(INstruments and NEtworks for developing logistics towards Sustainable Territorial Objectives)

Contract n° EVG1-CT-2001-00054

Local Context Analysis of

"The Viborg County case study"

Contents

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Project home page: www.districtlogistics.net

Roskilde, September 2003 (first draft)

1. Executive summary

In this document the Local Context Analysis (LCA) of Viborg is described. The LCA is based on the SWOT analysis that identified a number of Strengths, Weaknesses, Opportunities and Threats in the case of Viborg. Based on these findings we have identified hypothesis of innovative actions.

The hypothesis of innovative actions will be used to guide the focus in the next steps of Logistics District Analysis (LDA) and development of Local Scenarios (LS).

The empirical data used in this document is based on interviews and publicly accessible publications on transport, infrastructure, economic development and spatial planning in Viborg County. These data have been used as input in the SDL-SQM framework.

On the basis of a selection within the SDL-SQM framework a number of activities related to logistics, the local furniture and transport industry, regional spatial planning and environmental objectives has been selected for a SWOT-analysis.

The SWOT-analysis has lead to the formulation of a hypothesis of innovative actions, which will be the starting point for the scenario workshops within the INNESTO-project. The hypothesis of innovative actions is: *Innovative networks as the basis for sustainable district logistics*.

Regional profile

On the basis of the SDL-framework in INNESTO[1] a first regional profile has been produced for Viborg County. The profile is an attempt to give an indication on, how strengths, weaknesses, opportunities and threats can be perceived from a perspective on sustainable district logistics (SDL). Below is the regional profile presented.

A number of persons representing knowledge about transport, logistics, regional planning and development in Viborg County have been interviewed. On the basis of these interviews and publications on relevant issues in Viborg County a number of activities and projects have been selected for the SDL-assessment framework.

The selected activities/projects have been assessed and ranked by a score (from 0 to 5) and fitted in as strengths, weaknesses, opportunities or threats for the 32 different components that reflect different aspects of Sustainable Districts Logistics. On the basis of this ranking a first profile of Viborg County has been produced, as illustrated in table 1 below.

Table 1: SDL-profile of Viborg County.

			S Strengths	**W** Weaknesses	**O** Opportunities	**T** Threats
O	1	environment	●●	●●●●	●●●	●●●●●
O	2	economy	●●●	●●●●	●●●●●	●●●●
O	3	socio-culture	●●●●	●●●●	●●●●●	●●●●●
O	4	equity between individuals	●●	●●●●	●●	●●●
O	5	equity between territories	●●●●●	●●●●	●●●●	●●●●●
O	6	equity between generations	●●●	●●●●	●●●●	●●●
O	7	diversity	●●●	●●●●●	●●●●●	●●●●
O	8	subsidiarity	●●●●●	●●●●	●●●●	●●●●
O	9	networking and partnership	●●●●●	●●●●●	●●●●	●●●●●
O	10	participation	●●●●●	●●●●	●●●●●	●●●●
P	1	Perception of a variety of development approaches	●●●●	●●●●	●●●●●	●●●●●
P	2	Creativity and innovation in an entreprenurial culture	●●●	●●●●●	●●●	●●●●
P	3	Capacity to cope with complexity and ambiguity and to anticipate change	●●●	●●●●	●●●	●●●●●
P	4	Openness to enrich ones own culture and enhance multicultural cohesion	○	○	○	○
P	5	Discovery and re-encoding of territorial specificities and local knowledge	●●●●	●●●●	●●●	●●●
P	6	Ability to reach own optimal level of attainment and fulfilment	○	○	○	○
P	7	Fractal distribution of competence using the counterflow principle	○	○	○	○
P	8	Autonomy of strategic decision making within a facilitating infrastructure	○	○	○	○
P	9	Primary reliance on own resources without compromising those of others	○	○	○	○
P	10	Shared value system taking into account environmental, socio-cultural and economic interdependencies	○	○	○	○

[1] See the document *Sustainable District Logistics – Operational Framework* (August, 2002) by SRS.

P	11	Social cohesion	○	○	○	○
P	12	Opportunities and room for equitable interaction	○	○	○	○
P	13	Capacity for creating shared visions	○	○	○	○
P	14	Integration of social and technical skills into the innovation process	○	○	○	○
P	15	Access to information and to the arena of dialogue and debate	○	○	○	○
P	16	Multiplicity of interactions, enhanced by local actors	○	○	○	○
D	1	Enhancing problem understanding	○	●●●	●●●●●	○
D	2	Open collective learning	●●●	●●●●	●●●●	●●●
D	3	Negotiation and co-decision	●●●●	●●●	●●●	●●●
D	4	Creation of a shared vision	○	○	○	○
D	5	Client orientation	○	●●●●●	●●●	○
D	6	Result orientation	○	●●●●	●●●	○

Regional perspective

On the basis of the INNESTO SDL/SWOT-analysis a number of possible ideas and elements of a regional strategy of innovative action in the field of sustainable district logistics were identified (see Section 3). From these elements were a small number selected on the basis of their ranking in each dimension of Orientation, Social Potential and Dynamic Levers. The highest ranking elements are listed below:

Selected aspects of Orientations from the SDL-SQM analysis of Viborg County

- *O1 Environment:*
    1. "Agenda 21 initiatives"
    2. SEED – Sustainable European Economic Development
    3. Interactive web-site on green indicators
- *O2 Economy:*
    1. Strong specialisation within furniture and food production
    2. Publicly financed programme aimed at supporting entrepreneurial activities
    3. Focus on business, economic growth and welfare

Selected aspects of Social Potentials from the SDL-SQM analysis of Viborg County

- *P1 Perception of a variety of development approaches*
    1. Local initiative to strengthen innovation and marketing processes of the local and national furniture industry
    2. West-Link – a transport corridor from North Atlantic countries to Europe via Viborg County
    3. SEED – Sustainable European Economic Development
    4. Interactive web-site on green indicators
    5. Transport Political Network
    6. North Sea Commission, Network on transport corridors
    7. Campaign on local traffic safety

- *P2 Creativity of a variety of development approaches*
    1. Existing local firm networks among specific industrial sectors – e.g. furniture industry

- *P3 Capacity to cope with complexity and ambiguity and to anticipate change*
    1. Transport Political Network
    2. North Sea Commission, Network on transport corridors

- *P5 Discovery and re-encoding of territorial specificities and local knowledge*
    1. A strongly localised industrial base within furniture and metalworking manufacturing with extensive export to world markets

Selected aspects of Dynamics from the SDL-SQM analysis of Viborg County

- *D2 Open collective learning*: "Close B-to-B relationships within the local furniture industry enhance rapid knowledge and experience exchange among furniture firms."
- *D3 Negotiation and co-decision*: "The integrated involvement of transport firms on organising supply chains within the furniture industry distributes logistical competencies and decisions."

2. Main hypothesis of innovative action

Hypothesis

D2 D3	Open collective learning Negotiation and co-decision
O2	Economy
P1 P3	Perception of a variety of development approaches Capacity to cope with complexity and ambiguity and to anticipate change

Short description

Development of innovative networks in the relationships among local furniture and transport firms as the basis for implementing regional policies aiming at promoting more sustainable district logistics.

Expected results

- reduction of traffic load on existing traffic infrastructure (primarily roads)
- reduction of emissions from transport
- reduction in costs on transport for SME's localised in a peripheral region
- development of new localised orientations of the local furniture industry in order to prevent a re-localisation of business, employment and competencies from the region.
- formalisation of inter-firm competencies on transport and logistics within the local furniture industry as example of good practice of mobility management. Established good-practices on transport and logistics (competencies) could be used as good examples of mobility management of freight transport in the County of Could serve as a new tool for mobility management of freight transport for the regional planning authorities.
- promotion of transport and logistics inter-firm competences as a regional and cluster-specific competence, which adds to the competitiveness of the local furniture industry.

Organisational measures

- combination of several attempts stemming from local initiatives to follow criteria of economic and environmental sustainable development (e.g. regional spatial plan, reports on transport and infrastructure development, Centre of wood and furniture)
- integration of a regional hub-and-spoke system for the furniture industry (and other SME's) in a formal mobility management policy for Viborg County
- monitoring of selected indicators on transport and logistics in existing web-site at the planning authorities at Viborg County in order to sustain interest in the mobility management initiative.

3. SDL/SWOT analysis

O1 Environment

Strengths		**2**	**Weaknesses**		**4**
Agenda 21 initiatives	4	4	Regional plan of the County of Viborg - lack of integration of environmental indicators and objectives	4	5
SEED – Sustainable European Economic Development	5	5	Weak rail based freight transport service	3	3
Interactive web-site on green indicators	5	5	Lack of public interest in environmentak issues	4	3
Threats		**5**	**Opportunities**		**3**
Planned enlargement of speed and carrying capacity on existing main road network	4	5	Development of "green accounting" on public activities in Viborg County	2	2
A rise in the intraregional commuting	4	3	Reports on traffic, transport and infrastructure=increasing the knowledge of the planning authorities in the County of Viborg	2	5
SME's lack of innovation in clean technologies	4	4	Development of greening SME industries	5	5
Political focus on environmental issues has diminished in Denmark	5	4	Public awareness on damages on the environment	5	4
Increasing transit transport	3	4			

Therefore there is need to monitor basic territory features, the land use development, the resource use development and the environmental impact development.

Main indicators

Structural statistics	***Unit of measurement***
Total area	4122 Km2 (2003)
Total inhabitants	234.188 (2001)
Population density	57 inhabitants / km2
Land use development	***Unit of measurement***
Agriculture area	58 pct. (on national level in 2000)
Urban area	6 pct. (on national level in 2000)
Area for transport purposes	2 pct. (on national level in 2000)
Area under environmental protection	data n.a.
Resource use development	***Unit of measurement***
Total residual household waste	2,9 mill. tons per year (on national level in 2000)
Residual household waste per inhabitant	Kg / inhabitants per year
Total residual non-household waste	10,0 mill. tons per year (on national level in 2000)
Residual non-household waste per unit GDP	data n.a.
Total energy consumption and in main sectors: transport, industry and other uses	Selected sectors on national level in 2001: Food production: 36.548.277 Gj Textile & clothes: 2.764.401 Gj

	Wood, paper etc: 15.248.815 Gj Iron & metal: 23.769.709 Gj Furniture production: 4.746.671 Gj Transport: 82.106.595 Gj
Total energy consumption per unit GDP	data n.a.
Total energy consumption per inhabitant	data n.a.
Total energy consumption per transport mode: road, rail, water, air transport	Pj per year on national level in 1999: Road: 157,2 Pj Rail: 4,7 Pj Air: 34,3 Pj Domestic sea: 4,8 Pj.
Total energy consumption per passenger transport mode: road, rail, water, air	Pj per year on national level in 1999: Road: 98,8 Pj Rail: - Air: - Sea: -
Total energy consumption per freight transport mode: road, rail, water, air	Pj per year on national level in 1999: Road: 57 Pj Rail: - Air: - Sea: -
Environmental impact development	***Unit of measurement***
Total CO2 production, of which due to transport sector	21 pct. of total CO2 production in 1997 on national level
Total CO2 production per inhabitant	data n.a.
Total CO2 production due to transport modes: road, rail, water, air	Total tonnes per year in 1998: 14.311,2 tonnes Road:11204 t. (78,3 pct.) Rail: 247 t. (1,7 pct.) Air: 2451 t. (17,1 pct.) Sea: 409,2 t. (2,9 pct.)
Total CO2 production per passenger transport modes: road, rail, water, air	data n.a.
Total CO2 production per freight transport mode: road, rail, water, air s	data n.a.
Average peak concentration of traffic noise	Dwellings located in areas of different noise levels in 1995 (national level): < 65 dB: 374.000 dwellings > 65 dB: 130.000 dwellings
Total NO x transport emission	96.400 tonnes per year in 1998 (national level)
Total VOC transport emission	56.900 tonnes per year in 1998 (national level)
Total PM10 transport emission	data n.a.
Total SO x transport emission	5.500 tonnes per year in 1998 (national level)
Average water quality	data n.a.

Main hypothesis of alternative options

To integrate environmental objectives in planning activities targeting infrastructure projects, business development of SME's, traffic and transport management.

- take actions towards a re-vitalisation of the freight transport by railway
- establishment of an inter-modal transport corridor based on ship-lorry-train via the commercial harbour of Hanstholm in the North-West of Viborg County
- development of an existing website established and supported by the regional authorities, that can monitor the environmental load from the transport sector by selected measurable indicators

O2 Economy

Strengths		**3**	**Weaknesses**		**4**
Strong specialisation within furniture and food production	4	5	The regional industry generally characterised as low-tech	3	2
Publicly financed programme aimed at supporting entrepreneurial activities	3	2	Development of skills and competencies of local workforce predominantly organised within firms (non-formalised competencies)	4	5
Focus on business, economic growth and welfare	5	4	No focus on the reduction of transport growth	5	5
Threats		**4**	**Opportunities**		**5**
Predominantly small and medium-sized firms within the local transport and furniture industries	5	5	Re-development of the harbour of Hanstholm from mainly handling fish to also value-adding activities related to fishery	4	3
Labour shortage of skilled workforce in specially in the furniture industry	3	1	Include the actors in the logistical chain to implement SDL	3	5
A lower level of formal training/qualifications among the workforce than average in DK	4	3	New routines in organising transport and logistics	4	5
Absence of higher-level institutions of education and research	3	2	Include the actors in the logistical chain in order to promote SDL	5	5
High dependency on industries within the primary sector (fishery and agriculture)	4	3	Increased focus in planning system of Viborg County on relationships between transport, infrastructure and regional development	4	5

Therefore there is need to monitor basic economic features, structural development logistics, structural development trade, transport infrastructure development, transport intensity, external costs of transportation.

Main indicators

Basic Structure	***Unit of measurement***
Total GDP	Euro per year
Total employment in all sectors	122.952 people in 2001 (Viborg County)
Investment: Gross fixed capital formation in transport industry	n.a.
E-logistics	n.a.
Local units in wholesale trade	5346 local units in 2002
Local units in retail trade	7466 local units in 2002
Total store (all trade activities) surface per inhabitant and surface share of wholesale and retail trade	n.a.
E-commerce (producers)	n.a.
E-commerce (consumers)	n.a.
Transport infrastructure development	***Unit of measurement***
Railways per typology (sole or double track) and per	140 km of sole track in 2003

inhabitant	0,60 km per 1000 inhabitants in 2001
Roads per typology (sole or double track) and per inhabitant	5.531 km in 2000 of which 143 km national, 798 regional and 4590 km municipal (all minimum double track) 24,62 km per 1000 inhabitants
Railways capacity	1 daily freight train in each direction in 2000 60 passenger trains in each direction in 2000
Road capacity	Max vehicles per day n.a.
Road congestion, traffic jams and time loss	Average number of traffic jams-hours per inhabitant per year n.a.
Overcrowded public transport	Average number of crowding-hours per inhabitant per year n.a.
Transport intensity	***Unit of measurement***
Total passenger per transport mode: road, rail, water, air	76.710 mio. passenger km. on national level in 2001 Road: 70.589 mio. km. (92,1 pct.) Rail: 5.548 mio. km. (7,1 pct.) Sea: 235 mio. km. (0,3 pct.) Air: 338 mio. km. (0,5 pct.)
Total freight per transport mode: road, rail, water, air in ton/km	On national level: Road: 11.057 mio. ton/km (2002) Rail: 1.987 mio. ton/km (2001) Sea: n.a. Air: n.a.
Total freight per transport mode: road, rail, water, air in tonnes (domestic)	Viborg County in 1998 total: 13.715 mio. tonnes Lorry: 13.275 mio. tonnes Train: 14 mio. tonnes Ship: 426 mio. tonnes
Passenger transport intensity per unit GDP	n.a.
Freight transport intensity per unit GDP	n.a.
Passenger transport intensity per inhabitant	P-km per inhabitant per year
Freight transport intensity per inhabitant	T-km per inhabitant per year
External costs of transportation	***Unit of measurement***
Estimate of environmental (greenhouse and air impacts), social and health (noise, accidents, congestion) damages caused by total transport mode: road, rail, water, air	n.a.
Estimate of total environmental (greenhouse and air impacts), social and health (noise, accidents, congestion) damages caused by passenger transport mode: road, rail, water, air	n.a.
Estimate of total environmental (greenhouse and air impacts), social and health (noise, accidents, congestion) damages caused by freight transport mode: road, rail, water, air	n.a.

Main hypothesis of alternative options

Increase the efficiency in the regional transport system in order to stimulate and sustain the economic activity in the region. To compensate for the peripheral location of SME's, that is orientated towards non-local markets, by an economic efficient and environmentally friendly organisation of freight transport and logistics:

- to develop the competence on advanced logistics services of local transport firms

- to orient attention and develop competencies of external logistics among local SME's as an strategic asset
- a co-development of business and environmental strategies on sustainable district logistics
- to prevent a re-location of local businesses within labour-intensive industries to Eastern European countries – for example the furniture and metal working industries
- establishment of an inter-modal transport corridor based on ship-lorry-train via the commercial harbour of Hanstholm in the North-West of Viborg County. Development of intermodal hubs at the harbour of Hanstholm and a railway node in Viborg County (for example Thisted)

P1 Perception of a variety of development approaches

Strengths		**3**	**Weaknesses**		**4**
Local initiative to strengthen innovation and marketing processes of the local and national furniture industry		4	Little attention on environmental impacts from new infrastructure and transport projects		4
West-Link: a transport corridor from North Atlantic countries to Europe via Viborg County		3			
SEED - Sustainable European Economic Development		3			
Interactive web-site on green indicators		4			
Transport political Network		3			
North sea Commision, Network on transport corridors		3			
Campaign on local traffic safety		2			
Threats		**5**	**Opportunities**		**5**
Limited awareness on logistics and transport within the SME sector		5	Introducing transport and logistics as competencies within existing knowledge and innovation centre of furniture production		5

Therefore there is need to monitor basically the following courses of actions.

Main indicators

P01. Basic indicators for SDL	
Workshops and seminars focused on sustainable development	n.a.
Publications and public information on sustainable development and related innovation	2: Publication on local Agenda 21 initiatives and a web-site on environmental indicators

Main hypothesis of alternative options

- Tender of courses on logistics and environmental management for the needs of SME's via Centre of Wood and Furniture in the city of Skive
- Involvement of SME's in roundtables on specific implementation of SDL-measurements according to the conditions of the local industry

P2 Creativity of a variety of development approaches

Strengths		**3**	**Weaknesses**		**5**
Existing local firm networks among specific industrial sectors - e.g. furniture industry		3	Lack of competence-based networking within the local transport sector		5
Threats		**4**	***Opportunities***		**3**
Possible migration of local competencies within central localised industries - e.g. the furniture industry		5	Specialisation within knowledge-intensive segments of locally based industries - e.g. furniture and transport		3
A growing fusion and centralisation among formerly independent SME's		3			

Therefore there is need to monitor basically the following entrepreneurial features.

Main indicators

P02. Basic indicators for SDL	
Average business size in selected economic sectors	n.a.
Average business size in main economic sectors: agriculture, industry and services	Viborg County in 2001: Furniture industry: 29,9 employed per local unit Transport sector: 5,04 employed per local unit
Average business size in transport services	Transport sector: 5,04 employed per local unit
Businesses with ISO 14001, EMAS II, Vision 2000 and SA 8000 certification	n.a.

Main hypothesis of alternative options

- actions and strategies towards new competencies within existing industrial clusters in Viborg County – e.g. less focus on manual work and greater focus on innovation and development activities within furniture, food and metal working manufacturing.
- strategy development of new localised forms of regional expertice and excellence beyond duplicable manual production – fx. logistics competencies in networks of SME's.

P3 Capacity to cope with complexity and ambiguity and to anticipate change

Strengths		**3**	**Weaknesses**		**4**
Transport political Network		3	Existing programmes and networks on transport, environment and infrastructure objective primarily involves experts, politicians and planners. Lack of practitioners.		4
North sea Commission, Network on transport corridors		2			
Threats		**5**	***Opportunities***		**3**
Lack of human and economic resources among SME's represents a hinder to cope with new challenges - e.g. sustainability strategies		5	Existing programmes and networks represent platforms for introducing objectives and best practices on sustainable logistics etc.		3

Therefore there is need to monitor basically the following courses of actions.

Main indicators

P03. Basic indicators for SDL	
Programmes directed towards sustainable development	2: • Agenda 21 • SEED
Training courses based on issues of sustainable development	0

Main hypothesis of alternative options

- Introduce the concept of sustainable district logistics within existing planning and policy networks such as Transport Political Network and the North Sea Commission on transport corridors
- Co-ordinate policies and actions via interregional networks on de-coupling economic regional growth from a parallel growth in freight traffic

P5 Discovery and re-encoding of territorial specificities and local knowledge

Strengths		**4**	**Weaknesses**		**4**
A strongly localised industrial base within furniture and metalworking manufacturing with extensive export to world markets		4	Export relations for some industries are concentrated on few international markets with little scope for entries on new markets - e.g. the furniture industry's dependence on the German market		4
Threats		**3**	***Opportunities***		**3**
Rapid shifts in specific international markets		3	Development of existing skills to advanced competencies in a globalised network economy		3
Lack of higher level research and education institutions		3			
Majority of workforce employed within primary and secondary sectors		3			

Therefore there is need to monitor basically the following entrepreneurial features and courses of actions.

Main indicators

P05. Basic indicators for SDL	
Endogenous companies	?
Projects on local economic, environmental and socio-cultural diversification	n.a.

Main hypothesis of alternative options

- To increase the knowledge among local SME's on existing local specificities and assets, and the resources gained from inter-regional business networks. Through an identification of local characteristics, the supplement of non-local resources could be developed and directed strategically on a collective regional level.

D2 Open collective learning

Strengths		**3**	**Weaknesses**		**4**
Close B-2-B relationships within the local furniture industry enhance rapide knowledge and experience exchange among furniture firms		3	Rivalry and competition among SME's within same sector creates inertia in sharing of knowledge		4
Threats		**3**	***Opportunities***		**4**
External take-overs of local firms could threaten localised trust-based inter-firm relations		3	The existing close relationships among local furniture firms and transport firms represents a potential information and knowledge exchange network on best practices of logistics		4

Therefore it is useful to formulate an overall deduction from information and data related to SDL *Orientation* and local *Social Potential*

Main indicators

D02. Basic indicators for SDL	
Existence of training courses, seminars and workshops to increase knowledge of logistics operators	Yes : 1 – a course on logistics of local SME's. Organised by regional industrial board and private consultant firm

Main hypothesis of alternative options

- Integration of knowledge and practical experience on environmentally efficient logistics and transport in seminars and workshops targeting the local SME's and provided by the local industrial boards and consultants.

D3 Negotiation and co-decision

Strengths		**4**	**Weaknesses**		**3**
The integrated involvement of transport firms in organising supply chains within the furniture industry distributes logistical competencies and decisions		4	Limited involvement of the transport sector in the regional policymaking on transport		3
Threats		**3**	***Opportunities***		**3**
		3	A scope for greater involvement of transport firms in decion-making regarding eco-efficiency in logistics of transport-buying firms - e.g. furniture		3

Therefore it is useful to formulate an overall deduction from information and data related to SDL *Orientation* and local *Social Potential*

Main indicators

D03. Basic indicators for SDL	
Existence of round tables, joint committees and groups of logistics stakeholders for plans and projects development	0

Main hypothesis of alternative options

- The establishment of a network within major industrial clusters in the County of Viborg in order to develop and implement strategic actions on the regional freight logistics and transport.