

STUDY: FUTURE FOR LOGISTICS

Cluster for Logistics Luxembourg

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With the cooperation and support of:



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Logistics is one of the key pillars of Luxembourg's economy of tomorrow. Despite the tremendous decrease during the financial crises in 2008/2009 logistics has rapidly recovered and represents already today 5% of employment in Luxembourg.

The Luxembourg government decided to promote the development of existing logistics activities and to attract new logistics business to Luxembourg. This development should be considered in the global context of the trends for logistics underlining the importance of logistics for European development:

- Globalisation and relocation of production and as a result an increasing demand in transportation especially in sea-freight and air-freight
- Individualisation of products and as a result more complex supply chains
- Acceleration of traffics due to reduced delivery times and as a result of changing transportation chains
- Optimization of organisation structures and processes in the companies including new IT solutions for tracking and tracing of shipments
- Environmental concerns imposing the development of multimodal land transport solutions
- Raising energy prices changing the modal split in land transport
- New logistics designs due to increasing innovation both in technology and management

In this respect Luxembourg has some important assets in international competition:

- Sea-freight: the North Sea ports are in a range of 350 km and well connected by rail and waterways to the hubs of Mertert and Bettembourg/Dudelange
- Air-freight: Findel airport is one of the leading European air cargo hubs
- Land-freight: Luxembourg is located on the main European freight corridors
- Development of the rail-road terminal in Bettembourg/Dudelange
- State-of-the-art IT network and international connections
- Important public research institutes to promote innovation
- Governmental commitment to support development of Logistics in Luxembourg

Luxembourg has a quadri-modal infrastructure with the platforms of Mertert, Findel and Bettembourg/Dudelange and so the potential to be developed as a major logistics hub in Europe. A lot of leading logistics companies have recognized it and are already active in Luxembourg.

Luxembourg's strategy in logistics aims to develop the current platforms into a common hub concept; EUROHUB Luxembourg as:

- Gateway from/to and through Europe
- Cross-dock hub for European land transport
- European and regional distribution centre
- Logistics centre for value added services

The EUROHUB will be enhanced by the implementation of the logistics park in WSA, which will attract more logistics services to Luxembourg due to the state-of-the-art infrastructure and innovative concepts. Beside the existing three logistics platforms (Mertert, Findel, Bettembourg/Dudelange), WSA will allow the offer of a larger array of logistics services to the markets and this will enhance growth and employment. Therefore the EUROHUB concept will be the central part of this study, this central element connecting all transport modes, all logistics services and acting as a catalyst for future business developments in logistics.

As Logistics is a main driver for European success in global competition, logistics will be one of the major challenges for the next years in order to keep European industry competitive. This permanent search for competitiveness will lead the shipper and the logistics operators to a continuous search for new, better optimized supply chains. High logistics performance of European logistics hubs makes Europe attractive in the process of the optimization of logistics processes and in the reconsideration of location of production and logistics sites.

Efficient freight transport, a modern infrastructure and a state-of-the-art global framework are crucial for success in international competition. Luxembourg was ranked 15 in the world in the last World Bank Logistics Performance Indicator (LPI). This is definitely a challenge to improve the global framework of logistics in order to better perform in future.

In this respect all the chapters below will be evaluated in relation with their contribution to upgrade the position of Luxembourg in terms of:

- efficient goods clearance (LPI)
- first-class infrastructure (LPI)
- competitive rates (LPI)
- excellent logistics competence and services (LPI)
- developed tracking & tracing (LPI)
- respect of timeliness (LPI)
- advanced quality and security policy
- respect of environmental issues
- favourable governmental development policy

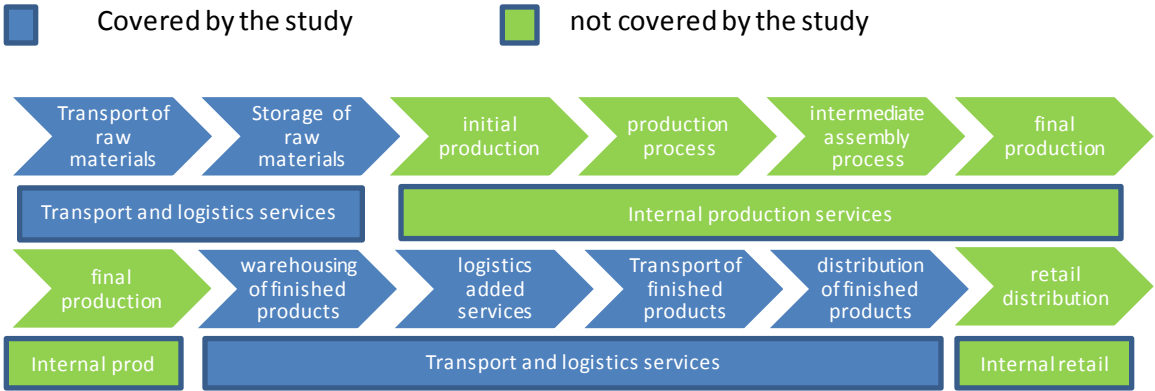
Luxembourg must offer high quality services and so differentiate itself from other cheaper European logistics hubs. However the costs must not be so high that operators cannot afford to pay for the level of service. EUROHUB must become an international reference as a competitive, efficient, safe and sustainable logistics hub.

The present study should be considered as an action plan to address the future challenges and to create the conditions to strengthen Luxembourg as a transport and logistics hub in Europe in a sustainable and environmentally friendly manner. It analyses the position of Luxembourg in the global logistics markets and aims to:

- propose actions to enhance further development of logistics activities in Luxembourg
- recommend improvements to the global framework of logistics to raise competitiveness
- advise on a structure for the implementation of a global action plan

In a further stage it will be important to classify these tasks in terms of priority and deadlines to catch up with our competitors and overtake them in attractiveness and competitiveness.

The scope of this study of logistics activities excludes in-house logistics during internal production processes in industry and the logistics related to retail distribution to final consumers. The scope of the analysis can be represented as follows:



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7. A regional green distribution strategy
8. Value added logistics services centre

2: The options to strengthen Luxembourg as an international logistics hub

1. Logistics infrastructure
2. Security, safety and quality policy
3. Single Window for Logistics
4. Innovation and research
5. Productivity of workforce
6. Training and education
7. Legal and regulatory framework
8. Environmental protection

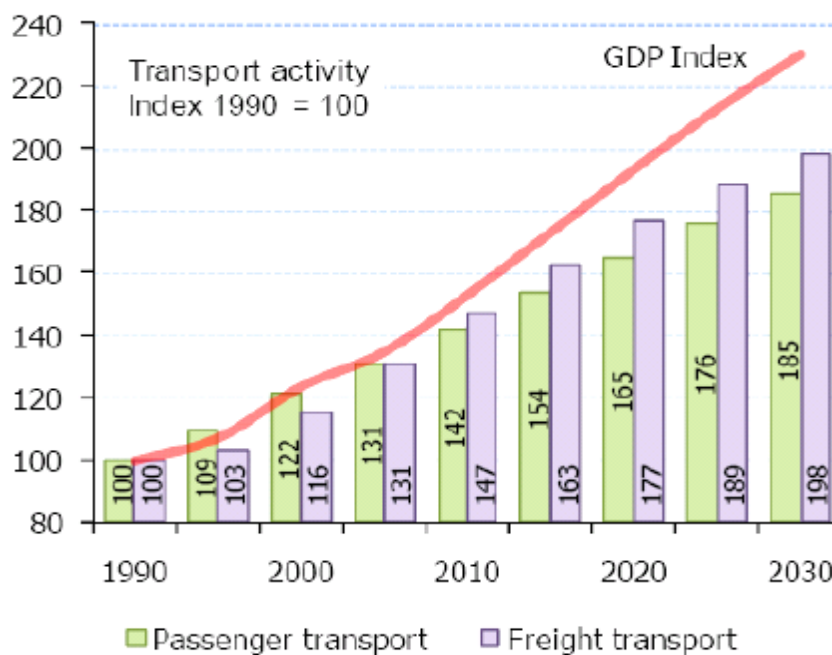
1: The vision: A master plan for Luxembourg as an international logistics hub

Freight transport and logistics move goods to where people need them. That's why this study addresses not only governmental authorities, but also companies and people that operate in the freight transport and logistics sector, as well the companies engaged in trade and industry which rely on a punctual logistics and transports services.

Luxembourg as an international logistics hub

Luxembourg industry alone does not produce the volumes needed to build up a competitive logistics centre; however Luxembourg can build up a competitive offer when attracting transiting flows. Raw materials, intermediate products and finished goods are crossing Luxembourg every day and high quality products are imported and exported at Findel Airport at the same time. These goods in transit can be air-freight landing in Luxembourg, sea-freight from the North Sea ports or international European goods being carried from producers to end-consumers through Luxembourg by road or rail.

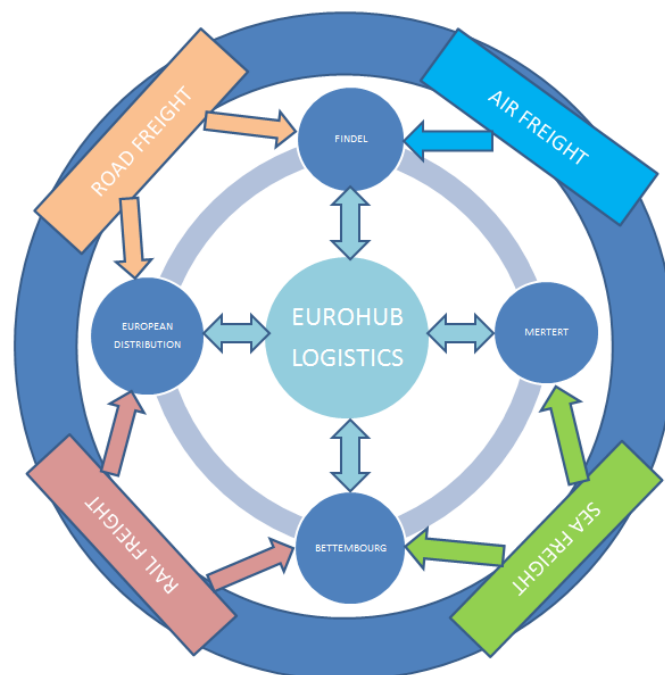
Against the background of growing transport volumes in the coming years (+35 %) [lit.wp3-1], and a higher volatility of the markets, a high pressure on transport costs and a political willingness to move to a more sustainable and green logistics solution, it is obvious that all transport modes have to be better linked together to improve performance and reduce costs.



(Source :ec.europa.eu/future_of_transport)

The statement

- Luxembourg industry alone does not produce the volumes needed to build up a competitive logistics centre.
- However, thanks to its good geographic location and market potential in a range of 350 km, Luxembourg can focus on transiting flows to build up a European gateway for goods from, to and through Europe.
- Against the background of the higher volatility of the markets, a high pressure on transport costs and a political willingness to move to a more sustainable and green logistics solution, all transport modes have to be linked together to offer competitive solutions.
- As an international logistics hub, Luxembourg will have to handle a large number of operators having different logistics processes and different IT solutions. Considering the increased level of required security and quality, Luxembourg must implement a global multimodal and intermodal concept for logistics focusing on international flows.
- The EUROHUB LUXEMBOURG must be multimodal and intermodal and offer to the market competitive services such as:
 - Gateway from/to and through Europe
 - Cross-dock hub for European land transports
 - European and regional distribution centre
 - Logistics centre for value added services
- The key to success will be the promotion of the EUROHUB concept, as a single logistics hub for all logistics services based on the interlinked quadri modal infrastructure.



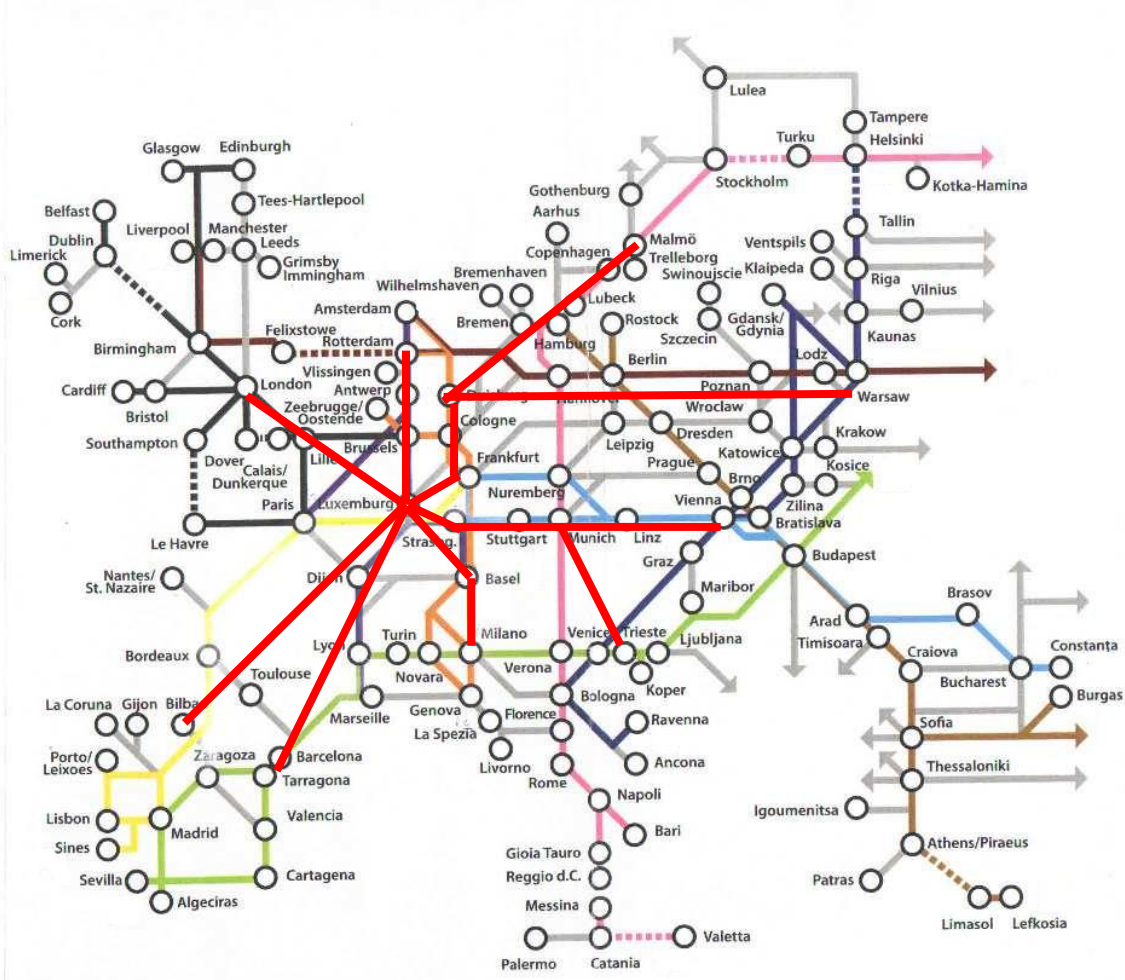
Road transport: 30 million tonnes transiting through Luxembourg every year (1.5 million trucks)

Air Freight: 8 million tonnes in a range of 350 km

Sea freight: 500 million tonnes in a range of 350 km

The market assets

The perfect geographical position of Luxembourg in Western Europe allows Luxembourg to position itself on some of the major European freight corridors.



This is also highlighted by the following figures [lit.wp3-2]:

Airports in Europe	Tons of air freight
GERMANY (FRA-HHN-CGN)	3.100.000
NETHERLANDS	1.500.000
FRANCE(Paris)	2.300.000
BELGIUM	1.100.000
LUXEMBOURG	700.000
TOTAL EU 27	14.700.000

8.7 million tonnes of airfreight representing 60% of all imported and exported air cargo to and from Europe are handled in a range of 350 kilometres around Luxembourg.

Ports in Europe	Containers in 1000 TEU's
ROTTERDAM	11017
ANTWERPEN	8144
HAMBURG	7906
BREMERHAVEN	4858
LE HAVRE	2369
ZEEBRUGGE	1437
Total	35.731

(source Eurostat)

20 million TEU or 400 million tonnes of sea freight representing 50% of all imported and exported sea cargo to and from Europe are handled in a range of 350 kilometres around Luxembourg.

On the top of that, 1.5 millions of trucks transit through Luxembourg every year representing 30 million tonnes of freight to a large number of European countries located on the freight corridors passing through Luxembourg. These trucks not only pass through Luxembourg for refuelling (the loss of productivity and reduced energy prices are not compensation the fuel price beyond a maximum range of 50 kilometres), but transit through Luxembourg because Luxembourg is located on their route.

The Luxembourg government has recognised the importance and the potential economic developments in this field and have agreed to make logistics one of the pillars for future economic development. They agreed to continue to improve the competitiveness of the country and to promote the development of an international logistics hub. With an estimated turnover of 836 billion € (EU27 plus Norway and Switzerland, 2006 figures), the logistics and transport sector represents a huge market for a competitive international hub. [lit.wp3-3]

In order to develop adequate solutions in Luxembourg, the European modal split must be taken into consideration to optimize the offer of the logistics hub in relation with the specifications of every country located on the freight corridors passing through Luxembourg. [\[lit. wp3-4\]](#) Great importance is attached to airports, rail-road terminals, inland ports and seaports as key points of interchange between different modes of transport. Improving the links between the national and regional transport hubs, optimizing all these flows, and offering logistics services at these key spots will develop Luxembourg as a European logistics hub.

Table 2: Modal Split of transport performance of inland modes in 2008 and 2009, % (based on declarations from the EU legal acts)

	2008			2009			
	Rail	Inland waterways	Road	Rail	Inland waterways	Road	
EU-27	17.8	5.9	76.3	16.6	5.9	77.5	
Belgium	15.9	15.6	68.5	12.8	14.3	72.9	↑
Bulgaria	20.5	12.6	66.9	11.9	20.7	67.4	
Czech Republic	23.3	0.0	76.7	22.1	0.1	77.8	
Denmark	8.7	0.0	91.3	9.2	0.0	90.8	↑
Germany	22.2	12.3	65.5	20.9	12.1	67.0	↑
Estonia	44.7	0.0	55.3	52.7	0.0	47.3	
Ireland	0.6	0.0	99.4	0.7	0.0	99.3	
Greece	2.7	0.0	97.3	1.9	0.0	98.1	
Spain	4.1	0.0	95.9	3.4	0.0	96.6	↑
France	15.8	3.5	80.7	15.0	4.0	81.0	↑
Italy	11.7	0.0	88.3	9.6	0.0	90.4	↑
Cyprus	0.0	0.0	100.0	0.0	0.0	100.0	
Latvia	61.3	0.0	38.7	69.8	0.0	30.2	
Lithuania	41.9	0.0	58.1	40.1	0.0	59.9	
Luxembourg	2.8	3.7	93.5	2.3	3.1	94.6	
Hungary	20.8	4.7	74.7	17.1	4.1	78.8	
Netherlands	5.4	34.7	59.9	4.9	31.3	63.8	↑
Austria	37.4	4.0	58.6	36.4	4.1	59.5	
Poland	24.0	0.1	75.9	19.4	0.1	80.5	
Portugal	6.1	0.0	93.9	5.7	0.0	94.3	
Romania	19.0	10.8	70.2	19.4	20.6	60.0	
Slovenia	17.8	0.0	82.2	16.0	0.0	84.0	
Slovakia	23.4	2.8	73.8	19.6	2.5	77.9	
Finland	25.7	0.2	74.1	24.1	0.2	75.7	
Sweden	35.1	0.0	64.9	36.8	0.0	63.2	
United Kingdom	11.6	0.1	88.3	12.1	0.1	87.8	↑
Norway	15.0	0.0	85.0	16.0	0.0	84.0	↑
Switzerland	46.9	0.0	53.1	44.5	0.0	55.5	↑
Croatia	21.8	5.5	72.7	20.6	5.7	73.7	

Taking into consideration these figures, it clearly appears that road transport takes the biggest share of transport performance in all European countries. On the northbound transport the share of road transports is very high: Spain 96.6%, Italy 90.4% and France 81%. On contrary, the countries located on the southbound traffics have a different modal split; mainly due to the higher use of inland navigation from the seaports: Belgium 72.9%, Germany 67%, Netherland 63.8%. The freight corridors passing through Luxembourg are some of the most important in Europe. As today still 75% of all land transports are operated by trucks, this also explains the 1.5 million Lorries transiting through Luxembourg daily. [\[lit. wp3-5\]](#)

This also means that most of the products where logistics services could be performed are carried by road and that the Luxembourg infrastructure must take this into consideration when building up its logistics hub. A main part of feeder and de-feeder activities will be on the roads and on multimodal rail-road transports.

Considering that the level of freight traffic will rise significantly in the future and considering Luxembourg's particular landlocked geographic position in Europe, Luxembourg must offer a state-of-the-art sustainable and efficient logistics and transport system for Europe. This includes creating ideal conditions for growth and employment, thus keeping in mind environmental protection and climate change aspects.

Luxembourg has all the required conditions to enforce its position as a European distribution and cross dock centre. An improvement in the competitiveness by an enhancement of the global framework will make Luxembourg the state-of-the-art logistics hub in Europe and so become an attractive place for foreign investors and help to create new jobs in logistics, trade and industry.

The goal of this study is to analyse the current situation, define objectives and give recommendations to achieve these objectives from three different angles:

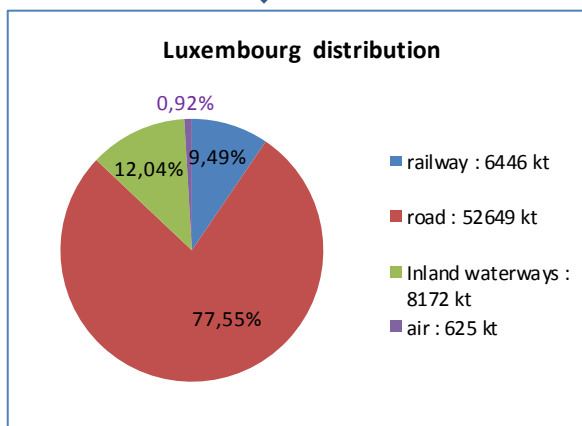
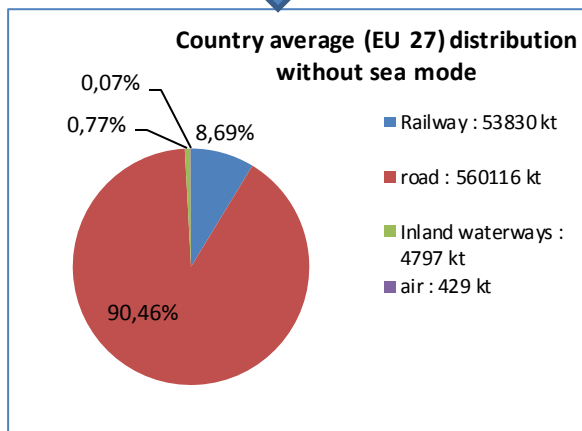
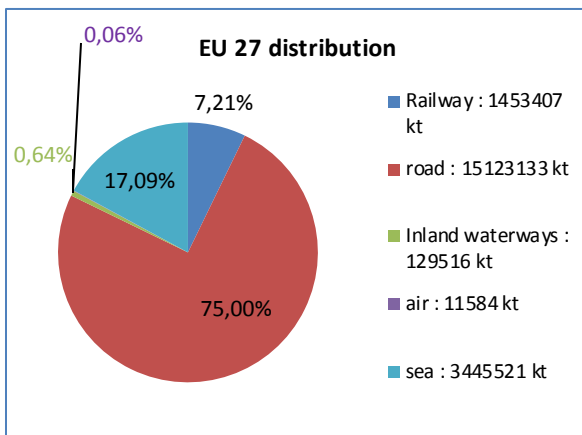
1. How to make Luxembourg become an international logistics hub.
2. How to strengthen Luxembourg's global framework
3. How to set up the implementation of a national strategy

1. Dynamic of transportations modes

In Europe (EU27), 75% of goods are transported by road, 17.1% by Seaway, 7.2% by rail, only 0.6% by river and finally 0.06% by air. In Luxembourg, as in Europe, the road which carries 77.5% of the goods is also the most used.

Inland waterway represents 12.04% of the goods carried in the Luxembourg. In Luxembourg air mode ensures routing of 0.92% and is more intensely exploited for the transport of goods relatively to the average European. On the other hand, the use of the rail mode to the Luxembourg is comparable to that of a country of the EU 27.

Figure 1. EU27 and Luxembourg distribution of freight transport by mode in 2009



2. Potential markets for Luxembourg

The level of international trade is still below the level of 2008, and there are only a few markets where a trend to more volumes can be observed. The recent figures published by the International Transport Forum [Lit.WP3-6], confirm the momentous stagnation of the European logistics market.

In the European community, national and international road transportation volumes were stable in the first half of 2012 compared with the second half of 2011; but the increasing trend of 2010 / 2011 has been stopped again.

Overseas imports and exports are also still below the level of the 2008 crisis and in the EU, sea-freight is 12% below 2008 and airfreight is 4% down compared to the same period. In the EU, only Germany is above stagnation level and is currently 12% above the 2008 level.

The picture is better when considering the BRIICS states (Brazil, Russia, India, Indonesia, China and South Africa): the sea freight exported from the EU to these states is growing continuously and is 52% above the level of 2008. The same trend can be extrapolated for air freight, and shows clearly the geographic markets to be explored and developed for value added logistics services in Luxembourg.

The analysis of the potential markets and products to develop logistics activities in Luxembourg is based on two different studies:

- The dynamic of the logistics sector in relation with the carried goods.
The data used is the 2010 data issued by Eurostat and related to 20 different types of products and linked to European transport: road, rail, waterways transport and short sea shipping. Air cargo and sea cargo is not specifically detailed in this study but included in the global figures.
- The dynamic of the logistics sector in relation with the main Luxembourg freight corridors.
The data used is the 2010 data issued by Eurostat and related to 62 different types of products on the associated freight corridors from France & Spain to Germany, Scandinavia and Poland and from Great-Britain & Benelux to Switzerland and Italy. The data is not associated with any specific transport mode but takes into consideration imports and exports of goods between these countries.

A clear definition of the goods imported and exported to and from these countries to Europe must be done to define the products and infrastructures to be built in order to develop the Logistics offer in Luxembourg. Concerning European flows the focus must be set on specific types of goods whose development is against the global trend of the European market.

2.1 Dynamic of the logistics sector in relation with the carried goods

The future orientation of logistics in Luxembourg will mainly focus on goods transiting through Luxembourg. In this respect it is important to analyze the types of goods transiting on the corridors and their modal split.

Figure 2. Nomenclature des produits NST07 à partir de 2008 selon CPA2008

Type de produit : level1	Level2	
1,"01",Produits de l'agriculture, de la chasse et de la forêt, poissons et autres produits de pêche (NSTR24 1,2,3, 5)	2,"01.1", "Céréales", "01.11.1, 01.11.2, 01.11.3, 01.11.4, 01.12"	
	2,"01.2", "Pommes de terre", "01.13.51"	
	2,"01.3", "Betteraves à sucre", "01.13.71"	
	2,"01.4", "Autres légumes et fruits frais", "01.11.6, 01.11.7, 01.13.1, 01.13.2, 01.13.3, 01.13.4, 01.13.52, 01.13.53, 01.13.59, 01.13.8, 01.13.9, 01.14, 01.21, 01.22, 01.23, 01.24, 01.25.1, 01.25.3, 01.25.9, 01.26, 02.30.4"	
	2,"01.5", "Produits sylvicoles et de l'exploitation forestière", "02.10.1, 02.10.3, 02.2, 02.30.1, 02.30.2, 02.30.3"	
	2,"01.6", "Plantes et fleurs vivantes", "01.13.6, 01.13.72, 01.19.2, 01.25.2, 01.30"	
	2,"01.7", "Autres matières d'origine végétale", "01.11.5, 01.11.8, 01.11.9, 01.15, 01.16, 01.19.1, 01.19.3, 01.27, 01.28, 01.29"	
	2,"01.8", "Animaux vivants", "01.41.1, 01.42.1, 01.43, 01.44, 01.45.1, 01.46, 01.47.1, 01.49.1"	
	2,"01.9", "Lait brut de vache, brebis et chèvre", "01.41.2, 01.45.2"	
	2,"01.A", "Autres matières premières d'origine animale", "01.42.2, 01.45.3, 01.47.2, 01.49.2, 01.49.3"	
	2,"01.B", "Produits de la pêche et de l'aquaculture", "03"	
	1,"02", Houille et lignite (8,9 NSTR24)	2,"02.1", "Houille et lignite", "05"
		2,"02.2", "Pétrole brut", "06.1"
		2,"02.3", "Gaz naturel", "06.2"
	1,"03",Minerais métalliques et autres produits d'extraction (11 12 15 NSTR 24)	2,"03.1", "Minerais de fer", "07.1"
2,"03.2", "Minerais de métaux non ferreux (hors uranium et thorium)", "07.29"		
2,"03.3", "Minéraux (bruts) pour l'industrie chimique et engrais naturels", "08.91"		
2,"03.4", "Sel", "08.93"		
2,"03.5", "Pierre, sables, graviers, argiles, tourbe et autres produits d'extraction n.c.a		
2,"03.6", "Minerais d'uranium et thorium", "07.21"		
1,"04",Produits alimentaires, boissons et tabac	2,"04.1", "Viandes, peaux et produits à base de viandes", "10.1"	
	2,"04.2", "Poissons et produits de la pêche, préparés", "10.2"	
	2,"04.3", "Produits à base de fruits et de légumes", "10.3"	
	2,"04.4", "Huiles, tourteaux et corps gras", "10.4"	
	2,"04.5", "Produits laitiers et glaces", "10.5"	
	2,"04.6", "Farines, céréales transformées, produits amylacés et aliments pour animaux", "10.6, 10.9"	
	2,"04.7", "Boissons", "11"	
	2,"04.8", "Autres produits alimentaires n.c.a. et tabac manufacturé (hors messagerie ou groupage alimentaire)", "10.7, 10.8, 12"	
	2,"04.9", "Produits alimentaires divers et tabac manufacturé en messagerie ou groupage", "Various in 10, 11 or 12 / Verschiedene in 10, 11 oder 12 / Divers dans 10, 11 ou 12"	
	1,"05", Textiles et produits textiles (23 NSTR24)	2,"05.1", "Produits de l'industrie textile", "13"
		2,"05.2", "Articles d'habillement et fourrures", "14"
		2,"05.3", "Cuir, articles de voyages, chaussures", "15"
1,"06",Bois et produits du bois et du liège (hormis les meubles) (19 NSTR24)	2,"06.1", "Produits du travail du bois et du liège (sauf meubles)", "16"	
	2,"06.2", "Pâte à papier, papiers et cartonnées", "17"	
	2,"06.3", "Produits de l'édition, produits imprimés ou reproduits", "18, 58, 59"	
	1,"07",Coke et produits pétroliers raffinés (10 NSTR24)	2,"07.1", "Cokes et goudrons
2,"07.2", "Produits pétroliers raffinés liquides", "19.20.2"		
2,"07.3", "Produits pétroliers raffinés gazeux, liquéfiés ou comprimés", "19.20.3"		
1,"08",Produits chimiques et fibres synthétiques, produits	2,"07.4", "Produits pétroliers raffinés solides ou pâteux", "19.20.4"	
	2,"08.1", "Produits chimiques minéraux de base", "20.11, 20.12, 20.13.2,	

en caoutchouc ou en plastique	20.13.3, 20.13.4, 20.13.5, 20.13.6" 2, "08.2", "Produits chimiques organiques de base", "20.14" 2, "08.3", "Produits azotés et engrais (hors engrais naturels)", "20.15" 2, "08.4", "Matières plastiques de base et caoutchouc synthétique primaire", "20.16, 20.17" 2, "08.5", "Produits pharmaceutiques et parachimiques y inclus les pesticides et autres produits agrochimiques", "20.2, 20.3, 20.4, 20.5, 20.6, 21" 2, "08.6", "Produits en caoutchouc ou en plastique", "22" 2, "08.7", "Produits des industries nucléaires", "20.13.1"
1, "09", Autres produits minéraux non métalliques (14, 22 NSTR24)	2, "09.1", "Verre, verrerie, produits céramique et porcelaine", "23.1, 23.2, 23.3, 23.4" 2, "09.2", "Ciment, chaux et plâtre", "23.5" 2, "09.3", "Autres matériaux de construction, manufacturés", "23.6, 23.7, 23.9"
1, "10", Métaux de base, produits du travail des métaux, sauf machines et matériels (13, 21, 24 NSTR24)	2, "10.1", "Produits sidérurgiques et produits de la transformation de l'acier (hors tubes et tuyaux)", "24.1, 24.3" 2, "10.2", "Métaux non ferreux et produits dérivés", "24.4" 2, "10.3", "Tubes et tuyaux", "24.2, 24.5" 2, "10.4", "Éléments en métal pour la construction", "25.1" 2, "10.5", "Chaudières, quincaillerie, armes et munitions et autres articles manufacturés en métal", "25.2, 25.3, 25.4, 25.7, 25.9"
1, "11", "Machines et matériel n.c.a. machines de bureau et matériel informatique	2, "11.1", "Machines agricoles", "28.3" 2, "11.2", "Appareils domestiques (électro-ménager blanc)", "27.5" 2, "11.3", "Machines de bureau et matériel informatique", "26.2, 28.23" 2, "11.4", "Machines et appareils électriques n.c.a.", "27.1, 27.2, 27.3, 27.4, 27.9" 2, "11.5", "Composants électroniques et appareils d'émission et de transmission", "26.1, 26.3" 2, "11.6", "Appareils de réception, enregistrement ou reproduction du son ou de l'image (électro-ménager brun)", "26.4, 26.8" 2, "11.7", "Instruments médicaux, de précision, d'optique et d'horlogerie", "26.5, 26.6, 26.7, 32.5" 2, "11.8", "Autres machines, machines-outils, armes et munitions et pièces", "28.1, 28.21, 28.22, 28.24, 28.25, 28.29, 28.4, 28.9"
1, "12", "Matériel de transport	2, "12.1", "Produits de l'industrie automobile", "29" 2, "12.2", "Autres matériels de transport", "30"
1, "13", Meubles et autres articles manufacturés n.c.a.	2, "13.1", "Meubles", "31" 2, "13.2", "Autres articles manufacturés", "32.1, 32.2, 32.3, 32.4, 32.9"
1, "14", Matières premières secondaires	2, "14.1", "Ordures ménagères et déchets de voirie", "38.11.31" 2, "14.2", "Autres déchets et matières premières secondaires", "37.00.20, Others 38.11, 38.12, 38.3 / 37.00.20, Andere 38.11, 38.12, 38.3 / 37.00.20, Autres 38.11, 38.12, 38.3"
1, "15", Courrier, colis	2, "15.1", "Courrier", "Not applicable / Nicht genannt / Sans objet" 2, "15.2", "Messagerie, petits colis", "Not applicable / Nicht genannt / Sans objet"
1, "16", Équipement et matériels utilisés dans le transport de marchandises	2, "16.1", "Containers et caisses mobiles en service, vides", "Not applicable / Nicht genannt / Sans objet" 2, "16.2", "Palettes et autres emballages en service, vides", "Not applicable / Nicht genannt / Sans objet"
1, "17", Marchandises transportées dans le cadre de déménagements (biens d'équipement ménager et mobilier de bureau), bagages et biens d'accompagnement des voyageurs	2, "17.1", "Mobilier de déménagement", "Not applicable / Nicht genannt / Sans objet" 2, "17.2", "Bagages et biens d'accompagnement des voyageurs", "Not applicable / Nicht genannt / Sans objet" 2, "17.3", "Véhicules en réparation", "Not applicable / Nicht genannt / Sans objet" 2, "17.4", "Echafaudages", "Not applicable / Nicht genannt / Sans objet" 2, "17.5", "Autres biens autres que des marchandises, n.c.a.", "Not applicable / Nicht genannt / Sans objet"
1, "18", Marchandises groupées: mélange de types de marchandises qui sont transportées ensemble	2, "18.0", "Groupage de marchandises diverses", "Not applicable / Nicht genannt / Sans objet"
1, "19", Marchandises non identifiables	2, "19.1", "Marchandises de nature indéterminée en conteneurs et caisses mobiles", "Not applicable / Nicht genannt / Sans objet" 2, "19.2", "Autres marchandises de nature indéterminée", "Not applicable / Nicht genannt / Sans objet"
1, "20", Autres marchandises, n.c.a.	2, "20.0", "Autres biens non classés ailleurs", "Not applicable / Nicht genannt / Sans objet"

Figure 3. Distribution of freight in EU27 by NST07 (% , 2010)

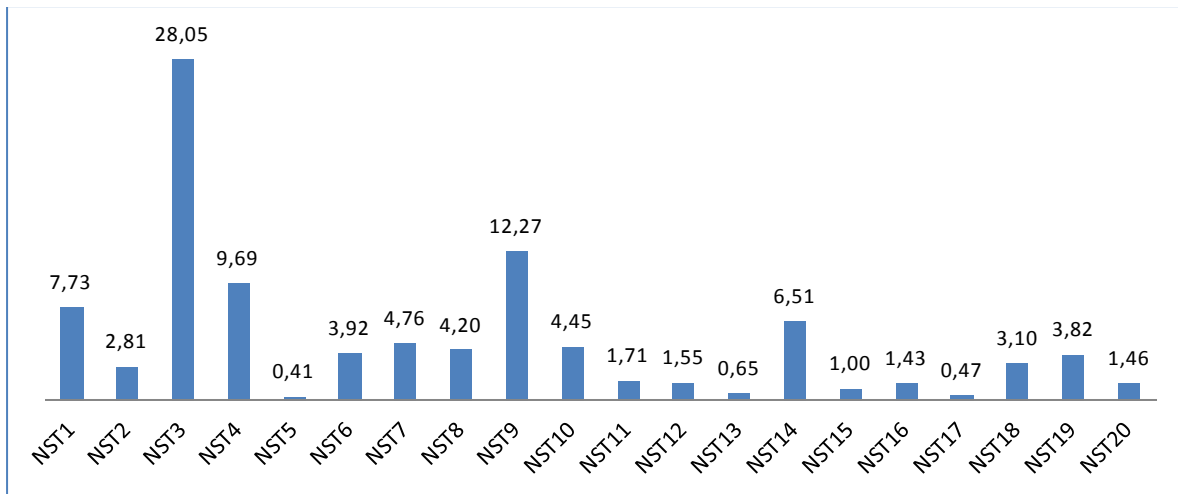
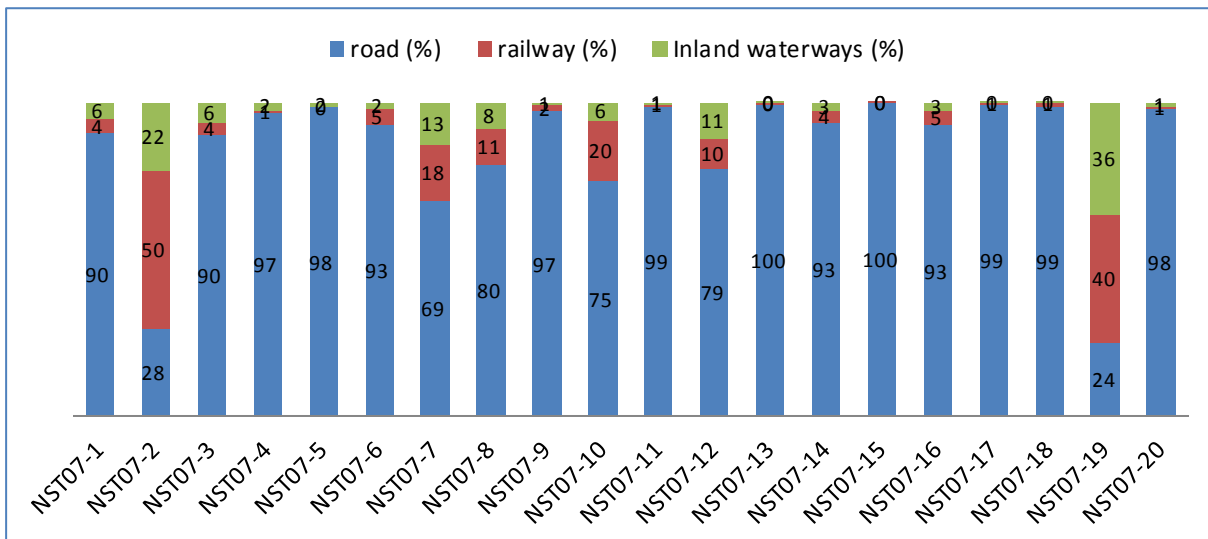


Figure 4. Transport by mode and NST07 in EU27 (% , real numbers, 2010)

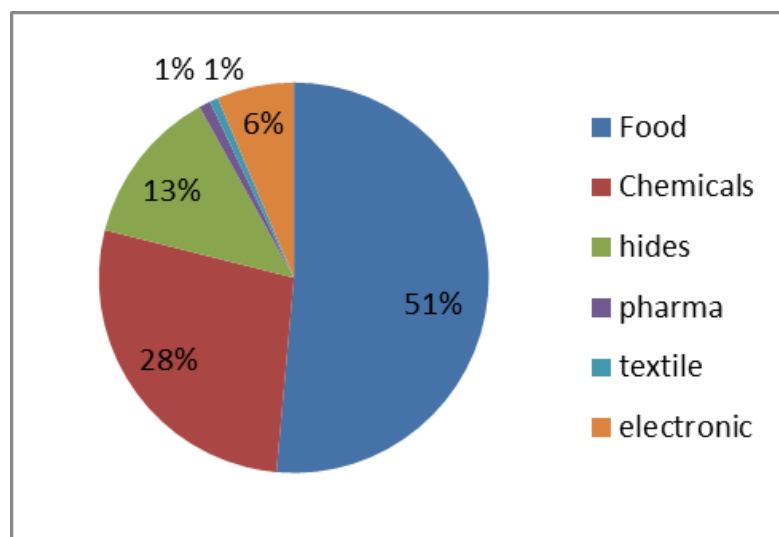


2.2 Dynamic of goods transports inside the freight corridors through Luxembourg

The first corridor gathers the traffic from and to France, Spain, Germany, Poland, Sweden and Denmark. The second corridor groups the traffic of goods taking to origin or destination in Switzerland, Italy, Belgium, the Netherlands and England.

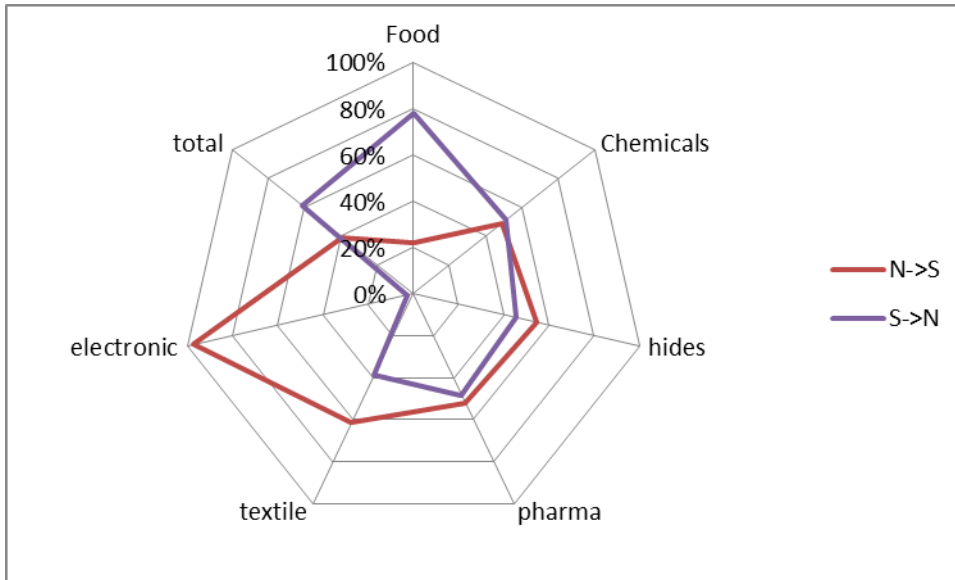
By adding the volumes on both corridors the goods which have had a positive growth between 2005 and 2010, it appears that more than three quarters of the market is represented by food and chemicals. Pharmaceuticals, textiles and electronic goods are only niche activities.

TOTAL	Food	Chemicals	hides	pharma	textile	electronic	
tons	16'430'979	8'785'139	4'158'352	303'404	226'555	2'040'666	31'945'094
share	51%	28%	13%	1%	1%	6%	100%



The south-bound and north bound flows are not balanced for all products. Apart from food products where the huge dimension of the market certainly allows dedicated logistics activities without balanced flows, only chemicals, hides, pharmaceuticals are balanced. Electronics are not balanced but can be pooled together with other products.

	Food	Chemicals	hides	pharma	textile	electronic	total
N->S	22%	49%	54%	52%	61%	97%	39%
S->N	78%	51%	46%	48%	39%	3%	61%



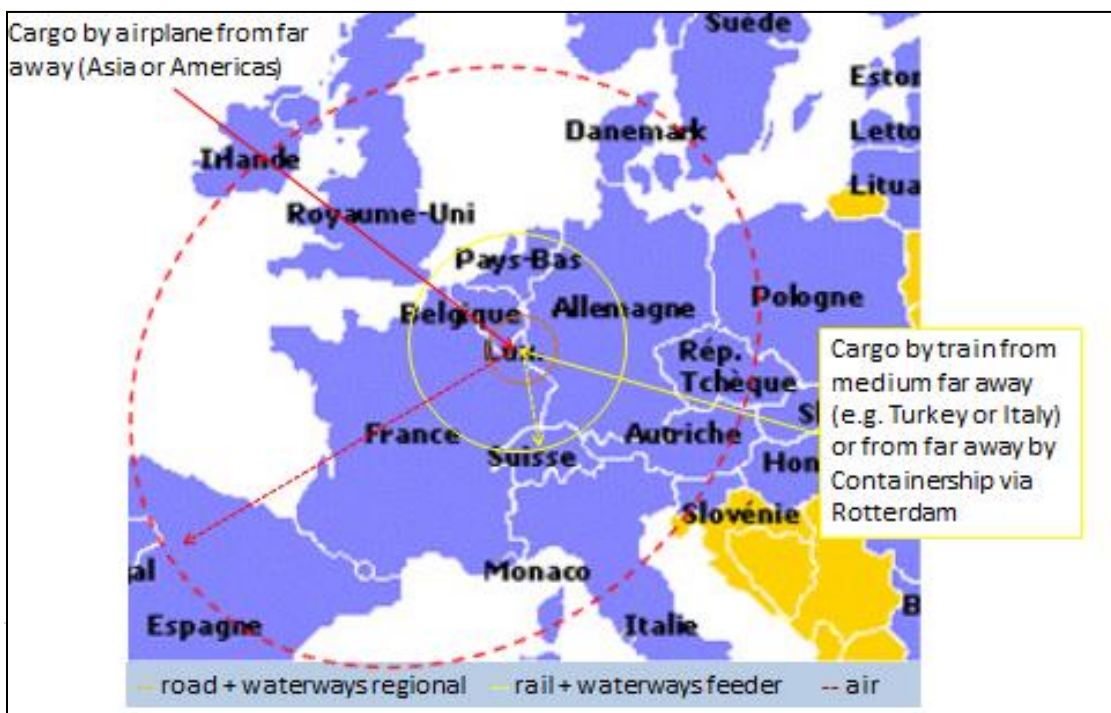
Characteristic risk of each product:

The products don't have the same exposure to the volatility of the market and have a better resistance to economic crises. This is particularly the case for pharmaceuticals and dangerous goods inside the chemicals and, of course, food. A particular focus should be set on these goods and especially if imported by air-freight or containerized sea-freight.

The deconsolidation could be done in a Luxembourg logistics hub, value added logistics services offered and final distribution carried out from Luxembourg. In this case, all the EUROHUB functions as a gateway, multimodal cross-dock, logistics services and distribution centre will be fulfilled.

Risk	Product
Relative stability	Food , hides , pharmaceuticals, textiles
High volatility	Chemicals, electronics

Operational range per transport mode:



1. Focus on markets with short term (3 Years) and immediate (2 Years after the crisis) growth
2. Develop current traffic in Europe and launch new traffic with BRICS countries and Turkey
3. Focus on feature products and on niche activities for future logistics developments
4. Focus on balanced goods flows or on very important flows where niche activities could be identified
5. Take in consideration the risk linked to the targeted goods in relation with their specific volatility on the market
6. Focus on goods having a high level of air-freight and containerized sea-freight.
7. Define the most likely opportunities for Luxembourg among the products transiting through Luxembourg;
 - a. focus on part loads
 - b. focus on loads changing their original corridor
 - c. take into consideration the modal action range
 - d. offer value added logistics services
8. Evaluate the risk of future development of each product and its particular market volatility
9. Develop close contact with customers and logistic operators in the specific field of products and test if there is a potential interest for including Luxembourg in their supply chain.
10. Define the requested services from the market for each specific product.
11. Benchmark Luxembourg with its potential current and future competitors.
12. Consider the EUROHUB in close relation with all logistics projects in the greater region to develop synergies and share competences.

3. The EUROHUB concept

Luxembourg industry alone does not produce the volumes needed to build up a competitive logistics centre. Thanks to its good geographic location and market potential in a range of 350 km Luxembourg can focus on transiting flows to build up a European gateway for goods from, to and through Europe.

- Air Freight: 8 million tonnes
- Sea freight: 500 million tonnes
- Road transport: 30 million tonnes transiting through Luxembourg every year (1.5 million trucks)

However, the complexity and inter-connexions of supply chains in global networks is growing. This obliges logistics operators to become stronger in terms of efficiency, security, quality, costs and environmental protection. If Luxembourg wants to develop logistics activities by stopping transiting goods in Luxembourg in order to provide logistics value added services, the increased level of complexity in the transport flows due to added split up of the supply chain must be taken into consideration. This complexity will lead to additional physical operations, additional IT services and additional document management all being a potential source of errors and mistakes. The big integrators (UPS, FEDEX, DHL...) have the advantage of handling the freight in their own facilities and following the documentation in their own IT systems.

As an international logistics hub, Luxembourg will have to deal with a large number of operators having different logistics processes and different IT solutions. Considering the increased level of security and quality required, Luxembourg must implement a global multimodal and intermodal concept for logistics focusing on international flows.

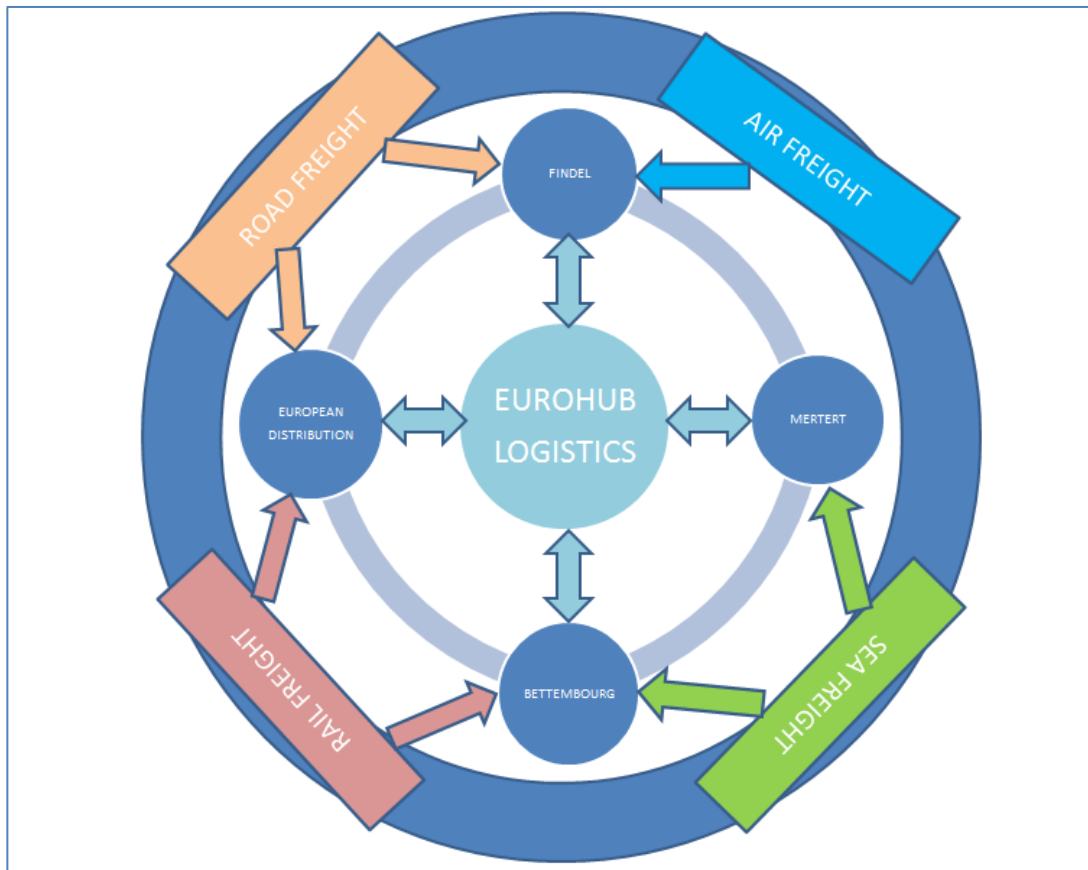
Luxembourg has a large advantage in terms of infrastructure compared to other logistics sites in the greater Region and can take advantage of those assets to attract shippers and operators or to provide specific services to other regional logistics centres:

- The inland port of Merttert dedicated to bulk products (and containers) as link to the ports of the North Sea
- The rail-road terminal of Bettembourg/Dudelange, as a multimodal switch point on main freight corridors and terminal of Lorry-Rail
- The air cargo centre of Findel, one of the leading hubs in Europe

Luxembourg must be considered as a single logistics hub with three multimodal platforms each having its own development strategy. The coordination of these policies will develop synergies between all operators and create a strong Luxembourg cargo community inside the EUROHUB concept.

The EUROHUB LUXEMBOURG must be multimodal and intermodal and offer to the market competitive services as:

- Gateway from/to and through Europe
- Cross-dock hub for European land transports
- European and regional distribution centre
- Logistics centre for value added services



EUROHUB is a neutral platform linking all logistics platforms and the origin of freight: air-freight, sea-freight, rail-freight and road-freight. The coordination of the dedicated development policies will develop synergies between all operators and create a strong Luxembourg cargo community inside the EUROHUB concept.

The interoperability of all transport modes and the high level of quality and security offered by the handling agents will guarantee to all forwarders commitment to his customer requirements. This will allow the forwarders to sell Luxembourg logistics as a single hub to their customers. Moreover, forwarders already operating can widen their commercial offer to their customers and prospects as they have a global guarantee of operability, quality service and rates from the handling agents of all logistics platforms. This will definitely allow Luxembourg to position itself as a Gate to Europe and as distribution centre to more shippers and forwarders.

Luxembourg must create value for customers by developing dedicated logistics infrastructures for logistics chains. Luxembourg must therefore become an international reference as efficient, safe and sustainable logistics hub. The services offered by the national cargo community must cover the whole supply chain including door-to-door solutions: collection of goods, transportation to the hub handling, warehousing, added value logistics services, customs clearance, transportation from the hub and final distribution for flows in and out of Luxembourg and Europe.

The key to success will be the promotion of the EUROHUB Luxembourg, as a single logistics hub for all logistics services based on the existing quadri-modal infrastructure. Luxembourg should be more aggressive in the promotion of its logistics sector. But all investments in promoting Luxembourg as a logistics hub depend on other countries' decisions related to investments in infrastructure. Luxembourg must therefore develop partnerships with other European and international logistics locations, port, airports, inland ports, rail-road terminals. The EUROHUB Luxembourg must be communicated and explained to the European and international logistics community.

In order to guarantee the competitiveness of EUROHUB, all aspect of the global logistics framework must be considered for every platform in particular and the EUROHUB in general. All measures must be implemented to enhance existing advantages and to catch up with other international prime logistics hubs.



1. Develop EUROHUB LUXEMBOURG as:

- Gateway from/to and through Europe
- Cross-dock hub for European land transports
- European and regional distribution centre
- Logistics centre for value added services

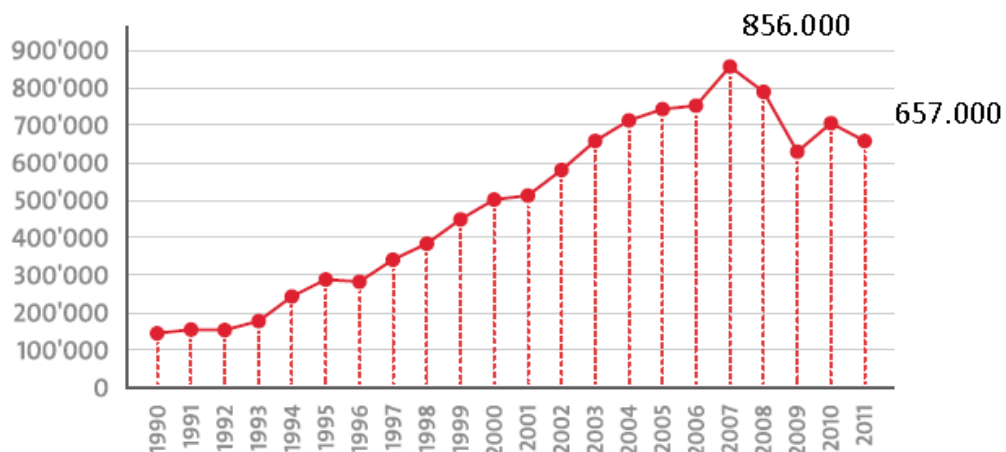
2. Create value for customers by developing dedicated logistics infrastructures for logistics chains.
3. Facilitate trade with non-EU goods with interesting VAT regimes.
4. Become an international reference as an efficient, safe and sustainable logistics hub.
5. Develop partnerships with other European and International logistics locations, port, airports, inland ports, and rail-road terminals.
6. Back up the pooling of freight to find the critical mass of goods to develop value added services for niche products on the WSA platform.
7. Build up a common neutral European distribution network to pool freight and to support logistics activities in the logistics park.
8. Promote EUROHUB on a national level as a neutral platform for the cargo community to improve global competitiveness
9. Develop Luxembourg as an international and European freight management centre.
10. EUROHUB must become an international reference as an efficient, competitive, safe and sustainable logistics hub.
11. Promote EUROHUB outside Luxembourg, in Europe and on worldwide growth markets.
12. EUROHUB must be developed as a centre for international and European freight management

4. A national airport strategy

Findel airport is one of Europe's most advanced, best-equipped airfreight handling facilities. Continuous investment ensures customers benefit from latest techniques and processes. Airport infrastructure and airport performances are crucial to worldwide trade and to the attractiveness of Luxembourg as a logistics hub and must continue to be developed to keep Luxembourg airport competitive in the future. Luxembourg must position itself as a general cargo hub and as a specialist in selected niche markets.



Optimum use must be made of existing infrastructure and of potential handling capacities up to 1,000,000 tonnes of airfreight yearly. Unfortunately the 2008 economic crisis has reduced the effort to reach this target and the current weakness of the global economy and particularly the high volatility of logistics activities is not helping a return to the former growth trend.



In the first half of 2012, the market trends of the second half of 2011 continued and the main airfreight forwarders are forecasting an underperforming year in 2012 compared to 2011. The total reduction of volumes in 2012 is estimated at 3% due to the decline in European private consumption. This makes it even more important to define a global airfreight strategy for Luxembourg to outline how to convince more forwarders to use Luxembourg as a gateway and distribution centre. Key arguments must be offered to the forwarders already active in Luxembourg to allow them to continue operating through Luxembourg in their internal competition with other airports. A state of the art infrastructure and optimum streamlined administrative processes must be offered.

Against this background of declining freight volumes it is essential to position Luxembourg airport better than our competitors in order to convince forwarders and air-carriers to use Luxembourg as a hub in and out of Europe. Quality and security, reliability and costs will be decisive advantages for the future.

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Potential markets from and to:

	Air
Belgium	X
France	X
Germany	X
Italy	X
Netherlands	X
Spain	X
Switzerland	X
Modal Split EU 27	0.06 %

Split per transport mode:

	Code NST	Air
Modal Split		
Courier	15	33 %
Full Unit Load		0 %
Groupages ?	18	67 %
Container	19	0 %
Others	20	0 %

Targeted goods for logistics services (AIR):

MAIN	AIR	Trend	Leaders
High tech products	27 %	+	Asia
Manufacturing equipment	19 %	o	Europe, North America
Apparel, textiles, footwear	17 %	+	Asia
Consumer products	16 %	o	All
Refrigerated foods	5 %	+	Latin America
Others	16 %	o	

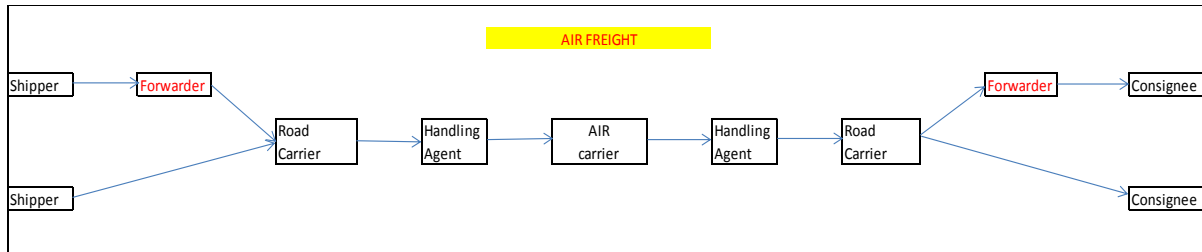
Source : Moving boxes by air

Our objectives :

1. Identification of decision makers in air freight
2. Cooperation between air carriers, handling companies and administrations
 - a. Setup of a common development board for air-freight
 - b. Improve organization and service of governmental administrations
 - c. Coordination between carriers and handling agents
3. Improve the competitiveness of the airport
 - a. Offer door-to-door solutions
 - b. Increase flexibility in shift planning
 - c. Enhance quality and security
 - d. Flexible night curfew
 - e. Incentive landing fees
 - f. Aircraft maintenance
4. Develop synergies with WSA platform
 - a. Cargo Village Concept
 - b. Build up a common European rail and road distribution network
5. Environmental benefits

Our recommendations :

1. Identification of decision makers in air freight



As it can be seen from these figures, forwarders (and Global Sales Agents) are mostly involved in the decision on where the freight will be handled, which airport will be used and where logistics services will be provided. In the concept of EUROHUB, a single entry point for interested forwarders should be defined, where information, advice and connections to local handling agents, air carriers and logistics services providers will be provided to them.

Attracting more forwarders to use Luxembourg airport as a transit hub for their import and export flows, will raise the volume of freight and then make Luxembourg more interesting for new air carriers who will then add Luxembourg to their regular flight schedules thus again making it easier for forwarders to offer and sell logistics solutions via the Luxembourg hub.

The development strategy could be the following:

- Attract new forwarders by having a larger range of flight connexions and offering them full services packages for their freight handled through Luxembourg. In this respect a global solution for road feeder and de-feeder services should be found for all forwarders, present and futures. A pooling of freight would allow a better level of efficiency and price competition.
- Attract cargo airlines operating new lines to/from or through Europe to Luxembourg by offering state-of-the-art services and competitive rates, thus again allowing forwarders to sell the additional lines from Luxembourg.
- For specific niche products, attract the current forwarders handling the existing flows to Luxembourg airport by offering value added logistics services.
- Attract new passenger airlines, starting new routes from Luxembourg or making a stopover in Luxembourg on international routes. This would allow the use of the belly cargo capacity of these passenger flights.
- Enhance transit cargo airlines by offering attractive conditions (landing fees, attractive fuel prices and 5th freedom traffic rights) for stops on new routes not operated through Luxembourg today. This solution has the advantage that the critical

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mass of freight for launching this kind of stop is lower than if a new route has to be launched. The infrastructure of the airport allows these short stops to load and unload freight, which is not possible in large airports like Frankfurt, Paris or Amsterdam. At the same time, logistics services could be offered for these goods and reinforce the position as a European distribution centre.

Freeport:

Luxembourg can be positioned in these particular niche markets beside Geneva and Singapore as a logistics centre for very high value goods such as arts, jewellery, cars, wines and collection goods. The use of the Freeport will be restricted to specialized forwarders and art agencies. This will raise the attractiveness of the airport as this will be the only airport in the Eurozone offering these services. Goods can then be shipped by plane and moved directly into the Freeport without leaving the tarmac and so have some advantages in terms of customs procedures. The single window for logistics, allowing automated and paperless goods clearance procedures will be a huge advantage for Luxembourg as it is today for Singapore.

Depending on the dimensions of the products to be stored, both Luxair and Cargolux can provide transport services for the Freeport as is for example the case today for Brussels as a European hub for precious metals. Moreover, the Freeport activities will link logistics services to the financial sector in Luxembourg and so promote both activities at the same time.

2. Cooperation between air carriers, handling companies and administrations

a. Setup of a common development board for air-freight

In order to stop the declining trend at the air cargo platform, a national development plan should be implemented as soon as possible. In order to achieve this in an efficient way a common board including all stakeholders should be set up including Cargolux, Lux-airport, Luxair, administrations and representatives of operators.

b. Improve organization and service of governmental administrations:

The overall target must be to optimize the processes at the airport involving all present players, in order to speed up operations and have a faster transit of the goods at the airport. To achieve this, all administrative processes must be checked to detect potential enhancement by optimized organization of administrative tasks. Detailed analysis of potential common representations of administrations or sharing of common tasks should be focused on. Especially in the field of sanitary, phytosanitary and health sanitary inspection this pooling of tasks must allow a permanent 24/7 presence of specialists at the airport. The same analysis should be carried out for other administrative tasks related to airfreight administrative requirements and in particular it must be analyzed why certain documents, such as transit licenses, are requested for transit in Luxembourg but not in other EU countries.

Service level commitments must be fixed in a common agreement and be respected by all involved parties to guarantee a high level of quality and predictability for air freight shipments.

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c. Coordination between carriers and handling agents

The business model of Cargolux aims to move as much freight as possible and to fly as many hours as possible per day. This obliges them very frequently to make additional stops to collect freight on their trips and in consequence change the flight schedule in a permanent way. On the other hand, the handling agent must define the shifts of their staff at the latest on the 20th of the month before operations. These two opposite constraints make it difficult to optimize handling processes and are an important factor in high handling costs. The handling agent can only plan the shifts on historical figures, but in the context of a declining market and high volatility this is clearly a huge disadvantage for the national air cargo platform.

In other airports with more flight activities the delay of some flights can be compensated for with the high volume of permanent operations and has less impact on the costs and the global competitiveness of the airport.

3. Improve the competitiveness of the airport

a. Offer door-to-door services

In order to convince new forwarders to use Luxembourg as a gateway to/from and through Europe, the handling agents must offer fully integrated door-to-door solutions. The collection of goods, the delivery of goods, the handling and customs procedures must be offered as a package to new forwarders in order to give them the benefits of existing feeder and de-feeder services they cannot build up on their own in a business development phase. The pooling of freight and shared distribution networks will be a decisive advantage here. The rise in volumes will allow more routings and an enhanced frequency of routings, which will again give more operational advantages to Luxembourg as a hub. The key to success will definitively be more volumes from new forwarders.

b. Provide more flexibility in use of workforce

Due to the stagnation of freight volumes, and as a consequence a number of planes landing at Findel airport which is not rising, better use of present staff can only be made by an increase in the flexibility in the organization of the shifts in order to enhance the overall competitiveness of the airport. A reference period of 6 months should be instituted for each member of staff allowing the balancing of periods of high activity with periods of low activity during the year. A longer reference period would also allow handling agents to reduce staff in the scheduled shift planning if the market declines by compensating hours already worked on the staff time sheets with free time.

Taking into consideration the seasonal peaks and the high volatility of the markets this would allow the air cargo center to be more competitive in the international market.

c. Enhance quality and security

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Beside the direct infrastructure specifically requested for the handled goods, a particular focus must be set on air-freight security. On the 25 March 2013, all current shippers will need to be registered as “secured shippers”. In Germany only 3,500 companies out of the 60,000 shipping company’s active today have requested certification as a “secured shipper”. This means that their freight is classified as unsecured and must be scanned before entry to the airport. It is more than likely that the scanning capacity in German airports will not be sufficient to scan all freight in time to secure the standard transit-times. It is recognised that these delays will lead operators to search for other airports which will guarantee good and speedy service. In this respect Luxembourg should invest in scanning infrastructures to be more competitive than other airports and so attract new business to Luxembourg.

d. Flexible night curfew

Night curfews at departure and destination airports make it difficult for cargo airlines to optimize the use of their aircraft. The negative consequences in terms of delays and/or lost productivity from a smaller technical defect or service problem, like unforeseen handling issues or a late delivery of cargo to be moved, are quickly multiplied if night operations are limited at the destination airport. Consequently cargo airlines will, where traffic rights and access to markets allow, choose airports without a night curfew. The trend in Germany is towards more and more restricted night curfews. Luxembourg could take advantage of this situation by fine-tuning the application of current rules in order to make them more flexible within a long term commitment for all operational stakeholders.

If Findel airport targets further development as a hub for high quality, high value and time sensitive products in a time of ever more flexible traffic rights and with surrounding unrestricted airports playing catch up, the existing regulations for the night curfew must be reviewed.

While the societal balance of benefits from “night silence” and “economic activity” is indeed difficult to strike, the rules should be improved to allow night operations at a non-penalizing cost (= the cost being the same as day time operation) for

- Scheduled operations running late, e.g. only carriers with an active schedule at Findel
- Latest generation less noisy aircraft, e.g. only specific aircraft types like the B777F or B747-8F

It can of course not be in the interest of Findel to position itself as an attractive hub for one-off charters using older generation noisier aircraft.

In this respect Luxembourg should find together with the involved stakeholders a flexible night curfew inside a fixed quota per night, thus enhancing the use of environmental and noise friendly aircraft.

In addition, the night curfew at airport is limiting the use of the airport infrastructure to a specific time window (6.00 am to 11.00 pm). That means that passenger and freight movements do not make full use of the infrastructure. Significant resources are expended unnecessarily and capacities remain unused.

e. Incentive landing fees

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Airport charges make up a considerable part of airline operating costs at an airport, typically 15-30%. Therefore a scheme of competitive landing fees, promoting the use of environmental and noise friendly aircraft while offering new operators introductory discounts, should be adopted to keep existing carriers and attract new ones.

- Discount on total amount of landing fees (including night fees) on total yearly amounts
- Discount for new routes and frequency increases
- Free stop overs for loading and unloading a part of the carried freight, limited to maximum of tonnes to be defined
- Reduced landing fees for low noise aircraft (e.g. Min CAT 3)
- Calculate the landing fees on carried freight basis and not on gross weight basis

f. Aircraft maintenance

Develop aircraft maintenance at Findel airport by offering services to new air carriers, cargo, passengers and business aviation. By making use of the existing technical infrastructure and the trained staff on site, these activities can be promoted to other European air carriers. Special landing fees and night curfew conditions should be set up for these activities.

4. Develop synergies with Eurohub South

a) Cargo village concept

The logistics park at WSA can be used for offering a large range of services to the airport community, services which it is impossible to implement at the airport due to lack of land. Warehousing of goods and logistics value added services can be offered on the WSA platform before goods are delivered to final European destination or re-exported out of Luxembourg.

Using free parking areas at WSA on weekends would at the same time solve the problem of congested facilities at the airport on weekends. Trailers with goods which are not required until flights several days ahead could be parked in the secured parking of WSA.

In the long term, when infrastructure at Findel will be used to its maximum capacity, the WSA platform can be used as deconsolidation platform for import air-freight, thus using directly the common distribution network.

b) Build up a common European rail and road distribution network

At the same time, air cargo for delivery in Europe can be pooled together with other standard goods stored or transiting through Bettembourg/Dudelange. Neutral carriers, not involved as air-freight forwarders, could pool together the freight of all air-freight operators with the freight being delivered out of the warehouses of WSA and so build up a global European distribution network. This pooling would give competitive advantages to

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Luxembourg as a single European distribution center; this will not only reduce the overall transport costs but also allow higher delivery frequencies on all routes.

Freight on routes to Italy and Spain could take advantage of existing rail-road routes and be carried in an environmentally friendly way to their final destination. Due to the size of air cargo pallets there are potential transport interface problems with rail-road transportation. Non-standard loading units and gauges will require special attention in the common distribution network if additional transshipments have to be avoided. A technical commission must be set up to analyse possible synergies and assess financial costs.

5. Environmental benefits

The highest sustainability in transport can be achieved in an effective way by having a good policy of replacing old planes by newer energy-efficient freighter aircraft. The national airfreight carrier already has the most modern and most environmentally friendly (fuel consumption / noise) fleet with 5 x 747/800.

The EU emission Trading Scheme (EU-ETS) is a market based measure aiming to enhance fuel efficiency by requiring air carriers to purchase credits for a portion of the CO₂ they emit. This may lead to further efficiency gains by encouraging the replacement of ageing fleets with new modern aircraft which improve the quality of life of local communities by:

- Enhancing fuel efficiency
- Reducing Co₂ emissions
- Allowing quieter take off and landings

In order to achieve this objective, collaboration of all involved partners in the transport chain is required; air carriers, aircraft constructors, engine manufacturers, fuel producers and governmental authorities. Careful choices must be taken balancing environmental progress and operational costs to make airlines economically and environmentally sustainable.

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1. Raise the volume of freight by promoting the logistics platform of Findel to foreign forwarders, global sales agents and air carriers in order to raise the volume of freight.
2. Attract new forwarders by having a larger range of flight connexions and offering them full services packages for their freight handled through Luxembourg.
3. Attract cargo airlines operating new lines to/from or through Europe to Luxembourg by offering state-of-the-art services and competitive rates, thus again allowing forwarders to sell the additional lines from Luxembourg.
4. For specific niche products, attract the current forwarders handling the existing flows by offering value added logistics services in Luxembourg.
5. Attract new passenger airlines, starting new routes from Luxembourg or making a stopover in Luxembourg on international routes and make use of the belly cargo capacity of these passenger flights.
6. Enhance transit cargo airlines by offering attractive conditions (landing fees, attractive fuel prices and 5th freedom traffic rights) for stops on routes where direct flights are operationally not feasible or economically not viable.
7. Setup of a common development board for air-freight, including all key stakeholders should be implemented including Cargolux, Lux-airport, Luxair, administrations and representatives of operators.
8. Improve organization and service of governmental administrations in order to optimize the processes at the airport, by gathering and/or sharing administrative tasks and offering full 24/7 presence at the airport.
9. Improve organization between governmental administrations and handling agents in order to allow a faster transit of the goods and give predictability to all forwarders.
10. Coordinate actions between carriers and handling agents to optimize handling processes and reduce handling costs.
11. Increase the flexibility of working time to take into consideration the high volatility of activity in transport and logistics.
12. Reduce global costs thanks to a reduction of global workforce costs by implementing a longer reference period.
13. In order to convince new forwarders to use Luxembourg as a gateway to and from Europe, the handling agents must offer fully integrated door-to-door solutions.
14. Set a particular focus on air-freight security and invest in scanning infrastructure to be more competitive and smarter than other airports.
15. Take advantage of a restrictive European trend towards night curfews by fine-tuning the application of current rules in order to make them more flexible within a long term commitment to all operational stakeholders.

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16. Position Findel as an attractive hub for carriers using a new generation of less noisy aircraft, e.g. only specific aircraft types like the B777F or B747-8F. Offer a flexible night curfew inside a fixed quota per night, thus enhancing the use of environmental and noise friendly aircraft.
17. Implement a scheme of competitive landing fees related to supporting the development of traffic of existing carriers while also attracting new operators.
18. Develop aircraft maintenance at Findel airport by offering services to new air carriers: cargo, passengers and business aviation.
19. Use the logistics park at WSA as a cargo village, offering a large range of services to the airport community; warehousing of goods and logistics value added before goods are delivered to a final European destination or re-exported out of Luxembourg.
20. Use free parking areas at WSA on weekends to solve the problem of congested facilities at the airport on weekends Trailers with goods which are not required until flights several days ahead could be parked in the secured parking of WSA.
21. Air cargo to be delivered in Europe can be pooled together with other standard goods stored or transiting through Bettembourg and so build up a global European distribution network.
22. Air-freight on routes to Italy and Spain could take advantage of existing rail-road routes in Bettembourg and be carried in an environmentally friendly way to their final destination.
23. The highest sustainability in transport can be achieved in an effective way by having a good policy of replacing old planes by newer energy-efficient freighter aircraft.

5.A national inland port strategy

The Luxembourg government has invested in the upgrading of the harbour infrastructures in the last years. New routes have been built and rail tracks renewed to keep the global infrastructure at the required level to develop business in the future. Waterways will certainly be one of the main transports modes to be developed in the future against the background of rising energy prices and internalization of environmental costs.



In addition to its existing bulk activities a special focus must be set on the potential use of Merttert in future container transports from the North Sea ports to the Greater Region of Luxembourg.

Potential markets from and to:

	Waterways
Belgium	X
Germany	X
Netherlands	X

Modal Split EU 27	1 %
-------------------	-----

Split per transport mode:

	Total	Waterways
KEP	1 %	0 %
Full Unit Load	90 %	79 %
Less Unit Load	3 %	0 %
Container	4 %	20 %
Others	2 %	1%

Targeted goods for logistics services (Waterways):

MAIN	Code NST	Total	waterways	Trend	Supremacy	Leaders
Food	1, 4	17,5 %	4 %	+	+	DE,NL,FRA
Bulk	2,3,7	28,0 %	8 %	+	+	DE,NL,BE
Paper	6	3,9 %	2 %	+	+	DE,NL,BE
Chemicals	8	4,2 %	9 %	++	+	DE,BE,FRA
Construction	9	12,3 %	1 %	o	++	DE,NL,BE
Steel	10	4,4 %	5 %	++	+	DE,BE,NL
Recycling	14	6,5 %	3 %	+	+	DE,NL,FRA

NICHE	Code NST	Total	waterways	Trend	Supremacy	Leaders
Textiles	5	0,4 %	6 %	+	+	
IT	11	1,7 %	0 %			

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It is obvious that waterways should develop mainly on bulk transports as bulk represents 40 % of the European market and 32 % of these goods are transported by waterways in full unit loads, meaning complete ships. Focus should be set on flows to and from the North Sea ports and to regions Oberrhein and Niederrhein in Germany. Additional development opportunities can be envisaged in container transports from the North Sea ports in the Hinterland.

Container transports have developed particularly in recent years in deep sea transport. More and more goods are carried in containers, both bulk and general cargo. A study by the Dutch research centre NEA [lit.wp3-7], forecasts an increase in traffic in ports by more than 15 % till 2030 compared to 2010. During the same period, container transports will double and transports to and from the Hinterland ports will increase by 94%.

In the last ten years the share of transports on inland waterways has reached 30 % of all imported and exported goods. In the period 2010/2011 in most of the ports of the North between Le Havre and Hamburg, container traffic has risen in volume: [lit.wp3-8]

Million TEU	2010	2011	2010/2011
Hamburg	7.9	9.2	+16.4%
Bremen	4.9	5.9	+19.9%
Rotterdam	11.1	12.1	+8.3%
Antwerp	8.5	8.6	+2.1%
Zeebrugge	2.5	2.2	-10.9%
Le Havre	2.4	2.3	-2.3%
Total growth	37.3	40.3	+8.2%

More than 25 TEU (62%) were shipped in the Hinterland for further transportation or for added logistics services on the goods before their final destination. The competitiveness of the ports will in future depend on their connection to the hinterland ports. The EU has defined main freight corridors (TEN T) connecting the seaports to the Hinterland. The fast implementation of these corridors will certainly be decisive criteria in the choice of hinterland ports.

In that respect, the share of waterway transports will surely develop in the next years as defined for the new Rotterdam terminal Maasvlakte 2. The target is to increase waterway transport to a share of 45% for the whole Rotterdam port; meaning 6 million TEU. Container traffic will rise massively on the Rhine as its reserve transport capacity is 700 % compared to 100 % of others rivers [lit.wp3-9]

Unfortunately, the current situation on the Mosel is not as encouraging as the projects in Rotterdam. In 2011 traffic on the Mosel has dropped by 11.9 %, from 14.3 million tonnes to 12.6 million tonnes. The decrease was very sensitive in scrap and iron ore, representing 1.4 million tonnes to the steel industry in the greater region. [lit.wp3-10]

The share of traffic was the following:

DE – Trier	1.0 million tonnes
DE – Saar	3.2 million tonnes
LU – Mertert	0.9 million tonnes
FR – Metz / Nancy	7.5 million tonnes

(Sekretariat der Moselkommission 2012)

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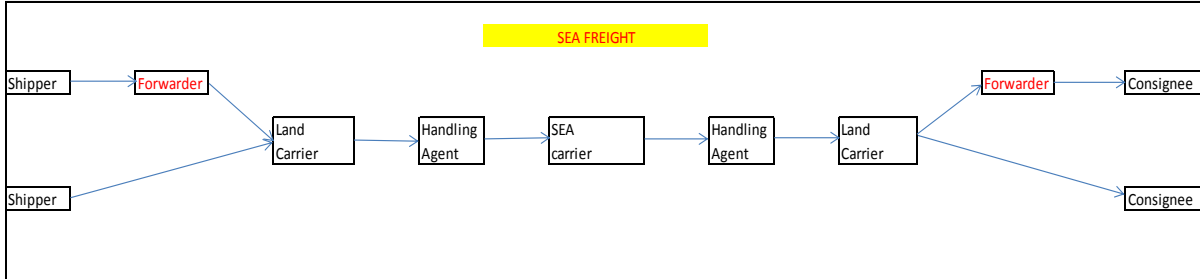
Our objectives :

1. Identification of decision makers in waterways transports
2. Hub for bulk products and bulk industries
3. Hub for recycling products
4. Hub for containers and packing of containers
5. Extended gate concept
6. Improve the competitiveness of the port
7. Maintenance of ships
8. Environmental benefits

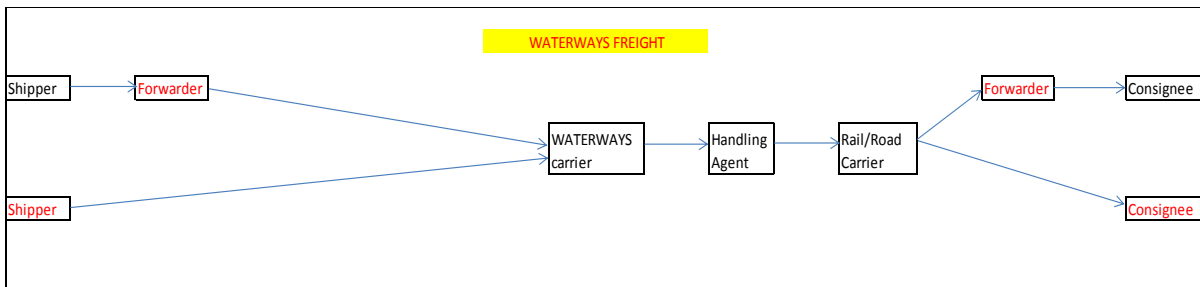
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Our recommendations :

1. Identification of the decision makers in waterways transport



As indicated above in most transport, the decision taker is the forwarder who sells to his customer (shipper or consignee) the full logistic service. The forwarder decides who will be the land carriers and sea carriers, which terminal will be used and where logistics services will be provided.



For bulk transport it is more likely that loading will be done directly at the shipper's premises. For container transports, the loading will be at a terminal on behalf of the global forwarder.

As it can be seen from both figures, forwarders are mostly involved in the decisions on where the freight will be handled and where logistics services will be provided. In the concept of EUROHUB, a single entry point for interested forwarders should be defined, where information, advice and connections to local handling agents and logistics services providers will be provided to them.

2. Hub for bulk products and bulk industries

The inland port of Mertert has to be strengthened in its function as an import and export hub for bulk. However the bulk market is clearly dominated by rail transport representing a market share of 50% of all European bulk transports. The geographic location of Luxembourg on the Mosel with access to the Rhine offers advantages for inland waterways transports. The activities in the port of Mertert should mainly focus on bulk products for regional construction industries coming from the Niederrhein and Oberrhein. The focus should be set especially on all types of materials for the construction sector in Luxembourg and the Greater Region. The infrastructures of waterways, rail and road are there to develop these

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activities. The incoming ships can then be used for the transport of local or regional steel products to Germany or the North Sea ports.

3. Hub for recycling products

Europe maintains a strong position in the global recycling market. Germany has been a key contributor to this position due to its technological leadership as well as strong commitment to addressing environmental concerns such as waste management through active legislation.

Recyclable materials include many kinds of glass, paper, metal, plastic, textiles, and electronics. The facilities of Mertert could be used to create a regional huge collection center for recyclable materials, where materials can be sorted, cleaned, and reprocessed into new materials bound for manufacturing and finally shipped on the waterways to their industrial consumers.

Legislative variations have underpinned the critical importance of gaining an understanding of local waste management. However a legal analysis must be carried out to see whether these cross border activities are feasible in regard to the potential administrative procedures.

4. Hub for containers and packing of containers

Against the background of enhanced congestion in the seaports, increasing energy prices and environmental costs, the feasibility of an inland container port must be checked from a long term perspective and included in the global project of the container terminal at WSA.

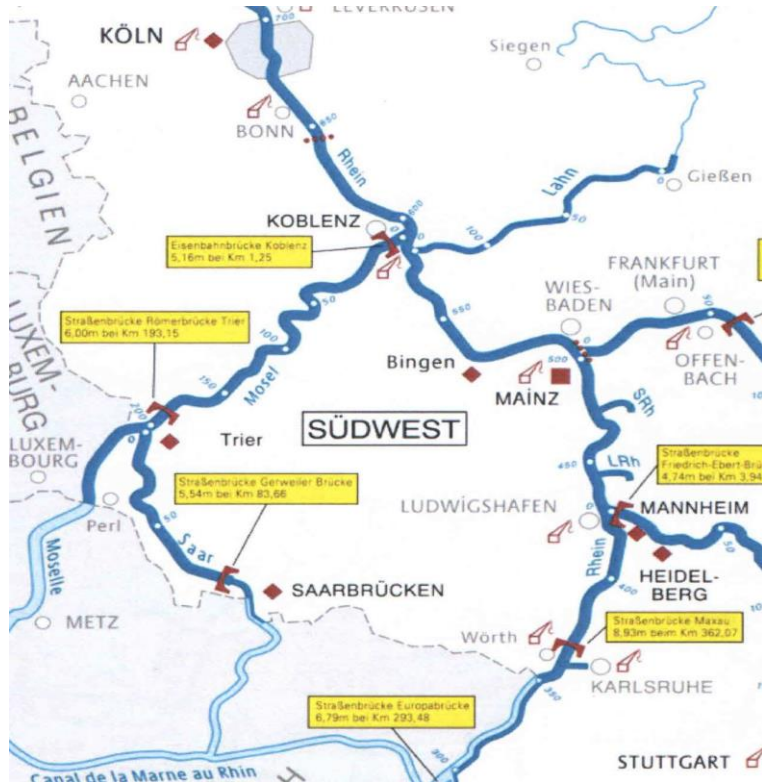
In the Netherlands, inland waterways terminals for containers exist. The first built was Nijmegen 150 km away from Rotterdam, the last built is Alphen 40 km away from Rotterdam

The advantages for inland container terminals are significant:

- Low costs for transportation to and from seaports
 - In south NL a ship with 32 TEU has the same cost as road transport
 - To be competitive a minimum of class IV (GMS Typ 1) is required on longer distances
 - The technical constraints of the Mosel in the Koblenz lock and the height of the railway bridge of 5.16 meters limit the gauge of ships to the ship categories üGMS Type 2 = 204 TEU if 3 layers of containers or 136 TEU if 2 layers of containers [\[lit.wp3-11\]](#)
- Low costs for handling of containers
- Solution to reduce congestion in the seaports




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But this transport mode is only competitive if road feeder and de-feeder is intended to local market in a range of 50 kilometers around the terminal.



Given the long transit times to the seaports from Mertert (5 days to Antwerp and Rotterdam), Mertert could be used for goods not requiring fast transit times after their arrival in the seaports. The port infrastructure and superstructure must therefore be developed in such a way that they will be operational in the medium term when container traffic will already have developed in terms of volumes in the Greater Region. The port could provide at the same time packing services for export companies in the port with the existing equipment. Before traffic rises to a level that allows regular feeder services with the ports, the full containers could be sent by road or train to the ports. The ships coming from the seaport could at the same stage load steel products or recycling material on their way back to the ports.

Inland shipping will take a particular position in European transport in the middle term future. As the most sustainable method of transport, inland vessels can provide an alternative to road transport to the hinterland ports without traffic jams and with less pollution.

Rotterdam Luxembourg (Door-to-door)	to 		
Cost per TEU	350 €	380 €	210 €
Lead Time	1 day	1 day	5 days

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However, we should take into consideration the future development in the port of Illange too and the existing services in Trier to avoid creating overcapacity on the market thus not allowing a long-lasting economical solution.

5. Extended gate concept

Through the “extended gate” policy of Rotterdam port, the container terminal operators want to push the containers to the hinterland of the sea as anyway most of the containers are not intended to stay in the port. Finally handling, storage and logistics are cheaper than in the ports. Logistics operations, customs clearance and final distribution are done from the hinterland ports.

In order to promote these services, contact must be made with port authorities in Antwerp/Zeebrugge and Rotterdam to position Luxembourg on the map of potential logistical options. Other countries are currently doing the same, for instance the harbour of Rotterdam and the Swiss inland harbours which signed a MoU. The target is to develop Basel as a key tri-modal hub against a background of rising freight volumes. The same development could be offered to the sea ports with Luxembourg as a tri-modal hub to the Greater Region, the Rhone Valley and the Western Mediterranean regions.

To support this solution, the Single Window for Logistics could be a huge advantage for Luxembourg as an “extended gate” of the ports of the North Sea. The container operators in the ports could submit their data for import procedures by Luxembourg customs by using the Single Window platform. At the same time, coordination between the different operators, handling agent in Mertert, the container terminal in Bettembourg/Dudelange and transport operators by road and rail could be linked by this tool and provide a full track and trace system for the shipped containers.

6. Improve the competitiveness of the port

a. Offer door-to-door services

In order to convince new forwarders to use the port of Mertert, the handling agent must offer fully integrated door-to-door solutions. The collection of goods, the delivery of goods, the handling and customs procedures must be offered as a whole package. The key to success will definitively be more volumes from new forwarders.

b. Provide more flexibility in use of workforce

Due to the stagnation of freight volumes, and as a consequence a number of ships in the port of Mertert which is not rising, better use of present staff can only be made by an increase in flexibility in the organization of the shifts in order to enhance the overall competitiveness of the port. A reference period of 6 months should be instituted for each member of the staff thus allowing the balancing of periods of high activity with periods of low activity during the year. A longer reference period would also allow handling agents to reduce the staff in the scheduled shift planning if the market declines by compensating hours already worked on the staff time sheets with free time.

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c. Coordination with the rail-road terminal at Bettembourg/Dudelange

Inland waterways must be integrated in the overall development of the container terminal in Bettembourg/Dudelange to avoid competition between the two centers.

The development of pallet wide 45" high cube containers could be one of the potential fields of development for this cooperation. As these containers could be used in traditional land transport with standard palletized goods, these containers could also be used for rail and road transport as they don't need to be returned on the shortest route to the ports, but could be used for additional transports before another sea transport. In this respect these containers could be carried by waterways to Mertert and then by rail or road transport to France, Italy and Spain before being used for triangular transport and returned to the sea ports.

7. Maintenance of ships

In 2011, 7,513 ships passed the locks of Koblenz on their way to Trier, Saarbrücken, Mertert or France. The number of ships seems to be stable and so represents a potential market for repair services on inland vessels.

Ship length	2010	2011
1 – 40 m	36	17
41 – 67 m	176	210
68 – 86 m	2.373	2.296
87 – 110 m	3.961	3.981
111- 135 m	1.001	1.001
>135 m	2	8
Total	7.549	7.513

Source: WSD Südwest

On the Moselle River currently no ship repair workshops exist. This could be an interesting way of diversification of activities in the Mertert harbour against the background of rising traffic in the future.

8. Environmental benefits

The CO2 emissions per carried ton leave no room for doubt: inland waterways are carrying the same amount of cargo in the most environmentally friendly manner compared to other land transportation modes in terms of tonnes kilometers.

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Comparison of carbon dioxide emissions in grams per ton-kilometer: [\[lit.wp3-12\]](#)

	<i>g / to-km</i>
Inland waterway vessel	33.4
Railway	48.1
Heavy truck	164

Inland shipping will take a special position in Europe in the near and distant future. Shipping cargo by waterway is an environmentally friendly and cost-effective way of transporting cargo. Inland navigation is also the most effective mode of transport in terms of external costs: CO₂ emissions, accidents, congestion and noise pollution. In the short and long term therefore, the choice to develop inland shipping is a good choice. Luxembourg should continue to develop this sector as it will be a key element for the future organization of transport flows in the hinterland of the seaports.

The connection Luxembourg to Koblenz is part of the TEN T core network. In this dedicated policy and its linked financing tools, a raising of the Mosel bridges to a height allowing permanent 3-layer container transports should be analyzed, thus enhancing container transport on the Mosel to and from the sea ports of the North Sea.

Today only 6% of European land transport is carried out by waterways. Waterways as an environmentally friendly transport mode should be developed according to its economic competitiveness, as there is still still huge unused transport capacity and waterways can help to decongest rail tracks and motorways.

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1. Promote the logistics platform of Mertert not only for regional consignees but also to foreign shippers, terminal operators and forwarders. Promotion of related activities must be done in Belgium, the Netherlands and Germany.
2. Develop Mertert as a bulk port, specialized on regional construction materials
3. Develop Mertert as a regional recycling collection station.
4. Coordinate services around container handling and packaging with the container terminal in Bettembourg, avoid national competition. Focus could be set on 45" palette wide containers for multimodal transport solutions.
5. Include the development of the port of Mertert in a regional concept with the ports of Trier, Metz and the Illange project.
6. Position Mertert and Bettembourg as part of the "Extended Gates" strategies of Antwerp / Zeebrugge and Rotterdam aiming to shift a maximum of containers in the Hinterland of the sea ports
7. Increase the flexibility of working time to take into consideration the high volatility of activity in transport and logistics.
8. Reduce global costs thanks to a reduction of global workforce costs by implementing a longer reference period.
9. Develop ship repair and maintenance services in the port of Mertert, taking into consideration the available docks
10. In the long run and taking into consideration the rising energy costs, support the development of the waterway connection to Koblenz in the TEN T core network; especially the height of the bridges against the background of increasing container transports.

6.A national rail-road terminal strategy

The Luxembourg government's decision to develop Bettembourg/Dudelange as a modern rail-road terminal and logistics park will boost the logistics activities in Luxembourg. The plans to upgrade the container handling capacities from 80,000 to 300,000 per year and to develop the transport of rail-road transports from 45,000 to 300,000 trailers a year will allow the positioning of Luxembourg in the future Rail-Road-Terminal map as a major player in Europe. Due to rising energy prices, current forecasts predict a disproportionate increase in intermodal transports for the coming 20 years. Making better use of rail-road transports will enhance the global capacity of the transport system and shift freight from road to rail.



For all kind of products the modal split is greatly in favour of road transport and gives huge opportunities for rail-road transport via the future terminal in Bettembourg/Dudelange.

MAIN	Split	leaders
Food	94 / 3	DE / FRA
Paper	93 / 3	DE / UK
Chemicals	80 / 11	DE / SP
Construction	97 / 2	FRA / ITA
Steel	75 / 20	DE / ITA
Recycling	93 / 3	DE / ITA
Textiles	90 / 4	DE / SP
IT	99 / 1	DE / FRA

Luxembourg is perfectly located on the crossroad of the main freight corridors with huge existing transit flows through the country. Unlike other regional projects, the rail-road terminal already exists and just needs to be upgraded and extended. The extended infrastructure will allow the current offer to be enhanced by offering more departures per day on existing routes and developing new ones.

The figures of Lorry-Rail are proving the demand of rail-road services from forwarders and road carriers. 36,700 trailers were carried by Lorry-rail in 2011, meaning 100 trucks less per day on the road on one corridor. During the same time the handling of multimodal swap bodies and trailers has grown by 15% to 90,000 units per year.

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In 2011, 1.5 million trucks transited through Luxembourg, using the national motorway infrastructure. All these are potential customers for further rail-road and logistics services in Bettembourg/Dudelange as they transit through Luxembourg using the main European freight corridors passing through Luxembourg:

- Poland/Scandinavia/ Germany – Luxembourg – France / Spain
- Great Britain/Netherlands /Belgium – Luxembourg – Switzerland / Italy / Turkey
- Great Britain/Netherlands /Belgium – Luxembourg – Germany / Austria

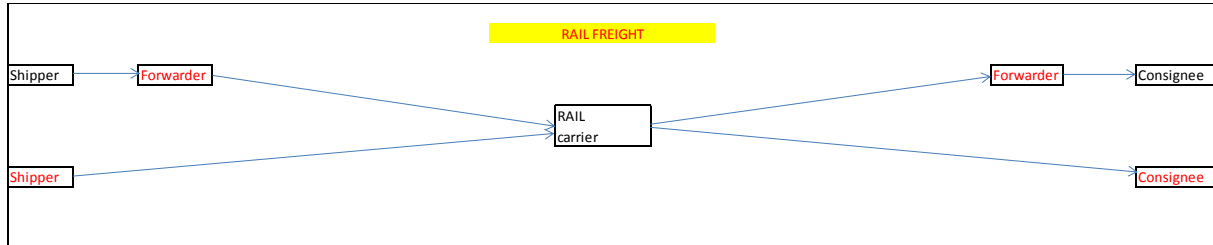
Our objectives :

1. Identification of decision makers in rail and road transports
2. Develop Eurohub South as the central land transport oriented multimodal hub
 - a) Coordination with the port of Mertert
 - b) Build up a European network for rail-road transports
 - c) Offer door-door multimodal rail-roads transports
 - d) Offer logistics services on European cross dock activities
 - e) Implement a funding system for terminal operators
 - f) Provide more flexibility in use of workforce
 - g) Dedicated truck parking infrastructure
3. Rail development
 - h) Analyse the importance of a centrally located rail unloading station for bulk products
 - i) Incentivise the launching of European new rail-road lines
 - j) Speed up introduction of European Train Control System (ECTS) on main European corridors
 - k) Support all European initiatives for longer trains on the main European corridors
4. Road development
 - a) Enhance cooperation based on complementarity between operators
 - b) Funding for investments in crane able trailers
 - c) Offer logistics services on European cross dock activities
 - d) Allow the use of Gigaliners for inter-platform transports
 - e) Create a central truck parking for national road carriers

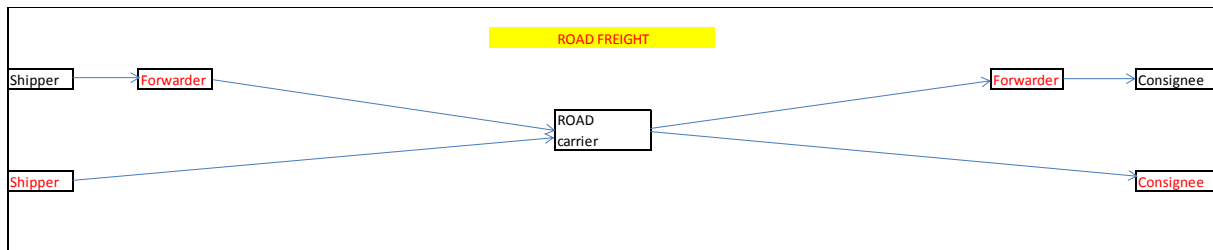
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Our recommendations :

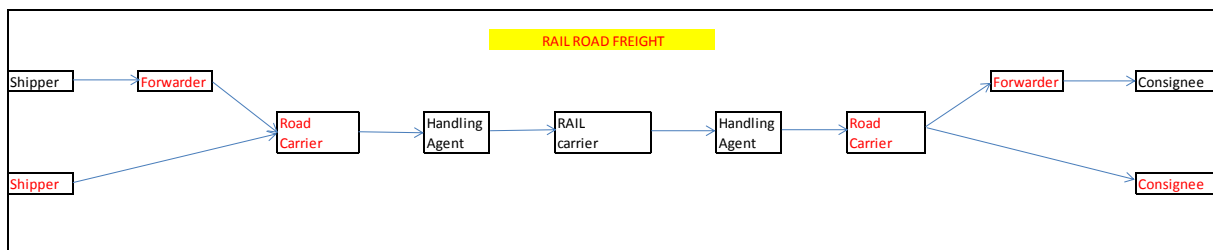
1. Identification of decision makers in rail and road transports



In rail transport the transport orders can be issued directly by the shipper or consignee or by the forwarder acting for his customers.



In road transport the situation is the same as in rail transport, decision makers are shippers, consignees and forwarders.



In rail road freight, the road carrier also has a large influence on the transport mode to be used to carry out the transport. As he is carrying the goods, he can decide to take a full road solution or to go for a combined solution with rail, depending on costs and lead times.

In principle, rail-road transports are cost wise more efficient if they can be bundled on a particular rail route, meaning that the lead time between loading and unloading must be calculated in a broader way in order to include eventual delays on the rail track. On the main European freight corridors the higher frequencies of trains are already allowing more time sensitive transports as there are more departures of trains allowing the overall lead time to be respected.

Volumes are definitively the key to success of rail-road transports. The collection of more volumes of trailers or containers impacts on the decrease in rates and the increase in the quality of the transport solutions as a higher frequency of trains can be offered to forwarders and road carriers.

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As it can be seen from the figures above, forwarders and road carriers are mostly involved in the decision on which mode of transport will be used, where the freight will be handled in a RRT and where logistics services can be provided. In the concept of EUROHUB, a single entry point for interested forwarders should be defined, where information, advice and connections to local handling agents and logistics services providers will be provided to them.

2. Develop the Bettembourg/Dudelange platform as the central land transport oriented multimodal hub

The ideal position of the logistics platform Bettembourg/Dudelange at the crossing of the motorways to France, Belgium and Germany and the location beside the shunting yard makes this platform ideal to develop rail-road transports on the north-south flows transiting through Luxembourg.

This allows rail operators and road operators to focus on the markets below, and focusing mainly on full truck operations. In addition with the future logistics park at WSA, the platform can be used as a European cross-dock hub, splitting up full truck roads coming from one part of the corridors and providing a new consolidation before continuing their way to other parts of the corridors.

Potential markets from and to:

	Road	Rail
Belgium	X	X
France	X	X
Germany	X	X
Great Britain	X	
Italy	X	X
Poland		X
Scandinavia		X
Spain		X
Switzerland		X
Turkey		X

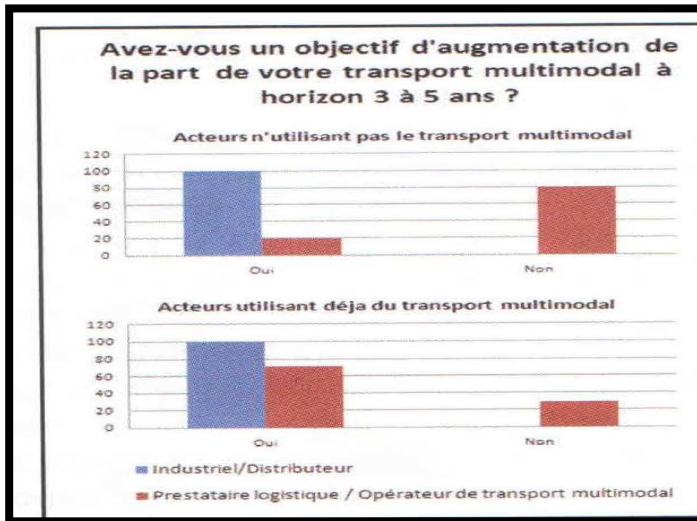
Modal Split EU 27	Road	90.5 %
	Rail	8.7 %

Split per transport mode:

	Code NST	Total	Road	Rail
Modal Split			90 %	9 %
Courier	15	1 %	1 %	0 %
Full Unit Load		90 %	91 %	82 %
Groupage	18	3 %	4 %	0.5 %
Container	19	4 %	2 %	16 %
Others	20	2 %	2 %	15 %

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A recent French study [lit: stratégie logistique avril 2012] has revealed that industry and distribution companies are willing to develop their share of multimodal transports.



The figures show that industry and distribution will push forwarders to develop and offer multimodal logistics solutions for their future logistics developments. 100 % of industry & distribution not active in multimodal transports want to develop multimodal solutions in the next 3 to 5 years. 100 % of industry & distribution and 70 % of logistics operators, already using multimodal transports are willing to continue their development in this field. At the same time, the service level of rail transports and the frequent delays of trains are still seen as a major hurdle to a more intense use of multimodal transports.

A gap is showing up between the logistics solutions provided by the operators and the logistics strategies of their customers. In order to develop multimodal transports, logistics operators must be informed and trained in the use of existing multimodal transport solutions allowing them to integrate these new solutions in their global logistics service offer. This could be done as a part of the EUROHUB concept.

Particularly Luxembourg operators and operators in the Greater region must be informed and trained in the use of multimodal transports and the potential benefits for their companies must be explained to them. In this respect the terminal operator should play a commercial neutral role and propose full door-to-door solution for local forwarders and road carriers.

a. Coordination with the port of Mertert

A strategy to integrate inland waterways and the port of Mertert in the overall hinterland transport policy must be defined in order to take advantage of the existing infrastructure and to avoid competition between the handling agents. Handling agents on both platforms must be involved in the development of the overall logistics market in Luxembourg and not be in a national competition, taking market shares from each other.

As the activities of the port of Mertert are mainly dedicated to bulk operations, Bettembourg/Dudelange must take the lead for rail-road transports and container transports. Mertert could be used as an intermediate solution during the construction of the

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new terminal in Bettembourg/Dudelange in order to start to attract new flows before the end of construction works in Bettembourg/Dudelange. This would have a positive impact on the use of the future capacities of Bettembourg/Dudelange and reduce the impact of fixed costs on low level handled volumes. Against the background of rising energy costs and congestion in the seaports, assuming higher volumes of containers being shifted in the Hinterland by waterways, and when Bettembourg/Dudelange will be fully operational and reaching its limits in terms volumes, Merttert could then be used as an additional hub for container transports.

b. Build up a European network for rail-road transports

Multimodal rail transport should be considered as road transport on rail which fully matches targets the strategic orientation of the terminal in Bettembourg/Dudelange. The main initiatives need to be developed by road carriers as they have a controlling market share of the products. It will be in their initiative to offer those services on the market to stop the goods in transit in the logistics park in Bettembourg/Dudelange where value added services can be provided. As those goods are already transiting through Luxembourg today, promotion efforts must be undertaken to inform and interest major forwarders and road carriers about the logistics solutions offered in Luxembourg. It is important to allow each transport mode to use its strengths and to interlink the main freight corridors to an integrated enhanced multimodal network. This integrated European transport network will allow transport routes to be redesigned as is recommended by the TEN T project of the European Commission.

Freight volumes are the key to success. The volumes will allow a high level of quality on the terminals, frequent departures on the rail network and competitive rates. Only the terminals with high volumes of freight, and being fully operational will be part of the future European rail-road network of the logistics operators. The implementation of the extension of the Bettembourg/Dudelange terminal must be as fast as possible to be on the map of the European rail-road terminals.

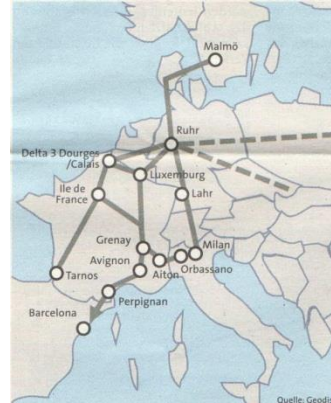
It is obvious that the forwarders and road-carriers will try to make an optimized use of their dedicated rail-road trailers and use as many rail-road transport connections as possible to amortize the additional costs of these trailers. This means that the forwarders will search for networks and network operators to organise their transports in the future.

On a pan European level, cooperation with other rail rail-road operators should not be neglected. On routes with low volumes, where daily departure are difficult to guarantee on an operational basis and where competitive rates are not possible due to the low level of trailers, cooperation with other operators could be implemented by building up a hub system in Europe for rail-road transports. Luxembourg could of course be part of these hubs taking into consideration the future investments planned in Bettembourg/Dudelange.

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The planned European network by Modalohr is one illustration of the future plans for common European networks. Missing links to Great Britain and Eastern Europe must be built to complete the network. In addition short sea-shipping has to be integrated in the concept for example from Spain to Great Britain and to Italy.

It would be interesting for Luxembourg to enter a commercial partnership with the operators of such networks.



c. Offer door-door multimodal rail-road transports

Some European logistics operators have already implemented their integrated multimodal strategy and will take full advantage of their position as first mover on the market. These companies already have fully integrated rail-road transports as a part of their regular flow management.

In order to enhance the use of rail-road transport solutions, the terminal operator should offer door-to-door solutions to middle size and small size companies. These companies very often don't have the knowledge to make use of rail-road solutions and don't have subsidiaries at the end of the route to unload and reload their trailers.

At the same time technical information must be prepared to inform potential forwarders and road carriers about the possible restrictive use of their trailers on certain rail tracks. Good technical and commercial information will be a key to success to convince new forwarders and road-carriers to shift more traffic from road to rail. This will make railways more competitive and reliable as a higher level of quality can be reached by offering more daily departures on the existing routes and launching new routes through Europe.

d. Offer logistics and cross dock services for containers in the hinterland of the North Sea ports

Taking into consideration the particular geographic location of Luxembourg, consolidation and deconsolidation of containers as an extended gate to the ports of the North Sea can be offered to the handling agents in the ports. The ports are targeting to reduce the space occupied by containers and also the on-site time of containers in the ports for imports and exports. A part of the solution can be found in the Hinterland ports with integrated multimodal infrastructure and dedicated logistics parks. Combined trains can bring containers to Bettembourg/Dudelange without prior deconsolidation during the import of the container. In addition to the usual space for container handling, Bettembourg/Dudelange can offer on site dedicated warehouses for logistics operations and space for empty containers in Mertert.

Then the goods can be carried to their final destination by rail or by road.

e. Implement a funding system for terminal operators

To meet the future demand for rail-road transports, the capacity of rail-road terminal at Bettembourg/Dudelange has to be developed. To achieve efficient processes and competitive rates, innovative handling technologies such as Lorry-Rail and Cargo-Beamer must be supported to meet the demand from the forwarders and road-carriers. However many innovative projects fail because of the high costs involved in the pilot project. The implementation of such technologies in Luxembourg should be supported by incentives to make Luxembourg the number one European rail-road terminal in terms of quality, innovation and competitiveness. Funding guidelines to support the implementation of these new technologies in combined transports should be elaborated. These guidelines must be designed to improve the introduction of new handling technologies into rail-road transports.

Other European countries are partially financing the handling costs on their rail-road terminals:

- France pays to terminal operators an incentive for each "Coup de pince" incentive, representing 15,6 € per handling operation.

- Germany's "Förderrichtlinien für Anlagen des kombinierten Ladungsverkehrs" grants incentives of up to 60 € per move. [lit.WP3-13].

- In Great Britain medium and small road carriers get incentives for shifting freight from road to rail estimated at 30 % of the rail transport rate with an upper limit of 93 € per container. [lit.WP3-14].

- In Belgium, national container transports by rail have been supported by the Belgium government with more than 30 million € in recent years. [lit.WP3-15].

Austria will launch next year a specific 5 year program (1.118 Billions €) to support railway transport and particularly rail-road transports for truck and trailer only traffics.

It should be granted that these incentives do not have a negative impact on the development of the Luxembourg terminal unless the same financial aids should be given to neutralize this competitive tool.

f. Provide more flexibility in use of workforce

Due to the high volatility of freight volumes, better use of present staff has to be made to be competitive. This can be achieved by an increase in the flexibility in the organization of the shifts in order to enhance the overall competitiveness of the terminal. A reference period of 6 months should be instituted for each member of the staff and allowing the balancing of periods of high activity with periods of low activity during the year. A longer reference period would also allow handling agents to reduce the staff in the scheduled shift planning if the market declines by compensating hours already worked on staff time sheets with free time.

g. Dedicated truck parking infrastructure

The Dornier study related to the development of WSA Logistics Park in Bettembourg/Dudelange has envisaged more than 1,000 truck movements per day with

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almost 100 trucks per hour in the peak hours. These trucks will not only arrive in the morning when the activities in the logistics park start, but due to the legal constraints for drivers' rest-and driving times, trucks will arrive 24 hours a day and take rest times on site before unloading or after loading has finished. The truck parking should be a safety truck parking with a large filling station and the safety management is given to an external services provider responsible for the safety of the goods and the maintenance of the infrastructure provided. The filling station must be dedicated exclusively to trucks having loaded or unloaded on site.

3. Rail development

Rail transport still remains very complicated and expensive due to a lack of European rules and technologies, to avoid changing train drivers and locomotives at every border. The EU has been working on this issue for years but some of the key players have more national than European interests. Nevertheless rail transport is an important carrier when it comes to bulk or steel products. The European projects should be pushed forward to allow at least the use of door-to-door trains on the TEN T corridors and thus allowing the development of new train connections and focus on other products.

Targeted goods for logistics services (Rail):

MAIN	Code NST	Total	Rail	Trend	Supremacy	Leaders
Food	1, 4	17,5 %	2 %	o	-	FRA,DE,AUT
Bulk	2,3,7	28,0 %	9 %	o	+	SUE,DE,PL
Paper	6	3,9 %	5 %	+	o	DE,FI,SUE
Chemicals	8	4,2 %	11 %	+	o	DE,LIT,PL
Construction	9	12,3 %	2 %	+	+	FRA,UK,DE
Steel	10	4,4 %	20 %	++	+	DE,FR,BE
Recycling	14	6,5 %	3 %	+	+	DE,AUT,PL

NICHE	Code NST	Total	Rail	Trend	Supremacy	Leaders
Textiles	5	0,4 %	4 %	+	o	DE,PL,SUE
IT	11	1,7 %	1 %	-	+	DE,HON,AUT

a. Analyse the importance of a centrally located rail unloading station for bulk products

The importance of bulk transport in the distribution of goods is impressive with by far the biggest market share. Particularly for a country like Luxembourg without any major natural resources, all bulk products like fuel, raw material for manufacturing or construction must be imported. Rail transport plays an important role as half of the products are transported by rail. The construction sector in Luxembourg has been in development for a long time. The majority of raw materials for construction must be imported to Luxembourg. It would be of great advantage for Luxembourg to have a centrally located unloading station for dry bulk construction products located as near as possible to the heart of construction activities to keep the last mile delivery distances as short as possible to be competitive compared to other transport modes. A common project with the port of Mertert would be of great interest.

b. Incentivise the launching of European new rail-road lines

Europe is going through very difficult economic times, but at some point sustained economic growth will return. When that happens, Europe's demand for freight transportation with rail-road solutions will continue the upward trend that has been its mark for the last years. Multimodal rail-roads are the best way to meet this demand on long European transport distances and to improve connections with non EU countries in the East and South-East of Europe. However there is a huge financial risk of launching new rail-road connexions over long distances related to very high investments in rolling stock and due to the fact that in this very particular market the demand for these transports must be stimulated on the forwarders' and road-carriers' side. As a result the launching of a new route can only be done with an unbalanced financial result in the launching period.

Financial incentives should be developed at a national and European level to support the development of a pan European rail-road network as these transports:

- are safe
- stimulate economic activity
- save fuel
- promote job growth
- reduce greenhouse gas and other emissions
- keep trucks off overcrowded highways

The target must be to allow these transports to become economically affordable to European businesses and consumers.

c. Speed up introduction of European Train Control System (ECTS) on main European corridors

On the European rail freight corridors, capacity constraints are increasing, especially to and from seaports. The forecasted growth in traffic will aggravate the current situation especially on these corridors and on the main European freight corridors. The multiplicity of incompatible European train protection systems forces in principle a change of locomotive at every border. These technical constraints reduce the speed of the trains and the capacity of the whole rail network. This makes rail less attractive for logistics operators. Luxembourg must support all actions to speed up the introduction of ECTS on the Ten T corridors. This will be a decisive advantage to attract rail traffics through Luxembourg, offer added value logistics services at WSA and make Luxembourg even more attractive as a hinterland port. The taxes to be paid for using the railway infrastructure should be reduced for the users with ERTMS/ETCS equipment in order to promote a European wide rail network with common technical and security standards.

The European commission is acting in favour of this global rail interoperability and incentives for 700 million € will be spent to support ERTMS systems. The commission will support at 50 % all investments in ERTMS in national projects. In this respect Luxembourg should develop a common project with Germany to implement the ERTMS technology on the connection with Köln's rail-road terminal as this link is part of the TEN T core corridors.

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During the definition of the new RECAST of the main EU- rail package, the EP has confirmed the possibility to member states to raise the rail fees on the ERTMS corridors from trains not equipped with these technologies. At the same time, member states are allowed to give bonuses on the rail fees to rail companies equipped with ERTMS technologies

d. Support all European initiatives for longer trains

Against the background of rising transport volumes, especially on the main transit corridors represented on by the TEN T corridors, the best way to absorb more traffic and shift traffic from road to rail in a competitive way is to use longer trains than today. Trains of 750 meters must be a minimum requirement on the TEN T corridors and all efforts should be undertaken to use trains of 1000 or 1500 meters. This would give a definitive economical advantage for rail transportation on long distances through Europe.

4. Road development

Road transport is still the first means of transport in land transportation. Road transport is more flexible and very often faster than other transport means. This explains that for goods needing fast delivery and requiring short transit times, road transport leads the market.

Targeted goods for logistics services (Road):

MAIN	Code NST	Total	Road	Trend	Supremacy	Leaders
Food	1, 4	17,5 %	94 %	+	-	DE,FRA,UK
Bulk	2,3,7	28,0 %	83 %	++	++	PL,ES,IT
Paper	6	3,9 %	93 %	+	-	DE,UK,PL
Chemicals	8	4,2 %	80 %	--	-	DE,SP,NL
Construction	9	12.3%	97 %	o	o	FRA,ITA,DE
Steel	10	4,4 %	75 %	++	-	DE,IT,SP
Recycling	14	6,5 %	93 %	--	-	DE,IT,UK

NICHE	Code NST	Total	Road	Trend	Supremacy	Leaders
Textiles	3	0,4 %	90 %	-	-	DE,SP,FRA
IT	11	1,7 %	99 %	++	-	DE,FRA,UK

a) Enhance cooperation based on complementarity between operators

A recent French study [lit: stratégie logistique avril 2012] has revealed that industry, distribution companies and logistics operators are willing to develop the pooling of freight.

Advantage can be taken of this trend as the pooling of freight will make it easier to build up new routes in a common distribution network for the Luxembourg EUROHUB. Cross dock operations can be provided on the Bettembourg/Dudelange platform and complementarity between handling agents on the platform and forwarders can be enhanced as the handling

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agents will guarantee the confidentiality of commercial information related to the shipments. Distribution routes by rail or road must then be operated by neutral rail or road carriers through Europe and make large use of the rail-road connections with a competitive door-to-door transport solution.



b. Funding for investments in crane able trailers

For the forwarders and road-carriers, the investments in purpose built trailers for rail-road transports are large and risky. The European gauges are different in every country and the handling technologies are not the same in every terminal. This will require high investments in multi-use trailers in rail-road transports. Funding guidelines to support the purchasing of these types of innovative trailers in combined transports should be elaborated. These guidelines must be designed to increase the use of rail-road transport solutions and enhance the modal shift from road transport to environmentally friendly rail-road transports.

In addition, these specific trailers dedicated to rail-road transports should be submitted only once per year not twice per year to technical control as most of the mileage will be done by train and have no effect on the technical conditions of the trailer. (2009/40/CE) Moreover an intensive use of these trailers will make it difficult to bring them back to Luxembourg for technical control if they are used in a European rail-road network. A specific regulation for the financing and technical control for trailers could be an advantage to attract to Luxembourg forwarders which manage huge fleets of trailers and have a pan-European rail-road service network.

c. Develop logistics services on European cross dock activities

Cross-dock and logistics services can be offered to road carriers transiting through Luxembourg on their way to their final destination. Full truck loads can be deconsolidated and part loads can be consolidated and then delivered by train or truck to final destinations.

Mainly goods on their way on the freight corridors transiting through Luxembourg could be handled in Bettembourg/Dudelange. The implementation of competitive rail-road

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connections to these markets and a global distribution network will be a decisive advantage for all operators.

Finally, consolidation of airfreight can be handled in Bettembourg/Dudelange before sending the build pallets to airports in Europe situated on the geographic corridors above. The same services can be offered at Findel airport in peak seasons.

d. Allow the use of Gigaliners for inter-platform transports

In order to optimize the flexibility between the two platforms and reduce costs, the use of Gigaliner trucks for this specific use and on this specific route should be considered. This would give Luxembourg a nice show case of how innovative logistics solutions can be implemented in a small country. At a future stage and depending on the Europort project or projects in Trier, the use of these trucks could also give an advantage in cross border traffics to Illange and Trier.

e. Create a central truck park for national road carriers

The central truck park should be a safety truck park and access rules must be established for national trucks to secure that the park will not be used by the transiting carriers. This park could be merged with the infrastructures at the Bettembourg/Dudelange platform and these additional trucks could enable the costs of this infrastructure to be optimised. Theoretically, due to the international driving time and rest time , traffic to and from the logistics platform will be reduced on weekends, thus giving the Luxembourg carriers the opportunity to use the same parking facilities.

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1. Promote the logistics platform of Bettembourg not only for regional operators but also to foreign shippers, terminal operators, forwarders and road carriers.
2. Develop the rail-road terminal of Bettembourg inside a pan-European network.
3. Coordinate services around container transports, handling and packaging with the port of Mertert as subcontractor of Bettembourg.
4. Attract forwarders and road carriers to use rail-road transports through Luxembourg by offering them full door-to-door services packages.
5. Offer logistics and cross dock services for containers in the hinterland of the north sea ports
6. Incentivise technological pilot projects.
7. Increase the flexibility of working time to take into consideration the high volatility of activity in transport and logistics.
8. Reduce total costs thanks to a reduction of overall workforce costs by implementing a longer reference period.
9. Define truck parking on the WSA site on weekends for trucks having loaded or unloaded at the rail-road terminal.

Rail:

10. Analyse the importance of a centrally located rail unloading station for bulk products
11. Incentivise the launching of European new rail-road lines
12. Speed up introduction of European Train Control System (ECTS) on main European corridors
13. Support all European initiatives for longer trains on the main European corridors

Road:

14. Enhance cooperation based on complementarity between operators
15. Support by incentives the purchasing of innovative trailers in combined transports to enhance the modal shift from road transport to environmental friendly rail-road transports.
16. The specific trailers dedicated to rail-road transports should only be submitted once per year to technical control as most of the mileage will be done by train.(see 2009/40/CE)

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17. Develop logistics services on European cross dock activities
18. Allow the use of Gigaliners to operate road transports between the national logistics platform and possibly in the Greater Region in relation with regional logistics projects.
19. Define truck parking on weekends for Luxembourg road carriers operating trucks in Luxembourg and the trucks having loaded or unloaded on one of the three national logistics platforms.

7. A regional green distribution strategy

Both the advance of urbanization and a growing desire for safe, quiet and healthy inner-city environments are driving the need to reconsider city logistics. In city centers and urban regions around the city centers, freight transports and logistics are often an obstacle to smooth flows of traffic and will be even more so after the construction of the TRAM in Luxembourg city. The last mile distribution of goods has to become smoother in city centres and densely urbanized regions. At the same time, the development of E-commerce will require more deliveries of goods to the customer's doorstep.



The average consumption goods per year of a Germany citizen have been defined as following: 3,000 kg of food and beverages (including weight of packaging), 130 kg of newspapers and books, 130 kg of drugstore goods and 185 kg of non-food articles. Some of these goods such as newspapers and fresh food must be delivered in the city centers on a daily basis. Others can be stored in the shops but storage space is restricted.

The trend to more e-commerce has major consequences on urban freight at several levels:

- Higher level of demand for non-food goods or beverage goods
- Increased requirements for logistical systems
- Higher costs for urban deliveries
- More congestion in urban areas and particularly city centers

Furthermore, demographic changes will impact the freight transportation and the logistics services to be provided in the future. The requirements of an ageing population could result in a wider range of logistics services, for instance by dedicated delivery services to the home. Freight villages as logistics interfaces will redesign the city logistics in an environmentally friendly way. This aspect has to be taken into consideration in the setup of the WSA logistics activities.

Our objectives :

1. Development of environmentally friendly urban deliveries
2. Support alternative energy solutions for urban transports
3. Environmental benefits

Our recommendations:

1. Development of environmentally friendly urban deliveries

The interface between long-distance and last-mile freight transport must be organized more efficiently. Management of logistical operations poses huge problems in both warehousing and in the organization of the last mile delivery in city centers. Faced with the risk of congestion due to a multiplication of the transport vehicles, local authorities have reduced the access to certain parts of the city during the main part of the day. Additional environmental (noise and pollution) and infrastructure (TRAM?) constraints will force local authorities to an even more strict access to city centers and to strictly monitor transportation in the cities. Due to the higher level of constraints the current logistical advantage in organization of city deliveries will disappear for operators and turn into a common constraint.

Solutions can be found by mutualizing logistical resources, by pooling freight on an urban platform before delivery in the city centers. The objective is to better manage product transportation by using WSA warehouse infrastructure with each firm consequently using identical resources and goods being delivered through the same channel. This development is unavoidable within a policy of sustainable development. Nevertheless solutions must be found to integrate other local logistics operators not established on the site of WSA to integrate their flows in the common delivery channel.

Examples of such concepts can be found in several European cities such as Monaco and La Rochelle in France or London and Munich. Logistics hubs dedicated to storing and grouping of goods, to be delivered via the common urban deliveries channel, were built outside the city and city deliveries carried out by electric vehicles. The La Rochelle and Monaco cases show that urban platforms are efficient solutions for carriers sharing the same delivery zone. In addition, logistics operators may offer reverse logistics services to the consignees by collecting packing materials on the trip back to the WSA platform.

International alliances that allow cross-border shipments to pass through the local delivery channel will clearly benefit these carriers and logistics operators on the WSA site. Small players, not having daily complete delivery tours, can also make use of the logistics platform in Bettembourg/Dudelange to drop goods for city delivery at the platform facilities which will then be delivered by the common city delivery network.

The same system can be applied for regional deliveries for trucks transiting through Luxembourg and not having time to spend on long delivery stops at the consignee sites. Cross dock handling and regional distribution can be organized on the WSA platform.

This dedicated infrastructure for city deliveries in WSA must include dedicated cross-dock warehouses, parking for trucks, a loading station for electric trucks and a truck service premises to allow the use of new alternative energies.

The objective is to reduce the number of truck trips, make use of less polluting vehicles and better manage public space in city centers.

2. Support alternative energy solutions for urban transports

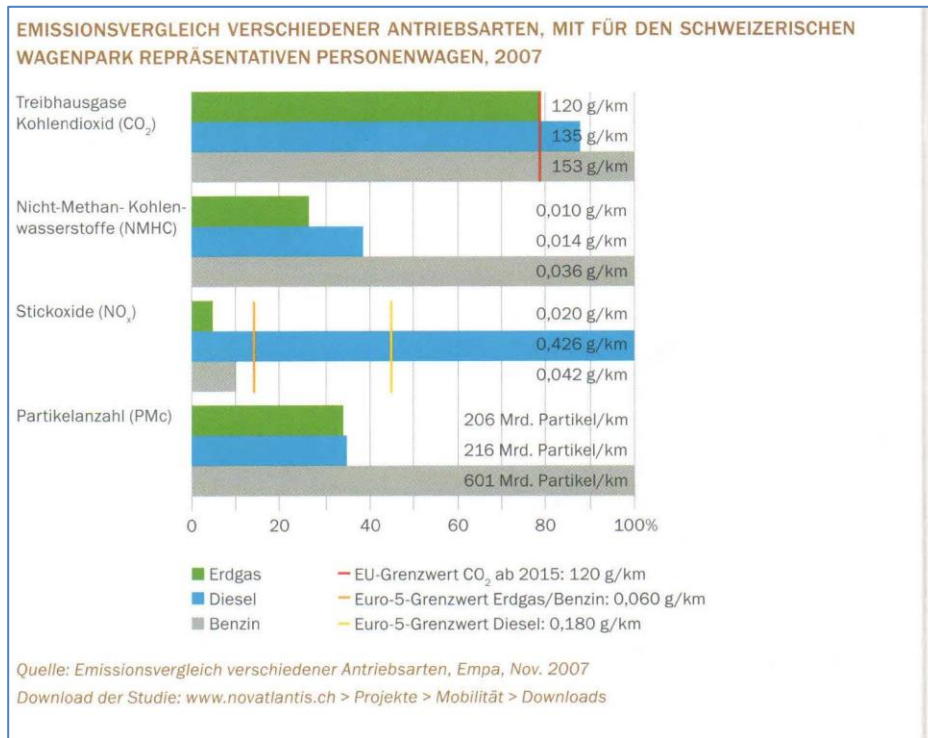
The last-mile distribution of goods must become environmentally friendly in city-centers and urban regions in order to enhance the quality of life. The development of WSA as a freight village for city deliveries in a range of 50 kilometers will help to achieve this aim by consolidating individual loads and so optimizing the capacity use of the trucks and reducing the total number of trucks entering the city every day. The last mile city delivery can be carried out with low emission urban trucks. The platform of WSA will be the key operational concept as the main support infrastructure for the city distribution system.

The distance to the city center of Luxembourg will allow the use of environmentally friendly technologies such as electric vehicles and trucks with LNG engines. Modern technologies allow these trucks to take loads up to 12 tonnes for city delivery in a range of 100 km. Of course infrastructure on the WSA site will need to be adapted to these new technologies and include battery recharging infrastructures and a LNG filling station. According to trials conducted in the EU Fideus project (Freight Innovative Delivery of Goods in European Urban Space), these vehicles are also particularly suitable for night use in urban areas, due to their low noise emissions.

Despite the considerable saving in fuel costs, the vehicle investment costs will remain a very important obstacle. All public authorities, whether they are local, national or European must really underline their desire for a future with clean vehicles, by introducing beneficial incentives for buying as well as using zero emission vehicles.

3. Environmental benefits

Urban deliveries represent 20% of the global city traffic but are responsible for 30 to 40 % of the environmental impact in terms of CO₂ emissions and noise. The impact of environmentally friendly vehicles or green vehicles, powered by electricity or natural gas, on energy use and the overall environment is considerable.



As it can be seen in the graph above, all road transport vehicles equipped with diesel engines will not respect CO₂ and NO_x limits by 2015 with EURO 5 engines. This will require huge investments in fleet renewals in order to respect future requirements in terms of environmental protection.

A green vehicle or environmentally friendly vehicle produces less harmful impacts on the environment than comparable conventional internal combustion engine vehicles running on diesel. Green vehicles can be powered by alternative fuels and advanced vehicle technologies and include hybrid electric vehicles, plug-in hybrid electric vehicles, battery electric vehicles, natural gas vehicles, clean diesel vehicles, and some sources also include vehicles using blends of biodiesel. As part of their contribution to sustainable transport, these vehicles reduce air pollution and greenhouse gas emissions, and contribute to energy independence by reducing oil imports.

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Comparison of several types of green trucks basic characteristics			
Type of vehicle/ powertrain	Range	Production cost for given range	Reduction in CO2 compared to conventional
Conventional ICE	Long	Low	0%
Biodiesel	Long	Low	100%
LNG	Medium	Low	100%
All-electric	Short	High	100%
Hybrid electric	Long	Medium	25%

In the direct comparison of the different energy types, it is clear that energy costs for LNG and electricity are below the costs of diesel or biodiesel. On the other hand, the purchasing costs or rental costs for LNG or electric powered trucks are double that of the diesel trucks. In addition LNG trucks have higher maintenance costs compared to classic diesel engines. All in all the costs per kilometer driven for LNG trucks are 50 % above the costs for standard diesel trucks. For the time being, unless the fuel price rises dramatically, the road carriers will not purchase these alternative energy trucks as operational costs are not competitive in the market. Without financial support from authorities it is unlikely that these environmental friendly trucks will be seen on the road in the midterm.

However, in the long term, sustainability will become accepted as a general standard by logistics operators due to an increasing awareness of sustainability issues among customers and public. It is likely that in the future changes in the consumers' mindsets will be at the origin of more sustainable logistics solutions. Logistics operators and authorities should agree on a common green distribution project instead of risking seeing regulations emerge to take into account the consumers' new mindsets. In the long run, sustainability will not be an opportunity for distinction between operators, as the industry is expected to reach high and homogeneous standards of sustainability. Logistics operators should control the speed of this green development by having common projects, like green city deliveries, and enhance common R&D alliances and programs.

The EU decided in July 2012 to support these initiatives by launching the program "Smart Cities and Communities" with a budget of 365 million euros to support urban logistics projects.

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1. Reduce the number of truck trips to city centres; make use of less polluting vehicles.
2. Better manage product transportation from an urban platform in the logistics park of WSA before delivery in the city centres and offer cross dock handling, city deliveries and regional distribution on the WSA platform.
3. Pool together freight and mutualize logistical resources to optimize city deliveries and reduce environmental impact.
4. The dedicated infrastructure for city deliveries in WSA must include dedicated cross-dock warehouses, parking for trucks, loading stations for electric trucks and truck service premises to allow the use of new alternative energies.
5. Enhance solutions for other local logistics operators not established on the site of WSA to integrate their flows in the common delivery channel.
6. Offer reverse logistics services to the consignees by collecting packing materials after the city deliveries on the trip back to the WSA platform.
7. Benefit from international alliances allowing cross-border shipments to pass through the local delivery channel
8. Offer to small operators, who do not have a daily complete delivery tour, the possibility to make use of the logistics platform in Bettembourg and to drop goods for city delivery at the platform facilities.
9. Offer to international operators, whose trucks are transiting through Luxembourg and which do not have time to make long delivery stops at the consignee sites the possibility to make use of the logistics platform in Bettembourg and to drop goods for city delivery at the platform facilities.
10. The last mile city delivery can be carried out with low emission urban trucks. The platform of WSA will be the key operational concept as main support infrastructure to the city distribution system and allow the use of environmental friendly technologies such as electric vehicles and trucks with LNG engines.
11. Infrastructure on the WSA site must include battery recharging infrastructures and a LNG filling station.
12. The investments in clean vehicles will need financial incentives from governmental or/and from local authorities for buying as well for using zero emission vehicles.
13. Local authorities should limit access to the city centre to vehicles with environmentally friendly Euro 5 and Euro 6 engines.

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- 14. Logistics operators and authorities should agree on a common green distribution project instead of risking seeing regulations emerge to take into account the consumers' new mind-sets.**
- 15. Logistics operators should control the speed of this green development by having common projects, like green city deliveries, and enhance common R&D alliances and programs.**

8. A Value added logistics service center

The current supply chain management focuses on just in time solutions where the order of the final customer is at the centre of all production planning and logistics processes. This strategy aims to increase the overall industrial productivity by reducing stocks and shortening production cycles.

This involves a high level of flexibility both in production and industry but also involves smaller and more frequent shipments thus enforcing quality and cost requirements.



The future trends in logistics are further globalization of markets, development of contract logistics solutions, improvements in the supply chains and global IT connexion for the management of the logistics flows.

Luxembourg is located on the central transit crossing for freight in Western Europe. All kinds of products pass through Luxembourg every day. The overall infrastructure has to be created in order to develop Luxembourg as the European distribution centre for the targeted goods. Then these goods, instead of being only in transit, can be stored in warehouses and value added logistics services can be performed while the goods are on their way to their final destination.

Our objectives :

1. Selection of products
2. 3PL services
3. 4PL services
4. Freight management
5. Managing free warehouses for short term projects

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Our recommendations:

1. Selection of products

As detailed under section WP3-2, Potential Markets for Luxembourg, focus should be set on large markets with stable growth and small markets with a high level of growth on both corridors; Corridor 1 France and Spain <-> Germany, Scandinavia and Poland & Corridor 2 from Belgium, Netherlands and England <-> Switzerland and Italy and include particular air-freight products.

Targeted markets: Corridor 1 France and Spain <-> Germany, Scandinavia and Poland

- Food
- Chemicals
- Hides / skin
- Pharmaceuticals (niche activity)
- Textiles (niche activity)
- Electronics (niche activity)

Targeted markets: Corridor 2 from Belgium, Netherlands and England to Switzerland and Italy

- Food
- Chemicals
- Hides / skin
- Pharmaceuticals (niche activity)
- Textiles (niche activity)
- Electronics, Apparatus (niche activity)

In the feature products, logistics activities for food (perishables and non-perishables) and chemicals should be developed and in the expansion products, logistics activities should focus on niche markets like pharmaceuticals, textiles and electronics.

Specific infrastructure must be built by the logistics operators after the definition of the targeted products to offer value added logistics services for:

- Temperature controlled goods: food, pharmaceuticals
- Dangerous goods: chemicals
- High value goods: arts, jewellery
- Standard commodities: electronics, textiles, general cargo

These infrastructures must match the exact needs of the markets and be built on the latest standards related to the selected goods and targeted logistics services.

2. 3PL services

Long-term trends pose challenges for supply chain managers and companies have to review their strategic logistics management more often. These trends include on-going globalisation,

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the growing demand for security, environmental protection and require at the same time reliable, flexible and cost-effective business systems.

The supply chains will become more dynamic and complex than in the past and therefore a large range of logistics services must be offered to the market not all of them being value added but very often a prerequisite to value added logistics services.

Third-party logistics (3PL) executes logistics activities and calls, especially in global, internationally fragmented supply chains for a smooth connection between all related logistics services:

- Warehousing: Traditional warehousing has declined since the gradual introduction of Just In Time (JIT) techniques. The JIT system promotes product delivery directly from suppliers to consumer without the use of warehouses. However, with the gradual implementation of international outsourcing and offshoring, the distance between the manufacturer and the retailer (or the parts manufacturer and the industrial plant) has grown considerably in many domains, necessitating at least one warehouse per region in any typical supply chain for a given range of products.
- Cross-dock: Cross docking is a specialized type of distribution centre in that little or no inventory is stored and product is received, processed (if needed) and shipped within a short timeframe. Traditionally the cross-dock activities take place in a hub integrated in a transport network.
- Consolidation: consignments are assembled for further forwarding; freight is pooled together for the same type of products of the same geographic destination.
- Co-manufacturing: parts of products enter the warehouse from different origins and are assembled before being sent to an assembly line, a typical example is the automotive industry where complete parts of a car are preassembled before entering the assembly line
- Co-packing or pick/pack: is a type of order selection process where the product is picked and handled in individual units and placed in an outer carton or other container before shipping. Catalogue companies and internet retailers are examples of predominantly pick/pack operations. Their customers rarely order in pallet or case quantities; instead, they typically order just one or two pieces of one or two items.
- Packaging: the main purpose of packaging is the picking, checking, labelling and packing of goods for export.
- Reverse logistics: stands for all operations related to the reuse of products and materials. The term refers to items that go from the end user back to the distributor or manufacturer. In the case of reverse logistics, the resource goes at least one step back in the supply chain. For instance, goods move from the customer to the distributor or to the manufacturer.
- Transportation and distribution: is the movement of goods from one location to another by different transport modes including air, rail, road, water. Distribution stands for the last mile transports to the final destination in a regional geographic zone.

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3. 4PL services

A Fourth-Party Logistics (4PL) provider assembles the resources, capabilities and technology of its own organization and other organizations to design, build, and run comprehensive supply chain solutions. Whereas a third party logistics (3PL) service provider targets a function, a 4PL targets management of the entire process and others take responsibility for a complete process for the customer. In that respect they can add to their logistics offer additional services like

- Security of goods
- Customs clearance
- Flow management
- Invoicing
- Controlling
- Order-to-cash (accepting orders from end consumers, preparation of shipment, transport organization and invoicing)

4. Transportation intermediaries

Transportation intermediaries are neither shippers nor asset-owning carriers, but play a role in the movement of cargo as they bring together the demand for transport and the supply of transport capacities. Depending on the level of logistics services and solutions provided two different types of transport intermediaries are interesting for the development of logistics activities in Luxembourg: transport brokerage and freight management.

Transport brokerage

A transport broker is a company that brings together a shipper that needs to transport goods with an authorized carrier that wants to provide the service.

Brokers provide an important and valuable service to both carriers and shippers. They help carriers fill the requested transport modes (air, sea, road, rail, waterways) and earn a commission for their efforts. They help shippers find reliable carriers that the shippers might not have otherwise known about. In fact, some companies use brokers as their traffic department, allowing the broker to coordinate all their shipping needs. (See Freight management below)

It's quite common for a successful freight broker to expand its business by creating subsidiaries or additional companies that offer other freight or logistics services.

The definitive advantage of transport brokerage is increased flexibility in times of high economic volatility. As these companies have not invested in heavy transport assets their dependence on high volumes of freight is lower, as they can adapt the level of their subcontracting partners to the level of economic activity. In addition their brokerage activities allow pricing which is very close to the real needs of the market.

Freight management:

Freight management coordinates the pick-up and delivery of their client's freight using all modes of transportation throughout Europe and around the world. Freight management is not only run by asset based operators, such as Third Party Logistics Providers, but also by non-asset based forwarders such as Fourth Party Logistics Providers. Freight management companies do not own or operate their own vehicles. They contract truck, rail and ocean carriers on their client's behalf. They work for either shippers or receivers. They simplify the transportation process and their services are no more complex to use than regular carriers.

Freight management companies are more than just a carrier. Carriers get paid to transport freight. Freight management companies get paid to solve their client's transportation problems. Solving problems not only requires a combination of industry knowledge and creativity but also requires the freight manager to perform additional functions.

Many small to medium sized businesses cannot afford their own logistics departments. Contracting a freight manager is an ideal way to access the capabilities of a logistician without having the expense of employing one on staff.

Large companies with logistics departments use agents to handle either extremely complex movements or irregular shipments to out-of-the-way places. Managers recognize that these shipments generally make up a small portion of their overall transportation budget yet require a great deal of their department's time and energy.

Here are a few of the additional tasks intermediaries routinely perform:

- Suggest alternative routing options;
- Research carrier rates;
- Negotiate volume discounts with carriers;
- Assist in preparing customs documents;
- Arrange cargo insurance;
- Recommend packaging strategies to reduce damage and loss;
- Coordinate shipper and consignee activity;
- Track and report shipment progress;
- Arrange warehousing and storage;
- Manage distribution including relabeling and reshipping.

The freight management activities cover the whole range of goods and transport modes and provide European and international transportation solutions for:

- Truckload
- Less Than Truckload
- Intermodal land transports
- Sea freight
- Air freight
- Warehousing

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Freight brokerage and freight management activities are both geographically independent of the location of their customers. The important elements are quality of their service, their ability to track and trace the shipments and their overall competitiveness.

Both activities are already offered in Luxembourg by various companies and should be developed in the future as Luxembourg possesses some local assets:

- highly skilled, multi-lingual workforce
- high standard of living
- state-of-the-art IT infrastructure
- international broadband connectivity
- central European location
- ideal time zone between Asia and America

Potential future assets to develop these activities will be:

- the single window B2G and B2B platform
- centralized European customs clearance

However in order to attract new operators to Luxembourg and drive these companies to manage their invoicing and financial activities through Luxembourg, Luxembourg must offer:

- flexible labor rules allowing easy recruiting of non EU specialists, particularly in brokerage of transport
- a free zone framework or similar allowing simplified establishment of operation
- an attractive tax environment (possibly part of free zone concept)
- a formal interaction with government bodies in the English language

The overall target must be to attract their headquarters to move to Luxembourg.

5. Managing free warehouses for short term projects

Free warehouses with small areas should be available for short term projects or the start-up of long term projects. These areas should be managed by Soleil in order to allow fast implementation of projects for forwarders interested in shifting business to Luxembourg

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1. Specific infrastructure must be built after the selection of the targeted products to offer value added logistics services for:
 - a. temperature controlled goods: food, pharmaceuticals
 - b. dangerous goods: chemicals
 - c. high value goods: arts, jewellery
 - d. standard commodities: electronics, textiles, general cargo
2. These infrastructures must match the exact needs of the markets and be built on the latest standards related to the selected goods and targeted logistics services.
3. Logistics services need to take into consideration on-going globalisation, the growing demand for security, environmental protection
4. Third-party logistics (3PL) operators must focus on reliable, flexible and cost-effective business systems
5. Third-party logistics (3PL) involves, especially in global, international, fragmented supply chains a smooth connection between all related logistics services.
6. Fourth-Party Logistics (4PL) operators take responsibility for a complete process for the customer and offer additional logistics services.
7. Attract transport intermediary activities to Luxembourg by offering a specific business environment
8. A special focus should be set on companies with developed contract logistics for future business development.
9. Free warehouses with small areas should be available for short term projects or the start-up of long term projects. These areas should be managed by Soleil.

2: The visions to strengthen Luxembourg as an international logistics hub

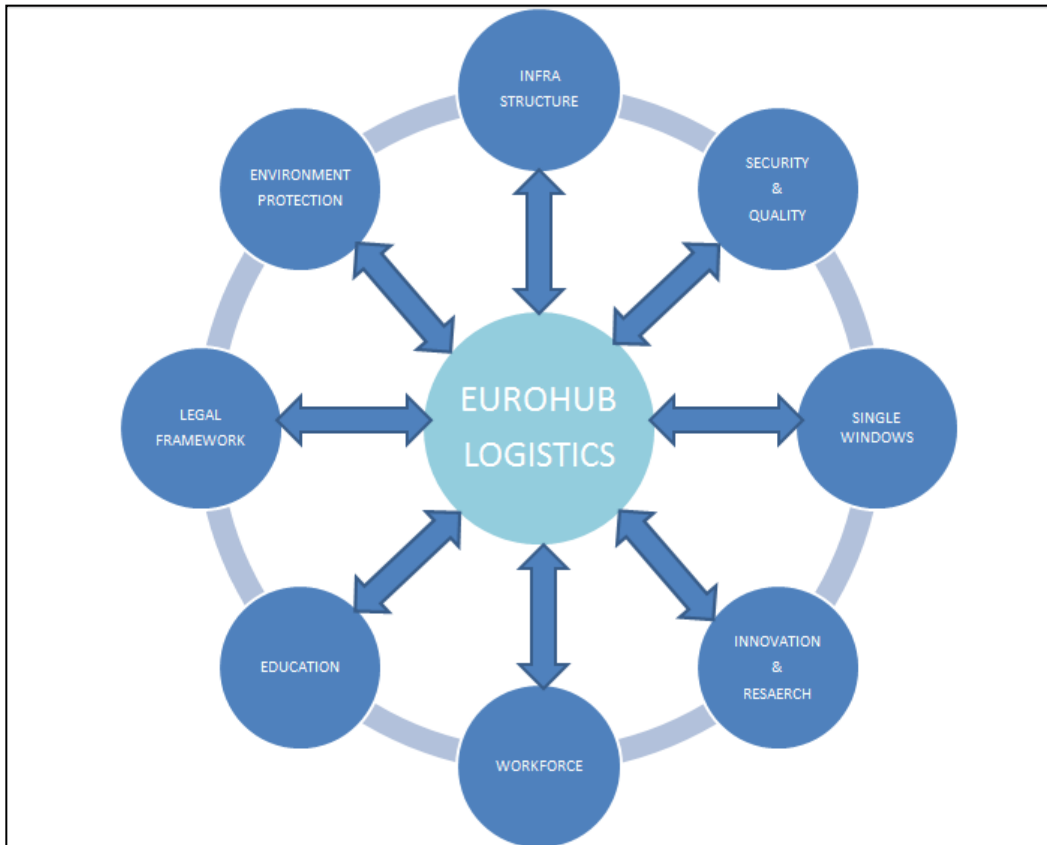
The past development of logistics in Luxembourg was mainly due to the autonomous development of the three national logistics platform, each one developing in an independent way from each other without focusing on potential synergies or common projects. The logistics sector itself has grown steadily in terms of employment and today employment in logistics represents some 5% of total employment in Luxembourg.

EMPLOYMENT	2005	2010	Growth
ROAD	6500	7300	12 %
RAIL	450	500	11 %
SEA & WATER	2600	4200	62 %
AIR	3200	4200	31 %
TOTAL	12800	16200	27 %

The future development of logistics, in a market of declining volumes and increasing competition between operators and logistics sites, will require a global concept for further developments. This concept will be based on a common, shared policy by the three existing platforms, each one in its particular transport market but also in common projects as described in chapter WP3.

Therefore, the EUROHUB concept must enhance the global framework of logistics activities in Luxembourg. The topics described in this chapter are mostly related to all transport modes, logistics platforms and logistics activities. In order to guarantee the competitiveness of EUROHUB, all aspect of the global logistics framework must be considered for every platform in particular and the EUROHUB in general. All measures must be implemented to enhance existing advantages and to catch up with other international prime logistics hubs. The overall target is to make Luxembourg more competitive than its competitors to attract new business and so enhance growth and employment.

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All the measures described in this chapter will again be evaluated in their contribution to the overall attractiveness of Luxembourg as a logistics hub:

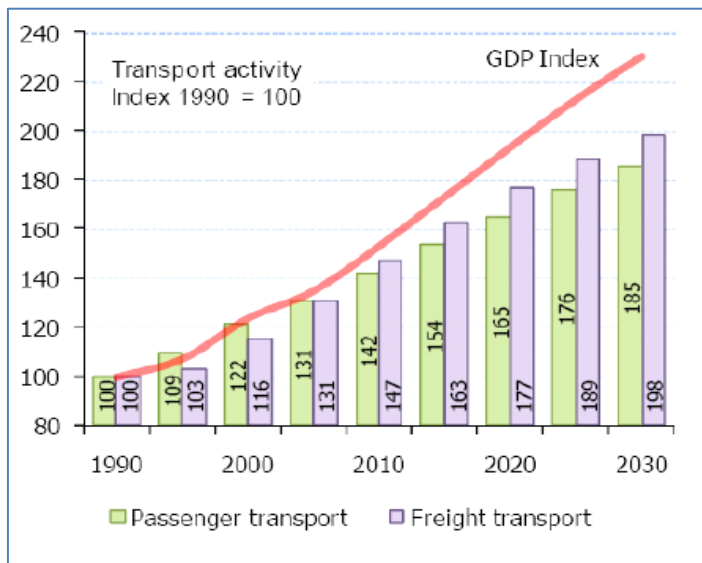
- Governmental development policy
- Goods clearance (LPI)
- Infrastructure (LPI)
- International shipments prices (LPI)
- Logistics services (LPI)
- Tracking and tracing (LPI)
- Timeliness (LPI)
- Quality and security
- Environment

1. Logistics Infrastructure

Luxembourg has today three logistics platforms which are linked together by a good motorway infrastructure ensuring good accessibility and mobility. In addition Mertert and Bettembourg/Dudelange are linked together by the national rail track.

This gives Luxembourg a good starting position in global logistics competition. Especially in the Greater region, Luxembourg is the only hub where these infrastructures link air, rail, road and waterways in a very short range.

An important advantage for the development of logistics is certainly the state-of-the-art IT infrastructure in Luxembourg allowing the exchange of data with all involved trade partners all over the world.



The future key challenge will be the rise in freight traffic as a result of continuous globalization of trade and increasing division of labour in the international economy. The result will be that more goods will be transported over longer distances and that more logistics services will be required between the different logistics stages of the international division of labour. This means that we need to react on the level of the existing infrastructures to adapt them to the future needs; mobility will be the key to success. The connexion of all transport systems must not only be seen in the national context but in the Greater Region as a whole. This includes the fact that that transport solutions on one side of the border are useless if not integrated in an overall regional concept.

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Moreover as the increase in traffic will fluctuate from one region to the other it is likely that especially on the major freight corridors, especially from and to seaports, the increase will be above the European average. If the forecast rise becomes reality, this will mean that if today we need one motorway lane for trucks on Luxembourg's transit highways, we will need two in twenty years. Combined with an increase in passenger traffics in general and a rising number of commuters in particular, major improvements of the infrastructure are mandatory to resolve existing and future bottlenecks in the transport system.

The future growth of international goods traffics in the coming year will cause more congestion on international corridors than already today. In order to guarantee a functioning international infrastructure, Luxembourg must optimize its current rail and road infrastructure and eliminate the existing and potential bottlenecks. The improvements should be achieved by 2020 in order to be ready to absorb future European goods transports.

Our objectives :

1. Better road works management to prevent congestion and enhance efficiency of the existing motorway network
2. Develop existing traffic management CITA
3. Remove bottlenecks on rail tracks and roads on the main freight routes
4. Additional truck parks on the main transit routes
5. Dedicated truck infrastructure for Eurohub South and Centre future development
6. Internal road linking the container terminal and WSA logistics site
7. Take advantage of Ten T corridors

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Our recommendations :

1. Better road works management to prevent congestion and enhance efficiency of the existing motorway network.

Road works have to be optimized to avoid congestion and minimize the economic and environmental damage it causes. Road works on motorways have to be carried out at night-time or on weekends, taking into consideration the considerable transit traffic. Especially cumulative congestions on main transit corridors and on alternative transit ways should absolutely be avoided by better national coordination of road works. A functional upgrade of the current CITA system would greatly help improve the current situation on Luxembourg's main traffic corridors. Implementing these measures will result in additional costs but will largely be compensated by environmental gains and better mobility for commuters.

2. Develop existing traffic management CITA.

Efficient traffic management systems help to improve traffic conditions, reduce congestion and enhance road security. The Luxembourg CITA system must be used in a more dynamic way than today, to make the traffic smoother and avoid congestion and accidents. In that respect the CITA system should not be limited to Luxembourg's motorways, but extended to infrastructure bottlenecks in the neighbouring countries. In order to make use of alternative itineraries, the information should be provided on the following switch points:

- i. Belgium: Arlon A4/N81 intersection
- ii. France: Richemont A31/ E411 intersection
- iii. Germany: Wasserbillig and Schengen

The interregional system should be used to:

- iv. Inform of bans on trucks overtaking during rush hour
- v. Fix speed limits during peak times
- vi. Indicate alternative routes in case of congestion on highways
- vii. Allow the use of the emergency lane

As the CITA system already exists it should be upgraded and its usage optimized to move from an information tool to a traffic management system. This measure will enhance the capacity of the existing road infrastructure, reduce congestion and at the same time increase road security.

3. Remove bottlenecks on rail tracks and roads on the main freight routes

The forecasted growth of traffic will unavoidably result in conflicts between the users of the infrastructure, freight and passenger traffics on railways, trucks and passenger cars on roads.

- Removal of bottlenecks on the railways:

If Luxembourg wants to develop its logistics services, it must improve the transit railways through Luxembourg in order to increase the volumes of freight and select the goods for which logistics services have to be offered in Luxembourg before their trip to final destination. The railway from Luxembourg to Bettembourg/Dudelange has to be developed

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in this respect because it is at the same time one of the main passenger rail tracks for commuters. If these transit corridors are not extended, trains will lose time by passing through Luxembourg and consequently will choose alternative corridors thus not allowing Luxembourg to offer logistics services for the goods carried by rail on international freight corridors.

- Removal of bottlenecks on roads:

Approximately 1.5 million trucks transit through Luxembourg every year mainly on motorways. These motorways are also the most used roads by commuters and the forecasted growth in traffic will aggravate the existing problems of congestion and traffic jams.

In the short term a solution should be found to use the emergency lane as an additional lane during peak hours. During these peaks, area-wide bans for overtaking for trucks should be mandatory and speed limits reduced on all lanes, managed and monitored by the existing CITA system as a true steering system.

At the same time, on-going infrastructure works should be finished to remove existing bottlenecks:

- the roundabout in Hellange
- the motorway to the northern part of Luxembourg

and new infrastructure projects should be implemented:

- Extend the A13 motorway with a direct full motorway connection to Belgian N81, with filling stations and parks for trucks should be implemented, thus reducing the traffic on the A3 and A6.
- Close the highway ring Luxembourg City north between Airport, Walfer and Capellen. This will greatly improve the situation on the A1 and A6, especially, during maintenance of the 2 tunnels there.

In the long term, Luxembourg should develop a common infrastructure investment policy with its neighbouring countries in the Greater Region. Motorways must be widened to six lanes but not only on the Luxembourg section but also to Arlon, Thionville, Trier and Saarbrücken if the enlargement is to be effective.

Using the emergency lane at peak hours and extending the motorways to six lanes will double the traffic capacity. This will be most important for Luxembourg as a transit country for freight and for commuters coming to work in Luxembourg.

The current Eurovignette Directive, authorises, but does not oblige member states to charge hauliers between 15 and 25 euro cents per ton/km. The charges are only for infrastructure costs not including environmental issues. The new measures decided by EP in September 2011 will allow member states to raise taxes by 3-4 euro cents per ton/km to cover external costs of road haulage, starting with air and noise pollution. Trucks with green EURO V engines will be exempt from charges until January 2014, and EURO VI engines until January 2018. Countries can choose to put funds towards transports projects such as alternative infrastructure and clean transport initiatives as described above.

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4. Additional truck parks on the main transit routes

There are insufficient parking areas for heavy goods vehicles on the motorways and in the vicinity of the logistic platforms of Findel and Bettembourg/Dudelange.

On the motorways, trucks are improperly parked, even on the motorways during night-time, and additional traffic is generated by the vehicles searching for parking space beside the motorways. This also makes drivers exceed their legal driving times, leading to a greater risk of accidents. In this respect the existing parking infrastructures on highways must be enhanced to absorb the future development of road transportation.

Secure parking places for trucks and commercial vehicles is listed as a top priority in the ITS (Intelligent Transport System) Action Plan and the ITS Directive 2010/40/EU. European truck drivers need to have access to information on the availability of secure parking places for their trucks as well as be able to make telematics-controlled parking reservations.

5. Dedicated truck infrastructure for Eurohub South and Centre future development

Today, at and near the Eurohub Centre and South, the situation is even worse than at the motorways parking. Once the dedicated park is full, the trucks have to search for alternative parking space and so park alongside the roads or return to the already congested parking on motorways. The forecasted rise in freight traffic in general and the development of the activities on the logistics platforms will result in a greater demand.

The Dornier study related to the development of WSA Logistics Park in Bettembourg/Dudelange has foreseen more than 1000 truck movements per day with almost 100 trucks per hour in the peak hours. These trucks will not only arrive in the morning when the activities in the logistics park will start, but due to the legal constraints for drivers rest-and driving times, trucks will arrive 24 hours a day and take rest times on site before unloading or after loading has finished. The truck park should be a safety truck park with a large filling station and the safety management is given to an external services provider responsible for the safety of the goods and the maintenance of the infrastructure provided. The filling station must be dedicated exclusively to trucks having loaded or unloaded on site. Access rules must be established for the trucks loading or unloading on site or transiting through the offices of the logistics operators on site. Access to this parking area must be managed and controlled by the service provider of the truck centre. Moreover, the enhancement of the container terminal in Bettembourg/Dudelange to 300,000 trailers per year will increase the truck traffic which can be estimated at the same volume as in the Logistics Park. These potential 2,000 trucks per day must be managed by building dedicated truck and drivers infrastructures on the WSA site, to avoid these trucks driving to the fuel stations on the motorways in Berchem.

Finally, access for trucks coming from the Findel platform must be guaranteed as synergies between both hubs will be developed.

As central parking for both platforms, the truck park must offer facilities for drivers: rest-rooms, sanitary installations and a large filling station with shops, providing optimum social conditions for the international community of drivers.

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6. Internal road linking the container terminal and WSA logistics site

The road link between the container terminal on one side of the marshalling yard and the logistics park on the other side will be crucial for the competitiveness of the logistics hub. An internal link, not on public roads, will make it easy to shift trailers and containers from train to the warehouse, using dedicated loading and unloading trucks for Lorryrail operations and so optimizing the productivity of the tool and reducing the overall costs. At the same time such a solution will avoid potential accidents with passenger cars with the cross dock traffic on the hub.

The fact that the trailer will not leave the platform, will definitively enhance the safety and security of goods before, during and after the value added logistics services in the logistics park. Especially for high value goods this will be mandatory.

Finally, the internal link would allow a single access point to the site and avoid double controls of trucks and drivers entering or leaving the whole platform.

7. Take advantage of Ten T corridors

As Luxembourg's platform are all part of the core Ten T corridors, they will be eligible for receiving incentives for the development of their infrastructure from the EU. A new call for proposals will be launched by the European Commission by the end of 2012 for a total amount of 500 to 800 million €. Luxembourg should develop projects as it is eligible to be supported by the EU, in particular for upgrading the road infrastructure in order to eliminate the current bottlenecks on motorways.

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1. Upgrade the existing infrastructures against the background of future rise in total traffics; mobility will be the key to success.
2. The connexion of all transport systems must not only be seen in the national context but in the context of the Greater Region as a whole; transport solutions on one side of the border are useless if not integrated in an overall regional concept.
3. Coordinate and optimize road works to avoid congestion and minimize economic and environmental damages it causes. Road works on motorways have to be carried out at night-time or on weekends
4. Use the CITA system to make the traffic smoother and avoid congestion and accidents; move from an information tool to a traffic management system.
5. Extend the CITA system to infrastructure bottlenecks in the neighbouring countries and give information about traffic problems in Luxembourg and possible alternative ways.
6. Improve the transit railways through Luxembourg in order to increase the volumes of freight in transit and attract goods for value added logistics services in the logistics park in Bettembourg, before being shipped to their final destination.
7. Upgrade the railways track form Luxembourg to Bettembourg to allow the transit of the goods trains and manage the increasing number of trains used by the commuters.
8. Use the emergency lane on motorways as an additional lane during peak hours.
9. During peaks hours, area-wide bans for overtaking for trucks must be mandatory and speeds reduced on all lanes.
10. Remove bottlenecks like the roundabout in Hellange
11. Finish the motorway construction to the northern part of Luxembourg.
12. Implement the project to link the A13 motorway with a direct full motorway connection to the Belgian N81, with filling stations and parks for trucks in order to reduce traffic on the A3 and A6.
13. Close the highway ring Luxembourg City north between Airport, Walfer and Capellen. This will greatly improve the situation on A1 and A6, especially, during maintenance of the 2 tunnels there.
14. In the long term, Luxembourg should develop a common infrastructure investment policy with its neighbouring countries in the greater region to widen the motorways to six lanes but not only on the Luxembourg section but also to Arlon, Thionville, Trier and Saarbrücken.
15. Make use of the current Eurovignette directive to finance alternative infrastructure and clean transport initiatives.
16. The existing parking infrastructures on highways must be enhanced to absorb the current and future need for parking places.

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17. Truck drivers need to have access to information on the availability of secure parking places for their trucks and be able to make telematics-controlled parking reservations.
18. The truck park in the logistics park must be a safety truck park and offer facilities for drivers: rest-rooms, sanitary installations and a large filling station with shops, providing optimum social conditions for the international community of drivers.
19. The safety management is given to an external services provider responsible for the safety of the goods and the maintenance of the infrastructure provided. The filling station must be dedicated exclusively to trucks having loaded or unloaded on site.
20. Access rules must be established for the trucks loading or unloading on site or transiting through the offices of the logistics operators on site. The access to this parking area must be managed and controlled by the service provider of the truck centre.
21. Allow access for trucks coming from the Findel platform to central parking for both platforms.
22. The road link between the container terminal and the logistics park must be an internal link, not a public road, to allow easy transfer of trailers and containers from train to the warehouse.
23. Allow a single access point to the container terminal and the logistics park to avoid double controls of trucks and drivers entering or leaving the platform. A common access system has to be developed by taking in consideration the particular dynamic of road transport during day time and over the week.
24. Take advantage of Ten T corridors to develop projects eligible to be supported by the EU in particular for upgrading the road infrastructure in order to eliminate the current bottlenecks.

2. Security, safety and quality policy

Globalization and international labour division have made logistics chains more vulnerable as the number of parties involved rises. To improve the security of supply chains and people working in the chain, a security and safety policy needs to be implemented for the Luxembourg logistics hub. Security and safety in international trade will create trust in new partnerships. This initiative will ensure security in the whole supply chain and reduce administrative burdens as much as possible to speed up the flows of goods.



It is widely acknowledged that proper quality, security and safety management improves business, often has a positive effect on competitiveness, market share, sales growth and avoidance of litigation. Implementing certifications offers the following advantages:

- More efficient, effective operation
- Increased customer satisfaction and retention
- Improved employee motivation, awareness, and morale
- Increased productivity
- Reduced waste
- Enhanced international trade

Our objectives :

1. Promote a 100% AEO airfreight platform
2. Known consignor accreditation
3. Upgrade common quality certifications
4. Increase specific certifications in niche activities

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Our recommendations :

1. Promote a 100% AEO airfreight platform

After seven years of negotiations the European Commission and the US Transportation Security Administration (TSA) have finally agreed to recognize each other's air cargo security program in June 2012. The agreement will eliminate duplication of security controls and the need to implement different regimes depending on the destination of shipments.

In separate agreements, EU and US certified trusted traders will enjoy lower costs, simplified procedures and greater predictability in their transatlantic air cargo transportations. The traders will benefit from faster controls and reduce administration for customs clearance.

The EU and US are the most important air freight partners for each other. More than 2 million tonnes are shipped each year over the Atlantic with a value of some 107 billion euros.

There are currently some five thousand companies approved as Authorized Economic Operator in the EU. Authorised economic operators (as defined in Regulation (EC) 648/2005) will benefit from facilitations with regard to customs controls relating to security and safety. The information and communication system supporting the concept of the Authorised Economic Operators will e.g. enable the national administrations of the Member States to grant AEO status and will provide access to the list of the AEOs for business needs. [lit. wp4-1]

Under this agreement, the EU and US will recognize each other's security certified operators. Authorized Economic Operators in the EU will receive benefits when exporting to the US market, and vice versa. Freight forwarders should plan for certification as a part of their future strategy.

In Luxembourg, automated processing in goods clearance and shortened administrative lead times have to be implemented for AEO only, in order to go for a full AEO certification by all airfreight operators. A 100% certified and secured logistics chain will have competitive advantages as from April 2013 when the new security and safety policy comes into effect. Luxembourg has more possibilities to set up such a safe environment than larger European airports. AEO certified operators will look for cooperation with other AEO certified operators and this will provide Luxembourg a competitive quality advantage in international competition. Especially high valued goods will look for such solutions and here Luxembourg can play an innovative role with a 100% AEO certified platform operating efficiently and speedily.

2. Known Consignor accreditation

After the terrorist attacks of 11th September 2001 and the worldwide alarm in relation with explosives found in October 2010, the security rules for air-freight have been reinforced. The new regulations, EU (VO EG 300/2008 and VO EU 185/2010) will lead to more secure supply chains.

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The Known Consigner is the current status under which a company is allowed to ship “secured” air-freight. This status will disappear on the 25th March 2013. Companies must go through a new process of validation to get the new status allowing the shipment of “secured air-freight”. If by 25th March 2013 the company has not been officially registered, the goods shipped must be checked by a security service provider who will scan the freight before it can be loaded in an airplane. This will have as a consequence higher costs and slower transit times for the freight.

In Switzerland only 15% of exporting companies are registered as KC, but their shipped volumes represent 75% of the global export flows. In this respect Switzerland is well prepared for the new EU regulations. In Germany only 500 companies are registered as KC and this could lead to severe bottlenecks at the airports during security checks.

The impact of this non-certification on Luxembourg airport as a transit hub and gateway from and to Europe must be addressed to offer solutions to the forwarders encouraging them to ship more freight through Luxembourg.

3. Develop quality certifications

The impact of quality certification on the selection of a location as a gateway or as a distribution center is huge and is one of an exclusion clause when it comes to selecting a hub. The certification level of the handling agents on the different platforms is various. The handling agents should go for a common standard of quality and security certification.

The inventory of existing quality certifications of the handling agents on their respective logistics platforms can be seen below:

Quality certification:

<u>Certification</u>	<u>Quality</u>	<u>Security & Safety</u>	<u>Environment</u>	<u>Others</u>
Findel	ISAGO(*)	TAPA / SMS(*)	ISO 14024	GDP
Bettembourg/ Dudelange	ISO 9001	OHSAS18001	ISO 14001	
Mertert	ISO 9001			

(*) under preparation

ISAGO

IATA's ISAGO (IATA Safety Audit for Ground Operations) program is a renowned quality standard for handling services all around the globe. It eases quality control within the industry and helps to save costs by reducing the number of required audits. ISAGO is mandatory for ground handling companies to stay in the competition between the different airports and helps attracting new forwarders and airlines.

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ISO 9001 - Quality Management Standard

ISO 9001 is the internationally recognised standard for the quality management of businesses:

- It applies to the processes that create and control the services an organisation supplies
- It prescribes systematic control of activities to ensure that the needs and expectations of customers are met
- It is designed and intended to apply to virtually any service, made by any process anywhere in the world

TAPA Air Cargo Security Standards (TACSS)

These standards have been established to ensure the minimum standards for safe and secure transportation of air cargo transiting on and off airports and airport associated facilities. TACSS consolidates security solutions for air cargo, including best known methods from industry and government compliance programs. The TACSS process covers threats to cargo that include theft and use of cargo for terrorist purposes.

Safety Management System (SMS)

SMS is a comprehensive business management system designed to manage safety elements in the workplace. A SMS provides a systematic way to identify hazards and control risks while maintaining assurance that these risk controls are effective. An effective SMS should:

- Define how the organisation is set up to manage risk.
- Identify workplace risk and implement suitable controls.
- Implement effective communications across all levels of the organisation.
- Implement a process to identify and correct non-conformities.
- Implement a continuous improvement process.

OHSAS 18001 2007

The purpose of OHSAS 18001 is to help organizations to manage and control their occupational health and safety risks and to improve their occupational health and safety performance. They can achieve this purpose by developing an occupational health and safety management system (OHSMS) that complies with the standard and so:

- Develops a methodology to identify hazards and assess organization's risks.
- Establishes procedures to identify hazards and assess organization's risks.
- Implements hazard identification and risk assessment methods and procedures.
- Maintains your hazard identification and risk assessment methods and procedures.

ISO 14024

The ISO 14024 provides guidance on developing programs that verify the environmental attributes of a product via a seal of approval. The *SuperDrecksKëscht® fir Betriber* label is

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certified in accordance with the internationally accepted ISO 14024:2000 standard. Waste management in the certified businesses fully meets the requirements for ISO 14024.

ISO 14001

ISO 14001's environmental management system requirements are an integral part of EMS. Environmental management system (EMS) refers to the management of an organization's environmental programs in a comprehensive, systematic, planned and documented manner. It includes the organizational structure, planning and resources for developing, implementing and maintaining policy for environmental protection.

4. Specific certifications in niche activities

Depending on the selection of goods on which Luxembourg will focus for further development of logistics in Luxembourg, quality and security certifications must be done to prove the logistics competence of Luxembourg EUROHUB. When it comes to food, chemicals, pharmaceuticals or other highly sensitive products only certification of processes will convince customers to choose Luxembourg for their particular logistics activities. One example is the GDP certification for pharmaceuticals:

Good Distribution Practices (GDP) Certification for Pharmaceutical Industry

Maintaining product safety and quality during distribution is of the utmost importance in the pharmaceutical industry. Good Distribution Practices (GDP) is a quality system for warehouse and distribution centers dedicated for medicines. Internationally accepted pharmaceutical GDP regulations stipulate that distributors of pharmaceutical products must align their operations with the standards. The scheme ensures that consistent quality management systems are in place throughout your entire supply chain, from the early delivery of raw materials to the manufacturing plants, to the final shipment of finished drugs to the end user.

Implementing a Quality, Security and Environmental Management System will motivate staff by defining their key roles and responsibilities. Cost savings can be made through improved efficiency and productivity, as service deficiencies will be highlighted. From this, improvements can be developed, resulting in better quality service levels and open up the market place to increased opportunities.

With the aim of promoting Luxembourg as a single logistics hub, an upgrade of certification will be required, particularly for the port of Mertert. The target is to have a common overall certification level for all operations linked to EUROHUB.

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1. Support freight forwarders to go for an AEO certification as a part of their future strategy.
2. Define simplified procedures in goods clearance processes for AEO
3. Upgrade common quality certifications on all platforms in order to allow secured cooperation
4. Evaluate the impact of the new Known Consigners regime for Luxembourg.
5. Support specific certifications in niche activities

3. Single Window for Logistics

Single Window for Logistics (SWL) is a major asset in the competitiveness of Luxembourg as a logistics hub. The goal of a single window is to facilitate trade by providing cheaper, easier and faster goods clearance processes between economic operators and governmental authorities, B2G. This will provide forwarders with a definitive competitive advantage for using Luxembourg as gateway to and from Europe.



Economic operators lodge electronically and once only all the information required by customs and non-customs legislation for cross-border movements of goods (import, export, transit) in a paperless IT platform. The risk analysis is done automatically by the system and the system provides the traders with an electronic response, be it approval or rejection, with details on the approval conditions or reasons for rejection.

At a second stage, the single window solution can be extended to the cargo community network (B2B) allowing all logistics operators to share data related to common logistics services.

The project SWL has to be seen in the general project of EC's MASP (Multi Annual Strategic Plan) targeting to harmonize data exchanges on the level of customs. In addition to this mandatory project, the Single Window will allow Luxembourg to provide forwarders with better and easier processes in customs clearance.

The SWL project will be integrated in the overall context of the "guichet-unique", part of the eGovernment project. The parties involved will be the logistics operators, handling agents and carriers on one side and all administrations involved in goods clearance procedures:

- Ministère de l'Agriculture, de la Viticulture et du Développement rural
 - o L'Administration des Services Vétérinaires
 - o L'Administration des Services Techniques de l'Agriculture (ASTA)
 - o L'institut viti-vinicole
- Ministère de la Culture
 - o Le musée national d'histoire naturelle (Section zoologie notamment)
 - o Le musée national d'histoire et d'art
- Ministère de l'Économie et du Commerce Extérieur
 - o La Direction du marché intérieur et de la consommation
 - o L'Office des Licences
 - o L'ILNAS (Institut de Normalisation, d'Accréditation et contrôle de la qualité des produits et services)
- Ministère des Finances

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- L'Administration des Douanes et des Accises
- L'administration de l'Enregistrement et des domaines
- Ministère de la Santé.
 - La division de la radio protection
 - La division de la pharmacie et des médicaments
- Ministère de la Justice
 - Le service des Armes et Gardiennage
- L'OSQCA (Organisme pour la sécurité et la qualité de la chaîne alimentaire)

Our objectives :

1. Key objectives for a single window system
 - a. Reduce the cost of trade documentation
 - b. Reduce delays in turnaround time
 - c. Increase authorities' processing efficiency
 - d. Attract new traders by increased competitiveness
 - e. Generate financial revenues for Luxembourg
2. Staged development of Single Window
3. Single Window project
 - a. B2G, a mandatory system for Luxembourg
 - b. Special committee
 - c. B2B, a competitive tool for operators

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Our recommendations :

1. Key objectives for a single window system

The single window is recognized as a great contribution to a pro-business environment, increasing efficiency and so lowering the costs for the business community with innovative use of IT. Single Window brings benefits to the trading community and hence the economy as a whole. The high cost savings, greater efficiency and shorter turnaround time will make Luxembourg much more attractive as a distribution and logistics hub.

a. Reduce the cost of trade documentation

Shipping and trade community (traders, freight forwarders, declaring agents) can submit their declaration using a front-end tool by internet or via a host-to-host connection. The submission of documents can be done from the office and is available 24 hours and 7 days a week.

After submitting the declaration, the front-end system of single window sends the data for automated processing to the various authorities in a 100 % paperless environment. The users will receive and be able to print their approved cargo clearance permit in their office, so making trips to controlling authorities superfluous. This will significantly reduce costs of trade documentation as documents are scanned once in a system and not duplicated and sent in paper form to a large range of administrations.

Costs will be reduced significantly by reducing the direct and indirect labour costs related to customs operations. Productivity levels will increase as a result of shortened turnaround times for the processing of trade declarations.

b. Reduce delays in turnaround time

By using a single window system, the processing time for approval can be considerably reduced. The system enabling automated processing by an integrated risk analyser, the permit application and processing service is available for use around the clock. The processing times for “standard” declaration can be reduced to a few minutes.

By the way, this will also allow customs agents and authorities’ agents to focus on complicated declarations and so also speed up these kinds of declarations as they are no longer losing time with a “standard” declaration.

c. Increase authorities’ processing efficiency

The governmental authorities should streamline the processes involved in the regulatory framework of trade permit approvals to strengthen the hub status. Agreements on lead times in terms of administrative processes must be found and then respected by all parties involved to strengthen the competitiveness of Luxembourg’s goods clearance processes.

The single window will also make it easier for administrations to react to regulatory changes for organisational reasons or linked to European customs policies.

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Moreover, the Single Window automatic processing will allow involved administrations to focus on value added tasks like control of fraud, drugs trafficking and forgery instead of doing administrative paper work.

Finally, trade statistics can be collected in a timely manner for analysis of trading patterns and forecasting of potential trading trends.

d. Attract new traders by increased competitiveness

A single window solution (in Singapore) has been identified as one of the key factors enhancing the competitiveness as a global city of trade and a logistics gateway to Asian markets. This enhanced competitiveness has attracted new traders and logistics operators allowing them to have better, faster and cheaper customs clearance and more efficient and secured logistics operations. The SWL system has allowed Singapore to enhance their daily transactions from 10,000 to 40,000 mainly by due to the advantages provided to traders and forwarders in terms of speed and predictability of clearance.

e. Generate financial revenues for Luxembourg

By attracting more forwarders to Luxembourg and by enhancing more freight passing through Luxembourg as an international gate for imports and exports, more customs clearance of goods will be done in Luxembourg in the high competitive Single Window system and will generate customs revenues for Luxembourg as customs clearance will no longer be done abroad but locally. European customs regulation forecasts that the 25 % of customs duty on imported goods will stay in the country of import declaration. By offering additional logistics services in Luxembourg, the goods will no longer be in transit through Luxembourg, but can be stored and logistics value added services provided and so generate financial revenues.

Once the whole system is operational, the system operations should be financed by the users of the system, the financial costs being largely balanced by the operational advantages of the system.

2. Staged development of Single Window

The basis of the Single Window concept is the electronic customs systems. This basis has to be progressively upgraded to meet the requirements of a Single Window system.

Phase 1: - paperless customs IT system
 - E-payment for Customs Duty in paperless customs IT system

Phase 2: - connection with other governmental back-end It systems
 - E-permit exchange with paperless customs IT system

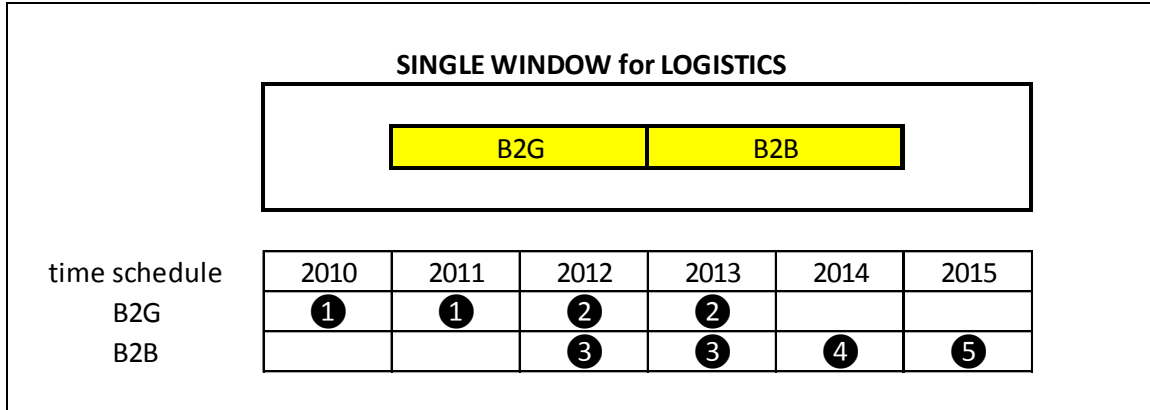
Phase 3: - connection with port and airport cargo community
 - E-documents exchange with stakeholders (air, sea, land)
 (Airlines / airport and port authorities / terminal operators)

Phase 4: - connection with the national logistics platform
 - E-documents exchange with stakeholders (air, sea, land)

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(traders / freight forwarders / logistics service providers)

- Phase 5:
- connection to other single window systems
 - Cross borders paperless trade involving all stakeholders



The implementation of the Single Window for Logistics project will make the use of the IT platform mandatory for all operators. The main target is a simplification of all administrative requests to administrations in the overall process of goods clearance. The main advantages will be the simplicity of the tool, the fixed automatic rules of decision and the reduced time of treatment. Therefore all involved administrations must be equipped with back-office IT based on the guichet-unique concept. This will allow them:

- to document, optimize and measure the related administrative processes
- to guide automatically the incoming information flow to the administrations concerned and allow internal controls
- to share documents between administrations
- to provide help and support to the operators

3. Single Window project

a. B2G, a mandatory system for Luxembourg

After the validation of a pilot project with pilot users testing the single window solution, the system will be extended to the rest and make the system mandatory.

100 % of trade declarations must be submitted and processed electronically via the IT system. Companies which do not have front end software may approach declaring customs agencies that can process their data and submit them in the system.

The documents and information submitted in the system are restricted for use only by authorized users such as customs or controlling agencies.

For administrations not yet having an IT processing system, a user interface allowing the submission of flat file transfers (scanned documents) has to be implemented. For other administrations which already have an IT system, the interface will be connected to the single window.

b. Special committee

A special committee comprising high level governmental officials, business leaders and logistics representatives has to be set up to ensure enough backing for the use of the IT (under the lead of the CTIE) and to support the re-engineering and improvement of the trade regulatory framework and processes.

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The committee has to conceptualize a national single electronic window for traders to submit trade declarations electronically, hence creating a paperless declaration tool. Existing processes of various authorities concerning information and processing requirements have to be analysed, documented and simplified in order to streamline all trade procedures.

Regular meetings have to be organised with the key operators to review the facility's progress.

c. B2B, a competitive tool for operators

Information sharing between the different applications can be enabled and will provide seamless flows of information between the different applications within each company's business flow. It minimises the need for repeated data entry on the same piece of cargo. A neutral and secure IT platform will facilitate the exchange of commercial information between the trading and logistics communities. It will enable value-added service providers to offer end-to-end application services to the trade and logistics community, such as complete supply chain management including multimodal transport solutions.

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1. The single window is recognized as a great contribution to a pro-business environment, increasing efficiency and so lowering the costs for the business community with innovative use of IT.
2. Implement a single window IT solution to facilitate trade by providing cheaper, easier and faster goods clearance processes between economic operators and governmental authorities.
3. Incorporate the SWL project in the overall context of the “guichet-unique”, part of the e-Government project.
4. Reduce the cost of trade documentation by sending the data for automated processing to the various authorities in a 100 % paper-less environment
5. Streamline the governmental administration processes involved in the regulatory framework of trade permit approvals to strengthen the hub status.
6. Set up agreements on lead times in terms of administrative processes to strengthen the competitiveness of Luxembourg’s goods clearance processes.
7. More customs clearance of goods in Luxembourg in the performing Single Window system will generate customs revenues for Luxembourg.
8. Define the staged development of Single Window on a timeline
9. Set up a special committee comprising high level governmental officials, business leaders and logistics representatives to ensure the implementation and success of the project.
10. Extend the single window solution to the cargo community network (allowing all logistics operators to share data related to common logistics services).

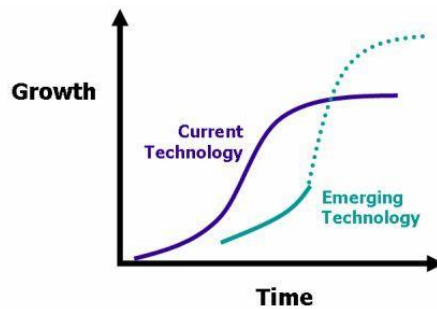
4. Innovation and Research

The rapid innovations in transportation and communications over the past few decades have completely changed the organization of labor and led to a global economy. Logistics processes and supply chains had to be adapted to this new business environment. In the future, the main challenges for logistics will be to handle increasing flows of goods by optimizing and reshaping the logistics processes and taking into consideration the environmental constraints.



This optimization requires new innovative technologies in order to keep pace with the heightened market requirements. As innovation can be linked to positive changes in efficiency, productivity, quality, competitiveness and market shares, pilot projects which aim to introduce innovative technologies and processes in logistics need to be supported.

Innovative companies will typically be working on new innovations that will eventually replace older ones. Life cycles of innovations can be described by using an “s-curve” or diffusion curve. Successive s-curves will come along to replace older ones and continue to drive growth upwards. In the figure below the first curve shows a current technology. The second shows an emerging technology that currently yields lower growth but will eventually overtake current technology and lead to even greater levels of growth. [lit.wp4-1]



The s-curve maps growth of revenue or productivity against time. When the curve of the emerging technology crosses the curve of current technologies, a switch point in the market appears when logistics operators need to switch to new technologies to stay in the market. In logistics such switch points can be illustrated by the global standardization of containers and the use Internet based communication technologies.

Luxembourg players, logistics operators and industry, should step into innovative concepts of technologies, in handling or data processing, and take advantage of the various state aids available in the development of research, development and innovation.

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The aid scheme from the Ministry of the Economy and Foreign Trade concerns 3 types of research and development (R&D): [lit.wp4-2]

- **Experimental development:** an activity aimed at developing new, modified or improved products, processes, services, methods or organisation models (including the creation of prototypes).
- **Industrial research:** research aimed at acquiring new, not yet commercially exploitable knowledge with the aim of allowing new products, processes, services, methods or organisation models to be created (possibly during a subsequent experimental development).
- **Fundamental research:** an activity aimed at broadening scientific and technical knowledge not associated with industrial or commercial objectives.

The law provides for the granting of specific support according to the following aid schemes and measures:

- **R&D projects or programmes**
- **technical feasibility** studies
- protection of technical **industrial property**
- aid for **young innovative enterprises**
- innovation **advisory services** and **innovation support** services
- temporary secondment of **highly qualified personnel**
- **process** and **organisational** innovation in services
- Investment in **innovation clusters** and animation of innovation clusters
- "**De minimis**" measures

The main assessment criteria are the following:

- the innovative nature of the project
- technological risks proving the R&D nature of the project
- the economic potential (except for fundamental research)
- the enterprise's financial capacity in relation to the size of the project

Beneficiaries

All enterprises and private research organisations established in Luxembourg are eligible.

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Forms of aid

The aid intensities, calculated on the basis of the eligible costs of the project or programme, cannot exceed the following limits:

Maximum aid intensity			
	Large enterprise or large private research organisation	Medium-sized enterprise or medium-sized private research organisation (including 10% bonus)	Small enterprise or small private research organisation (including 20% bonus)
Experimental development	25%	35%	45%
Experimental development + collaboration (including 15% bonus)	40%	50%	60%
Industrial research	50%	60%	70%
Industrial research + collaboration (including 15% bonus)	65%	75%	80%
Fundamental research	100%	100%	100%

Our objectives :

1. Expand the use of CITA and enhance Intelligent Transportation Systems
2. Innovative handling technologies
3. IT developments
 - a. Communication technologies
 - b. Transport & Warehouse management systems
 - c. Single Window Logistics
4. Alternative energy solutions in logistics
5. Carbon footprint calculator
6. Logistics indicators

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Our recommendations :

1. Expand the use of CITA and enhance Intelligent Transportation Systems

According to a recent study of Inrix related to traffic jams in Paris, [lit.wp4-3] the costs of traffic jams on Luxembourg motorways can be estimated at 1 billion euros per year. These costs include the loss of productivity of the workforce and increased energy consumption during slow traffic. The cost does not include indirect costs such as environmental pollution or accidents.

Intelligent Transportation Systems (ITS) are information and communication technologies applied to vehicles which can help make road transportation more intelligent, can save time and money by reducing congestion, can improve safety and minimise vehicle fuel consumption and emissions. ITS solutions may prevent accidents before they happen, minimise traffic delays, reduce congestion by suggesting alternative routes or finding drivers an available parking space. Through the use of ITS, special purpose lanes can be controlled and priority can be given to vehicles such as buses and cars carrying multiple occupants or low emission vehicles.

On the supply side, the ITS should send all information into in-vehicle displays to inform drivers of traffic conditions. New applications and complementary in-vehicle technologies that can provide this information to drivers should be developed.

The introduction of ITS in vehicles and on roads will make a positive contribution towards the improvement of transport safety, mobility, productivity, and emissions. The enhancement of CITA to an Intelligent Transportation Systems on the roads and in the vehicles should be supported.

2. Innovative handling technologies

The handling of goods is confronted with ever higher terminal productivity requirements in terms of efficiency, speed and safety. In addition, given the strong labour intensity of all handling activities, they are also very sensitive to high labour costs impacting the total cost. These factors encourage innovation in this particular field of activities having a major impact on the competitiveness of Luxembourg as a logistics hub. It is obvious that technological innovations and developments can dramatically increase labour productivity. However, all handling agents will compare financial investments to benefits on the reduction of labour costs. In this respect all technological innovation should be supported at an early stage by incentives to make handling in Luxembourg more competitive by innovation.

3. IT developments, communication and track and trace

Accurate capacity planning, routing of the goods, dispatching of transport modes, notification and track-and-trace of shipments are growing in importance, necessitating a more efficient IT based control of information to provide a high level of compliance for high value goods. This importance is growing in relation with the requirements of the customers, whether for an individual shipment of the customer or for the management of a global network of the logistics provider. In addition, if use is made of several logistics operators

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(multimodal transports), or better use is made of the existing transport capacities (freight pooling), the IT systems of all involved partners or sub-contractors have to exchange and share information. Without this shared information the whole track-and-trace system of the logistics solution will not be operational.

EUROHUB common IT exchange platform

Intercompany networks will either have to develop their common IT solutions, taking into consideration a huge effort in standardization of their IT platforms, whether consider to use a plug-and-play common solution provided by IT companies.

Technology-assisted booking systems also require the networks of logistics service providers to communicate with their client's IT systems, both for the reception of the transport order as for the track-and-trace of the shipment in the IT system of the customer. Standards must therefore be established to manage the way the information flows in the system and to guarantee commercial confidentiality between all involved parties. Such standards will be a requirement for process optimization and network management and as such be unavoidable.

Mostly an industrial customer has more than one provider for one mode of transports, obliging him to get connected to several IT networks to get the track-and-trace information concerning his shipments. On the other end of the logistics chain, the logistics operators have more than one customer, obliging them to get connected with a lot of IT systems of their customers where they can get their transport orders by electronically means. Logistics customers will in the future increasingly look for Logistics service providers who can plug into customers' systems with a minimum of adaptations.

Luxembourg should support all innovation in the field of standardization of common IT solutions for the national logistics operators and handling agents.

EUROHUB, common clearing centre

Taking into consideration the respective small size of Luxembourg's companies compared to their competitors abroad, a common IT clearing centre would give Luxembourg a competitive advantage. This clearing centre could provide and guarantee the notification and track-and-trace functions of shipments transiting through the Luxembourg logistics platforms. These services could be linked to all goods passing through the EUROHUB, be it on one platform, or be it for multimodal transports combining the use of several platforms and thus offer a global track and trace system for all operations linked to the EUROHUB. Furthermore, the data can be used in the TMS (transport management systems) for all kinds of transport operations or in the WMS (warehouse management system) of the logistics operators involved for all kinds of value-added services. The neutral EUROHUB clearing centre could act as a trade facilitator between the customers, the handling agents and the logistics providers by:

- Supporting a common procurement platform allowing the conversion of customer orders into transport missions in a common format
- Providing track-and- trace information to the customers by converting the common data format into the format of the customers
- Storing transport documents to be shared between operators and their customers thus allowing paperless invoicing

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- Clearing invoicing between customers and logistics operators and logistics operators between themselves

These functions could be a part of the Single Window Logistics, B2B function which will provide advantages for Luxembourg in terms of innovation and competitiveness. These services could then also be offered to other Single Window solutions as services package and operated from Luxembourg.

4. Alternative energy solutions in logistics

The fossil fuels currently in use are unquestionably limited. Forecasts differ widely on additional quantities which could be accessed by using potential new extraction technologies.

Without any innovative technologies whether to drastically reduce fuel consumption in transportation or to enhance new alternative energy sources, a bottleneck in fuel supply will probably be unavoidable. In order to avoid this peak-oil scenario, the development of existing alternative propulsion technologies should be encouraged and implemented whenever it will be economically possible. The development of these new technologies to a high degree of maturity and cost effectiveness cannot be financed by the logistics operators; the help of public innovation agencies is required.

Possible developments:

- Road transportation: use of LNG powered trucks or electric trucks for regional distribution and city deliveries
- Waterways shipping: In inland waterways, the purchase of low emissions engines for instance with LNG should be encouraged as the Netherlands are doing. The Netherlands intend to launch a national program to equip 50 inland ships with LNG engines in 2015. A first experimental ship is already operating between Rotterdam and Basel with LNG technologies.
- Short Sea shipping: In short-sea-shipping and inland waterways, the purchase of low emissions engines for instance with LNG should encouraged as the Netherlands are doing. Netherlands intends to launch a national program to equip 50 short-sea-ships with LNG engines in 2015.

5. Carbon footprint calculator

Carbon management is getting more important every day, in global business and in regulatory ways. The environmental balance of logistics must be improved and is increasingly becoming a business requirement. Today shippers, in particular from the food industry, are taking more and more into consideration the environmental impact of their logistics providers as selection criteria for their suppliers. In the same way that quality certification was and is a selection criterion for tenders, the carbon footprint will become an important element of differentiation between the different transport modes.

Already today, shippers are requiring EURO V trucks to be allowed to load on their platform and in the future this standard will certainly move to EURO VI or hybrid trucks. Moreover in a particular transport mode, companies investing in innovation and new transport materials will take future advantage of this trend. It is mandatory that Luxembourg's logistics

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providers are well prepared for this new trend and are able to demonstrate their carbon footprint impact.

A free of charge online carbon footprint calculator, via the EUROHUB, should be available to logistics operators to measure and monitor the environmental impact per transport, by using different modes of transports. This would help the operator to define where improvements can realistically be made and where changes are necessary to reduce carbon emissions throughout the supply chain. A carbon calculator and later on a “Bilan Carbone” help show the logistics sector where savings and fuel improvements cost can be made in order to maximize economic performance and reduce environmental impact.

The logistics operators must be concerned in the environmental impact of their supply chain solutions and should therefore calculate their global carbon footprint and go for a “Bilan Carbone”. The consolidation of these carbon assessments could be an argument to promote Luxembourg as an environmentally friendly logistics hub. This needs the definition of common standards to make it possible to calculate CO2 emissions of all transport modes and to compare their improvement over time. These standards must also be respected by small and medium operators to calculate the green performance of the Luxembourg logistics hub.

6. Logistics indicators

The follow up of the present study will require some statistical tools and indicators in order to have a precise follow up of the effect of the implementation of the future action plan to develop logistics in Luxembourg. Without these indicators it will be difficult to measure the impact of the actions and to make efficient choices if the effect is not in line with the expectations.

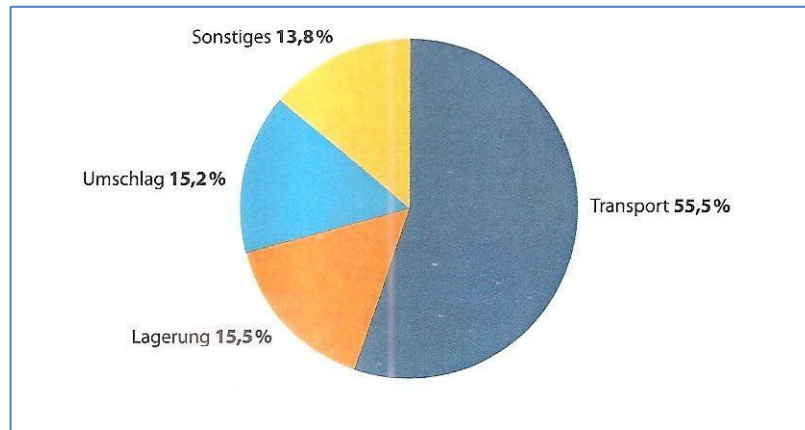
A first version of indicators should refer to the year 2010 as a basic reference indicator for further studies.

These indicators must be a part of the EUROHUB concept, allowing the following of the performance and development of each logistical platform and the impact of cross platform business. The indicators could be followed by the Cluster or by a public research center and must include the following topics:

- **Top 50 logistics providers in Luxembourg**
 - o Turnover (euro)
 - o Employment (euro)
- **Per transport mode**
 - o Volumes (tonnes)
 - o Value (Euro)
 - o Turnover (Euro)
 - o Main cost factors (Euro)
 - o Employment (Jobs)
 - o Means of transport (number and Euro)

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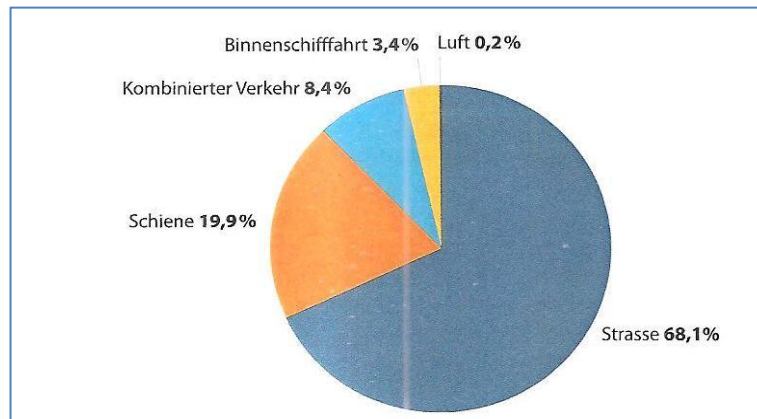
Example Logistics Cluster Basel:



- Per logistics platform

- Volumes (tonnes)
- Value (Euro)
- Turnover (Euro)
- Main cost factors (Euro)
- Employment (Jobs)
- Means of transport (number and Euro)

Example Logistics Cluster Basel:

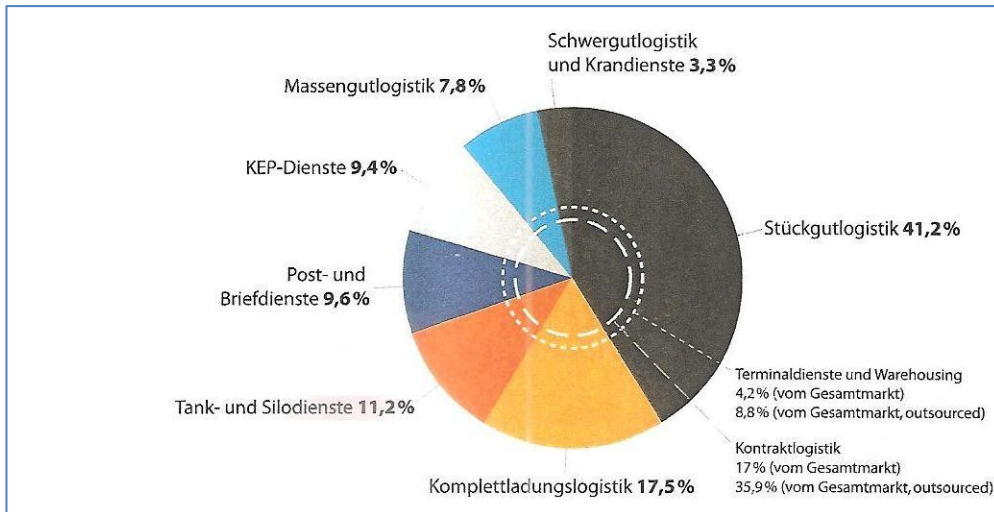


- Volumes and value per logistics market

- Dry Bulk
- Liquid Bulk
- Full unit logistics
- Heavy transports including craning
- Consolidation logistics
- KEP logistics
- Postal logistics
- Share of handling and warehousing
- Share of contract logistics

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Example Logistics Cluster Basel:



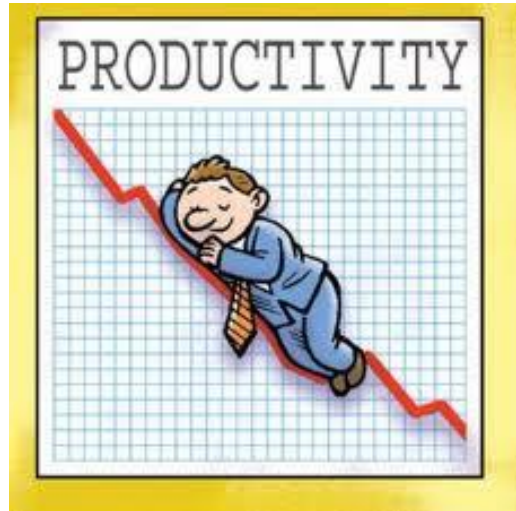
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1. CITA must be upgraded to an ITS level. Intelligent Transportation Systems (ITS) are information and communication technologies applied to vehicles which can help make road transportation more intelligent, can save time and money by reducing congestion, can improve safety and minimise vehicle fuel consumption and emissions.
2. Develop an application enabling ITS to send all information into in-vehicle displays to inform drivers of traffic conditions. The introduction of ITS in vehicles and on roads will make a positive contribution towards the improvement of transport safety, mobility, productivity and emissions.
3. Support by incentives technological innovation in handling operations at an early stage to make handling in Luxembourg more competitive by innovation.
4. Support the development of the interconnection of technology-assisted booking systems between the networks of logistics service providers and their client's IT systems, both for the reception of the transport order and for the track-and-trace of the shipment in the IT system of the customer.
5. Build up a common IT clearing centre of shipments transiting through the Luxembourg logistics platforms by:
 - a. Supporting a common procurement platform allowing the conversion of customer orders into transport missions in a common format
 - b. Providing track-and-trace information to the customers by converting the common data format into the format of the customers
 - c. Storing transport documents to be shared between operators and their customers thus allowing paperless invoicing
 - d. Clearing invoicing between customers and logistics operators and logistics operators between themselves
6. In order to avoid this peak-oil scenario, the development of existing alternative propulsion technologies should be encouraged and implemented whenever it will be economically possible. Incentives from governmental authorities are required.
7. A free of charge carbon calculator and at a later stage a "Bilan Carbone" must help show the logistics sector where cost savings and fuel improvements can be made in order to maximize economic performance and reduce environmental impact.
8. Define statistical tools and indicators in order to have a precise follow up of the effect of the implementation of the future action plan to develop logistics in Luxembourg.

5. Productivity of workforce

For Luxembourg, one of the most pronounced macroeconomic consequences of the crisis is a very marked fall in apparent labour productivity – the relationship between gross value added by volume and employment. This change was the result of business activity falling more steeply and quickly than employment, as employment usually lags behind business activity. In Luxembourg, the fall in productivity was nevertheless much greater than in other Eurozone countries. Worse still, although productivity went back to pre-crisis levels during 2010-2011 in other European countries, Luxembourg's productivity level is still below that of 2007.

(Statnews Études et prévisions [studies and forecasts] no. 28/2011 30/08/2012)



Comparison of statutory working hours in the Greater Region

European Directive 2003/88/EC lays down minimum employment conditions for protecting workers' health and safety. This Directive introduced a 48-hour maximum working week, including working hours, rest time, night working and minimum annual holiday entitlement. However, member countries have the right to redefine several components in the process of transposition into national law. As a result, we see divergences in the following items:

	Hours per week	Hours per day	Annual holidays
DE	40 hours	8 hours	24 days
FR	35 hours	10 hours	30 days
BE	38 hours	9 hours	20 days
NL	40 hours	8 hours	20 days
LU	40 hours	8 hours	25 days

As a general rule, the statutory maximum weekly working time is 40 hours except in France and Belgium. These two countries also allow a longer daily maximum of 9 and 10 hours respectively to give greater work flexibility. The position on the length of annual holidays varies, with Belgium and the Netherlands having 20 days and France 30 days. Germany and Luxembourg are similar in length of holidays.

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Comparison of labour costs in the Greater Region

- for an employee earning €3,000 gross

Comparison of labour costs for an employee earning €3,000 gross				
Annual wages	Germany	Belgium	France	Luxembourg
Cost to the company	3,580	3,909	4,241	3,437
Employer social security costs	(580)	(909)	(1,241)	(437)
Gross wages	3,000	3,000	3,000	3,000
Employee social security costs	(607)	(390)	(649)	(365)
Income tax	(539)	(417)	(224)	(63)
Net wages	1,854	2,193	2,127	2,572

Source: PwC Luxembourg, SME competitiveness in the Greater Region, 2011, www.etude-pme.com

Comparison of labour costs for an employee earning €3,000 gross (as a %)				
Annual wages	Germany	Belgium	France	Luxembourg
Cost to the company	119.3%	130.3%	141.4%	114.6%
Employer social security costs	19.3%	30.3%	41.4%	14.6%
Gross wages	100.0%	100.0%	100.0%	100.0%
Employee social security costs	20.2%	13.0%	21.6%	12.2%
Income tax	18.0%	13.9%	7.5%	2.1%
Net wages	61.8%	73.1%	70.9%	85.7%
Total payroll burdens	39.5%	43.3%	63.0%	26.8%

Calculations: clc

It can therefore clearly be seen that Luxembourg is still competitive on labour costs both for companies and for employees in terms of social security costs. However, Germany is not much different from Luxembourg and it would be hard to use labour costs as a reason for attracting logistics operators to Luxembourg. However, since the main difference is in the level of social security costs, the higher the level of gross wages, the more this difference favours Luxembourg. By contrast, the leveraging effect of social security costs has less impact at lower wage levels.

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- The Greater Region: employees earning the minimum wage

The table below shows the change in minimum wage between 2005 and 2012 for the main logistics competitors.

DE = depot staff level, average for Saarland and Rhineland-Palatinate

	Salaire nominal			Coût patronal		
	2005	2012	Delta	2005	2012	Delta
De Saar pour 40 heures	1600	1807	13%	1909	2156	13%
Fr pour 35 heures	1217	1425	17%	1721	2015	17%
Be pour 38 heures	1210	1472	22%	1577	1918	22%
NL pour 40 heures	1264	1456	15%	1474	1698	15%
LU pour 40 heures	1466	1801	23%	1680	2064	23%

Source

http://www.google.lu/publ/cdata/explore?ds=ml9s8a132hlg_&met_y=minimum_wage&idim=country:lu&fdim_y=currency:eur&dl=fr&hl=fr&q=salaire+minimum+luxe+bourg#!ctype=1&strail=false&bc=d&nselm=h&met_y=minimum_wage&fdim_y=currency:eur&scale_v=lin&ind_v=false&rdim=country&idim=country:be&ifdim=country&hl=fr&dl=fr&ind=false

We find that Luxembourg not only has the highest minimum wage, but also the highest rate of growth along with Germany. Furthermore, the delta between the wage increase in countries using automatic wage indexation and those that do not amounts to 7% over the period being studied. Luxembourg is therefore losing wage competitiveness at 1% per year compared to France, Germany and the Netherlands.

If the minimum wage is added to employer social security costs, the results of the various countries become similar, except for the Netherlands which remains well ahead of the other countries.

Hourly wage

Minimum wage	Net	Employer social security costs	Cost to employer	Hours per week	Hours per month	Cost per hour
DE Saar for 40 hours	1,807	19.30%	2,156	40	173.3	12.44
FR for 35 hours	1,425	41.40%	2,015	35	151.7	13.29
BE for 38 hours	1,472	30.30%	1,918	38	164.7	11.65
NL for 40 hours	1,456	16.55%	1,697	40	173.3	9.97
LU for 40 hours	1,801	14.60%	2,064	40	173.3	11.91

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If we compare wages at the level of the cost to employers, we find that Luxembourg is no longer in the lead but way behind the Netherlands, even allowing for the minimum wage for unskilled employees. Quite the opposite, Luxembourg is becoming too expensive for the logistics business, which requires a large amount of labour. On top of this finding, we note that the rate of wage growth due to wage indexation is 1% per year higher than wage growth in France and Germany. The benchmark therefore needs to be set by comparison to the Netherlands, with a lower minimum wage, a lower social security contribution rate and shorter annual holidays.

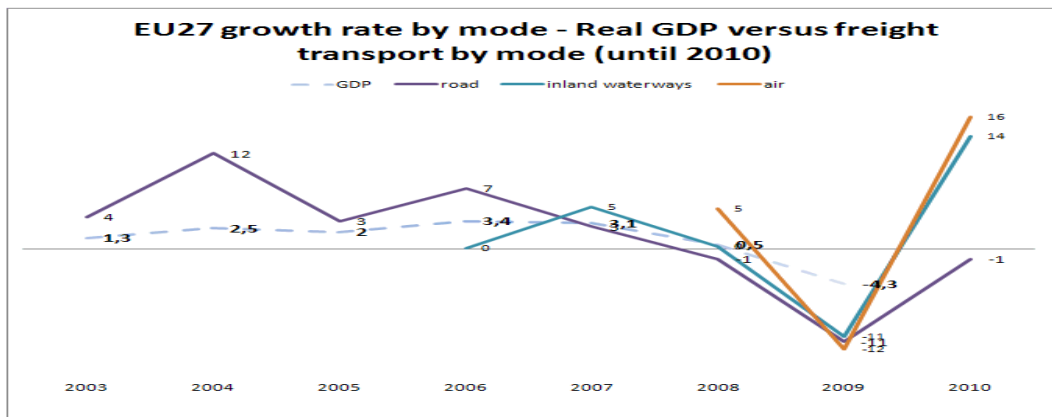
In addition to this general finding on wages in Luxembourg, we need to add certain market conditions specific to logistics, which include its volatility and the very seasonal nature of the transport business.

Volatility of the logistics markets

The markets are volatile in Europe as well as in Luxembourg and are dominated by the influence of external factors.

Changes in the volumes of goods transported depend largely on changes in the economic environment, irrespective of the type of transport used. For example, the correlation factor between the annual rate of growth in transport of goods by sea and the rate of growth of real European (EU27) GDP over the 2003-2009 period stands at 0.948 points. This is extreme sensitivity. For example, all other things being equal, a jump of one percentage point in EU27 real GDP leads to an average jump of 2.48 percentage points in the volume of goods transported by road in the EU27 over the 2003-2010 period. This elasticity is almost exponential. As another example, in 2009, all other things being equal, a drop of one percentage point in real EU27 GDP led to a drop in 4 to 5 points in the volume of goods transported by rail in the EU27. In practical terms, this sensitivity manifests itself through the volatility in the volume of goods transported. This volatility is even more marked when it comes to transporting goods by rail and inland waterways to Luxembourg.

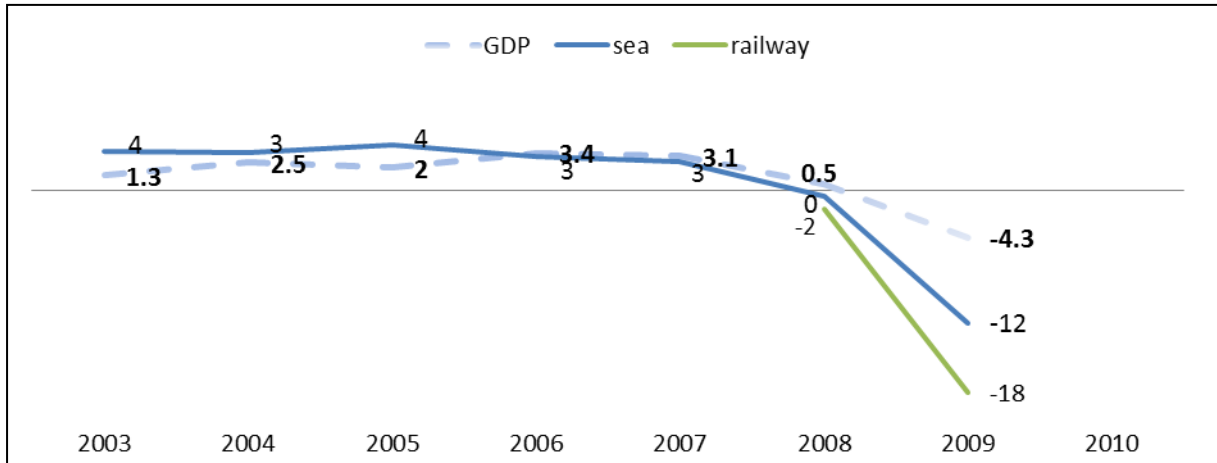
Figure 9. EU27 annual growth rate evolution by mode - Real GDP versus freight transport by mode (until 2010)



The slowdown in the economy between 2007 and 2009 cut the rate of growth in European GDP from +3.1% to -4.3%, amounting to a drop of 7.4%. The effect on road and inland waterways was a drop of -15%, with airfreight down 17%.

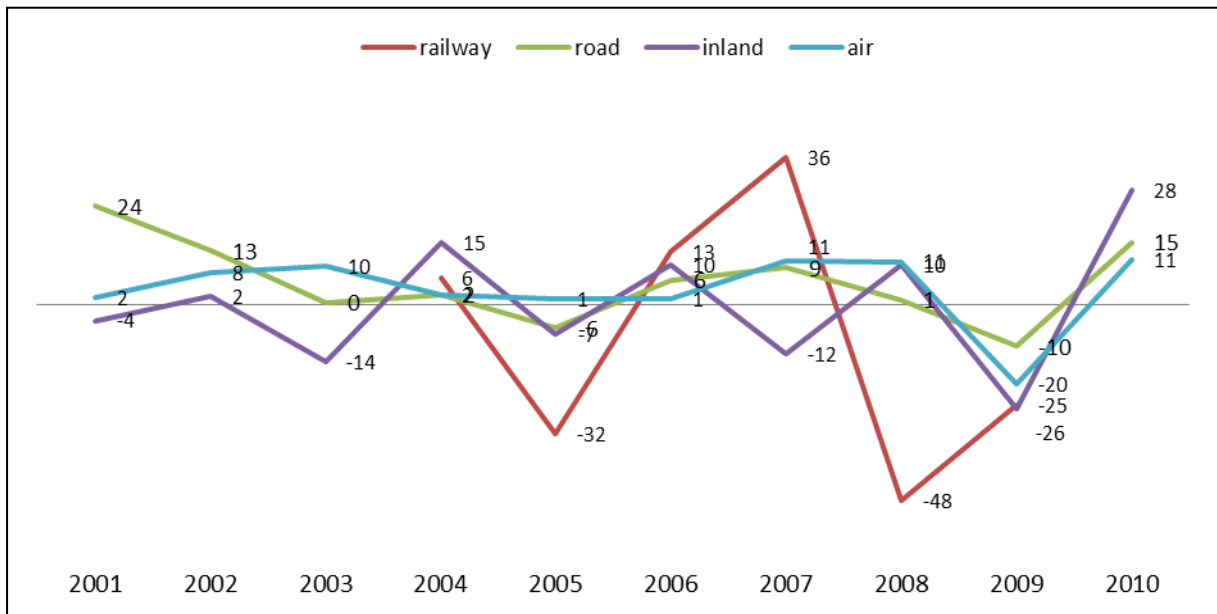
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Figure 10. EU27 annual growth rate evolution by mode - Real GDP versus freight transport by mode (until 2009)



The effect of GDP contraction on rail was -21% with sea freight down -15%.

Figure 11. Luxembourg freight transport annual growth rate evolution by mode

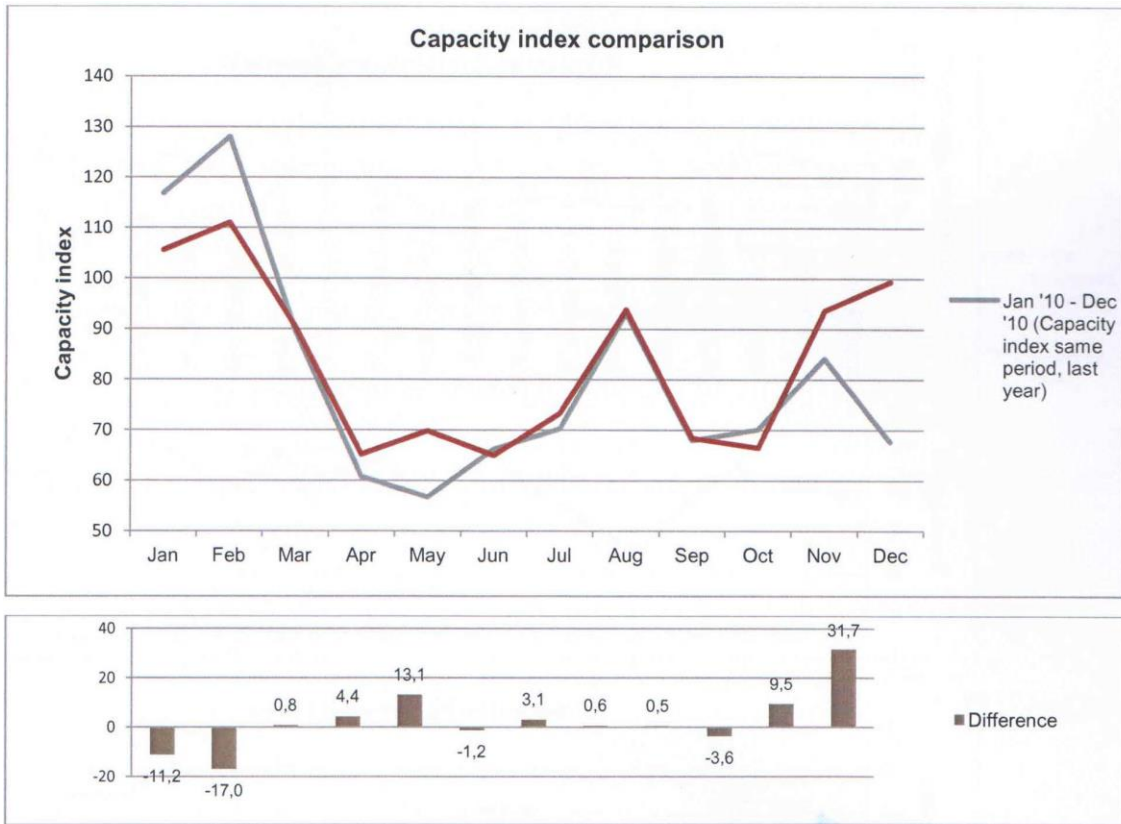


Given the size of the Luxembourg market, the effect of the economic recession was magnified to an even greater extent for Luxembourg logistics businesses:

- Rail: - 62%
- Road: -19%
- Inland waterways: -13%
- Airfreight: -30%

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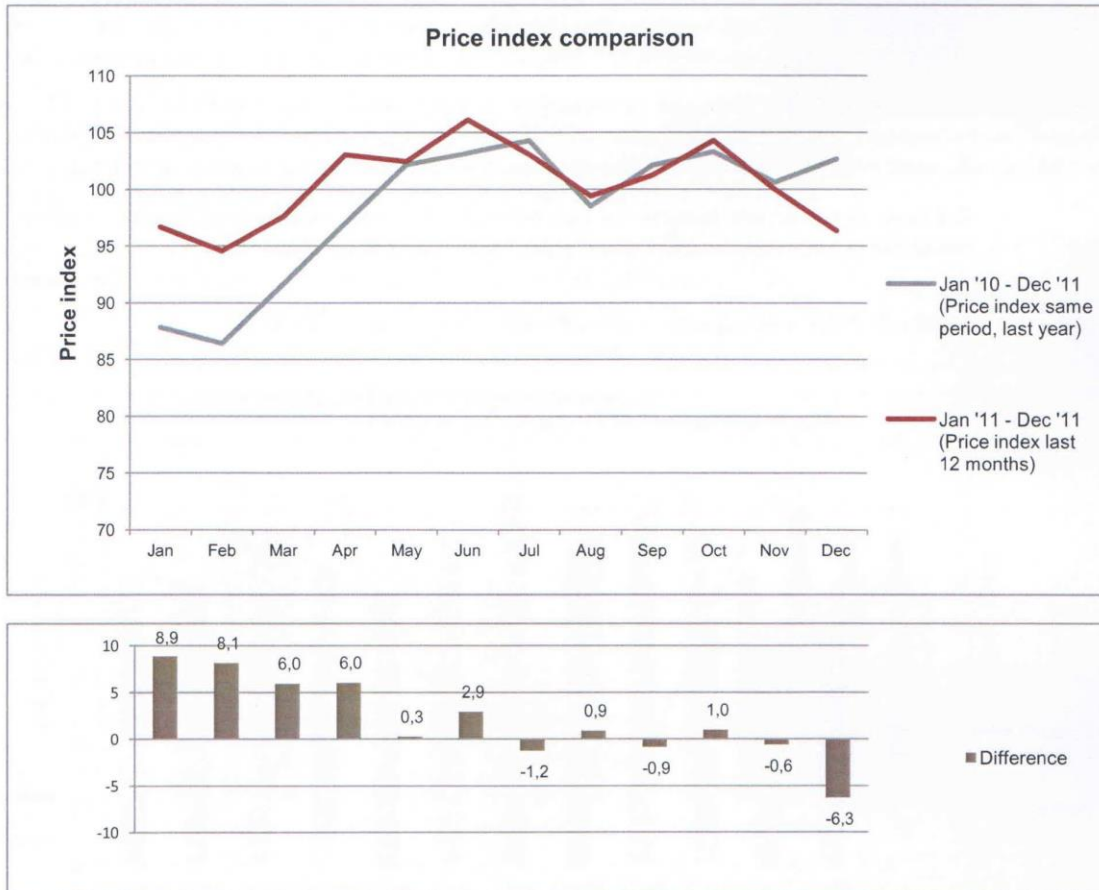
These markets are seasonal both in Europe and in Luxembourg, and are dominated by the influence of road transport.



Source: Transporeon Cap Gemini 10

The above graph on the ratio of available transport capacity compared to market demand in 2010 and 2011 is a good illustration of the seasonality of road transport; as a reminder, this accounts for 75% of European transport. It becomes clear that companies have surplus labour in the November to March period, while during the rest of the year they cannot meet market demand. This in particular puts pressure on transport prices, as shown below.

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Greater working time flexibility in logistics would improve labour management in a very volatile economic environment and also improve allocation of production capacity to the seasonal variations in the logistics market. Finally, such improved allocation of production capacity would damp down inflationary pressure on transport prices during the peak season and enable logistics and industry to increase their market competitiveness.

Our objectives:

1. Allow room for flexibility in organising working hours, particularly those affected by seasonality
2. Relax working time scheduling arrangements.

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Our recommendations:

1. Allow room for flexibility in organising working hours, particularly those affected by seasonality

What are known as annualised hours systems allow employees' working time and wages to be calculated and scheduled over a longer period of up to one year. They are intended to achieve greater working time flexibility for better management of labour to cope with the shorter economic cycles and greater seasonality of certain industries, particularly logistics. The basic approach of annualisation is to calculate working hours over a longer period, not to exceed the maximum average permitted period, while allowing for weekly variations.

Such annualisation is implicitly accepted by European Directive 93/104/EC which dates back to 1993. This legislation stipulates that the average length of each seven-day working period should not exceed 48 hours, including overtime, over a period that may not exceed 4 months. Member states have the power to extend this for up to 6 months for specific industries or businesses and up to 12 months in collective agreements.

	Reference period	Maximum hours per working day	Maximum hours per working week	Average weekly working hours
DE Saar	24 weeks	10	48	40
FR	1-12 months	10	48	35
BE	3-12 months	9	45	38
NL	13 weeks	9	45	40
LU	1 month	10	48	40

Source: eurofound.europa.eu/eiro

It is very apparent that Luxembourg has a major competitive disadvantage in annualising working time compared to our direct competitors. This time we should look to Germany's regulatory framework as a benchmark. In the field of logistics, in which variations in economic circumstances produce exponential changes compared to the overall market and experience ever-increasing winter/summer fluctuations, this flexibility becomes crucial for survival.

Faced with ever more uncertain economic circumstances, the need of companies for flexible labour is more pressing than ever? The use of overtime is one of the main ways of achieving flexible working hours. However, companies could also use regulated modulation of working time, which would enable companies to reduce or extend working hours to react to fluctuations in the demand for goods or services.

Under annualised hour's systems, companies could modulate the number of fixed standard hours and redistribute them over the year. Daily working time could not exceed 10 hours and must allow for a weekly rest period of at least 44 hours (Article 233.1 of the Labour Code). Also, working time may not exceed 48 hours per week. Furthermore, pay would not be for hours actually worked per month, but would be fixed at the pay for an average working week.

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Industry annualisation agreements

In countries neighbouring Luxembourg, many industry agreements provide for annualisation systems with implementation details set at the company level in consultation with the trades unions. Many agreements at industry and company level provide for various annualisation systems, often in the form of annual working time accounts and flexible weekly working schedules. Once again, Germany should act as a benchmark since it has the most extensive model.

Belgium	Clothing, chemicals, agriculture and food retailing, banking, healthcare
France	Hospitals, education, transport and logistics
Germany	Construction, metallurgy, vehicle manufacturing, transport and logistics
The Netherlands	
Luxembourg	The hotel and catering industry, depending on the size of the company

The reasons for using annual accounts relate to the highly competitive nature of the business sectors to which companies are exposed; companies are faced with fluctuations and unpredictable demand. A representative industry is the construction industry in Germany, in which over half of companies use a system of annual working time accounts because of the high volatility of the seasonal fluctuations in this industry.

The determining factors are the same in the logistics industry. A 1% increase in GDP leads to a 2.5% increase in logistics activity and still worse, a 1% contraction in GDP leads to a 4% to 5% shrinkage in the logistics activity. In addition to this, the various types of transport see a marked seasonal imbalance often connected with the construction, food and agricultural industries. In this volatile environment, annualisation systems are a mechanism that really improves the competitiveness of the logistics industry:

Benefits for the employer	Benefits for the employee
Smoother operation and increased productivity from human and financial resources	More stable employment by cutting use of temporary staff
Better ability to cope with business peaks and troughs	Boosts job stability by reducing outside subcontracting
Easier to reduce overtime and keep down labour costs	Improves the chances of a permanent contract of employment
Easier to reduce non-productive working hours	Guaranteed fixed monthly income
Reduces absences after cutting overtime	More predictable annual working hours
Better budgeting, because costs are easier to predict	Better work-life balance

For employees, these systems improve their company's competitiveness and help safeguard their existing jobs and make their jobs more secure in economic cycles that are becoming ever shorter. Similarly, annualisation results in more permanent contracts of employment compared to fixed term contracts. While the flexibility inherent in annualised regimes implies that employers can avoid taking on additional staff during periods of peak demand, it also implies that they are less likely to have to cut their workforce in times of recession. The overall effect is therefore to increase job stability.

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For companies, redistributing working hours flexibly to meet market demand (without using overtime paid at a higher rate) increases their productivity, maximises the use of their operating facilities and reduces their overall labour costs. Annualisation thus contributes to improving the competitiveness, performance and profitability of the logistics industry.

2. Relax working time scheduling arrangements.

A Working Time Plan must cover the foreseeable business activity of a company over the reference period and set down the principles governing the organisation of working hours in the event of unforeseeable occurrences or force majeure. It must be finalised at the latest five clear days before the start of each reference period and cover the whole of that period. It must not be possible to amend it during that reference period. All Working Time Plans must necessarily be put before the appropriate employee representatives in advance for their opinion. We should also observe that Working Time Plans are not a European obligation and exist only in Luxembourg.

As a result, when the economy is slack, it becomes very hard to optimise the productivity of labour if companies have to produce a Working Time Plan covering a period longer than their order books. How can a company schedule its human resources, employees or workforce, in an optimal manner if it does not know what orders it has to fulfil or what services it has to render?

Given the volatility of the logistics market, where the order book on average covers 48 to 72 hours ahead, it becomes impossible to fit the Working Time Plan to economic requirements. This leads to working hours being paid for non-existent work and has a major impact on companies' competitiveness, particularly in an environment of increased competition due to a shortfall in market demand.

Working hour's systems must be modifiable for the economic situation of the industry concerned. In the logistics business, where the order book is visible only two or three days ahead, it is not possible to produce a Working Time Plan in advance to meet actual market demand. It must have the facility of being adapted in the short-term to adjust labour to the work to be done.

To sum up, given the volatile and seasonal nature of the logistics industry, a coherent set of measures made up of a working time annualisation system and its Working Time Plan will make labour costs more competitive for the logistics industry in Luxembourg, in an extremely volatile and competitive environment.

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	Luxembourg	Netherlands	Germany
Working hours per week	40 hours	40 hours	40 hours
Working hours max per week	48 hours	45 hours	48 hours
Working hours max per day	8 hours	8 hours	8 hours
Days of holidays	25	20	24
Minimum salary per month	2064 €	1601 €	2156 €
Minimum salary per hour	11.91 €	9.24 €	12.44 €
Growth over the last 7 years	+ 23 %	+15 %	+13 %
Working time flexibility	4 weeks	13 weeks	24 weeks
POT obligation	Yes	No	No
Ability to change shift plans	No	Yes	Yes
Freedom to top-up with external staff	Yes	Yes	Yes

Reduce the level of social costs for salaries below 3000 € to make Luxembourg attractive for low qualification jobs.

- 1. Increase the flexibility of working time to take into consideration the high volatility of activity in transport and logistics.**
- 2. Install a general regime of 6 month working time account (“période de reference”) for logistics activities with a maximum working time per day of 10 hours, and a maximum weekly working time of 48 hours.**
- 3. Negotiate a collective labour agreement for an annual working time in logistics.**
- 4. Exempt the logistics sector from the obligation of a “Plan d’organisation du travail”**

6.Training and education

People employed in transport and logistics sector are the key factor to ensure the development and the success of Luxembourg as logistics hub in the long term. The availability of sufficient well educated personnel at all levels is mandatory for operators to have efficient processes and to improve their competitiveness. Investment in training and education is as important as investments in warehouses or fleets.



Specialization, new innovative technologies and more international division of labour will completely change the requirements for people employed in these sectors. The workforce will become a key success factor for the development of logistics in the future. The competitiveness of a logistics hub will mostly depend on whether the operators will succeed in finding educated staff and give them lifelong training in order that their competences meet the requirements of the future logistics processes. Today, the transport and logistics sector already has difficulties in recruiting skilled staff. An ageing population will not help solve the problems in the 20 years to come.

In addition to training, the creation of good working conditions associated with rising pressure will be a key challenge for logistics operators.

Our objectives :

1. Education and training commission with all stakeholders
2. Logistics education in school
3. Vocational system of education (Technician)
4. Logistics courses in higher education (BTS)
5. Lifelong training
6. Compliance with social legislation

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Our recommendations :

1. Education and training commission with all stakeholders

The cluster together with operators, trade associations, chambers of industry and commerce and unions will launch a permanent board to build up education in logistics in Luxembourg. This board will ensure continuous collaboration to improve the basic education and enhance future training on the logistics markets.

Specific programs for the integration of the unemployed in logistics have to be supported. Especially for people with low levels of education, training for jobs as regional delivery truck drivers should be developed. With the increasing level of technology and IT required for correct and timely track and trace, companies will have an increasing need for these well trained drivers. This strong trend has been confirmed by studies of the Fraunhofer institute on the German market and Luxembourg operators confirmed this trend.

2. Logistics education in school

Currently the Luxembourg education system covers only the highest degree of education, Masters in Logistics at Tudor, and the lowest level of education, Logistics warehouse workers at the Lycée technique de Bonnevoie.



The middle part of the education pyramid, education administrative staff in offices is not covered by any national education program.

The diversity of jobs among white collar staff is very large and covers operational tasks (planner / disponent), customs agents, insurance specialists, quality and security specialists, sales, logistics controllers, logistics engineers and project managers. For more than 90 % of the white collar staff in 4PL companies an education in logistics is required.

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In a recent survey during a workshop related to logistics, a panel of 15 representative companies prioritized the needs of education in Luxembourg below:

Does your company have vacant jobs today?	Y	80 %
Will your company have vacant jobs in the future?	Y	90 %
Does your company have problems recruiting people trained in logistics?	Y	80 %
Should Luxembourg build up local education in logistics?	Y	100 %
Should the education be at technician level?	Y	90 %
Should the education be at BTS level?	Y	90 %
Would your company support the project by providing work experience placements?	Y	100 %
Should the cluster promote logistics in schools?	Y	100 %

The Cluster for Logistics confirms the request from its members to build up adequate logistics education and training in Luxembourg both on the technician level and on the higher BTS level. The cluster will promote logistics education at school by presenting the different jobs in logistics at schools to attract young students to this sector.

3. Vocational system of education (Technician)

The logistics sector definitively needs white collar workers but not only at management level. A lot of operational and operational linked tasks have to be done on a daily basis and could be done by technician-level staff. For instance jobs like:

- Sea/Air/Road planner
- Insurance clerks
- Customs agent
- Freight settlement agent
- Transport administrator
- Security and quality specialists
- Sales representatives
- Customer service operators

For these jobs a specific education starting in the Lycée techniques at the level of 12ième and 13ième should be enhanced. A dual model of 50% school education and 50 % education in logistics companies should be introduced.

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4. Logistics courses in higher education (BTS)

At a higher level a specific BTS education should be developed. BTS is a professional education qualifying people for the labour market for jobs like:

- Team Leaders
- Logistics controllers
- IT support teams
- Project managers
- Logistics procurement staff
- Transport analysers
- Quality representatives
- Logistics engineers

The target must be to offer such an education in Luxembourg to attract young people to come to Luxembourg and study here and later on integrate them in the local logistics sector. The target must be to create an internationally recognized education course for BTS studies. The creation of an internationally recognized course of study will raise the brand awareness of Luxembourg as a logistics hub and allow local operators to recruit locally people knowing Luxembourg and having been in contact with the national logistics sector and industry during their studies.

If the number of students interested in studying logistics is not high enough to build up education at schools, the logistics operators should then be allowed to organise professional education in their companies under the state authorities and control.

5. Lifelong training

By defining the contents of the two education levels above, technician and BTS, the logistics sector will also address the issue of required lifelong training. This training will allow people working in the field of logistics without having studied logistics when entering the sector, to complete their education and get more efficient in the fulfilment of their task. At the same time, special training has to be identified for subjects too specific to a certain type of goods or logistics services. This training must then be offered to the whole sector by specialists in this particular field.

This will be a part of the tasks of the permanent education board as described above.

6. Compliance with social legislation

All logistics operators of transport modes have to comply with social legislation and health and safety rules at work. Authorities are urged to set up checks to prevent social dumping and non-compliance with legislation. It is in the interest of all operators to comply with national rules and legislation to avoid price dumping on the market. Furthermore, satisfied, motivated and healthy employees are the basis for long-term economic success.

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1. Develop specific programs for the integration of the unemployed in logistics especially for people of low level education.
2. Promote trainings for jobs as regional delivery truck drivers.
3. Develop specific training for white collar jobs in the middle part of the education pyramid.
4. Promote logistics and logistics education in schools
5. Promote the dual education system allowing students to have first professional experiences during their studies of logistics.
6. Implement a “technicien” level education for operational and operational linked staff.
7. Implement a “BTS” level education for middle management staff.
8. The “BTS” level education must be internationally recognized to allow local operators to recruit national and international people who have studied in Luxembourg.
9. If the number of students interested in studying logistics is not high enough, allow logistics operators to organise professional education in their companies under the state authorities and control.
10. Address the issue of required lifelong training on the basis of “technicien” and “BTS” level education.
11. Comply with national rules and legislation to avoid price dumping on the market.

8. Legal and regulatory framework

The new logistics infrastructures must be supported by an overall business development concept to be efficient. New companies must be attracted to Luxembourg, existing flows stopped in Luxembourg and new flows diverted from other corridors through the Luxembourg hub. In order to achieve this, Luxembourg needs an appropriate legal and regulatory framework for logistics activities be it through the implementation of European legislation or through sole Luxembourg initiatives.



Some of the actions described in the chapters above may need a specific legal or regulatory framework. An ad hoc workgroup including different governmental administrations, organisations such as the Chambre de Commerce, Fedil and CLC and the Cluster for Logistics should be set up for this purpose. In addition, this group should target simplifying administrative procedures and streamlining the legal and regulatory framework.

Our objectives :

1. Fiscal representation
2. Social European regulations
3. One stop shop for new logistics operators
4. Streamline the administrative processes related to logistics projects
5. Purchasing, procurement and financial clearing
6. Customs clearance competence center
7. Support local logistics projects
8. Review technical controls for trucks and trailers
9. Evaluate impacts of the future liberalisation of road cabotage

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Our recommendations :

3. Fiscal representation

The Fiscal Representation regime was reintroduced in Luxembourg on 28 February 2008. The main purpose of the regime was to support the development of the logistic sector as the lack of fiscal representation was identified as being a barrier for the development of the sector.

The regime implemented in 2008 is very attractive due to the fact that it offers a very broad scope: many transactions connected with imported goods can be declared under fiscal representation, including storage in Luxembourg and works on goods. But on the other hand the regime also triggers complex administrative follow up as well as the financial responsibility of the fiscal representative.

Unfortunately the regime has not had the success expected as direct VAT registration of the importing company is preferred by most of the players for two main reasons:

- The fulfilment of VAT obligations within the framework of direct VAT registration is business-orientated and easier to manage, and thus reduces in most of the cases the administrative costs for both the logistics company and the importing company
- The importing company remains fully liable for any VAT due on deliveries from Luxembourg, and not the logistic company.

Today only a few players are currently acting as fiscal representative and are limiting the scope of the regime to goods which only transit in Luxembourg, i.e. subject to an import followed by an intra-community delivery to another EU country.

Also, similar comparable regimes which exist in neighbouring countries (France, Germany, and Belgium for example) are limited to exempt transactions (import followed by an intercommunity delivery, intra community acquisitions followed by an export). To that extent, Fiscal Representation is a simplification: instead of having to register to report only exempt transactions, the non-established company uses the VAT number of a third party.

It would be advisable, more than 4 years after the implementation of the regime, to review the nature of the transactions which are currently declared under Fiscal Representation in Luxembourg and assess the needs of the sector, compare the regime with comparable regimes abroad to benefit from best practices, reduce the scope of the regime, decrease in parallel the level of administrative obligations for the fiscal representative and potentially consider excluding the financial responsibility of the fiscal representative acting for EU companies (similar to France).

4. Social European regulations

The employees in transport companies and especially the operational ones on board ships, waterways ships, trains, airplanes and trucks are impacted by the new European rules related to international workers. A transition regulation is in place until April 2020, after which date employees active in transport activities will mainly be registered in their country

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of residence. This will have a huge impact on the competitiveness of Luxembourg logistics companies and on employment in this sector for international truck drivers, regional distribution drivers, sales employees and internal audit and accounting functions.

The development of logistics in general, and the development of headquarters functions in particular will not be made only with people living in Luxembourg. A large part of these employees will live in the greater region and so also be affected by this new regulation.

These international workers perform their professional activities simultaneously in several EU or not EU countries. The country of residence of the employer or the employee is not necessarily the country where the transport activities are performed. Employing staff from multiple countries would raise the question of the consistency of applicable social security and income tax legislation, and employment regulations. In each of these areas of the law, different attribution rules are in force.

Social security

Regulation (EC) No. 883/2004 requires exclusivity of legislation applicable to social security (Article 11, paragraph 1, Regulation (EC) No. 883/2004). A multinational worker can therefore be subject to the social security system of one country only.

The special rules for workers employed in international transport (drivers and seafarers) are no longer reproduced in the new regulations (Article 16 Regulation EC 987/2009: Procedure for the application of Article 13 of the basic Regulation), such that they are subject to the same rules as apply to all workers who habitually work in several member states.

We should therefore refer to the social security provisions of the state in which the worker is resident, if he carries out a significant proportion of his work there. Implementing Regulation No. 983/2009 (Article 14) defines the expression "significant proportion" as a proportion of working time and/or remuneration of at least 25%. To determine where a significant part of the work is carried out, we have to look at a forecast for the next twelve months.

In such situations, we have to decide with which state the worker has the closest links. If a worker works in more than one member state and lives in the state in which he carries out a significant proportion (25%) of his work, he is subject to the legislation of the state in which he lives. If an employee works in more than one member state for several companies or employers which have their head offices in different member states, he is also subject to the legislation of the state in which he lives.

Transitional rules: Regarding the cross-border situations which were already in existence on 1 May 2010, initially there is no change in the social security legislation applicable to workers, in accordance with Article 87, paragraph 8 of Regulation (EC) No. 883/2004. Initially, the current provisions of Regulation No. 1408/71 continue apply to them, but only to 30 April 2020 at the latest.

Tax

The rules on income tax are found in the double tax treaties signed by the worker's state of residence with the states in which he works (Article 15, paragraphs 1, 2 and 3 of the OECD model tax convention). In contrast to social security, persons may be liable to tax in several states without being subject to double taxation ("salary splitting").

The income tax apportionment rules appear in the "double tax treaty" that the state in which the worker is resident has signed with each of the states in which he works. These attribution rules determine which member state is entitled to tax the worker's income. They therefore ensure that income will not be taxed twice. In the case of multinational working, it is essential to have a good understanding of what is known as the 183 day rule.

The state of residence nevertheless retains the right to tax the income, if all the following conditions are met:

- The employee is not present in the state in which he is employed for over 183 days per calendar year (old OECD convention models) or for a period of 12 successive months (new OECD convention models), and
- The employee is paid by an employer or on behalf of an employer which is not resident in the state of the employment, and
- The employee is not paid on behalf of a permanent establishment that the employer has in the state of the employment.

If any of these three conditions is not met, the worker is taxable in the state of the employment, with backdated effect to the first day present.

Article 15, paragraph 3, of the OECD model convention introduces an exception for aircrew and seafarers, the principles of which are set out below.

International transport workers: aircrew and seafarers

Article 15, paragraph 3, of the OECD model convention introduces a principle of exclusivity for aircrew and seafarers. These workers are taxable in one single contracting state, which is the one in which the employer has its head office.

International transport workers: road transport personnel

For workers in the international road transport industry, the coordination of tax rules is far less clear. Usually they have no guarantee of exclusivity. Most double tax treaties provide that truck drivers are subject to the same rules as other workers (state in which they are employed, subject to the 183 day rule – see 11.3.3).

Employment law

Freedom of choice exists only in the case of employment legislation declared to be applicable. But this is restricted by a series of legal principles and provisions at the national and international level (Regulation EC 593/2008 and national employment legislation, particularly in view of Directive 96/71/EC on secondment).

Typical examples: International driver

- The employer is established in Luxembourg
- The worker lives in Germany
- The worker works simultaneously in all EU member states

- Social security

The heavy goods vehicle driver is covered by social security in his employer's country, Luxembourg (Article 11, paragraph 3(a) of Regulation (EC) No. 883/2004). If he earns more than about 25% of his wages or works for more than about 25% of his time in Germany, the Luxembourg employer must cover him for social security according to German law in Germany (Article 13, paragraph 1 Regulation (EC) No. 883/2004).

- Tax

This worker will also be taxed in Luxembourg for the days on which he works in this country (salary splitting). For the other working days, he will be taxed in Germany – if he has worked for less than 183 days in the other member states. His country of residence (Germany) will grant him an exemption in the final income tax calculation for the proportion of income taxed in Luxembourg. This will be done subject to the progressivity clause, which means that income will be taxed in Germany on a progressive basis.

- Employment law

For a German truck driver, employed by a Luxembourg goods transport company, who drives in several member states, it makes sense to choose the employment law of the employer's country: this allows some symbiosis with social security law to be created.

5. One stop shop for new logistics operators

The One-Stop Shop (OSS) is a service model that has been implemented by several European public administrations. The OSS acts as an interface between the citizen /companies and the public administrations and is adopted for a series of both simple and complex tasks. Luxembourg's "guichet unique" is a national one-stop shop. Nevertheless, a consulting contact point for this OSS should be set up to provide beforehand information for new logistics operators creating a subsidiary in Luxembourg and providing support in the contact with all related administrations.

This service will provide assistance with a single interface to the public administration for all those steps that have to be taken when creating a new business or industry or changing an existing one. This service can be provided by the Cluster for Logistics to offer fast, simple and user satisfactory access to all involved public administrations. This would allow reducing the time to register new companies and start new businesses.

6. Streamline the administrative processes related to logistics projects

The WSA project was the perfect illustration of a good sensed administrative process taking into consideration every individual phase of a construction process of a logistics park. However experience has shown that for projects of a larger scale these administrative processes are not adapted as they are too long and need to be done one step after the other.

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Logistics opportunities must be seized when they appear and in this respect, Luxembourg needs to be more flexible and faster than its competitors to take advantage of existing business opportunities.

A complete analysis of existing processes related to logistics infrastructure projects must be done and a streamlined process with shorter lead times must be implemented.

7. Procurement, invoicing and financial clearing

Very often the invoicing of transport and logistics services is still a non-automatic process for shippers and forwarders which very often generate delays of several weeks and months between the moment where the service is provided and income of the cash flow of this service. Moreover if differences between estimated costs and the invoiced amounts appear, the agreed payment terms are no longer respected.

Instead of sending invoices to each other, industrial and logistics operators, should come to a "Gutschriftverfahren", in a paperless environment reducing administrative costs on each side and enhancing competitiveness in a global way.

Luxembourg could be used as a national model for such a practice by setting up a national clearing centre for all transport and logistics services provided by registered trade partners. The clearing centre will compare the procurement data including the rates from one partner and compare these data to the invoicing data sent from the other partner. If the data match, the payment will be made according to the agreed payment terms. If the data does not match, manual clearing will be required.

The national clearing centre could also provide financial services to all partners such as earlier payments, internal rating of the partner, fixing credit lines etc...

It has to be analysed what the legal and regulatory framework for these services should be if in the overall framework of EUROHUB. At a later stage these services could be offered to European or international logistics customers.

6. Customs clearance competence center

A Single Authorisation for a simplified procedure (SASP) allows economic operators to use the local clearance procedure or the simplified declaration procedure in the Member State where he is established in order to perform the customs formalities relating to his imports/exports wherever they occur in the Community. A transfer of the goods to the authorised location is possible; subsequently a periodic supplementary declaration must be lodged.

This Regulation provides the legal basis for an electronic information and communication system to be used for the information and communication process between the customs authorities involved in Single Authorisations and for information of the Commission, Member States and of the economic operators.

It is expected that a wider use of Single Authorisations for simplified procedures will pave the way for the implementation of centralised clearance as a standard procedure under the modernised Customs Code. Centralised clearance will allow economic operators to centralise and integrate accounting, logistics and distribution functions with consequent savings in administrative and transaction costs, thus providing a genuine simplification.

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Luxembourg should take advantage of its perfect IT connection network to develop a competence centre for centralised clearance in Luxembourg. This function could be added to the other headquarters services to be offered to potential new logistics operators.

7. Support local logistics projects

Logistics projects are not only brought to Luxembourg by new logistics operators searching for the ideal location for new projects. Also small and midsize companies already established in Luxembourg are developing new projects for existing or new customers. Support should be given to these companies especially on the local level by giving them access to additional land for required warehouse construction or allowing them to integrate the WSA logistics park.

8. Review technical controls for trucks and trailers

Taking into consideration the huge difficulties existing in technical controls for all kinds of vehicles, Luxembourg should take advantage of the EU directive 2009/40/CE, which provides for only an annual control for trucks and trailers. This would reduce the related loss of productivity for the road carriers and allow Luxembourg to come to the same level of control as other EU countries.

9. Evaluate impacts of the future liberalisation of road cabotage

The opening of domestic road transport markets to cabotage, the domestic transport of goods in a member state by a haulier registered in another country is again under discussion.

In a report made public on 20 June 2012, a high-level group set up by the European Commission recommends a gradual opening of this market. The report will feed into the Commission's reflections on the subject, and the Commission is then due to present a report, by the end of 2013, which will determine whether or not conditions are appropriate for a more extensive opening of domestic markets to cabotage. Depending on the results of this report, the Commission will decide whether legislative proposals are required. However, these intentions are not new: the white paper on transport (April 2011) already recommends the elimination of current restrictions on cabotage.

The last review of this sector took place at the end of 2009, with the adoption of Regulation 1072/2009, which allows for three consecutive cabotage operations in one international journey within a period of seven days, and allows transporters to carry out cabotage en route back to their country of origin, under certain conditions. At the time, the dossier had both supporters and detractors, since it advocated increased flexibility on cabotage. Heavyweights, such as France and Germany, were strongly opposed to more liberalised cabotage, since they were afraid of competition from 'new' member states. Meanwhile, the European Parliament played the liberalisation card. It was also Parliament which obtained the rendez-vous clause for the end of 2013.

The tensions which arose at the time over this dossier will certainly return at some point. To avoid social dumping, the high-level group also recommends accompanying the opening of

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markets with obligations on labour rights. It has proposed imposing the labour law of the country in which a company is carrying out regular cabotage activities which are not linked with international transport. This is similar to the situation under Directive 96/71/EC on the posting of workers. In order to carry out regular activities in other member state, carriers would be obliged to submit to a procedure of prior registration, an obligation aimed at ensuring that labour laws are respected.

Cabotage linked to an international journey would be authorised for a limited period of time, under much less restrictive conditions than those currently in force. According to the high-level group, such flexibility would allow transporters to optimise fleet management and to avoid empty runs, which are ecologically wasteful.

In this particular field Luxembourg must carefully analyse the impact of these regulations on the employment in the road carrier sector and take advantage of the potential new development of road transport companies in Luxembourg.

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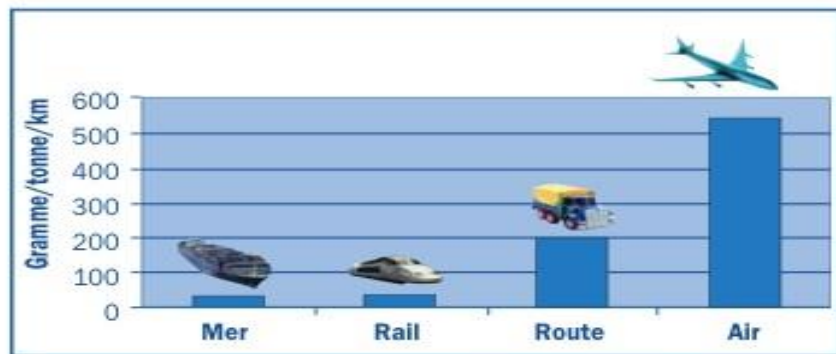
1. Together with key governmental administration, assess the current legal and regulatory framework; check the compliance of the existing framework with the requested framework for the EUROHUB project and develop legal and regulatory measures to reinforce Luxembourg's position.
2. Review the nature of the transactions which are currently declared under Fiscal Representation in Luxembourg and assess the needs of the sector to improve the regime.
3. Analyse the impact of the European rules related to mobile non-Luxembourg resident workers, drivers and administrative staff, to avoid the loss of thousands of jobs in road transports by 2020.
4. Set up a one-stop-shop to back up all investments made by logistics operators, existing and future companies, in Luxembourg by providing support in all related administrations.
5. A complete analysis of existing processes related to logistics infrastructure projects must be done and a streamlined process with shorter lead times must be implemented.
6. Enhance the regulatory framework to set up a financial clearing centre for all transport and logistics services in Luxembourg
7. Create a centre of competence for customs clearance in Luxembourg, allowing the clearance of goods in Luxembourg even if the goods are not physically in Luxembourg.
8. Support the development of local logistics projects of present operators on the local level by giving them access to additional land for required warehouse construction.
9. Allow road transport companies to take appointments for the technical control of their equipment to reduce costs and optimize productivity
10. Analyse the impacts of the future liberalisation of road cabotage transports on the road transport sector in terms of employment and infrastructure.

8. Environmental protection

Tomorrow's transports have to be clean, quiet and climate-friendly. The objective of reducing greenhouse gas emissions by 40% by 2020 (compared to 1990 level) means that transport sector will have to make a substantial contribution. A rise in traffics also means a rise in emissions of pollution and CO₂, more noise and more land take. Because emissions and noise and congestion will not be accepted by the population in the long term, even if it is the same population that is consuming the carried goods, transport has to consume less energy and become more efficient, cleaner and quieter.



**Comparaison des émissions de CO₂
entre les différents modes de transport :**



Source : Commission Européenne

The main targets to achieve more environmentally friendly transports are:

- a reduction in CO₂ emissions by reducing energy consumption
- a development of alternative energy sources for transports
- a development of regional green distribution to reduce pollution and costs

But technological progress alone will not allow meeting the targeted emissions objectives of the European Commission. This can only be achieved by additional measures like:

- Optimizing the transport systems
- Shifting freight to rail and waterways
- Optimizing the use of existing infrastructure
- Reducing congestion on the roads

Increasing awareness of sustainability issues among customers and the public will be a critical factor for the logistics industry. The absence of standard regulations in the EEU leaves large room to national solutions. In the long run, the level of sustainability will be determined by political regulations.

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Unfortunately, innovation in environment protection is very expensive and has a long return on investment. This calls for help from public authorities to financially support the operators during the launching of new green programs. Without this support, companies will not be able to upgrade their processes and technologies to an environmentally friendly level.

Our objectives :

1. A national green label for logistics
2. Promote the use of environmentally friendly trucks
3. Reduce noise associated with rail freight transport
4. Support a modal shift from road to rail and waterways
5. Funding of green shipping on waterways and short-sea-shipping
6. Set up emission-based landing fees at airport

Our recommendations :

1. Luxembourg label Green Logistics

Technological means alone will not allow the reduction of emissions. This can only be achieved by integrating the measures listed in this master plan:

- Optimizing the transport systems
- Shifting freight to rail and waterways
- Optimizing the use of existing infrastructure and rolling stock
- Reducing speed of goods flows
- Authorizing cabotage transports

In order to structure this environmental orientation, Luxembourg should create a national label for green logistics, with detailed criteria, allowing companies to benefit from incentives to continue investments in environmentally friendly technologies and processes. A national calculation method and key performance indicators (based on CEN-norm DIN EN 16258:2011) should be developed allowing the evaluation of the performance of all transport modes involved and so ensuring the success of this policy. The target must be to make the Luxembourg transportation and logistics sector THE green leader in Europe. The small size of the fleets and the young age of the equipment, compared to other European countries, will allow Luxembourg to take the lead in this field.

This will allow logistics operators to communicate more on a green image to public than today. All of the operators have made considerable progress in the last years due to the technological improvement of their fleet and their internal sustainable green policy. The national label would certify this effort and allow Luxembourg to be promoted on an international level in accordance with the main trends in sustainable logistics.

2. National vehicle taxes depending on the emissions of the engine

The energy consumed in transport, and mainly road transport causes problems. In addition the efficiency of the latest diesel engines is high and the market standard of the engines has been upgraded to EURO 6 engines. Nevertheless the new EURO 6 engines allow a reduction of CO₂ emissions by 80% compared to EURO 5 engines. Like Germany, who reduced the “Schwerverkehrsabgabe” (LAVA) by 10% for EURO 6 trucks, Luxembourg should go the same way and support its efficient road carriers to become the greenest truck fleet in Europe.

A reduction of CO₂ emissions is possible by adding bio-diesel to conventional diesel, as bio-diesel does not produce CO₂ emissions during combustion. Today the bio-diesel represents only 2 % of the diesel sold in Luxembourg whilst in Germany and France the share is 5%. The target of the EU is that bio-diesel should represent a share of 10 % by 2020. Luxembourg should boost its local bio-diesel production project to achieve this aim.

Further reductions of emissions in heavy goods transport vehicles are possible by changing the external aspects of the trucks without changing the loading area. Aerodynamic elements can be added to the trucks and trailers reducing gasoil consumption by 15%. In the same

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respect, higher total weights for trucks should be accepted if the truck uses hybrid technologies, which makes trucks heavier in total but again without changing the load weight. Luxembourg should support the EU on this way to green road traffic. [lit.wp4.4]

The linking of road taxes with the type of engine and this aerodynamic equipment will encourage operators to use more new generation trucks thus not only reduce emissions but also the noise of the trucks and trailers. As Belgium will introduce a new toll system in 2013, Luxembourg should consider introducing a similar toll system with different levels of costs related to environmental class of the engine as is done in Germany. The incentives for purchasing of low-noise, low-emission vehicles should be financed by the revenues from the emission-class linked tolls.

Finally incentives should be promoted and given for LNG powered trucks or electric trucks for regional distribution and city deliveries

However, the human factor should not be forgotten. As the transfer to cleaner energies will not be done in a couple of years, conventional powered trucks will continue to be on the roads. Specific training in environmentally sustainable driving should be given to all drivers including theoretical knowledge and practical driving practice. Savings up to 5 % of fuel consumption can be targeted thus making road operators more competitive in the international competition.

3. Reducing noise associated with freight transport

The desire to shift more freight to rail requires in parallel a plan to reduce noise caused by trains along the rail tracks. Due to the fact that freight trains use the same rail infrastructure as passenger trains, these trains often pass through the centre of residential areas. Especially the brakes of the rail waggons cause a lot of noise on rail tracks with high frequency in such areas. The government should launch an incentive program to speed up the retrofitting of the existing waggon fleet. In addition, Luxembourg could follow the way of Switzerland which implemented an incentive program of trains transiting through Switzerland by giving a bonus on the transit rail price in relation to the type of brakes on the waggons used by the transiting rail carrier. [lit.wp4-5]. The implementation of such bonuses has been confirmed by the EP beginning of June.

At the same time construction of noise reducing walls at particularly exposed locations should be supported and even incentives given to insulation measures for dwellings suffering directly from the noise caused, due to the fact that they are closely located to the rail tracks. Priority zones should be located on the main transit tracks connecting Luxembourg to our neighbouring countries on the main freight corridors and sea ports.

4. Support a modal shift from road to rail and waterways

The European Union will continue to pay incentives for shifting international freight from road to rail or waterways even in 2013 after the end the Marco Polo program. The official basis will be the CEF, Connection Europe Facility program, with which the EU targets closing gaps in the European TEN T network. Luxembourg should take advantage of these programs particularly by introducing new innovative technologies on the rail-road terminal in

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Bettembourg/Dudelange. At the same time, all actions should be continued to include the Luxembourg-Köln connection in freight corridors, thus allowing also the promotion of the modal shift to rail for the road transit traffic through the Eifel to Köln.

5. Funding of green shipping on waterways and short-sea-shipping

Emission standards in the shipping sector on waterways and short-sea-shipping will evolve and become more environmentally friendly.

Ship owners are taking into consideration that their ship will be powered in future by LNG instead of heavy oil. LNG has a definitive environmental advantage compared to oil:

- Emissions of "Feinstaub" -100 %
- Emissions of SO₂ -100 %
- Emissions of NO_x -70 %
- Emissions of CO₂ -25 %

For short-sea-shipping the LNG alternative is of great importance as the North Sea will become an Emission Controlled Area (ECAs) in which nitrogen oxide and sulphur oxide emissions from ship exhausted SO₂ emissions must be dramatically reduced by 2015. The highest sulphur content allowed in ship fuel will reduce globally as of 1 January 2020 from 3.5% to 0.5%. Sulphur content allowed in Sulphur Emission Control Areas (SECA) that currently include the Baltic Sea, the North Sea and the English Channel will decrease as of 1 January 2015 from 1.5% to 0.1%. The use of exhaust gas cleaning systems will continue to be allowed, which means that vessels equipped with scrubbers may also run on types of fuel that are currently in use. According to an IMO expert study, the use of heavy fuel oils will largely have to be abandoned once the sulphur content limit in fuel decreases to less than 1%. Transfer to low sulphur and thus cleaner fuels (marine diesel and marine gas oil) will increase fuel costs considerably, because it is more expensive to produce cleaner fuels than heavy fuels. [lit.wp4-6].

In inland waterways, the purchase of low emission engines for instance with LNG should be encouraged as the Netherlands are doing. The Netherlands intend to launch a national program to equip 50 inland ships with LNG engines in 2015. A first experimental ship is already operating between Rotterdam and Basel with LNG technologies.

In short-sea-shipping, the purchase of low emission engines for instance with LNG should be encouraged as the Netherlands are doing. The Netherlands intend to launch a national program to equip 50 short-sea-ships with LNG engines in 2015.

For the record, the cost of a new LNG engine is estimated at 400,000 €, the equipment with scrubbers costs 200,000 € per ship. All efforts should be undertaken to convince the operators to shift to LNG propulsion solutions on their vessels. A reviewed system of taxes should be implemented to encourage Luxembourg operators to shift these technologies and allow the Luxembourg pavilion to become the European reference in green shipping both in short-sea-shipping and in inland waterways.

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6. Set up emission-based landing fees at airport

A scheme of competitive landing fees, promoting the use of environmental and noise friendly aircraft should be adopted to keep existing carriers and attract new ones.

Reduced landing fees for low noise aircraft (e.g. Min CAT 3, latest generation less noisy aircraft, e.g. only specific aircraft types like the B777F or B747-8F) should be implemented. It can of course not be in the interest of Findel to position itself as an attractive hub for one-off charters using older generation noisier aircraft.

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1. Make transports more environmentally friendly to hit the targets fixed by the EC
2. Create a national label for green logistics, based on international criteria, allowing companies to benefit from incentives and continue investments in environmentally friendly technologies and processes.
3. Support by incentives the upgrade of logistics technologies to an environmentally friendly level and help financially the operators during the launching of new green programs.
4. Develop the Luxembourg transportation and logistics sector to become the green leader in Europe.
5. Like Germany, who reduced the "Schwerverkehrsabgabe" (LAVA) by 10% for EURO 6 trucks, Luxembourg should go the same way and support its efficient road carriers to become the greenest truck fleet in Europe.
6. Boost the project of local bio-diesel production to achieve the target of the EU, bio-diesel representing a share of 10 % in diesel fuel by 2020.
7. Support the European policy aiming to allow aerodynamic elements to be added to the trucks and trailers allowing the reduction of gasoil consumption without changing the loading area.
8. Support the European policy aiming to allow higher total weights for trucks to be accepted if the truck uses hybrid technologies, which makes trucks heavier in total but without changing the load weight.
9. Link road taxes with the type of engine and the aerodynamic equipment to encourage operators to use more new generation trucks thus not only reducing emissions but also the noise of the trucks and trailers.
10. Introduce a new toll system like Belgium (in 2013) or Germany in Luxembourg with different levels of costs related to the environmental class of the engine. The incentives for purchasing of low-noise, low-emission vehicles could be financed by the revenues from the emission-class linked tolls.
11. Promote and give incentives for LNG powered trucks or electric trucks for regional distribution and city deliveries.
12. Set up specific training in environmentally sustainable driving for all drivers including theoretical knowledge and practical driving practice.
13. Launch an incentive program to speed up the retrofitting of the brakes of the existing waggon fleet to reduce noise emissions.
14. Construct noise reducing walls at particularly exposed locations along the rail tracks on transit routes.

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15. Luxembourg should take advantage of the CEF, Connection Europe Facility program, by introducing new innovative technologies on the rail-road terminal in Bettembourg.
16. Continue actions to include the Luxembourg-Köln connection in the TEN T freight corridors, thus allowing also the promotion of the modal shift to rail for the road transit traffic through the Eifel to Köln.

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Literature:

- [lit.wp3-1] ec.europa.eu/future_of_transport
- [lit.wp3-2] EU transport in figures, Statistic pocketbook 2011
- [lit.wp3-3] EU transport in figures, Statistic pocketbook 2011
- [lit.wp3-4] Eurostat, **Statistics in Focus** Author: Hubertus CLOODT
- [lit.wp3-5] EU transport in figures, Statistic pocketbook 2011
- [lit.wp3.6] ec.europa.eu/taxation_customs/customs/policy_issues/electronic_customs_initiative
- [lit.wp3-7] ports and their connections within the TEN T, Zoetemeer, December 2010
- [lit.wp3-8] Institut für Seeverkehrswirtschaft und Logistik
- [lit.wp3-9] bureau voorlichting binnenvarrt, Rottedam, the power of inland navigation
- [lit.wp3-10] Sekretariat der Moselkommission 2012
- [lit.wp3-11] Containerbroschüre, Einigung der Binnenwasserstrasse für den Containertransport
- [lit.wp3-12] Moselkommission 2011
- [lit.wp3-13] DVZ nr 74 , port of Hamburg
- [lit.wp3-14] Low carbon Freight Dividend Project
- [lit.wp3-15] DVZ nr. 97, SNCB Logistics

- [lit.wp4-1] Wikipedia: innovation
- [lit.wp4-2] <http://www.innovation.public.lu/en/financer-projets/rd-entreprise/projets-programmes-rd/index.html>
- [lit.wp4-3] http://www.lepoint.fr/economie/la-note-salee-des-embouteillages-08-07-2011-1350751_28.php
- [lit.wp4-4] EC june 2012
- [lit.wp4-5] TU Berlin, BAFU, may 2012
- [lit.wp4-6] Teemu Makkonen, University of Turku