements about their participation in the project put down in a Letter of Commitment before the activities will actually start.

IDENTIFICATION OF MEASURES

Table E

This phase is crucial in the sectoral approach; from now on, the implementation of measures can start and energy reduction in freight transport will be actually realised.

At the beginning of the industry project, a number of companies is convinced to actively participate in the industry project and is asked to endorse their participation in a letter of commitment. In behalf of each industry project one or several workshop(s) will be held with all interested companies to discuss common problem areas, identify potential collaboration opportunities and (common) potential measures. The results of these workshops will be put down in a so-called Industry Action Plan, which offers guidance to the involved companies regarding common problems and common measures, yet also

Table E.

Deliverables	Effects
4.1 - letters of commitment are signed by participating companies - company logistic profile is available	Several companies per industry project are committed to implement efficiency measures, baseline logistic situation is thoroughly described
4.2 Industry Action Plan	Common problem areas and measures for the industry are defined, communication strategy is worked out
4.3 Implementation plan per company	Each company is well-prepared and ready to start implementation
4.4 Assessments for Sustainable Logistics Award are realised	Assessments enable to choose one winner

contains an elaborate communication plan to distribute the results within the sector and an estimation of the total reduction potential within the sector. The website www.eu-interaction.net offers detailed descriptions of best practices that can be of great help in selecting and/or developing measures which have proven to be successful within a sector of industry. In the Industry Action Plan will also be addressed the actions that industries as a whole, as a representing body, should take. For instance, think of collaboration between companies (e.g. bundling of loads, swapping of goods), international collaboration (e.g. common warehouse abroad), development of standards (e.g. clean vehicles, larger loading units), etc.

However, each company has designed its supply chain in a different way and has different experiences, and will therefore have its own, specific requirements. Therefore, each company is expected to develop and write down its own implementation plan, that will elaborate on the actions to be taken, by whom and other persons to be involved, vehicles to be involved, expected impacts in cost and energy reduction, time schedule, threats and opportunities timing of action, risk factors, etc.). Again, the website www.eu-interaction.net might offer great help by means of the best practices register. This website also presents various methodologies and calculation tools such as Digiscan and Chain Calculator that enable quantifying the results of each measure in a specific context.

Finally, each participating industry is asked to nominate one company for the National Sustainable Logistics Award.

EMBEDDING AND DISSEMINATION

The last phase is not the final phase, but will take place throughout the project duration. As said before, the concept of watching industries is crucial to the continuation of the project. Furthermore, each participating industry and company is kindly requested and supported with communication material to share its knowledge and experience within their own networks, whenever and as much as possible. At the end of the project the Sustainable Logistics Award will be awarded tot the winner. The time and occasion should be considered with care, to generate a maximum of publicity and attention with this event.

Case studies from The Netherlands

In The Netherlands a similar approach has been carried out in 2005/2006. In this programme, funded by the Ministry of Transport and executed by SenterNovem, 6 Dutch branches

have been actively involved. Within each branch a specialised consultancy has been working together with the branch association and the logistics responsables within individual companies on the identification of potential energy and cost reducing measures within these companies, defining implementation strategies and the actual implementation.

In the table below a short summary of the results in The Netherlands is presented.

All industry sectors involved are presently working on articles, presentations, newsletters and so on, to give publicity to the results of the project so far. Furthermore, all industry sectors are convinced of the high potential of efficiency measures and have therefore started logistic networks within the sector to keep logistic efficiency high on the agenda and preserve and distribute the knowledge and experiences that have been gathered during the project.

MORE ON THE SECTORAL APPROACH WITHIN THE METALLURGIC INDUSTRY

One of the sectors involved in 2005 was the metallurgic industry. From a logistical point-of-view this sector is relatively underdeveloped as historically a strong focus has been on the production activity in the value chain. However, the sector has been come under large pressure, due to e.g. rising energy costs and strong increase of competition from abroad. Also the branch was under increasing environmental pressure. Therefore each opportunity for cost-saving combined with a possible reduction of energy use and/or emissions was welcome.

Within this branch 5 companies have been actively working on putting logistics higher on the agenda and on actual energy use reduction in their freight transportation activities. Examples of these companies were e.g. Nedal Aluminium (part of Hunter Douglas) and Outokumpu Copper.

A crucial stimulating factor in this sector has been the fact that the sector was already involved in a so-called Long Term Agreement on Energy Efficiency with the Dutch government. This agreement was focused on production, but transportation was added as a new theme. The transportation project fitted very well in this new theme and in that way the project was introduced smoothly in the entire sector. It must be pointed out, however, that the reason for companies to actively participate was not so much energy reduction in this case. The reduction of logistics costs throughout the entire supply chain was regarded as highly rewarding. Till now the logistic structures were being characterised as:

Table 3. Industry sector, types of measures and potential impacts

Industry sector	Types of measures	Potential impacts within the entire sector, reduction of:			
		Costs (x mln eur)	Km (x mln km)	CO ₂ (% / ton)	Energy (% / GJ)
Paper	Mainly logistic arrangements with clients, modal shift and management information. Collective measures have enabled consolidation of shipments and enhancement of the old paper supply chain.	5	5 (10 %)	10 %	10 %
Metallurgic industries	Mainly logistic arrangements with clients (individual companies and collectively). Collective measures have enabled consolidation of shipments. Better and more use of management information.	5-10 %	?	5-10 %	5-10 %
Other industries	Logistic arrangements with clients (reduction of delivery frequency). Modal shift.	?	0,31	219	2.839
Tapestry	Three different scenarios have been worked out regarding consolidation of shipments between shippers.	0,84 (50 % max)	1,1	975	10.277
Rubber and Plastics	Use of larger vehicles, implementation of a hub-spoke structure, better transport planning.	0,45	0,45	370	3.900
Academic hospitals	Elaboration of the 'regional cooperation by hospitals' concept	20-30 %	?	?	?

Source: Final Report Brancheaanpak Transportbesparing (Sectoral Approach Transport Reduction)

- production driven (as opposed to market-driven);
- rigid and non-flexible;
- relatively costly.

The main practical problems that were identified in the companies' logistics structures and operations causing inefficiencies and unnecessary energy use were:

- a relatively low load factor ("empty space in the truck");
- a high degree of expensive and very inefficient emergency shipments;

- inefficient supply chain structures (e.g. external production activities in remote areas, non-optimal stock locations);
- use of non-optimal vehicles.

The measures that were identified and applied in the different companies to meet these problems are classified in the figure depicted below.

Looking at the figure it strikes one most that most measures were focused on external transport (inbound and outbound).

For each company an implementation plan has been developed and after that actual implementation could start. On

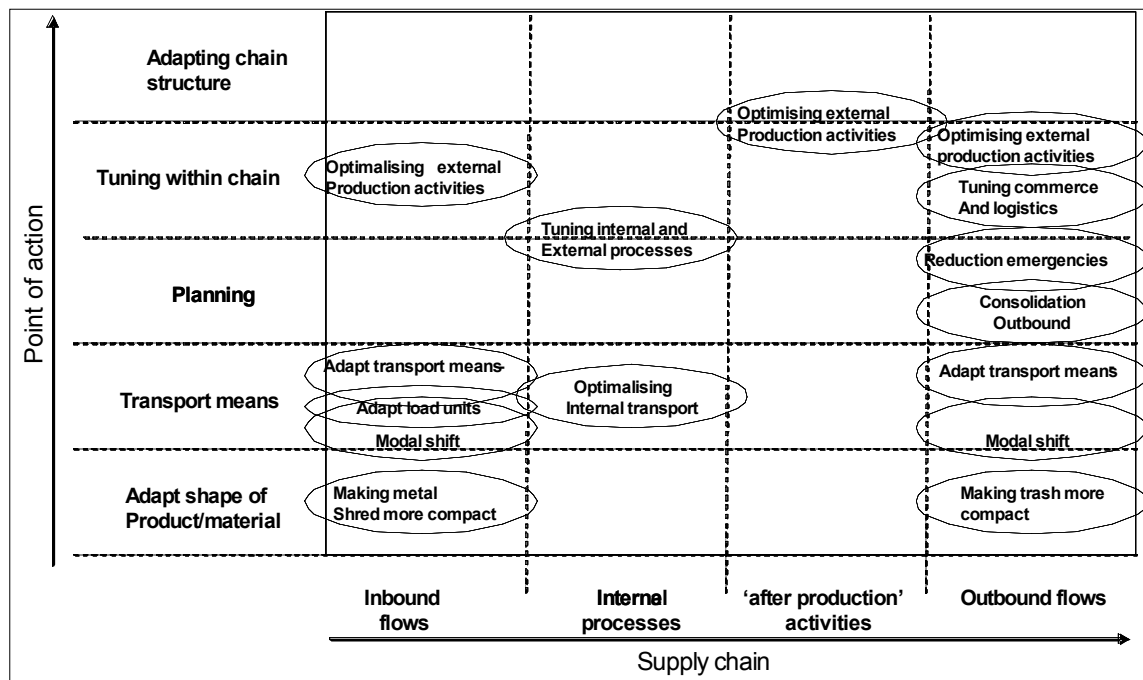


Figure 1. Efficiency measures set out against the point of action and the supply chain

average cost reductions of 15 % appeared to be possible for these companies and sometimes even much higher on specific flows. Also in terms of kilometre, energy use and CO₂-emission reduction the potentials were high: on average reductions of 10–15 % should be possible here, depending on the specific flows and scope of implementation.

In the mean time, all companies have started to actually implement measures. Some companies have come really far in this first year after the project and others are active on a smaller scale, but practice shows that all are able to realise significant reductions. Also on the sector level a strong process has been initiated, resulting in several collaboration projects in which the participating companies are involved and a new large project, aiming at opening up the subject among the other companies within the metallurgic sector in the years to come.

Major success factors in the implementation process appear to be management commitment, stability in the production process and openness within the organisation(s).

This example of the metallurgic industry in The Netherlands shows that a sectoral approach, as used in INTERACTION can be truly effective, in stimulating cost and energy reduction in freight transport.

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