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FV-2000 - Quality of Freight Villages Structure and Operations
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2 Executive summary

The FV-2000 is a 18 months project co-funded by the European Commission – DGVII - within the Fourth Framework R&D Programme.

According to the Transport RTD Work Programme, research on Integrated Transport Chains (or Intermodal Transport) has the objective of increasing the commercial use of effective intermodal operations within Europe. This task is addressed in the FV-2000 Project taking into consideration the structure and organisation of the transport nodes (called "Freight Villages", "FV") providing services for intermodality, on a European scale. Transport nodes are in fact essential for the efficiency and competitiveness of intermodal solutions, acting as an interface between transport modes and between transport and other logistic operations. In this project the expression "Freight Village" is used instead of "terminal", because "Freight Village" gives a more suitable indication of the integration of the different functions of transport chains. A definition of "Freight Village" is as follows:

"A freight village is a defined area within which all activities relating to transport, logistics and the distribution of goods, both for national and international transit, are carried out by various operators. These operators can either be owners or tenants of buildings and facilities (warehouses, break-bulk centres, storage areas, offices, car parks, etc.) which have been built there. Also in order to comply with free competition rules, a freight village must allow access to all companies involved in the activities set out above. A freight village must also be equipped with all the public facilities to carry out the above mentioned operations. If possible, it should also include public services for the staff and equipment of the users. In order to encourage intermodal transport for the handling of goods, a freight village must preferably be served by a multiplicity of transport modes (road, rail, deep sea, inland waterway, air). Finally, it is imperative that a freight village be run by a single body, either public or private".

This definition was established by EUROPLATFORMS on 18 September 1992, appendix to the Statute of Europlatforms E.E.I.G.

The project activities covered 7 countries of the European Union: Denmark, Finland, France, Germany, Italy, Spain and Sweden. For each of these countries, one or more FVs participated in the project, as partner, associated partner or sponsoring partner. Each country was represented in the Executive Board of the FV-2000 Consortium, being responsible for the quality of the work at the national level and for its adherence to plans.

The Freight Village 2000 project has two main aims:

- to analyse and evaluate the impacts of Freight Village (FV) lay-out and operations on the improvement of intermodal transport market share, i.e., to determine whether the proximity of different transport and logistic activities is a key factor for improving the use of intermodal transport;
- to define which internal Freight Village organisation and lay-out is to be adopted in order to satisfy environmental and safety requisites and to maximise the efficiency of intermodal transport operations.

Intermodal transport

According to the EC Transport RTD Work Programme, research on Integrated Transport Chains (or Intermodal Transport) has the objective of increasing the commercial use of effective intermodal operations in Europe.

This task is addressed in the FV-2000 Project taking into consideration the structure and organisation of the transport nodes (called "Freight Villages" or "FVs") providing services for intermodality. Transport nodes are in fact essential for the efficiency and competitiveness of intermodal solutions, acting as an interface between transport modes and between transport and logistic operations.

This report introduces the methods used in the project and presents the results of the quantitative and qualitative analysis carried out with the aim of understanding if and how FVs contribute to intermodal transport development. It is based on a survey carried out in seven European countries (Denmark, Finland, France, Germany, Italy, Spain and Sweden), which has investigated three target groups: FV Managers, Logistic and Transport Operators, Public Authorities involved in FV planning and development.

The analysis shows that FVs play an important role for the development of freight transport and for the economic development of the areas in which they are located. In particular, the analysis demonstrates that the logistic synergies developed in the "integrated Freight Villages" (which have an intermodal terminal, where the modal exchange is accomplished, and which provide a range of services) are a key factor for the improvement of intermodality. The proximity of different transport and logistic activities and the services that this model of FV supplies to logistic and transport companies increase the attractiveness of intermodal transport for industrial and transport operators and make it more reliable, flexible and therefore more competitive.

Environmental aspects

The data collected during the project was used to define the environmental aspects to be managed in FV areas and the characteristics and functions of the management tools to be developed.

Three management tools were developed from the results of the survey and were validated by end users (Freight Village managers and transport companies).
These are:

1. a Good Practice Code for Freight Village managers
2. a Decision Support System for risk assessment in FVs
3. a Training Software Tool for transport and logistic companies.

The Good Practice Code is addressed to Freight Village managers and concerns transport and storing operations in Freight Village areas. It is a user-friendly handbook, available also via Intranet and CD-ROM. FV managers can find in the Good Practice Code a useful tool for the improvement of environmental and safety management, involving transport and logistic companies, with the aim of improving FV environmental and safety performance.

The Decision Support System - DSS - is useful in assessing the risk related to transport and loading/unloading of dangerous substances and other flammable goods. The DSS has been implemented using ARC VIEW© and has been tested by three FVs involved in the project: Bologna, Barcelona, Paris (Sogaris); any Freight Village can adopt it. Several utilities are

developed and a database of about 160 substances and materials can be used to build accident scenarios.

The Training Software Tool - TST - is addressed to transport and logistic companies located in Freight Villages. Companies can find in the TST information, recommendations, check-lists, self-assessment tests. They can find examples for an adequate management of dangerous goods in warehouses as well. This TST includes technical guidelines and recommendations on communication, training, professional skills and organisation. The TST aims at the improvement of FVs environmental and safety performances and helps to initiate the implementation of an Environmental Management System according to international standards. It is written out in HTML and Java languages, and can be disseminated via Intranet or other electronic systems (e.g. CD-ROM).

The different operators located in FVs will use these three tools to undertake the following tasks:

- increasing operators' awareness and knowledge
- communicating with shareholders
- disseminating good practices
- assessing the risk related to dangerous (ADR-RID) and non dangerous goods (rubber, plastics, paper, cotton etc.).

3 Objectives of the project

The FV-2000 project aimed at the development of user-oriented guidelines and simulation tools for the evaluation of the FV structure and organisation, in order to increase the attractiveness of intermodal transport for industrial and transport operators. The project objectives can be summarised as follows:

– FV structure:

OBJECTIVE 1: analysis and evaluation of the impacts of FV lay-outs and operations on the improvement of intermodal transport market share, i.e., determination whether the proximity of different transport and logistic activities is a key factor for improving the use of intermodal transport (integrated vs. non-integrated FVs);

OBJECTIVE 2: establishment of the merits and limits of the development of Freight Villages for the enhancement of intermodal transport competitiveness; this was based on benchmarking and analysis of the best practices and case studies;

– FV operations:

OBJECTIVE 3: establishment of the environmental impact of FVs and intermodal terminals;

OBJECTIVE 4: definition of guidelines and management tools for the improvement of risk and environment management, working conditions and safety in FVs;

OBJECTIVE 5: increasing the awareness of FV operators (FV personnel, private transport companies personnel, etc.) with regard to the environment, work safety, quality, risk prevention and assessment.

4 Means used to achieve the objectives

For meeting the above mentioned objectives the FV-2000 team developed the methodologies on which the project is based and carried out a survey in 7 European countries (Denmark, Finland, France, Germany, Italy, Spain and Sweden) with some 130 interviews addressed to three target groups throughout 1998:

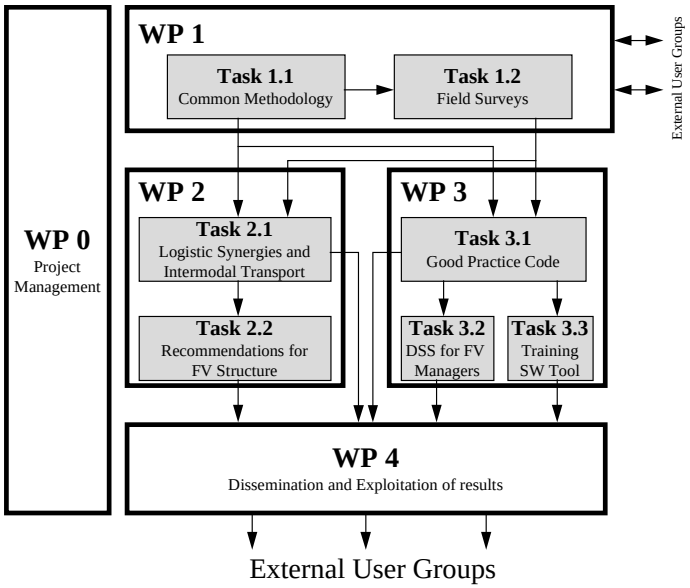


Fig. 1 – Structure of the study

– Freight Village Managers;
– Logistic and Transport Operators;
– Public Authorities involved in Freight Village planning and development.

Furthermore, two other sources of information have been taken into account:

– case studies have been made at specific sites, mainly during the autumn and winter 1998, with a few studies completed during early 1999;
– workshops has been held in each country, mainly in late 1998, to discuss the reality of the freight transport and logistics environment and to propose solutions for increasing intermodality and reaching sustainable mobility, a key issue in the European Union Common Transport Policy.

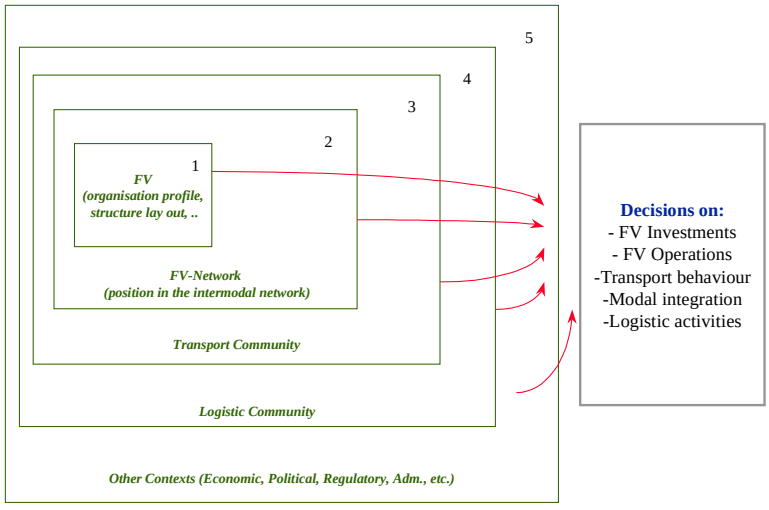
A common methodology was developed and adopted. The common methodology allowed to develop:

– questionnaires and surveys;
– case studies;
– national workshops;
– quantitative and qualitative data analysis.

As a starting point, the relationships existing between the FV and its environment were taken into consideration with particular reference to:

– freight village structure;
– the freight village network;
– the transport community;
– the logistic community;
– other contexts.

The figure below illustrates the relationships between the above mentioned elements:



Relationships existing between the FV and its environment

The methodology focused on the FV structure, i.e. mainly on the FV organisational profile, lay-out, environmental aspects, etc. This box is included in and related to a second one representing the FV network. It concerns the position and the role of the FV in the intermodal network. Two further external boxes represent the Transport and Logistic Community to which the FV network belongs. Finally, the more external box represents the economic, political and regulatory context in which the transport/logistic community, the intermodal network and the FV operate.

All these elements are strictly interconnected and influence the decisions of the different actors involved in the transport chain concerning investment and infrastructure, local, national and European regulations, transport behaviours and choices, etc.

4.1 Questionnaires and field survey

Field surveys were carried out in 1998, using common **questionnaires**, in 7 European countries (Denmark, Finland, France, Germany, Italy, Spain and Sweden) with some 130 interviews addressed to three target groups:

- Freight Village Managers;
- Logistic and Transport Operators;
- Public Authorities involved in Freight Village planning and development.

The questionnaires represented one of the main tools used for gathering information and were divided into two parts: the first parte, "*Questionnaire on intermodal transport*" concerned FV structure/activities and intermodal transport aspects. The second part concerned the environmental and safety aspects related to FVs (operations, risk and environmental management, working conditions and safety, etc.).

The "Questionnaire on intermodal transport" addressed objective 1 and objective 2 of the project. It aimed at producing quantitative data:

- to evaluate how the different models of FV structure/management influence the use of intermodal transport by transport operators;
- to know whether or not the development of intermodal freight transport is in some way correlated to the structure of FVs and terminals;
- to have empirical evidence of the fact that the proximity of different transport and logistic facilities in a single location can help increase the market share of intermodal transport attracting new operators, including SMEs.

The "Environmental questionnaire" addressed objectives 3, 4 and 5 of the project. It aimed at defining:

- the environmental and safety aspects to be considered in FVs and in transport and logistic companies;
- the quality of the environmental management procedures in the FV and in transport and logistic companies;
- the responsibilities and needs of FV managers with regard to environmental and safety aspects;
- the scope and functions of the final products/services of the FV-2000 project:
  - the Good Practice Code for FV managers and for transport and logistic companies;
  - the Decision Support System for FV managers;

– the Training Software Tool for transport and logistic companies.

4.2 Case Studies

The following **Case studies** were carried out at specific sites, mainly during autumn and winter 1998:

Denmark: Aalborg and Vejle
Spain: Barcelona and Guadalajara
Sweden: Årsta and Malmö
Italy: Bologna and Padova
Finland: Port of Kotka
France: Rungis

The case studies made an important contribution to the basic information collected by the interviews; they describe, in relation to the overall objectives of the FV-2000 project, significant cases using qualitative information about the general transport environment at the sites, the political, legal and organisational constraints and the business developments and opportunities.

To ensure a common description in the 7 European countries the following structure was used for all the case studies:

– short description of the site;
– the general transport environment;
– the political and legal situation (information on constraints and opportunities relevant for the site activities);
– the organisation and management of the FV (information on human resources in the FV-management and the commercial and legal structure);
– business developments and opportunities (e.g. new added-value services and intermodal solutions);
– other information relevant to the FV-2000 objectives;
– summary.

4.3 Workshops

The **workshops** were held in late 1998 to discuss the freight transport and logistics environment and to propose solutions for increasing intermodality and reaching sustainable mobility, a key issue of the European Union Common Transport Policy.
National workshops were arranged in the following countries:
Denmark
Spain
Sweden
Italy
France
Germany

The national workshops examined the impact on the FV structure and operations of:

– national/regional transport policies;
– environment planning (problems and conflicts);
– environmental and safety issues;

- the liberalisation/privatisation of railways;
- the role of local authorities;
- concentration vs. accessibility;
- the integration of the FV network.

The following categories of people participated in the workshops:

- FV managers;
- transport and logistic operators (or associations);
- local authority officers;
- governmental officers;
- railway operators;
- intermodal terminal operators.

4.4 Data analysis

The data collected in the survey, case studies and workshops was analysed from both a quantitative and a qualitative point of view.

The quantitative analysis was based on a comparative approach, that is on the comparison between different categories of Transport Operators and Freight Villages. With regard to Transport Operators ("TOs"), the main distinction was between TOs located "inside a FV" and TOs located "in the vicinity of a FV". A second important distinction concerned "integrated FVs" (with an intermodal terminal) and "non integrated FVs" (without an intermodal terminal). Among these main categories, various criteria of analysis were considered both for TOs and FVs, such as turnover, range of road and R/R freighting activities, R/R equipment, traffic flows and volumes, productivity, position in the rail/road transport network etc.

The qualitative analysis was used to validate the quantitative results, and was based on the following subjects:

- National/Regional/Local Transport Policies and Regulations (planning, environmental and safety issues, liberalisation/privatisation of railways, role of local/regional authorities and of national governments in the FV development, role of the European Union);
- Transport Efficiency and Freight Villages (transport demand requirements and FV supply, concentration vs. accessibility, integration of the FV Network).

The results of the study are described in the following chapter.

5 Scientific and technical description of the project

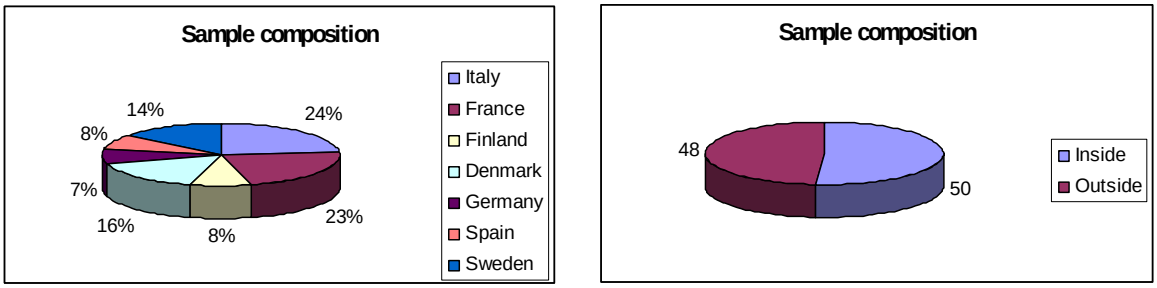
5.1 Intermodal Transport: quantitative analysis

This chapter describes the results of the quantitative and qualitative analysis linked to objectives 1 and 2 of the project. The quantitative results concerning the Logistic and Transport Operators are first presented; then some quantitative results are described deriving from the FV Managers interviews. Finally some qualitative evaluations based on the Public Authorities interviews, case studies and workshop are described.

5.1.1 Logistic and Transport Operators

Sample composition

The survey sample was formed by 98 European transport Companies, spread in a satisfactorily way among the Countries which participated in the survey and representing the main categories of transport operators. Most of the interviews were carried out with transport and freight forwarding Companies, handling substantial volumes of traffic over medium and long distances.



Sample composition

The sample is heterogeneous, both in terms of the activities which are carried out by the Companies and the geographical coverage of the network, which is assured through a number of branches and subsidiaries in Europe and in some extra-European Countries. 49% of the companies are located inside a FV while 51% are located outside.

Almost all the interviewed Companies have maintained relationships with the nearest FV for several years. In some cases the relationships started when the FV was first established.
The reasons leading companies to start relationships with a FV are the following:

- the optimisation of traffic flows;
- the reduction of operative costs;
- customer demand;
- the value of integrated logistics;
- the diversification of services;
- the availability of information technology.

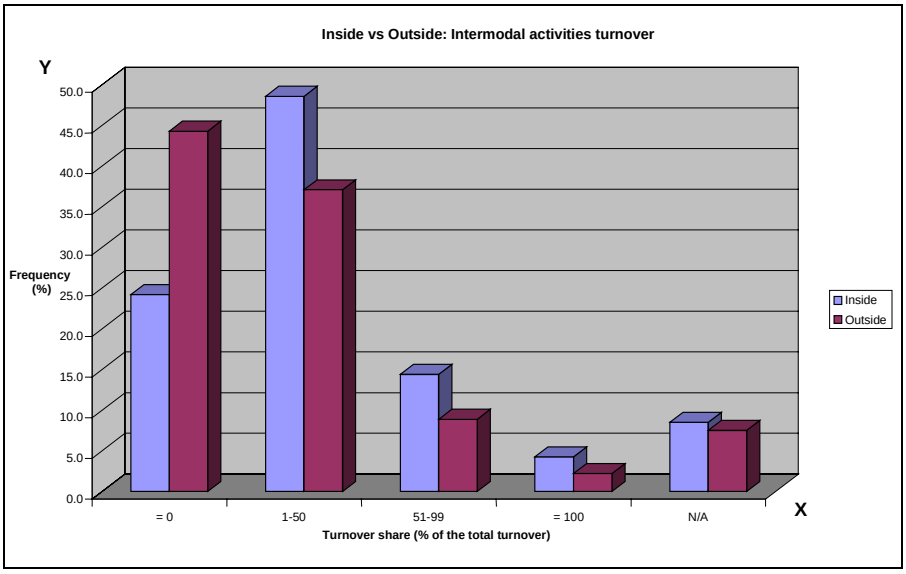
This fact tends to prove the FV polarising function over the production resources located in its area of influence.

Turnover
As far as turnover is concerned, and referring specifically to the share of the intermodal transport activities of the Companies, it is interesting to analyse the distribution of this share relating to railroad intermodality.

The following figure shows the 1997 figures for companies located inside and companies located outside a Freight Village. In particular, the percentage of the global turnover imputable to intermodality is shown. The figure may prove that the companies located inside the FV have a larger turnover coming from the intermodality.

Particularly, a higher percentage of the companies located inside the FVs (shown on the Y axis) assign a higher percentage of their total turnover (X axis) to intermodal transport; this is true both for the ranges between 1% and 50% and between 51% and 99%.

Furthermore a rather high percentage of companies located outside FVs do not assign any part of their turnover to this mode of transport.



Intermodal activities turnover

This shows the importance of establishing an office inside a FV for increasing the turnover coming from intermodality and proves that FVs are a key factor for the development of intermodal transport.

R/R equipment
The interviewed companies have various road and intermodal equipment and means of transport. Their vehicles are mostly owned by third parties. This is true for light vehicles, operating pick-ups and deliveries and for heavy vehicles.

As for intermodal equipment, each operator owns a considerable quantity of loading units (several hundreds), mostly semi-trailers, containers and swap bodies, without a specific specialisation for particular goods (perishable, dangerous goods, etc.). A detailed view of the intermodal equipment is

provided in the figures below, in which the total number of vehicles of inside and outside companies is shown.

These two figures show that swap bodies are prevailing in the transport organisations located inside the FV area, while the companies located outside prefer the use of semi-trailers.

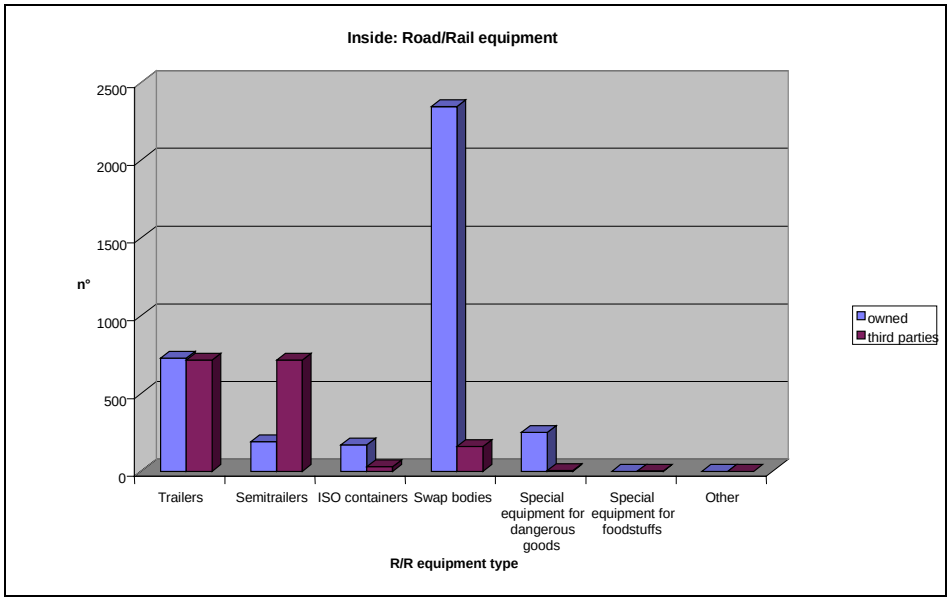


Fig. 4 – Inside companies: R/R equipment.

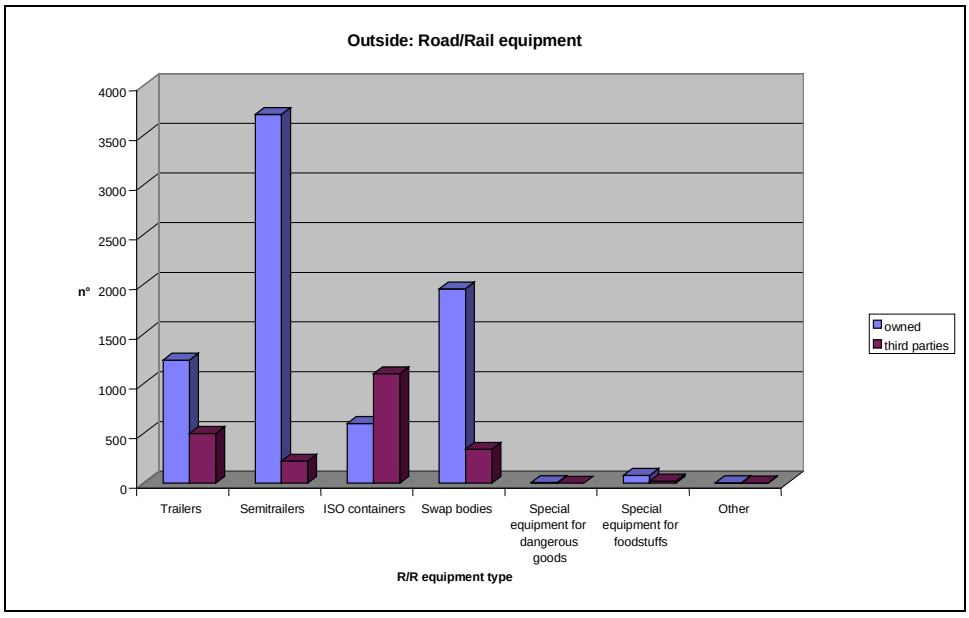


Fig. 5 – Outside companies: R/R equipment.

This fact clearly shows the attitude of transport operators located inside a FV to intermodal transport.

Total freight flows

The interviewed Companies were asked to supply the figures relating to overall traffic flows plus road and intermodal flows (expressed in quantities and/or number of cargo units) managed by the local branch office in the years 1992 and 1997, together with the forecast for 2002.

From the quantitative analysis the following situation emerged:

- the global traffic volumes (all transport modes) - relating to insiders and outsiders - are increasing for entire period, in accordance with a trend which confirms higher performances (rates higher than 100%) during the first five years (1992/1997) with more prudent expectations and slower growth for the following five years. Particularly notable is the difference relating to projections for the year 2002, presenting increasing values of 26% for the insiders against approx. 5% for the outsiders. The increasing trend is moving at a faster rate for the insiders than for the outsiders;
- in the specific case of the road/rail flows, for both targets of transport operators, the declared and expected flow figures are moving in a steady and increasing trend, but with smaller differences between the first and the second five year periods. If we consider the entire period of analysis 1992/2002 the increasing trend is faster for the insiders.

Total freight flows

When comparing the trends referring to the traffic global volumes with the road/rail volumes, the following considerations arise with regard to the forecasts:

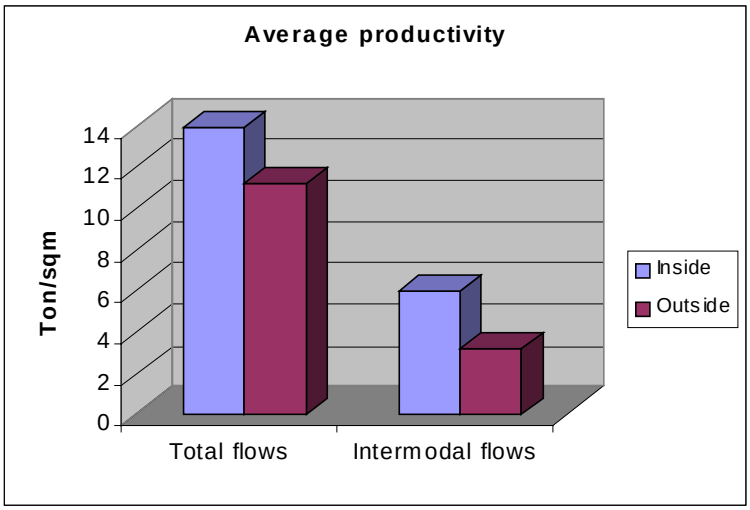
- inside operators seem to foresee a higher growth of railroad intermodality with respect with the global traffic volumes and, therefore, the expectations of the operators inside the FV seem to be more optimistic about intermodal development. In the near future this type of transport mode should enjoy greater importance than it currently does;

– concerning the outside operators the growth of intermodality is the same as for the overall traffic flows, without any particular change of attitude towards intermodality.

From these considerations it further comes out that FV is an essential factor for intermodal development.

Productivity

The following figure shows the values of the interviewed Companies' average throughput for 1997. This parameter was calculated, for each company, as a ratio between the overall or intermodal traffic volumes and the surface of the covered warehouses available. The figure shows the higher productivity values, which are typical of the insiders both for the total flows and the R/R flows.



1997 average productivity

This is an important parameter, whose values give a positive answer to our initial question: it proves that the companies located inside are more oriented to using intermodal transport and that FVs contribute to the development of intermodality.

5.1.2 Freight Village Managers

A second group of evaluations concerns the target group of Freight Village Managers.

Types of Freight Village

The FV-2000 survey, based on a sample of 14 European FVs located in 7 countries (Denmark, Finland, France, Germany, Italy, Spain and Sweden), showed that various FV models exist in Europe today, each of them with its own peculiarities. It appears that all the examined FVs contribute to solving the problems deriving from the growing demand for the transport of goods in Europe (congestion, environmental impact, accidents and cost effectiveness).

Two main FV models can be highlighted:

– **integrated FVs**, where the modal change is accomplished, providing also a range of combined services, where transport is only a single part of the global logistics performance. This is the

Italian "interporti" model which integrates the FV with the intermodal terminal of the Italian State railway network;

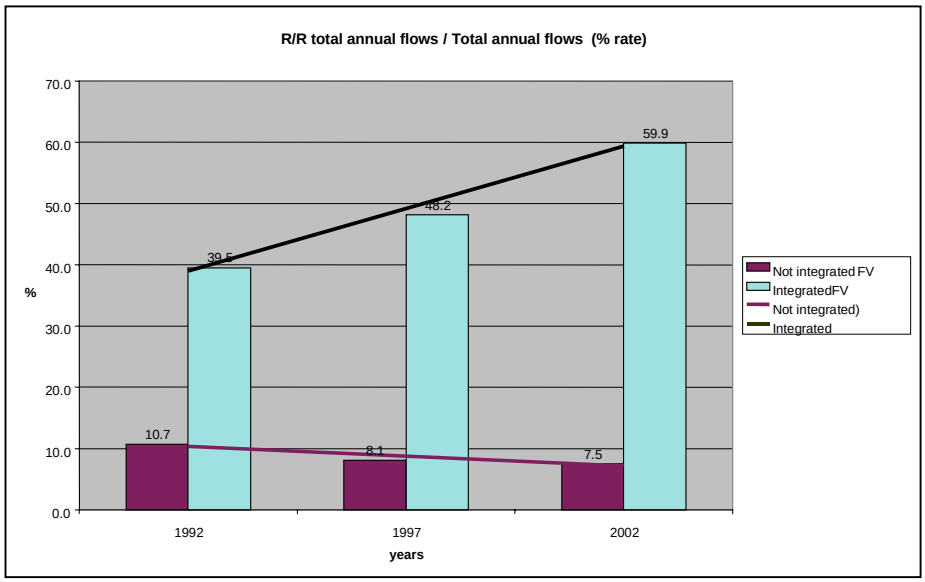
– **non integrated FVs**, inside of which the modal change is not accomplished; a change of vehicle takes place (that is from one vehicle to another) but not of transport mode; this usually is a urban model that integrates transport activities in the peripheries of large cities and changes ground transportation modes from trucks to small vans.

Among the above described FV models there are organisational models fluctuating from one system to another, where the railroad infrastructure exists but is undersized in comparison with the areas equipped for road haulage services.

Rail/Road flows

As with the transport operators, the FV managers were also asked to draw up flows quantities. Generally speaking, a substantial increase in total traffic volumes can be confirmed.

Particularly, by making a distinction between "integrated" and "not integrated" FVs, the increase of the intermodal traffic is much stronger in the "integrated" FVs than in the "non integrated" ones.



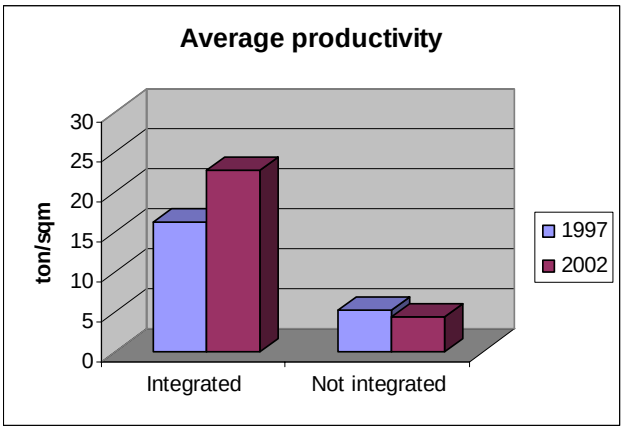
R/R annual flows/Total annual flows

The above figure describes the rate between the total R/R freight flows (calculated by adding the R/R flows declared by the FV managers) and the total flows (calculated by adding the total flows declared by the FV managers) both for integrated and not integrated freight villages. The rate between the annual Rail/Road flows and the annual total flows is high and shows a growing trend for the integrated Freight Villages: 39.5% in 1992, 48.2% in 1997. A 59.9% value is expected by FV managers in 2002. On the contrary, the same parameter is very low and shows a decreasing trend if referring to the non integrated FVs (10.7% in 1992, 8.1 in 1997 and 7.5% in 2002).

A marked evolution of R/R traffic in the "integrated FVs" has taken place in the recent past and it seems that an important increase will occur in the near future; furthermore, with regard to intermodal transport, the "integrated" FVs seem to operate better than the "non integrated" ones.

The same conclusions arise when we consider, for some integrated and non integrated FVs, the average rates up to 1997 and the forecast to 2002 of productivity figures referring to intermodal transport (as defined in the transport operators case, that is the ratio between traffic flows expressed in Tons and the total rate of the covered warehouses). Integrated FVs give better performances than non integrated FVs.

Therefore the "integrated" FV model appears to be the one which should be adopted in order to help the development of this form of transport.



Average productivity

5.2 Intermodal transport: qualitative analysis

The quantitative analysis was integrated through the analysis of 11 national case studies, 6 national workshops and 7 interviews addressed to national public authorities. The qualitative evaluations based on the above mentioned source of information, validated the quantitative estimations. Furthermore the following observations emerged from the qualitative analysis:

The role of local and regional authorities as well as national governments in the FV development

- Lack of co-ordination between policy making bodies at central, regional and local levels
- Lack of co-ordination between different transport ministries within one country
- Bureaucracy and conflicting political interests slow down the development
- National transport policies are often perceived as being in favour of road transports
- Long-term investments in intermodal equipment, while political decisions change frequently
- Local and regional authorities often initiating FV development

Public/private partnership (PPP)

- Public/private partnership successful for FVs in many cases
- High investment costs for FVs means public support is indispensable at the investment phase

Transport policies for the growth of combined transport

- Long term conditions a prerequisite
- Homogenous regulations all over Europe, and for all transport modes
- State funding of intermodal infrastructure
- Enhanced environmentally motivated policies

Environmental and safety issues
- Environmental concern increasing as a factor influencing the intermodal choice
- Environmental benefits of intermodal transport not sufficient to justify its use
- Awareness/implementation of ISO 14001, but BS 8800 not familiar
- Before building a FV studies should be made of environmental impact
- FVs mean less warehouse dispersment, and possibility for reverse logistics and consolidation

The role of the European Union
- Planning: A unified European railway network
- Budget: Allocate funds to create intermodal terminals
- Services: A liberalised market would guarantee more competitive services

Intermodal transport has not developed as expected due to:
- Economic conditions (low profitability for intermodal operations)
- Lack of homogenous systems for different modes and different countries
- Low flexibility in rail operations and lack of co-ordination between transport modes
- Low frequency, and too high tariffs (compared to road transport)
- Low reliability

Concentration vs. accessibility
- Too few intermodal terminals today (according to transport purchasers)
- Concentration of transport companies in FVs an advantage

Integration of the FV Network
- Improved co-operation and network activities between FVs will make the transport centres more recognised and used

In the following sections we have compiled representative reflections from the national workshops and case studies with regard to the analysis criteria. At the end of the qualitative analysis section there is a summarised description of how important the criteria seem to be for the development of Freight Villages and intermodal transport.

5.2.1 National/Regional/Local Transport Policies and Regulations

The role of local and regional authorities as well as national governments in the FV development

The Verona freight village was conceived by a consortium for industrial development. It was clear from the start that the function of the freight village was not only to rationalise the transport service but also to make a significant contribution to the territorial and economic development of the Veronese area. In other words the idea of realising an infrastructure was to provide answers to Verona's productive demands as a factor for industrial development. (IT)

Intermodal transports have been in a political focus in Sweden during the last years. It is a political intention to transfer goods from roads to railways at the same time as the political decision about transports from 1997 also contains ideas about co-operation under competition. From the beginning the ambition was to relieve the roads from heavy traffic at the same time as the railway would be supplied with larger quantities of goods. The need of expensive road investments would thereby be reduced. (SE)

Freight Villages are an essential instrument for improving the use of intermodal transport and that more incentives should be created by the State in order to encourage operators to use this mode. (DK)

On the environment issue there is much talk at policy level but so far few actions have been taken. (DK)

The main regret expressed by these operators is the lack of incentives for the creation of new logistics platforms both on the part of the EEC and the French State. Contrary to what occurs in other European countries, reflections on the creation of logistics platforms in the immediate proximity of combined transport terminals have not yet led to concrete achievements. (FR)

The problem is that the municipals, local councils, city councils or other financial partners only will finance the port establishments and terminals. At the same time the government by the Swedish State Road or Rail administrations then have to pay billions of Swedish crowns to establish new road and rail infrastructure connections. (SE)

A Freight Village infrastructure has an essential role in territorial development and it is necessary to grant funding to support combined transport activities. (IT)

Given the lack of help from the National Railway Operator, the state railway company claims that it only oversees and assists the railway system and identifies the Ministry of Fomentation as responsible for the creation of infrastructures. (ESP)

Only one of the 17 Spanish freight villages has a combined transport terminal located inside the site. In most cases the railway line is situated beside the transport centre and there isn’t always direct access to the terminal. Such a situation is a consequence of the total dis-coordination between the policy making bodies in Spain, both at central, regional and local level and between the ministries for road planning, the railway system and the development of ports and terminals. In consideration of this, intermodal transport in Spain remains at a very low level. (ESP)

Because political intentions and the conflicts between aims and goals the politicians need to know how logistics and transport systems works in the reality. As an example about political decisions that have reacted in the opposite direction is that the maximum weights of the load carriers have been raised every three years in due to political decisions about maximum weights for lorries, trailers and tractors. (SE)

The regulations for intermodal transport of hazardous goods are regulated by rules of ADR for road transport and RID for rail transport. The main difference between ADR and RID are related to the free (not documented) volumes of hazardous substances allowed at road or rail transports respectively. However a procedure in order to harmonise the ADR and RID regulations has started. That means that both railway and road transports as well as the whole chain in an intermodal transport will be governed by the same regulations. (SE)

Another aspect of hazardous goods is the handling of original transport documents. During road transport the lorry drivers normally carried those documents in the driving compartment. During railway transports the original documentation does not follow the transport in the same way. The document instead will be placed in mailboxes on the intermodal wagons. (SE)

It is also problems with documents from state owned railways in other countries. This is an organisational problem. Prescriptions are differing between different authorities. No authority could have an over all responsibility for intermodal terminals. (SE)

A problem is the long-term perspective for investments in intermodal equipment, while at the same time political decisions have a much shorter lifetime. For example the length of life for a rail wagon is 25 years, but for a lorry only seven years. (SE)

Bureaucracy and varying political interests have considerably slowed down the development both of freight villages (e.g. building permission) and the development of intermodal transport. New technical solutions will certainly contribute to developing intermodal transport but will only be possible through considerable public funding. The national transport policies have privileged the development of road transport and penalised the use of the railways (Terminal Operator). (IT)

In 1997 a new guideline has been implemented in Germany, enabling other companies than the former state railways to obtain public money for investment in intermodal terminals. By doing this government wanted to encourage private enterprises (non-state railways, inland ports) to invest in intermodal transfer equipment because of DB AG's hesitating terminal investment policy. (DE)

Certainly, this guideline facilitates the further deregulation of the rail freight market as well as more flexibility and competition in terminal investment. But from the GVZ point of view it is still not sufficient enough for real "strategic" terminal investments in freight villages. Although it has been proved numerous times that freight villages generate long-term intermodal traffic volumes by providing optimum intermodal interfaces, the to-be-investor still has to give the 20-year service guarantee for the terminal in order to get substantial public funding. For obvious reasons, this is even harder for a private company than for the state railways.(DE)

Therefore, the commercial risk of running the terminal in the long term and also for establishing train service should be shared by all parties interested in the modal shift from road to rail (terminal operator, railway companies, users of intermodal services, municipalities, federal transport institutions). (DE)

The transport centres shall be promoter, but it is the companies, who have the main responsibility. The centres have the facilities to make the total traffic more efficient. There must be better co-operation/network activities between the centres to make the "EU transport centres" (inter European) more recognised and used. (DK)

Low freight terminals (regional) should feed freight to major centres to increase the total quality and frequency, also for regional areas. (DK)

Regulatory aspects and problems are still to be solved. The development of the national network of interporti began with the 1986 General Transport Plan and materialised with the allocation of funds in 1990, and with recent (1997) provisions in favour of freight villages and intermodality. The Five Year Interporti Plan will soon be completed. Substantial problems exist in Central Planning activities. (IT)

The political statements are not clear enough. There are seldom either action or economics behind. The main responsible for the inefficiency are the users of the transport centres. The investors should be neutral. But the local authorities and the centres should be more co-ordinated. The regional authorities should be primus motor to more action regarding the centres. A clear political statement concerning how the centres should appear and what they should contain is necessary. There is a

need for precise criteria and a clear concept definition. The criteria could be by status (A, B, C), where the centres should satisfy the requirements and demands, according to their status. (DK)

The location of freight villages should be at the heart of advanced communication networks and of sufficiently developed concentrations of demand. Unfortunately the development of some Italian freight villages has been slowed down tremendously by too much bureaucracy in terms of urban development. To obtain the authorisation necessary for a new construction or to modify an existing construction is a real via crucis. (IT)

The national transport policies have privileged the development of road transport and penalised the use of the railways without considering the external effects produced by road transport. A recent study carried out by the Italian Railways has demonstrated this. (IT)

FV development should comprise basic intermodal transfer facilities (eg rail siding with paved area for FLT operation) to provide intermodality right from the start. These facilities should be prepared for modular extension according to the real transport figures. It is complicated to promote combined transport without any intermodal transfer point. Usually terminal investment starts only with substantial traffic demand which, on the other hand is not achievable without a terminal. So, the terminal should be there before its potentials users, not the other way around! (DE)

Secondly, a permanent development body like a GVZ-Entwicklungsgesellschaften is necessary for the success of FV. These companies can be run on a lean-management basis and should be financed by all parties interested in the sustainability of the FV (i.e. PPP). (DE)

Although PPP is a successful approach to FV development the problem is the delayed terminal provision in some FV. Therefore the initially planned division of development tasks into:
- estate development by municipalities and federal institutions
- private investment in warehousing and logistics facilities and
- intermodal terminal and train services by DB AG
has been only partly fulfilled because of the specific railway situation described above. (DE)

Public/private partnership (PPP)

Some Danish transport centres have been built by financial investors. In other centres it began on local areas and initiatives. (DK)

Regarding the finance several solutions are possible, but concerning managerial issues it is the internal task and responsibility of the individual companies. It is still of great importance that a co-ordination between the companies is present and active. The responsibility for these co-operations could be created by PPP solutions e.g. between a local authority, a financial institution or a houseowners´ association. (DK)

In Verona a total of 300 billion Lire have been invested overall, all of which is public money. An issue of importance is the high investment costs necessary in order to realise freight villages, which signifies that public intervention is indispensable, at least in the investment phase. On the other hand noteworthy benefits do exist outside these infrastructures which must be considered when evaluating the economic convenience, when public authorities decide on the allocation of financial resources. In the case of Verona, without public intervention it wouldn’t have been possible to achieve anything. (IT)

Intermodal infrastructures should be funded by the State. Similarly, concerning variable costs, a policy supporting the railways (and indirectly combined transport) is necessary. In Italy not enough is done in this respect. The State should provide assistance to the railways. (IT)

Supporting the role of freight villages as instruments for economic and territorial development. The necessity to grant public funding to support combined transport activities. (IT)

PPP has proved to be successful for the development of German FV, because all interests in FV establishment are represented and considered. (DE)

Transport policies for the growth of combined transport

The main railroads to the terminals must be better. The railways must increase competitiveness with a specific priority to reliability, frequency (high) and price. The political disagreement between national, regional and local authorities must be rectified towards a more environmental focus. It is important because the customers demand environmentally correct transport, but they will not pay the increased price. Therefore there is a need for a longer term planning, especially in environmental issues. The environmentally correct transport will be a competitive parameter, not in regard to the price parameter, but a requirement to the lowest price. (DK)

DSB have generally to be more aggressive to improve the use of combined transport. In total there has to be more focus on the added value philosophy. (DK)

Long term conditions are a prerequisite in order to implement transport policies in favour of freight villages. (SE)

A transparent rail freight grant system, as in the UK, should be implemented. The grant system has to be conform to EU competition law and should enable railway operators to tip the cost balance to road transport. (DE)

Environmental and safety issues

It is essential to subscribe to environmentally sustainable concepts of transport and production; reliable and competitive service conditions must still be assured. The environmental benefits of combined transport are not sufficient to justify its use and essentially intermodal transport should produce economies of scale enabling cost reduction and competitiveness. In the current state of affairs, combined transport cannot be competitive with road transport. If it is to be recognised as a solution for environmental reasons (reduction of road congestion and safety), it can only survive if it is heavily subsidised by public funding. (IT)

Taking account of the environmental constraint is different for great groups of transport and small companies respectively. The SMEs do not generally have financial means to mange and observe certain rules. (FR)

On environmental issues there is a degree of sensitivity, anticipating EC actions resulting in increased pressures and cost of exploitation. (FR)

Not all the companies interviewed were familiar with ISO 14001 and BS 88000 and most of the companies situated in freight villages considered the environment issue to be the responsibility of the freight village manager. (FR)

It is worth noting that before implementing an infrastructure project, studies should be carried out to discover what the environmental impact and risks are. It is the responsibility of the Public Organism to analyse and evaluate the positive and negative aspects, pausing especially on negative points that can be easily avoided or corrected through precautionary measures. The process of observation, analysis and evaluation of the environmental situation should occur on a continuous basis and not in sporadic fashion, given that most environmental disasters are caused by gradual hindrances rather than isolated incidents. Negative environmental impacts are often unresolvable and the damages irreparable. (ESP)

Within this context it is important to point out that Freight-Villages, as well as the State railroad company and the port authorities are treating the environment very carefully and are working on obtaining their ISO14000 certificate (International Standardisation Organisation). (ESP)

Concentration of activities in an organised way, with equipment for monitoring and intervention, allows for a risk management much more adapted and much less theoretical. (FR)

It is important for Freight Villages to develop an Environmental Plan which should be known, accepted, and put into practice by the management of Freight Villages and by all the clients who use the Centre. (ESP)

Freight Villages by nature care for the environment since they allow for less warehouse dispersment around the country as well as a concentration of transportation in proximity to Consumer Centres, or located in central crossways of the four modes of transportation (air, maritime, railroad and ground). This situation fosters better control of environmental risks. Furthermore, one of its functions is to provide a centralised service to its clients in order to continually improve the environmental impact. For example: the service should offer clients a Reverse-Logistics service that provides solutions for return transport, packaging and vacuum packed transportation. It should also offer clients solutions regarding selective pick-up of residuals both for offices and for warehouses and transport. (ESP)

The transport centres shall be promoter of environmental correct solutions and put a pressure on the users of the centres. Aspects as improved consolidation, intranet/internet, city logistics, better use of empty space could contribute to a healthier environment. (DK)

Price regulative intervention from the government with the purpose of moving more freight to the railways and intermodal transport would give a huge environmental advantage. The intermodal terminals shall be placed near a motorway or transport corridor and in direct connection to main railways. (DK)

The role of the European Union

Despite Spain's railway services' slow evolution in comparison with the rest of Europe, there is hope that before long there will be a significant quality jump both in machinery and in infrastructure. For this reason the transport policies of the European Union ought to consider the situation in Spain and the improvements needed in co-ordinating public entities, railway companies, industry and private enterprise. The following aspects are also needed:

a) A clearer definition of who plans the central axes of transit routes in Europe.
b) Freeing-up of the necessary funds.
c) Development of the necessary infrastructure to give rise to several companies in order to foster competitive service. (ESP)

In conclusion, certain activities on the part of the DG VII are expected to take place:

- Planning: A unified European railway network that includes Spain. The Spanish Railway system needs to be adaptable to the width of the UICC rails, or a solution to the problems involved in changing rails or the Automatic System of Bogies could be investigated.
- Budgets: Allocate budgets to create intermodal terminals (in or adjacent to the Freight Village, not at a distance of 3 Km or more), and take advantage of already existing intermodal terminals.
- Services: Liberalise the market to give rise to a greater number of railway operations which would guarantee more competitive service.

The goal is to obtain, through planning, liberalising budgets and starting an efficient railway service, a European railway network of Freight Villages that offers value-added services and railroads within the FV without ever overlooking caution with regard to the environment. (ESP)

In addition, it would be beneficial if all railway transport were a European service and not just Spanish, so that all companies could offer a European service. The hope is that railway services will follow the same kind of evolution path as telecommunications: opening-up of the market, birth of new companies and the development of a competitive service that benefits the consumer. (ESP)

The European Commission is promoting intermodal transports, but the national authorities and politicians do not always follow these intentions. Today national thinking is the major barrier to further development and an international extension of intermodal transports. National solutions should be co-ordinated with international policies, otherwise it will result in inefficiency for the European intermodal transports. (SE)

5.2.2 Transport Efficiency and Freight Villages

Transport demand requirements and FV supply

For a freight village the concentration of transport companies is an advantage and, according to transport companies, there are too few intermodal terminals today. The services in demand include repair & cleaning, guarded parking areas for lorries outside the terminal. (SE)

A major problem for intermodal and railway transports is the unbalanced flows between Sweden and the European mainland. The exported volume is almost twice as big as the imported flow. The result is a lot of rail wagons and intermodal load carriers returning empty to Sweden. This means low efficiency and low profitability for the intermodal transports. (SE)

Another questioned is the potential or new markets for intermodal transport. About 85% of the total volume of mainly general cargo that is transported by ASG and BTL technically could be shipped by intermodal transports instead of only road transports. Changes of attitudes are needed before intermodal transport volumes will increase. It could also be dangerous from an economic perspective for road-hauliers to be locked up with investments for intermodal operations. (SE)

The real threat to intermodal transports is the low profitability. A key question is why it is not profitable to send 25 lorries by train instead of having 25 drivers to operate them? The problem is that the fixed costs for a lorry is about 5% of the total cost when using it. For the intermodal system the fixed costs instead is about 95%. The cost calculation method used by the Swedish State Railways is based on the cost for a lorry transport. Then they offer a tariff corresponding to 90% of the cost of a lorry transport. The lack of profitability in the rail business is also a well-known problem. However also road hauliers have profitability problems. Under the current economic

conditions intermodal transports can be profitable for road hauliers and perhaps forwarders but not for the rail operators. (SE)

It emerged that intermodal transport has not developed as expected for the following reasons:
- economic conditions (discontinued subsidies, reduced road taxes)
- technical issues (increased max. weight for lorries, not enough swap bodies and semi-trailers equipped for intermodal handling)
- low flexibility
- small volumes means low frequency
- too high tariffs (SE)

The growth of the international traffic stopped in 1998. The reasons are multiple :
- difficult progression of interworking (obligation to change engines, mechanics, etc),
- service quality deterioration (FR)

It emerged from the interviews that the most important criteria for selecting modal splits are costs reduction and the optimisation of flows. On the whole combined transport is judged to be somewhat unreliable and far more expensive than road transport. (FR)

A Freight Village must have a minimum size in transport volume because:
- it is necessary to have sufficient containers for the same destination;
- it is necessary to have the traffic balanced in both directions. It is necessary to have an exchange of 150.000 tons between two building sites to create a direct return train five times per week between these two sites. (FR)

From this double report on the localisation and the sites number, and the zones with logistic vocation, one can derive the following conclusions:
- a logistic freight village cannot justify by itself only the establishment of a combined transport site;
- a combined transport site can and must serve several logistic freight villages, and this service road will be all the more efficient since the road links are good between the freight villages and the site;
- if the localisation of a new combined transport site can not be determined by a logistic freight village project, even important, it is on the other hand necessary to wonder about the advisability of creating a freight village associated with a project of combined transport site. (FR)

At the Spanish level, there seems to be a lack of co-ordination with respect to the Freight Villages, transport systems and intermodal transport specifically. In order for the Freight Villages to function well, there needs to be a high level of co-ordination between two parts, the Freight Villages and the transport operators. (ESP)

There are not enough intermodal terminals in Spain, and those that do exist are not efficient because they do not have the means and equipment to offer services and conditions that compete with the road system. This is where the need to develop intermodal terminals arises, which are capable of offering more versatile and efficient services and deals. (ESP)

Logistics divisions should have, adjacent or incorporated, an adequate railway structure linking them to Freight Villages and the most relevant commercial Ports. They would thus be able to offer modern and effective railway services. Until now only the National Railway Operator offers railway

service, and it has created many obstacles for any private initiative concerning railway systems to link Freight Villages. Another obstacle is the high investment required to create a successful railway service. (ESP)

In analysing the evolution of the Spanish railway service, it becomes evident that hardly any changes have been made over the past 30 years. This fact is especially notable when we consider that there are aspects that need improvement: on one hand, the duration of transit is often longer by railway than by road, and on the other, the railway offers a less than reliable service as cargo often does not reach its destination. Logistics operators point out that the time elapsed to move from the last railway node to the intermodal terminal of the FV is double that of the original trip. Plus which the Spanish railway does not reach all destinations, illustrating the so called “problem of the final Kilometre.” This problem could be remedied by making the intermodal terminal of the Freight Village the key node for modal changes. (ESP)

In order for the railway service to be successful, the policy of fees must be equal or lesser than that of the road system. Many Spanish transporters request that the method of transport (railway versus road) be agile and take into consideration the two factors mentioned above: equal or lower price and favourable transit duration. (ESP)

Another disadvantage of the Spanish railway is that it does not use the UICC rail width, which unites all the other European railway systems. This means that time is lost at the border where switching engines is required, in addition to incurring extra cost because cargo must be moved from a platform on one track to one on another track. Another possibility is to adopt the automatic Bogies system: engines and cars come with several annexed axes that automatically adapt to the width of the track. But the changeover still requires time and the initial investment is much greater than for than of a regular train. Neither system fits into the desired conditions. (ESP)

For decades the railway service has been concerned with improvements its passenger transportation and has overlooked commercial transport. Some examples are the AVE that links Madrid and Sevilla, the Local Barcelona-Madrid and the Euromed linking Valencia and Barcelona. (ESP)

The facilities on the stations (terminals) in Denmark are poor; the prices are non-competitive, which causes poor exploitation of the existing railway net. There are almost no terminals in Europe, which has the right capacity, with the direct access to main railways. There are few good examples e.g.: Bologna, Munich and Cologne. In Denmark in Høje Tåstrup and Taulov better direct access to the main railway net is under consideration, which is an investment (50 MEURO). (DK)

But the railways are not attractive enough. The transport time is too long on non-scheduled block train distances, just as the departure and arrival hours are inexact, which gives a poor planning. The tough competition from road transport operators causes that these railway-problems must be solved before freight can be transferred to rails. The freight users are not enough environmental aware to weight the environmental advantages from the railways in comparison to the mentioned problems. (DK)

DSB is co-operating with ADTRANS in planning a demonstration project, where the aim is to reduce loading time and costs in terminals. If this is succeeded, there will here be a potential and interesting market, also on short distances (100-150 km). (DK)

Huckepack solutions has not developed as expected, because of the reaction of the railway (operators). (DK)

In the last few years road shipments have increased by 180% whilst rail shipment have increased by a mere 3-4%. This phenomenon is explained by two reasons which are the greater flexibility and reliability of road transport (in this case necessary to reach several new branches opening in Italy) and its lower cost (including the cost of delays and inefficiency on the part of the suppliers of road transport). (IT)

Why should we move traffic from the road to the railways? The road is more efficient and the trucks that are manufactured these days do not pollute so much …..(IT)

Should intermodal transport be considered an economic activity or is it something else? In other words, the experience of the past fifteen years must make us aware that in the current state of affairs intermodal transport cannot be competitive with road transport. If it is to be considered as a necessary solution for environmental reasons, e.g. to reduce road congestion and increase transport safety, then we must recognise the fact that it can only survive if it is treated in a similar way to local public passenger transport. That is, by recognising the social function and awarding the necessary public resources to subsidise it. Otherwise, it is destined to lose. (IT)

Land intermodality (including the transport of containers) is influenced decisively by the cost of the final transfer between the road and the terminal. (IT)

All the participants recognised that the main reasons for the slow growth of intermodality are the greater flexibility and reliability of road transport and its lower cost. (IT)

Since 1994 the transformation of the state railways into a commercial enterprise (Deutsche Bahn AG – DB AG) has lead to significant changes in combined transport:

- Although modal shift from road to rail is still a main political target, combined transport has to be commercially viable.
- Track access charges account for 40 to 50 percent of the total transport cost complicating the competitive position of rail in the freight market.
- Public finance is only involved in terminal and rail track investment but there are no direct subsidies available for transport services.
- For obtaining public finance for terminal investment, the investor, i.e. DB AG, has to guarantee for up to 20 years for the terminal being in service (because of the long depreciation period of the terminal equipment).
- Therefore DB AG is currently only investing in terminals with long-term guaranteed and substantial traffic volumes or in replacements for existing terminals.
- Some of the freight villages have been spared out from terminal investment so far because they are "only" determined to generate new potential for combined transport by establishing intermodal facilities rather than only reacting on existing transport demand.
- The density of the intermodal terminal network in Germany is relatively high and with decreasing transport figures in national combined transport some of the terminals are even competing to each other. This refers especially to some of the freight village terminals.
- Additionally, international intermodal transport with distances competitive to road transport, is still too complicated to succeed. While railway structure in Germany (separation of transport services and network) is prepared for co-operation as well as for competition, most of the other European railways are not. (DE)

The most important criteria as for the modal splits are the reduction of the costs, the optimisation of flows and the requests of the customers. (FR)

A contiguous building site which makes it possible to generate economies on the costs of exploitation of the companies, to offer a greater time flexibility for the routing of the containers or the swap bodies and finally to limit the circulation of the heavy lorries. (FR)

Combined transport is judged in the whole relatively not very reliable in terms of respect of the schedules and is regarded as a means of transport more expensive then the road transport. In addition, the unreliability of the rail network related on frequent social movements and a transport plan supporting the travellers to the detriment of freight is often put ahead. (FR)

Given that the market is increasingly demanding the shipment of small lots, continued purchasing, short lead-times, and the carrying out of cross-docking near the point of consumption, Freight-Villages are an ideal location for operators.

- First, the Freight Village is an adequate space in an optimal location close to the four main transportation mediums (air, ground, rail, and maritime). With a few well designed accesses, the FV guarantees that its clients can offer efficient, quality transport services.
- Second, the FV offers value added services that make the client's management abilities and logistical and distribution activities easier. (ESP)

Combined transport is providing an obvious advantage in term of external costs. This advantage is all the more important since the building site can avoid road courses in urban zone, which is the case if it is localised in the centre of an agglomeration, and if the urban distribution starting from the site can be organised on short distances with suitable means. The large combined transport sites involve a strong concentration of road and railway flows; they cannot thus be localised in the centre of great agglomerations. (FR)

The advantages for the Urban Community of Lyon are obvious:

- organisation of a modern multi modal logistic site with good connections with transport infrastructures;
- creation of an offer for new establishments and re-localisation of companies presently badly installed;
- availability of good-quality urban surfaces in the centre of Lyon. (FR)

For an inspector of classified facilities, the logistic freight villages bring an obvious positive contribution as regards environment. Thanks to the presence of a manager, a true upstream process is possible, allowing a real adaptation of the regulation to the companies functioning. The combined play of this regulation and the freight village internal rules of procedure enables a high level of safety without excessive or unsuitable constraints. (FR)

Thanks to the economies of scale, it is also possible, without any large additional costs, to set up in these freight villages true security teams and an effective prevention organisation. A real functioning in symbiosis with the Administration is thus possible: GARONOR and SOGARIS are a very good example. (FR)

It appears, however, that this advantage is not always perceived by the companies and that it becomes even a disadvantage for those which do not wish to be forced by lawful safety measures. A more systematic control of isolated companies would be undoubtedly useful to restore a healthy competition, but the Administration does not have always the possibility of doing it. (FR)

In addition, it is necessary to point out the other advantages brought by the freight villages as regards environment:

- direct access to highways without harmful effect for the urban access roads;
- very limited noise and visual harmful effects for the neighbouring habitation zones;
- improved use of space and possibility of architectural and landscaped discipline. (FR)

The freight village manager and regional officer insisted on the social function of combined transport in terms of employment and the environment, further enhanced in a freight village context. They agreed that the Italian freight villages have demonstrated their function in territorial development stating that in the past ten years the use of semi-trailers and swap bodies has increased tenfold. (IT)

The representative of the main Italian combined transport operator stated that the experience of the Italian interporti has been positive. The concentration of transport companies and logistic activities has almost eliminated the cost of the final transfer between the road and the terminal. (IT)

The goal for profitability, or return on investment, of the railway transport business at the Swedish State Railways (SJ) is 7%. Today it is difficult for the Freight Division of SJ to reach this profitability. It would probably not be attractive for anyone else to start rail freight business in a larger operation. (SE)

No new intermodal terminals are planned since the intermodal transport business has low profit. Investments will instead be guided towards more profitable business areas. For example it is no problem to get private financing to mobile telephone networks. The problem is to find a balance between private enterprise and public economy when new financial solutions are needed. (SE)

Concentration vs. accessibility

Various initiatives related to this problem have emerged, among which the 1993 constitution of the Barcelona Logistic Centre stands out as a considerable success. This association endeavours to unite all persons and enterprises interested in promoting Barcelona as a Logistic Centre for Southern Europe. In fact, a study elaborated for this association by Andersen Consulting (an international consulting firm) concluded that, given the present situation of international and multinational enterprises, it would be optimal for such entities to have between 1 and 3 distribution warehouses (based on macro regions and located preferably in Freight Villages) for the entire territory of the European Economic Union. If an international enterprise has only one warehouse, it is located in Northern Europe. If the enterprise has three warehouses, then they are located in the North, the South, and the East. (ESP)

The amount of transport centres must be co-ordinated, so an overcrowding is avoided, which will harm the environment, use unnecessary land area and create negative commercial solutions. The existing transport centres shall be used more efficiently with a better exploitation. A prerequisite for better consolidation and the full exploitation of the transport centre is the presence of as many transport operators as possible. But it is needed that they co-operate. The centres must especially contribute to the international traffic with highly efficient routes between the centres. Neutral railway operators on the long distances, with high frequency, a competitive price and a high reliability shall operate the routes. (DK)

Intermodal transport, in order to be more competitive, must no doubt produce a greater concentration of activities in a few freight villages. This is necessary in order to produce the economies of scale which can make it possible to reduce costs and to be competitive with regard to

price and quality. On the other hand, the concentration of traffic in few big terminals can produce local congestion, with the consequence of the social refusal which could derive therefrom. (IT)

Concerning a freight village network the concentration of traffic in medium-large structures is preferable to the distribution of intermodal functions in a multiplicity of terminals. It is obvious that to adopt policies in favour of concentrating or dispersing freight villages involves completely different instruments on the part of public authorities, both from a technical and consensus point of view. From a technical point of view however, there is no doubt that the concentration of intermodality in a few integrated structures (and therefore with logistics functions, etc.) is preferable, also making it possible to develop more easily innovative techniques. Crucial psychological reasons are also in play. (IT)

The future of national intermodal transports is predicted to consist of many more and smaller intermodal terminals or reloading points connected in a lightweight intermodal system that will provide lower costs. As an example it was described that ASG and BTL have about 30 terminals for general cargo all around Sweden. The normal lorry distribution distance was, for the company distributing clothes, about 60 km from the intermodal terminal. (SE)

The mean distribution distances in the ASG or BTL systems were instead about 20 km. A lightweight intermodal system that instead would consist a lot of small terminals or reloading points, similar to the new lightweight intermodal transport system called “Lättkombi”, could perhaps reduce the lorry transport length with about one third. (SE)

This system is the latest product from the SJ Cargo Group. Traditional intermodal terminals are not needed in this system. Instead a forklift truck is travelling by the train and is also operated by the train driver at every loading or unloading point. The system is today based on a hub in Borlänge and the customer of it, the Dagab group, is very pleased with it. This system would provide a better railway-system over a greater area because it doesn’t need the resources that are expected in a Freight Villages be-cause the idea of the system is that it doesn’t need any stationary handling equipment or other expensive facilities that are offered in traditional intermodal terminals. (SE)

From the aspect of international or European intermodal transports instead fewer terminals with better service and intermodal connections are needed. (SE)

Integration of the FV Network

Three models of Freight Villages presently exist:

a) The urban model that integrates transport activities in the peripheries of large cities and changes ground transportation modes from trucks to small vans.
b) The Italian model (Interporti) that integrates the FV with the intermodal terminal of the Italian state railway network.
c) The Harbour Freight Village model adjacent or integrated to a harbour area.

(ESP)

In the transport centres there shall be intranet/internet contact possibilities with the purpose of consolidation of national and international traffic, among other things regarding city traffic/logistics. (DK)

An international transport exchange could be suitable for reducing the empty transports between the centres. (DK)

A freight village being next to a combined transport site can provide additional advantages:
- possibility of directly wheel barrowing swap bodies from the site to the warehouse (which strongly lowers the transhipment cost) as it is done in ports or airports (zones of freight with direct access to quays or tracks) ;
- possibility of transferring on the freight village certain additional activities which are consuming space, such as storage of containers and trailers, repair, washing, services to the employees, but we should not hide the difficulty in moving some of these activities to the competing field ;
- possibility of developing the grouping-deblocking activity under better conditions. (FR)

Use of land and real estate is a main question when planning for large regional freight terminals or other transportation plants. Questions about freight terminals are discussed from the localisation perspective and especially about road and rail access to waterfront terminals. Very often direct access to the main road network is desired. For the ultimate freight or intermodal terminal all the transportation modes Sea, Land and Rail should be possible to combine. (SE)

5.2.3 Summary of the qualitative analysis

Reflections from the national workshops and case studies with regard to the analysis criteria are compiled in the section above. As can be seen the situation is somewhat different in the seven European countries, but there are mainly similarities in the view on how FVs and intermodal transport should be developed. In this section a summary of the qualitative analysis is made. The summary is structured according to the analysis aspects used in the section above.

National, regional and local transport policies and regulations

<u>The role of local and regional authorities as well as national governments in the FV development</u>
- *Lack of co-ordination between policy making bodies at central, regional and local levels*
- *Lack of co-ordination between different transport ministries within one country*
- *Bureaucracy and conflicting political interests slow down the development*
- *National transport policies are often perceived as being in favour of road transports*
- *Long-term investments in intermodal equipment, while political decisions change frequently*
- *Local and regional authorities often initiating FV development*

The policy decisions made at national, regional and local levels respectively are not always co-ordinated. This can mean that a national initiative or policy not is implemented at the lower levels. One reason can be the lack of funding, another can be that regional interests are favoured by the local administrations.

Intermodal transports and FVs involve several transport modes, which makes it difficult if they are administered at different ministries or administrations. There is a risk of sub-optimisation if the planning process is focus at one mode at the time.

In order to establish, or expand, a FV it is a complicated and time-consuming process in to fulfil all bureaucratic requirements. And in addition to this the political level has to approve, since it is a major infrastructure investment.

Even if the national transport policies clearly state the importance of developed intermodal

operations, the FV and intermodal operators as well as customers state that the actual policy implementation is different. A single decision in favour of road transports is no problem, but added together they are perceived as making it difficult for intermodal operations. Some issues mentioned are weight and length measurements for lorries, fuel tax policies.

Regulations are changed so often that operations such as FVs that are based on long term investments have difficult to adapt to the rapid changes without severe economic consequences .

All the aspects mentioned above focus on the problems regarding the role of authorities and governments. This last issue on the subject however reflects the importance of the authorities for a successful establishment of a FV. In several of the case studies the support and initiatives from the local/regional authorities is stressed as being of vital importance for the planning and implementation process.

Public/private partnership (PPP)

- *Public/private partnership successful for FVs in many cases*
- *The high investment costs for FVs means public support is indispensable at the investment phase*

PPP has proved to be successful for the development of many FVs. In e.g. Denmark transport centres have been built by financial investors, since the operation is considered being profitable in the long run. A mixed partnership with participation of local authorities, financial institutions and real estate companies is considered favourable.

There are high investment costs in order to realise a FV. In many of the studied cases public funding at the early stage has been crucial for the infrastructure investment. Intermodal infrastructure means land acquisitions and long term pay back time. It is thus very important to have the authorities participating in the development and planning, and that they understand the role of FVs as instruments for economic and territorial development, as well as the environmental advantages. The long term aim is to operate FVs on a strictly commercial basis.

Transport policies for the growth of combined transport

- *Long term conditions a prerequisite*
- *Homogenous regulations all over Europe*
- *Homogenous regulations for all transport modes*
- *State funding of intermodal infrastructure*
- *Enhanced environmentally motivated policies*

Transport policies must be of long term character. FV structures and especially intermodal infrastructure are long term investments. It is not possible to adapt to rapidly changing regulations and legislation without financial difficulties. When planning the purchase of handling equipment and layout of roads and railways there is a need to know the long term framework for this operation. An example is that the maximum weights for load units has increased in Sweden several times in recent years as a result of political decisions about maximum weights for lorries, and trailers. Thus the terminal operators have had to invest in new handling equipment with higher lifting capacity.

International traffic is having problem when the national regulations are different, and e.g. make it necessary to have several sets of documentation. It also prevents from using nationally optimised load units and wagons for border crossing transports, since there are various types of load units.

Intermodal transport is made difficult due to the fact that the different modes have a different set of regulations. One example is that when transporting hazardous goods the road transport is regulated in ADR, while RID applies to the rail transport.

The state is usually involved in funding of the rail infrastructure. There is also a demand for public funding of the intermodal infrastructure in terminals.

On the environmental issue there is much talk at policy level but so far very few actions have been taken. The customers are demanding environmentally friendly transports, but the authorities are not implementing regulations to enhance the use of environmentally adapted transports, i.e. rail and intermodal concepts.

Environmental and safety issues

- *Environmental concern increasing as a factor influencing the intermodal choice*
- *Environmental benefits of intermodal transport not sufficient to justify its use*
- *Awareness/implementation of ISO 14001, but BS 8800 not familiar*
- *Before building a FV studies should be made of environmental impact*
- *Concentration of activities in an organised way, with equipment for monitoring and intervention, allows for a better risk management*
- *FVs mean less warehouse dispersment around the country, and a possibility to offer reverse logistics services as well as improved consolidation*

Before building FVs studies should be made of the environmental impact, both negative as well as positive aspects, focusing on negative points that could be avoided through precautionary measures.

FVs can be part of a solution to environmental problems, since a location outside city centres means less traffic in densely populated areas.

Intermodal transport is often perceived as an environmentally adapted transport solution. Public funding could be used to subsidise intermodal transport as part of an environmentally adapted transport policy.

The role of the European Union

- *Planning: A unified European railway network*
- *Budget: Allocate funds to create intermodal terminals*
- *Services: Liberalise the market to give rise to a greater number of railway operations which would guarantee more competitive services*

Even though the European Commission acts to improve and enhance the development of the European transport system, there sometimes seems to be a limited knowledge of this at regional and local levels. Also, the national authorities and politicians do not always follow these intentions.

National transport policies can be a barrier to the development of intermodal transports. National solutions should be co-ordinated with international policies, otherwise it will result in inefficiency for the European intermodal transports.

Transport efficiency and Freight Villages

Intermodal transport has not developed as expected
Some of the most important factors mentioned in the workshops and case studies are:

- *Economic conditions (low profitability for intermodal operations)*
- *Technical issues ands standards (lack of homogenous systems for different modes and different countries)*
- *Low flexibility in rail operations and lack of co-ordination between transport modes*
- *Small volumes means low frequency*
- *Too high tariffs (compared to road transport)*
- *Low reliability*

Concentration vs. accessibility

- *Too few intermodal terminals today*
- *Concentration of transport companies in FVs an advantage*

The transport operators find the number of FVs with intermodal terminals to be too few, while the economy of scale means that the terminals can not be to close to each other. This conflict has to be solved by increased flexibility in the rail operations and e.g. improved pre- and end-haulage services.

FVs should be located at the heart of infrastructure networks and where there is a sufficient concentration of transport demand.

Integration of the FV Network

- *Improved co-operation and network activities between the FVs will make the transport centres more recognised and used*

5.3 Environmental aspects

The environmental data collected was used to define the environmental aspects to be managed by the Good Practice Code, the DSS for FV managers and the Training Software Tool.

Three tools were implemented and validated by Freight Village managers.

5.3.1 The Good Practice Code

The purpose of the Good Practice Code is to integrate environment and safety aspects in FV management.
The Good Practice Code was produced during the reporting period 01/01/99 - 31/03/99, on the basis of the results of the surveys. It was optimised during the month of April 1999 and it delivered (Deliverable 3 of the project) to the European Commission on 3rd May 1999.

The Good Practice Code (GPC) is structured in four chapters and three annexes described as follows.

Chapter 0: Executive summary - The Good Practice Code for friendly environmental management in Freight Villages

This section includes:
- a synthesis of the contents of the Good Practice Code;
- a presentation of main results coming from the survey;
- a description of the GPC scope.

Chapter 1: Environment and safety management is a competitiveness factor.

This chapter begins with the presentation of the results obtained from the survey and identifies the reasons why transport and logistic companies and FVs should improve their environmental and safety management and adopt the related standards.

It briefly presents the International and European political context, underlining the reasons why attention to environmental and safety issues has recently increased. Furthermore, it describes the efforts made in trying to find solutions to global and local emergencies such as the *greenhouse* effect or the stratospheric Ozone layer depletion or the worsening of the air quality in urban areas.

It goes on to examine the reasons (pressures and benefits) why transport and logistic companies and FVs should improve their environmental and safety management. Though several of these reasons are common to other economic sectors, some specific aspects differ and these have been identified:
- pressures from manufacturing companies certified according to ISO 14001 or EMAS: in fact these companies plan to work only with certified transport companies; pressures from towns and villages (municipalities and population) that aim at improving the quality of life;
- corporate image improvement, privileges for certified companies' lorries/trucks circulation, better acceptance in case of Freight Village expansion;
- economic and financial benefits such as improved efficiency (traffic flows optimisation, green logistics), money and insurance cost reduction, stakeholders satisfaction etc.;

Chapter 2: recommendations

Chapter two illustrates the structure of the recommendations providing FVs with a reading and using key. The recommendations are practical solutions for environmental and safety issues encountered by a transport or logistic company or by a FV manager.

The recommendations are described in worksheets. Each worksheet corresponds to a environment or safety aspect.

The identified aspects are relevant for the implementation of an environmental management system in transport companies. For companies wishing to obtain environmental certification (ISO 14001), recommendations can help identify objectives, write out programmes and find practical solutions.

Chapter 3: checklist for self-auditing

Chapter 3 provides a checklist for environmental self-auditing. This checklist was drawn up from the questionnaires developed for the project: the surveys were useful for validating and expanding in depth the questionnaire and in obtaining a good auditing tool for the transport sector.

Checklists are useful for identifying environmental and safety aspects related to transport companies' activities. They can be used directly by the company or by an external auditor. Once environmental and safety aspects have been identified, the recommendations can be adopted.

The checklists are particularly useful for verifying the relevance of the environmental and safety aspects and for supporting the identification of related environmental and safety impacts.

Chapter 4: bibliography

ANNEX 1: Short presentation of the reference standards.

ANNEX 1 of the Good Practice Code describes the international environmental and safety standards giving an overview of their contents. The standards considered are:

- Council Regulation EEC/1836/93 allowing voluntary participation by companies in the industrial sector in a Community Eco-Management and Audit Scheme (EMAS);
- ISO 14001. Environmental Management Systems - Specification with Guidelines for Use;
- ISO 14004. Environmental Management Systems - General guidelines on principles, systems and supporting techniques;
- ISO 14010. Guidelines for Environmental Auditing - General principles;
- ISO 14011. Guidelines for Environmental Auditing - Audit procedures: Auditing of environmental management systems;
- ISO 14012. Guidelines for Environmental Auditing -Qualification criteria for environmental auditors;
- BSI 8800. Guide to Occupational health and safety management systems.

The adoption of the Good Practice Code recommendations can be a first step for the application of environmental and safety standards.

ANNEX 2: Glossary

ANNEX 3: FV-2000 survey results

5.3.2 The DSS for Freight Village managers

The Decision Support System (DSS) was produced between January and May 1999 covering two reporting periods. Some initial utilities of the DSS were presented at the Paris meeting in March 1999 to check their compliance with users' needs. After that the DSS was implemented by using ARC VIEW 3.1 and the programming language AVENUE. The DSS was delivered to the Commission the May 31.

A user manual has been written out as well, and recorded in the same CD-ROM for the dissemination. Here below, the table of contents and the first pages of the manual describing the main functionality of the DSS are reported.

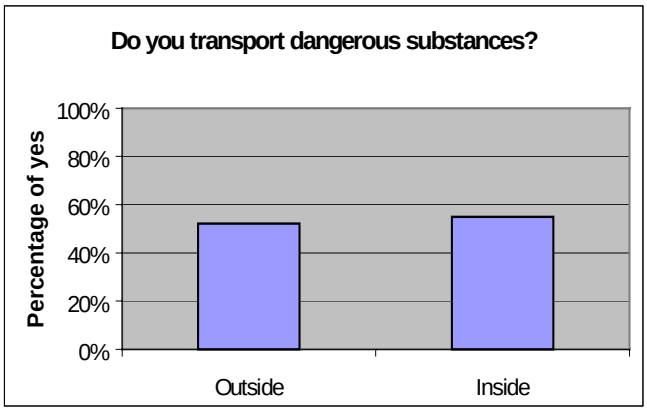
DSS - Table of Contents

1. Foreword
1.1 The need of risk management tools in Freight Villages

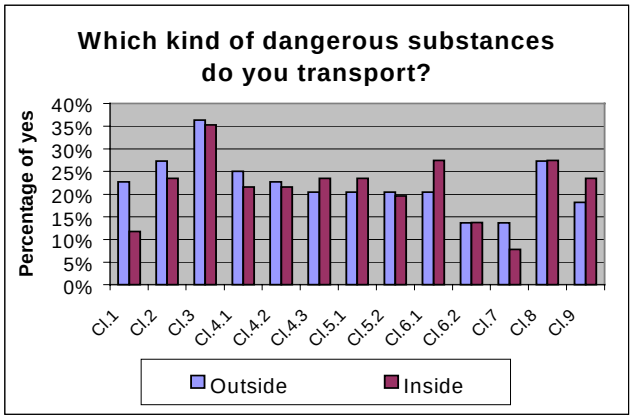
1.2 What the DSS can do
1.3 Assessment method to simulate an accident
1.4 Basic elements to understand how the DSS works
1.4.1 Views
1.4.2 Tables
2. Getting started
3. Simulating accident scenarios
3.1 How to simulate an accident scenario
3.2 Editing themes representing scenarios
4. Equipment themes
5. Other functions
5.1 Finding out warehouses containing dangerous substances
5.2 Drawing tools
6. Annex
6.1 Password
6.2 List of dangerous substances considered in the simulation process of accident scenarios

Foreword

The surveys carried out during the project "Quality of Freight Village structure and operations - FV2000" (95 interviews) demonstrate that companies inside the Freight Village transport and handle dangerous substances. Warehouses of dangerous goods are less frequent. No differences exist between inside and outside companies.

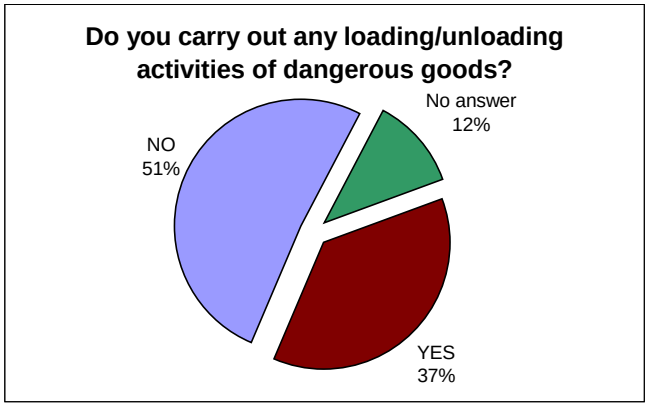


All ADR classes are transported, but it is impossible to exactly define the quantities of each one as they frequently change throughout a year. The following figure shows the data during the surveys.



The maximum quantity transported during one year by one interviewed transport company is equal to 670.000 tons. The major part of the companies declared they don't exceed 10.000 tons.

17% of interviewed companies declared to store dangerous goods. 37% of companies declared to handle dangerous goods.



Even if Freight Village managers don't directly handle dangerous substances, they take part in the management of this issue providing services or facilities to companies:

- about 50% of the interviewed Freight Village managers have established regulations for preventing and managing major hazards;
- about 20% of Freight Villages has an emergency manager,
- 17% of FVs have an inside emergency intervention team (e.g. fire brigades).

Two interviewed Freight Village managers have organised a parking area for trucks transporting dangerous substances and 16% of interviewed transport companies think that this service could be very useful. In this way, the risk related to truck parked along the roads during the night can be reduced as well.

It's possible that new parking areas will be organised in the future but what is the risk related to this service? Is the concentration of dangerous trucks acceptable?

What the DSS can do

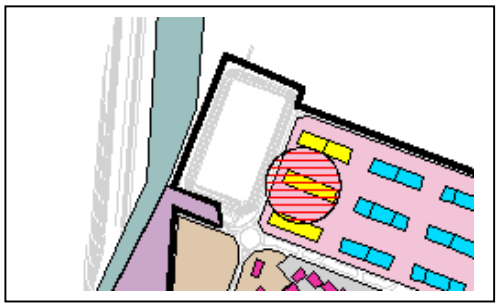
The DSS can help Freight Village managers to demonstrate to public Authorities and to surroundings that the risk related to the activities in FVs can be acceptable if they are planned and carried out correctly.

In the same time, FV managers can assess the risk related to transport and storing activities in their sites and set up adequate countermeasures.

It was designed to do fundamentally two operations:

1. *Simulating accident scenarios involving dangerous substances stored in warehouses or transported.*

   In the storage case a warehouse sector or a tank are "point" sources of risk and for this reason the simulation process will generate a red circle describing the area involved in the accident. The extent of this area depends on different factors as illustrated in the chapter 1.3.



   In the transport case a polyline, drawn by the user, represent the path of a truck transporting dangerous substances; this is a "polyline" source. The simulation process will draw a red buffer zone along this path describing the zone involved. The area extent depends on different factors as illustrated in the chapter 1.3.

2. *Planning facilities inside the Freight Village area.*

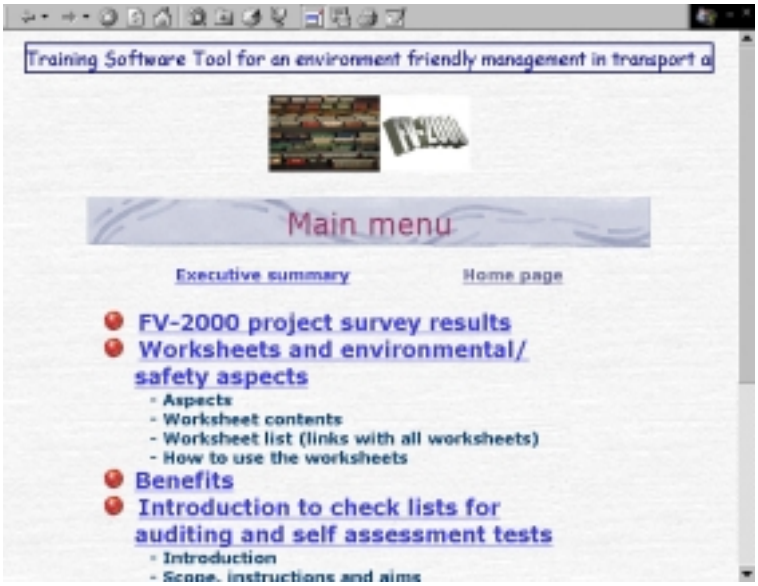
For example Freight Village managers can plan a new hydrant system or improve the existing one finding the best location in relation to the distance from the warehouses. Other examples are the plants for alarm giving or the waste pick-up system.

5.3.3 Training Software Tool for transport and logistic companies.

The contents of the TST were defined during the realisation of the Good Practice Code. During the month of May 1999, the TST was completed by translating it in *html* language and by implementing some specific functions such as the self-assessment tests by using the *Java* language.

A user manual was not produced because html language is well known (the internet sites are implemented by using html language as well) and the TST is very user friendly.

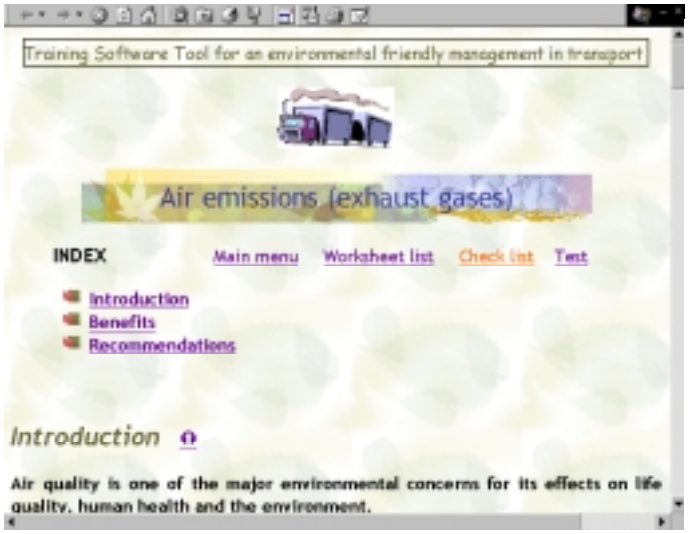
Here below, some sample pages are reported.



This figure shows the first part of the main menu. Storing criteria, a presentation of environmental and safety international standards, the TST glossary and the bibliography are included as well. From the main menu it's possible to access to all other TST pages.

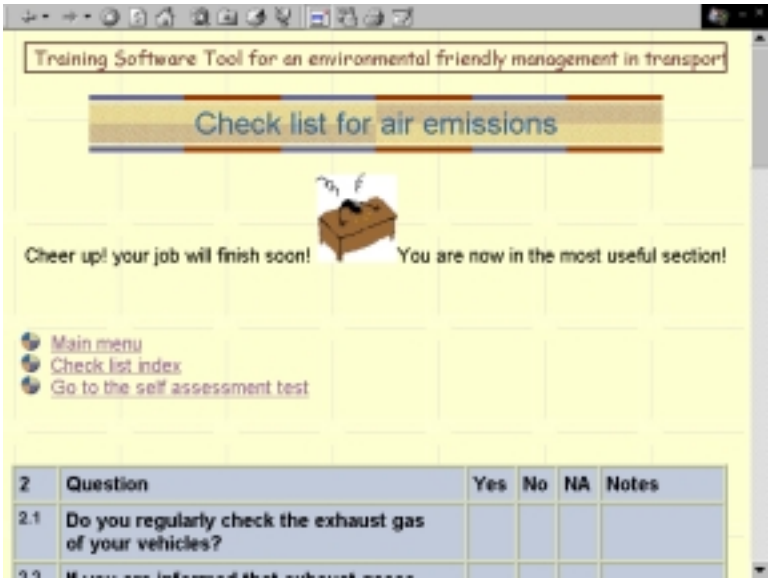
The following figure shows an example of worksheet. Each worksheet contains:

1. An introduction to the considered aspect.
2. Benefits that can be obtained.
3. Recommendations

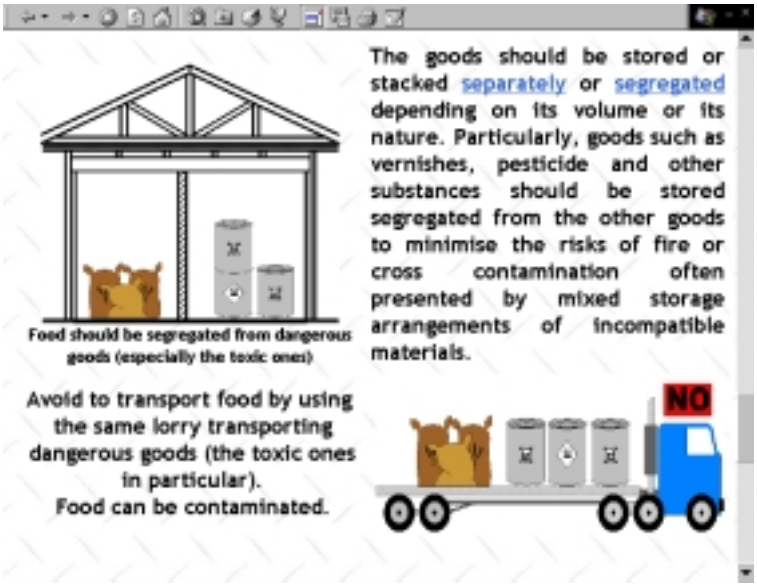


1. Air emissions-Exhaust gases
2. Air emissions-refrigeration units
3. Traffic reduction
4. Behaviour of truck drivers
5. Energy and fuels
6. Water pollution and consumption
7. Waste minimisation and management
8. Noise reduction
9. Road accidents
10. Fire risk
11. Loading, unloading accidents
12. Prevention and management of spills
13. Training on dangerous substances
14. Sensitisation/ motivation of employees
15. Internal communication: training
16. Communication with stakeholders
17. Communication with general public and Authorities
18. Communicat. with financial and technical operators
19. Benchmarking
20. Personnel skills and occupational aspects
21. Plan, carry out and report audits
22. Organisation and responsibilities

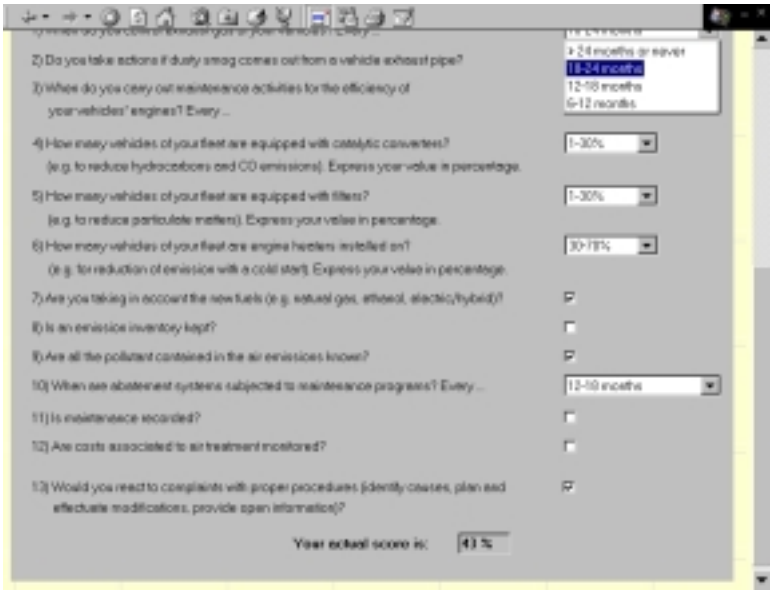
Checklists are written out for 10 environmental and safety main aspects. 22 worksheets have been written out in total (see the list above) A checklist provides the necessary background for environmental and safety auditing. Checklists are designed for a field survey of environmental and safety performances in transport companies and it can be used by the company directly or providing it to an external auditor. The use of the checklist is recommended for the environmental review of the site in conformance with the ISO 14001 and the EMAS Regulation.



It is particularly useful in verifying the relevance of environmental and safety aspects in one Organisation, and in supporting the identification of related environmental and safety impacts. A good environmental audit provides information on more effective improvements that can be planned to prevent pollution, accidents, damages, loss of resources, responsibilities. Registration of results of performed audits is useful to compare in the future different outcomes and to demonstrate to third parties, if the case may be, that auditing is in force.



This figure is an example of the "Storing criteria" page.
This page provides transport operators with suggestions useful to avoid accidents and food contamination.
Suggestions are very practical and messages are very clear.
This approach has been suggested by previous UNEP experiences as well.



– This figure shows an example of self-assessment test. A score is assigned to each question. At the end of the test a final score is provided as percentage with respect to the best performance (100%).

Results of each test should be registered to put in evidence the improvements performed.
In this version of the TST, tests for the three main aspects are provided:

– air emissions
– noise emissions
– dangerous substances and emergency management.

6 Conclusions and recommendations

6.1 Conclusions about intermodal transport

Methods and results of the FV-2000 project have been described in this report. Freight Village Managers, Transport and Logistic Operators, Public Authorities responsible for the Freight Village planning and development process have been involved in the project trough a survey carried out at international level in 7 European countries. Furthermore significant case studies and national workshops with users groups have provided additional information which completes and validates the quantitative data.

The main aim of the data analysis was to understand how and how much the organisation and structure of the Freight Villages may help the reduction of the gap still existing between road haulage and intermodality and, more specifically, which type of FV structure should be promoted in order to get best performances in term of more suitable services for specific user needs.

The evaluations effectuated show that the FVs (both “integrated” and “not integrated”) play an important role for the future development of the freight transport and for the economic development of the areas in which they are located; more particularly, the analysis demonstrates that the logistic synergies developed in the “integrated Freight Villages” are a key factor for the improvement of intermodal transport.

The proximity of different transport and logistic activities and the services that this model of FV can supply to logistic operations and transport companies increase the attractiveness of intermodal transport for industrial and transport operators and make this kind of transport more reliable, flexible and therefore more competitive.

This synthetic conclusion appears to be a key element in the assessment of a freight European transport strategy in favour of a growing use of intermodal techniques.

6.2 Conclusions about environmental aspects

As planned, the Work-package 3 of the FV-2000 project has allowed to find answers to the following questions:

- Which are the main environmental and safety aspects in the FV areas?
- Is there environmental and safety awareness in FV and Transport/logistic companies?
- Is there an environment/safety management in FV areas and if there is, how it is implemented?
- What knowledge is there on environment/safety reference standards amongst transport and logistic companies’ and FVs’ managers?
- What kind of environmental and safety services would the companies inside the FV area need?
- What environment/safety services do FVs already provide transport companies with?
- Are dangerous substances being stored, transported and handled in the FVs and, if so, how is the management of these activities carried out?
- How are the relationships with the public Authorities or other external participants managed?

These answer demonstrated the need of tools for environmental and safety management in Freight Village areas and helped to defined their characteristics and utilities. Three management tools have been implemented:

- a Good Practice Code for FV managers
- a DSS for risk assessment in Freight Villages
- a Training Software Tool for Transport and Logistic companies.

By using these tools and exploiting information and data collected during the project, the Freight Village have now the opportunity to promote initiatives for improving the environmental and safety performances of FVs and inside transport and logistic companies and for demonstrating that Freight Villages can give more guaranties of a correct management in comparison with the irrational and uncontrolled distribution of transport companies on the territory. For example, the following tasks can be undertaken:

- Increasing operators' awareness and knowledge
- Communicating with stakeholders
- Disseminating good practices
- Assessing the risk related to dangerous (ADR-RID) and no dangerous goods (rubber, plastics, paper, cotton etc.)

The study showed that transport and logistic companies are interested in services that allow a better organisation and the improvement of the environmental and safety aspect management. Freight Villages already offer some of these services since they increase the attractiveness of their sites. These services are performed by a specifically trained and organised central management and allow the reduction of truck mobility as well.

In conclusion, the results of the project encourage the FVs in developing these services to increase the FV site attractiveness.

6.3 Final recommendations

The ultimate objective of this chapter is to make the reader aware of the main facts that influence the development of intermodal transport and to support through recommendations the decision making process of the following three users groups: Freight Village Managers, Public Authorities, Logistic and Transport Operators. It is organized in the form of a questions/answers chapter about the main topics addressed during the project activities and gives a view of the variables which influence the use, costs and performances of intermodal transport.
The structure of this chapter is organized in order to synthesize the main results of the project and to stimulate the actors that belong to the three users groups to work on common understanding of intermodality and common standards of interoperability.

6.3.1 FV managers

What main freight village models exist today in Europe?. Is the number of the FVs too few today and are they integrated in the FV network?

The FV-2000 survey, based on a sample of 14 European freight villages located in 7 countries (Denmark, Finland, France, Germany, Italy, Spain and Sweden) points out that various FV models exist in Europe today, each of them with its own peculiarities. All the examined Freight Villages seem to contribute to the solution of the problems deriving from the growing demand for transport of goods in Europe (congestion, environmental impact, accidents and cost effectiveness).

Two main FV models can be highlighted:

- non integrated FVs, inside of which the modal change is not accomplished; a change occurs by the diversification of the vehicles (that is from one vehicle to another) but not by transport mode; this usually is a urban model that integrates transport activities in the peripheries of large cities and changes ground transportation modes from tracks to small vans;

- integrated Fvs, where the modal change is accomplished, providing also a range of combined services, where the transport is only a single part of the global logistics performance. This is the Italian Interporti model which integrates the FV with the intermodal terminal of the Italian state railway network.

In the middle of the above described FV models there are organisational models fluctuating from one system to another, where the railroad infrastructures exist but are tendentially under-dimentioned in comparison with the areas equipped for road haulage services.

The FV-2000 project shows that the number of FVs with intermodal terminals is too low; on the other side the economy of scale means that the terminals can not be to close to each other. A good equilibrium between these two opposite requirements must be found.

The research shows that FVs should be able to operate inside a “balanced” system, in terms of kilometric distances, and should be therefore able to capture the intermodal traffic flows on a medium/large distance scale (inside a physiological range-150 Kms about), without getting into competition with the other network nodes, on the contrary maximising the possible synergies

The conflict can also be solved by increased flexibility in the rail operations and e.g. improved pre- and end-haulage services. Furthermore, FVs should be located at the heart of infrastructure networks and where there is a sufficient concentration of transport demand.

A crucial point concerns the integration of the FV network: improved co-operation and network activities between the FVs is necessary. It will make the transport centres more recognised in the transport community context and more used giving the possibility of exploiting the following competitive FVs factors

- FV position with respect to the main transport relations;
- FV connection with the road network;
- FV connection with rail/intermodal network;
- optimising of vehicle productivity;
- transhipment availability;
- integrated logistic services;
- information technology availability;
- cost reduction by sharing services;
- etc.;

What freight village model may contribute to the development of intermodality ?

The quantitative and qualitative evaluations effectuated in the context of the FV-2000 project have demonstrated that both integrated and not integrated FVs play an important role for the future development of the freight transport and for the economic development of the areas in which they are located.

More particularly the analysis has shown that the logistic synergies developed in the “integrated Freight Villages” are a key factor for the improvement of intermodal transport; the integration of the intermodal terminal into the FV, the proximity of different transport and logistic activities and the services that this

model of FV can supply to logistic operations and transport companies (such as centralised information systems, EDI communication systems, etc.) increase the attractiveness of intermodal transport for industrial and transport operators and make this kind of transport more reliable, flexible and therefore more competitive. All these factors have a positive impact on intermodality and increase the competitive advantages of this kind of transport.This synthetic conclusion appears to be a key element in the assessment of a freight European transport strategy in favour of a growing use of intermodal techniques.

The FV-2000 project has also proved that the logistic integration potential arising from FVs drive an attraction also towards the transport operators located outside it. The vicinity to the FV is a favourable condition for indirectly benefit from the services offered by the FV.

This is particularly true for the integrated Freight Villages in which a larger amount of services and logistic synergies are offered. For this reason the integrated FV model has an “attraction capacity” higher than the not integrated one.

Still referring to the results of the FV-2000 project the recent past and expected future increase of the intermodal traffic is much stronger in the “integrated” FVs than in the “non integrated” ones.

Higher values of productivity mark the integrated FVs. The ratio of the major productivity related to the integrated FV is evident if referred to the 1997 flow values. Furthermore, when the 2002 data are considered (expectations of the FV Managers) the productivity values increase even more.

For these reasons, in order to develop the role of the FVs in the transport community and the future development of this kind of infrastructure, it is recommended to promote the integrated model.

6.3.2 Public authorities

Is the role of Public Authorities important for the future development of FVs and intermodality ?

Various aspects examined during the FV-2000 project focus on the problems regarding the role of authorities and governments. In all the examined cases studies, in all the national workshops and also during some quantitative evaluations effectuated during the study, the support and initiatives from local/regional/national authorities has been stressed has being of vital importance for the planning and implementation processes related to the FVs and intermodality development.

The function of this important kind of infrastructure is not only to rationalise the transport service, but also to make a significant contribution to the territorial and economic development of the areas in which they are located. It is an important factor for industrial development.

Into this context, it appears evident that the role of the Public Authorities is fundamental and we recommend that public authorities play a main role in the future development of FVs and intermodality.

Is Public/Private/Partnership useful for the development of the FVs ?

Intermodal infrastructure means land acquisitions and long term pay back time. The FV-2000 project has demonstrated that PPP has proved to be successful for the development of many FVs. Variuos FVs have been built by financial investors in Europe, since the operation is considered being profitable in the long run. A mixed partnership with participation of local authorities, financial institutions and real estate companies is therefore recommended.

Concerning FV development and the problems national regional and local authorities have to deal with, is there lack of coordination in the policy making process ?

The FV-2000 project has analysed in depth the role of local and regional authorities as well as national governments in the FV development through interviews addressed to public authorities, national workshops and case studies. The situation is somewhat different in the seven analised European countries (Denmark, Finland, France, Germany, Italy, Spain and Sweden), but there are similarities in the view on how FVs and intermodal transport should be developed and on the problems authorities have to deal with.

Among the above mentioned problems two of the most important are:

1) Lack of coordination between policy making bodies at central, regional and local levels

The policy decisions made at national, regional and local levels respectively are not always co-ordinated. This can mean that a national initiative or policy is not implemented at the lower levels. One reason can be the lack of funding, another can be that regional interests are favoured by the local administrations, etc.

The dis-coordination among the policy making bodies is considered as one of the main factors limiting the potential developement of FVs and intermodality.

2) Lack of coordination between different ministries within one country

Intermodal transport and FVs involve several transport modes, which makes it difficult if they are administered at different ministries or administrations.

Therefore, in order to promote the development of the Fvs in Europe and, in particular, the development of intermodal transport, an increased coordination in the policy making process is recommended.

Does bureaucracy and conflicting political interests slow down the FVs development?

Regarding this question, the FV-2000 analysis has pointed out that in general, in order to establish or expand a FV it is always complicated and time consuming process to fulfil all the bureaucratic requirements. Bureaucracy is perceived as an important obstacle to the FV development. In particular, concerning intermodal transport, where several transport modes and actors are involved, bureaucracy slow down the actual institutional decision making process and is a source of inefficiencies. Taking into account the increasing growth of the freight transport in Europe, the capacity of facing the related problems depends on the speed by which the political decisions will be affected. More generally, each factor that slow down the development of FVs and intermodality is considered in favour of congestion, environmental impact, accidents and cost effectiveness development.

Therefore, the FV-2000 project points out that a quicker reaction to the above mentioned freight transport growth is necessary.

Are national transport policies often perceived as being in favour of road transport ?

During the FV-2000 project it has been observed that, in several cases, the national transport policies state the importance of developed intermodal operations. Anyway the FV and intermodal operators, as well as customers, often state that the actual policy implementation is different. A single decision in favour of road transports is no problem, but added together they are perceived as making it difficult for intermodal operations. Some observed issues are weight and length measurements for lorries, fuel tax policies etc.

For this reason it seems that, even if the transport policies apparently are in favour of Fvs and intermodality, the real situation is somewhat different.

Clear political statements should better define the role of Fvs, the role of intermodality, take into account the costs produced by road transport, etc.. There is a need for precise criteria and clear concept definitions concerning how the FVs should appear and what they should contain, which requirements should be satisfied.

For this reason, clearness at political level is, above all, necessary.

Are regulations changing too often ?

During the FV-2000 project it has been observed that a certain degree of instability exists in the definition of the political issues pertaining the FVs development. In some case regulations are changed so often that operations such as FVs implementation, which are based on long term investments, find it difficult to adapt to the rapid changes without severe economic consequences.

For this reason a certain stability is recommended at political level in the definition of the transport policies affecting the Fvs and intermodality development.

Must transport policies for the development of FVs and intermodality be of long term character ?

Transport policies must be of long term character. FV structures and especially intermodal infrastructure are long term investments. It is not possible to adapt to rapidly changing regulations and legislation without financial difficulties. When planning the purchase of handling equipment and layout of roads and railways there is a need to know the long term framework for this operation. An example is that the maximum weights for load units has increased in Sweden several times in recent years as a result of political decisions about maximum weights for lorries, and trailers. Thus the terminal operators have had to invest in new handling equipment with higher lifting capacity

For this reason long term transport policies are recommended. This is a prerequisite for the future development of both FVs and intermodality.

Must regulations be homogeneous all over Europe and for all transport modes ?

Regulations should be homogeneous all over Europe. International traffic is having problem when the national regulations are different, and e.g. make it necessary to have several sets of documentation. It also prevents from using nationally optimised load units and wagons for border crossing transports, since there are various types of load units.

A second important aspect concerns more particularly the intermodal transport. Intermodal transport is made difficult due to the fact that the different modes have a different set of regulations. One example is that when transporting hazardous goods the road transport is regulated in ADR, while RID applies to the rail transport. For this reason not-homogeneous regulations represent a barrier to the development of the freight transport and, in particular, of intermodal transport.

Must the environmental concern be taken into account by the transport policies ?

During the FV-2000 project it has been pointed out that Freight Villages by nature care for the environment since they allow for less warehouse dispersion around the country as well as a concentration of transportation in proximity to Consumer Centres, or located in central crossways of the four modes of transportation (air, maritime, railroad and ground). On the environmental issue there is much talk at policy level but so far very few actions have been taken. The customers are demanding environmentally friendly transports, but the authorities are not implementing regulations to enhance the use of environmentally adapted transports, i.e. rail and intermodal concepts.

Intermodal transport and FVs are environmentally adapted transport solutions. For this reason public funding could be used to subsidise intermodal transport as part of an environmentally adapted transport policy.

What should be the role of the European Union ?

"Intermodality" is a key issue of the European Union Common Transport policy today. It should allow for a more efficient and sustainable European Transport System, exploiting the characteristics of each transport mode and maximising pratical benefits of the users. Even though the European Commission acts to improve and enhance the development of the European transport system, there sometimes seems to be a limited knowledge of this at regional and local levels. Furthermore, even if the European Commission is promoting intermodal transport, the national authorities and politicians do not always follow these intentions. Today national thinking is sometimes one of the major barriers to further development and to an international extension of intermodal transports.

For these reasons the following main actions should be promoted by the Commission:

- Planning: a unified European network
- Budgets: allocate funds to create intermodal terminals
- Services: liberalise the market to give rise to a greater number of railway operations which would guarantee more competitive services

The goal should be to obtain, through planning, liberalising budgets and starting an efficient railway service, a real European network of Freight Villages that offers value-added services and railroads within the FV, without overlooking caution with regard to the environment

Furthermore, national solutions should be co-ordinated with international policies, otherwise it will result in inefficiency for the European intermodal transports.

6.3.3 Transport companies

What are the main reasons why a transport company should start relationships with a FV ?. Which type of FV a transport company which decides to establish an office in a FV should choose ?

We strongly recommend to transport and logistic operators to establish their offices and warehouses inside a FV. The direct reason for this recommendation is based on the FV-2000 demonstrated statement "the Fvs, both integrated and not integrated, play an important role for the future development of the freight transport and for the economic development of the area in which they are located".

More particularly, the reasons leading companies to start relationships with a FV are the following:

- the optimisation of the traffic flows;
- the reduction of the operative costs;
- the customers exigencies

- the value of integrated logistics
- the diversification of services
- the information technology availability

Two more reasons concern traffic volumes. A higher increasing trend of global traffic volumes and a higher increasing trend of intermodal traffic volumes both in the recent past and in the next future (expected) has been identified during the FV2000 project for the insiders transport companies with respect to the outsiders.

A distinction should be effectuated between "integrated" FVs and "not integrated" FVs.
The value of integrated logistics is in fact particularly high for the first type of FV, while the other three reasons are also valuable for the not integrated type.

A second clarification concerns the intermodal transport. For maximising the benefits deriving from this type of transport, the value of integrated logistics assumes a strategic role.

If the company effectuates or intends to effectuate intermodal transport, the choice of an integrated freight village allows for various advantages. The proximity of different transport and logistic activities and the services that this model of FV can supply to logistic operations and transport companies (such as centralised information systems, EDI communication systems etc.) increase the attractiveness of this kind of FV.

Among the integrated FVs, those which achieve higher levels of economical and productive performance are those able to combine various services possibilities in comparison with those only following a mere transfer from one transport mode to another.

Intermodal transport need this kind of synergies for being more reliable, flexible and more competitive.

For this reason the recommendation is to choose an integrated FV.

Furthermore the synergies developed inside this kind of FV are possibly useful also for those companies which don't effectuate intermodal transport.

Which type of activity a TO should perform for taking advantage of the services offered inside a FV ?. Which type of goods a TO should move for taking advantage of the services offered inside a FV ?

No particular constraints exist concerning the activities both of the transport companies which intend to establish an office in a FV and of the transport companies which are already located inside a FV.

All the following categories of operators could take advantage of the synergies developed inside a FV:

- road hauliers;
- couriers;
- forwarders;
- rail transport operators;
- intermodal transport operators;
- integrated logistic operators;
- terminal operators;
- etc.

No particular constraints exist concerning the type of goods moved both by the transport companies which intend to establish an office in a FV and of the transport companies which are already located inside a FV.

- General cargo;
- controlled temperature/refrigerated goods;

- dangerous goods;
- heavy and bulky goods;
- manufactured products;
- etc;

All these categories of goods can be moved without particular problems by companies located inside a FV. Furthermore, additional facilities exist for those goods which needs to be treated in a particular manner. The companies which move the dangerous goods, for example, take a particular advantage of the FV facilities: risk management systems, security systems, surveillance services, favourable geographical location of the FV, environmental facilities etc.

The companies which move refrigerated goods, for example, take advantage of the information and telematic services possibly offered by a service-oriented FV: tracking and tracing technologies are today less difficult to implement thanks to the services offered by some FV, such as the gate in-gate-out control.

Does a transport company located in vicinity of a FV take advantage of the services offered by it ?

The FV-2000 project has demonstrated that the outside operators ask for specialised services available in the FV area. For this reason the FV develops an integrating action and drive an attraction also with respect to the outsiders. In some case the vicinity to the FV is a good factor for indirectly taking advantage of the services offered by it but the necessary condition for benefiting completely from the advantages of the FV is being inside it.

How a transport company should increase the turnover coming from intermodality ?
What a transport company should do for having a higher increasing value of its productivity referred to total traffic volumes ?
What a transport company should do for having a higher increasing value of its productivity referred to intermodal traffic volumes ?

Turnover: analysing the road haulage activity turnover, the FV-2000 project has demonstrated that no significant differences exist between transport companies located inside and transport companies located outside the FV. Anyway, the survey effectuated during the project development clearly demonstrates that the companies inside the freight village show a turnover coming from intermodality which is higher than outsiders one's. This is particularly true for those companies located inside an integrated FV. Furthermore a considerable number of the outside companies themeselves do not ascribe to this type of transport any amount of their turnover. This clearly prove that the FV (in particular the integrated one) is a key factor for the development of intermodal transport.

Productivity: the productivity is the ratio between the traffic volume and the surface of the available covered warehouses and is expressed in tons per square meters. The FV-2000 project has demonstrated that major values of productivity (both referred to total traffic volumes and to intermodal traffic volumes) surely mark out the companies located inside a FV.

For this reason the direct answer to question (and our corresponding recommendation) is: a transport company should establish its office inside a FV.

Annexes

Annex 1: List of publications, conferences, presentations and if applicable patents resulting from the project

Articles

A certain number of articles about the FV-2000 findings have been published by the following reviews during the project lifetime:

Freightworld (webmaster@freightworld.com)
www.freightworld.net/news.html

Internationale Transport Zeitschrift (also published in English and French)
Rittmann AG Verlag, Redaktion
Spalentorweg 9
CH-4003 Basel
Tel : +41 61 261 88 30
Fax : +41 61 261 08 78
www.rittmann.ch

Traffic Technology International
UK & International Press
Abinger House, Church Street
Dorking, Surrey RH4 1DF
United Kingdom
Fax: +44 1306 742525
E-mail: traffic@ukintpress.com

Automatic ID News Europe
Advanstar House, Park West
Sealand Road
Chester
Great Britain
Tel : +44 1244 378 888
Fax: +44 1244 370 011
E-mail: sblackhurst@advanstar.com

International Journal of Transport Economics
Instituti Editoriale e Poligrafici Internazionali s.r.l.
Casella Postale 1, Succ. 8
I-56123 Pisa
Tel : +39 50 878 066
Fax : +39 50 878 732
E-mail: iepi@sirius.pisa.it

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Great Britain

Tel : +44 1306 631331
Fax : +44 1306 631696
E-mail: enquiries@sigs.com

Road and Transport Research
Australian Road Research Board
Transport Research Ltd.
500 Burwood Highway
Vermount 3133 S. Victoria
Australia
Tel : +61 3988 11555
Fax : +61 3988 78104
E-mail: rayb@arrb.org.au

Transport policy
Elsevier Science
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1000 AE Amsterdam
The Netherlands
Tel : +31 20 48 53 757
Fax : +31 20 48 53 432
E-mail: nlinfo-f@elsevier.nl

World Transport Research
Elsevier Science
P.O. Box 211
1000 AE Amsterdam
The Netherlands
Tel : +31 20 48 53 757
Fax : +31 20 48 53 432
E-mail: nlinfo-f@elsevier.nl

Transport Reviews
Taylor and Francis Ltd.
Rankine Road
Basingstoke RG24 8PR Hants
Great Britain
Tel : +44 1256 813000
Fax : +44 1256 330245
E-mail: info@tandf.co.uk
Homepage: http://www.tandfdc.com/

Transport Rundschau
Vogt-Schild AG
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CH-4501 Solothurn
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Kluwer Academic Publishers
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Tel : +31 78 6392392
Fax : +31 78 6546474
E-mail: orderdept@wkap.nl
Homepage: http://www.wkap.nl

Transportation and Distribution
Penton Media Inc.
1100 Superior Avenue
Cleveland OH 44114-2543
U.S.A
Tel : +1 216 9319175
Fax : +1 216 6966413
Homepage: http://www.penton.com

Cargo Systems International
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London, SW1E 5DR
Great Britain
Tel : +44 020 7223 7233
Fax : +44 020 7931 0516

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Great Britain
Tel : +44 01737 768 611
Fax : +44 01737 855 469

Distribution Business
Landor Publishing Ltd
Quadrant House
250 Kennington Lane
London, SE11 5RD
Great Britain
Tel : +44 020 7735 4502
Fax : +44 020 7587 0497

European Freight Management
2 Tanglewood, Alconbury Weston
Huntingdon
Cambridgeshire, PE17 5LB
Great Britain
Tel : +44 01480 891328
Fax : +44 01480 891328

Freight
Hermes House
St. Johns Road, Turnbridge Wells
Kent, TN4 9UZ
Great Britain
Tel : +44 01892 526171
Fax : +44 01892 534989

International Freighting Weekly
151 Rosebery Avenue
London EC1R 4QX
Great Britain
Tel : +44 020 7505 3560
Fax : +44 020 7505 3590

Transport Journal
Unit 64, 14-20 George Street
Birmingham, B12 9RG
Great Britain
Tel : +44 0121 440 3003
Fax : +44 0121 440 4644

Transport Management
48 Wallace Avenue, Worthing
West Sussex, BN11 5QF
Great Britain
Tel : +44 01903 248887
Fax : +44 01903 700534

World Cargo News
Suite 12
Woodlodge, Woodfield Lane
Ashtead
Surrey, KT21 2DJ
Great Britain
Tel : +44 01372 276222
Fax : +44 01372 279191

Conferences, workshops, seminars

The following table gives a list of conferences, workshops and seminars to which the partners of FV-2000 have actively contributed:

Conferences, workshops, seminars			
	Partner	***Description***	***When***
DK, ES, S, IT, FR, DE	All partners	Seven FV-2000 national workshops in the following countries: Denmark, Spain, Sweden, Italy, France. Germany	9/12-1999

EU	Europlatforms/Interporto Bologna	FV-2000 presentation in Lille (Transport R&D conf.)	11-1999
EU	Interporto Bologna	Antram Workshop in Aviero (Portugal)	09-1999
EU	Interporto Bologna	Seminar on Freight Villages in Bologna - sponsored by EC DGXVI	07-1999
EU	All partners	FV-2000 International Conference in Barcelona (conference acts can be downloaded from EUROPLATFORMS homepage)	06-1999
EU	Interporto Bologna	International conference on Logistics in Budapest	04-1999
EU	Interporto Bologna	Freightview Conference in Sheffield	04-1999
EU	Interporto Bologna	Presentation of the Freight Village concept in Lisbon - Conference sponsored by EC DG XVI	03-1999

Other presentations

Various other presentations have been done during the project lifetime. Some others are still in progress (in particular through the thematic networks of the fifth framework programme). The following table gives the list of such presentations:

Other presentations			
	Partner	***Description***	***When***
EU	Europlatforms	Project information on EIA web pages (European Intermodal Association)	Planned
EU	All partners	Participation in EC thematic networks, links with other EU-projects	In progress
EU	EUROPLATFORMS	Each freight village disseminated the project results to resident companies through direct presentations	Jan-Mar 2000
EU	Interporto Bologna	Project co-ordinator meets the national FV associations	Jan-Mar 2000
IT	Interporto Bologna	Presentation of FV-2000 results to Italian FV-managers	Jan-Mar 2000
ES	Cilsa	Presentation of FV-2000 results to Spanish FV-managers	Jan-Mar 2000
FR	Sogaris	Presentation of FV-2000 results to French FV-managers	Jan-Mar 2000
EU	Europlatforms	Copy of FV-2000 brochure and results sent to Transport Ministries of participating countries	Jan 2000
IT	Interporto Bologna	Copy of paper presented at Lille DGVII conference sent to Italian Ministry of Transport	12-1999
DK	FDT	Presentation of FV-2000 results to Danish FV-managers	10-1999
EU	NTU	Project information to Eurochambers	09-1999
DK	DTC	Briefing of the Danish Road Directory	08-1999
FI	FDT	Briefing of the Finnish Ministry of Transport	06-1999
DK	NTU	Project information: TØF (Danish Transport Economic Ass.)	06-1999
DK	NTU	Briefing of the Danish Ministry of Transport	04-1999
DK	NTU	Briefing of the Danish Agency of Railways	04-1999
S	TFK	Presentation to the TFK-Board of Directors	03-1999
DK	NTU	Project information: Nordic Link meeting	12-1998
DK	NTU	Presentation to the DTC Board of Directors	12-1998

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