

Policy guidelines for regions falling under the new regional competitiveness and employment objective for the 2007 - 2013 period in the fields of the knowledge economy and the environment, in line with the Lisbon and Gothenburg objectives

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**Policy guidelines for regions falling under the
new regional competitiveness and
employment objective
for the 2007 - 2013 period**

Vol. II Country Report. THE NETHERLANDS

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The Team takes full responsibility for the data, information and judgments expressed in the present report.

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LIST OF ACRONYMS

CIS	Community Innovation Survey
DG Regio	Directorate General of Regional Policy of the European Commission
ERDF	European Regional Development Fund
EKC	Environmental Kuznets Curve
EPO	European Patent Office
ESPON	European Spatial Planning Observation Network
FA	Factor Analysis
GDP	Gross Domestic Product
ICT	Information and Communication Technology
INRA	International Research Associates (Europe)
NUTS	Nomenclature of Territorial Units for Statistics
PC	Personal Computer
PCA	Principal Components Analysis
PPS	Purchasing Power Standards
R&D	Research & Development
SF	Structural Funds
TLC	Telecommunication

EXECUTIVE SUMMARY

This Report offers an assessment of economic conditions and policy priorities for the regions falling under the new Competitiveness and Employment Objective 2007-2013.

It is structured as follows:

- 1) the report presents some statistical data on the general economic conditions of the country.
- 2) a statistical analysis on the three ERDF themes: a) Innovation and the Knowledge economy; b) Accessibility; c) Environment and Risk Prevention.
- 3) a discussion of the current experience with Structural Funds and some implementation issues.
- 4) a set of policy priorities as perceived by the team of independent experts. The methodology, sources of data and description of indicators are explained in detail in Vol. I of the Report, that should be duly considered.

Contributors to the Report include: the statistical team, the core team, thematic experts and the country experts. The final version has been prepared under the responsibility of the core team (Milan).

Eligible Regions: Drenthe, Flevoland, Friesland, Gelderland, Groningen, Limburg, Noord-Brabant, Noord-Holland, Overijssel, Utrecht, Zeeland, Zuid-Holland.

▪ *General Economic Conditions*

Twelve NUTS 2 regions, of which four (Gelderland, Noord-Holland, Zuid-Holland and Noord-Brabant) represent two thirds of the country population are eligible for the regional competitiveness and employment objective. Even the less populated region scores above the reference average of EU Competitiveness regions, with Zuid-Holland nine times more densely populated than the latter benchmark. The national average for the share of employment in the primary sectors is slightly below the EU benchmark, reflecting a developed services economy. Utrecht shows the minimum in agriculture employment, while Drenthe, Flevoland, and Friesland are significantly above the benchmark. Manufacturing employment is particularly low in Utrecht, Noord-Holland, Zuid-Holland, while closer to the EU average in Noord-Brabant and Limburg. The former group is also the regions with highest GDP per capita (along with

Groningen, because of the income of gas exploitation, mostly transferred outside the region, that has the highest unemployment rate).

In terms of economic performance the overall ranking is high for half of the regions, and intermediate for the remaining ones. On average, GDP per capita and its growth are slightly above the benchmark, unemployment well below, but productivity per employee growth often is also below the reference average. There are indeed differences. Regions at least 20% below the benchmark for GDP per capita include Flevoland, Friesland, Drenthe. However, while the latter one has also low growth, Flevoland shows very high growth relative to the country (5.54% yearly 2000-2002).

- *Innovation and knowledge economy:*

The innovation potential in most regions is in contrast to their good performance. Only Noord-Brabant and Limburg show consistently high innovation indicators. R&D expenditures are well below the benchmark in Friesland, Drenthe, and Zeeland. Number of patents applications is particularly low in the former and in Groningen, Flevoland as well. Often the share of firms' turnover due to new products is low, except in Noord-Brabant and Overijssel. Given the nature of the economy, employment in hi-tech manufacturing is often limited, while employment in hi-tech services is more relevant: this is higher than the benchmark in six regions, particularly in Flevoland, Utrecht and Zuid-Holland.

Summing up: the best innovation performers are Limburg and Noord-Brabant, the laggards are Friesland and Zeeland, and the picture is mixed for all the others.

- *Accessibility*

In one region only multimodal transport accessibility is in the low range, Groningen, while it is high for seven regions and intermediate for the remaining ones. Connectivity to transport terminals by car is overall very good, with only Friesland, Groningen, and Drenthe in an intermediate range. Trends of transport in the country are quite peculiar. Car mode growth was much lower than in the EU-15, while railways have an increasing role. Inland waterways maintain their strong position. The TEN-T priority projects include the High Speed Railway Paris-Bruxelles-Koln-Amsterdam-London, the Betuwe line, the Rhine-Danube waterway, the Western Europe motorway of the sea.

ICT/TLC indicators are high in all regions, except in Friesland and Drenthe, where they are intermediate. There are some more marked regional differences in broadband access, however always beyond the benchmark.

- *Environment and risk prevention*

Five regions have some energy sustainability problem: three of them because of low levels of energy efficiency and renewable resources (Groningen, Zeeland, Limburg) and one because of lack of self-sufficiency (Drenthe). The environmental impact of transport seems to be particularly high in Zuid-Holland, Noord-Brabant and Limburg, mainly because of traffic intensity. Concerning the indicators of natural/rural assets the situation is everywhere unsatisfactory (only Gelderland has for example a degree of protection above the benchmark). Natural risk is low everywhere (except for specific local circumstances) and technological risk is usually low to intermediate, except in Zuid-Holland, because of the impact of the petrol-chemical pole of Rotterdam.

- *Implementation of Structural Funds in the current programming period*

All the regions were eligible to the current Objective 2, but Flevoland, in a transitional support from Objective 1. Netherlands has currently four multi-regional programmes: North (Drenthe, Groningen, Friesland), East (rural areas in Gelderland, Overijssel, Utrecht, and some industrial zones), South (Noord-Brabant, Limburg, Zeeland), and 'Urban Zone in the Netherlands' (covering eleven selected zones in nine towns. In terms of current priorities, around one half are targeted to the productive environment (SMEs, large business, rural development, tourism), around 25% in planning and rehabilitation, 10% in human resources, 6% in ICT and the remaining in small measures in transport, social infrastructures, environment.

- *Policy priorities for discussion*

The key message of the analysis is that several regions in the Netherlands need to increase their innovation capacity, in order to sustain in the long term the high economic performance of past years. This leads us to suggest that for all regions the first priority in terms of funds allocation should be for Innovation and Knowledge Economy. There are however regional variations and the analysis leads to four possible groupings: North (Groningen, Friesland, Drenthe); South-East (Noord-Brabant, Limburg, Zeeland, Gelder), Core Urban Area (Zuid-Holland, Noord-Holland, Utrecht), while Flevoland is a specific case.

Innovation should be the highest priority in all the above mentioned groups (including particularly Flevoland), except however in the Core Urban Area, where the performance is satisfactory and the needs of public funds in this area are limited. In the North regional group perhaps more should be allocated to RTDI capacity building, while in Flevoland to SME support and other measures.

Environment and risk prevention should be the highest priority in the Core Urban Area. Interventions should focus on technological risk in Zuid Holland (particularly in Rotterdam), and perhaps in some measures in favour of clean public transport in congested areas. Elsewhere Environment is a secondary priority, of not negligible importance however in specific local circumstances, for example where as for the natural parks of Gelderland there are some natural assets to be preserved, or where the limited remaining rural areas can be oriented to outdoor recreation, e.g. in Limburg.

Accessibility is overall a low priority in the Netherlands. Specific measures can be of interest however in the field of ICT for SMEs for some local clusters, while in general the scope for ERDF financing of links to TEN-T projects seems to be limited.

1 Scope and methodology

1.1 Aim of the report

The aim of this Country Report is to offer the European Commission an overview of the strengths, weaknesses, opportunities and threats faced by the regions eligible for the new Competitiveness objective 2007-2013. It focuses on the three ERDF themes listed in the draft regulation, and it has been prepared as a background document, with a view to supporting the Commission in its own policy priorities analysis and negotiation with the Member States.

As a part of a comprehensive study on 19 countries including 167 regions, the present Country Report is designed as a summary assessment of some key issues. It is a preliminary assessment that should be completed by a much more detailed structural and policy analysis needed at a later stage for the preparation of the Operative Programmes. Moreover, as explained in detail in Vol. I (Statistical Analysis), and as requested by the Terms of Reference, the present report is based mainly on standardised regional statistics and a common cross-country approach. This has obvious advantages in terms of comparisons and benchmarking, but is not designed to fully capture specific features based on local data, and this fact should be duly considered when using it as a reference.

1.2 Methodology for context analysis

The analysis at regional level presents the following sections: general economic structure, innovation and the knowledge economy, accessibility, environmental and risk prevention. For each section a brief description is given according to a short list of indicators with the following characteristics:

- they are consistent and available at NUT2 level;
- they are relevant for the ERDF thematic approach;
- they are, as far as possible, policy-oriented.

The choice of this set of indicators comes from the need to provide guiding principles for policy priorities, rather than to develop comprehensive regional statistical data. For this reason it should be clear that they give some highlights of the major trends in the regions and do not offer a complete picture of all the needs and weaknesses experienced by the regions.

The rationale of the data processing is the following:

- for each aspect (economic structure plus three themes) a linear composite indicator is created and the region is ranked in comparison with all the other eligible regions;
- for each theme (except Environmental risks) the degree of correlation with the economic performance is investigated, by means of a correlation analysis.

The basic idea is to discuss the main thematic trends in the regions, with respect to the ERDF eligible interventions, in the light of the economic structure and trends and the relative position of the regions as compared to a given benchmark (the EU eligible regions average). This reading of the data helps to discover combinations of, for example, High Innovation and Low Economic Performance, that may suggest the existence of unexploited potential, hence an opportunity to invest more on transfer and adaptation than on R&D or tertiary education per se. This analysis is included in Sections 2 to 5.

This set of information is then discussed from a more qualitative point of view on the basis of inputs coming from an assessment of the current SF programming period and lessons learnt in the field analysis carried out by the national expert.

1.3 Structure of the report

Section 2 briefly summarises the general economic conditions for the eligible regions, using the following average annual data (2000-2002): regional population and its national share, population density, employment share of manufacturing, a 'rural/urban' and a 'presence of manufacturing' classification; and 1995-2002 averages for GDP per capita, rate of unemployment, growth of GDP, labour productivity growth per employee, and economic performance ranking. The latter ranking is crucial in the analysis. It is based on a linear combination of two factors ('levels' and 'growth') arising from a factor analysis (see Vol. I for details). Each data set is presented in comparison with a benchmark given by the average of the EU 168 regions eligible for the objective. Often some additional macroeconomic information is also included.

The following section is on Innovation and Knowledge Economy. It presents regional average annual data (mostly 1995-2002) on R&D expenditure as a share of GDP, EPO applications per million inhabitants, percentage of employment in high-tech services, share of population with tertiary education, share of firms' turnover due to new products (CIS data), and an overall

classification based on a factor analysis. Regions are classified High, Intermediate or Low performing in innovation with a combination of these data.

Section 4 is about Accessibility. It presents data on TLC and ICT (share of firms with Internet access and websites and share of households with a PC and access to the Internet) and data on transport indicators (the ESPON multimodal accessibility potential and connectivity to terminals by car). The analysis is supplemented by recent and forecasted trends in travel demand by mode (DG TREN data and scenario at 2020 (Tremove)). A multi-index analysis is given in the Annex.

Section 5 looks at Environment and Risk prevention. This includes standardised data on energy sustainability (electricity efficiency, self-sufficiency, renewable sources and ranking); the environmental impact of transport (vehicle density, non-fuel transport, anthropic degree, urban/rural typology); natural and technological risk (flood hazard potential, burnt areas and polluting sites). The reader should note that these data cannot cover specific sub-regional environmental risks, but consider regional averages.

Section 6 gives a quick overview of the current 2000-2006 programming period, based on a financial breakdown by re-classified priority and some qualitative comments based on the evaluation results.

The last section is about the policy priorities assessment. The first part of it presents the results of a correlation analysis between Economic Performance and Innovation, Access, and Environment summary indicators. A similar cross-reading is given for Economic Performance, Accessibility and Environment, while the presence of high Natural or Technological Risks is considered as a critical issue per se.

After this combined reading of performance and structural data, the following section is more qualitative, and based on other sources of evidence, including interviews with stakeholders, official documents, evaluation reports, academic research, and the personal assessment by the country expert. This leads to the suggestion of some indicative regional policy priorities, based on the available evidence, to be checked at a later stage when the national frameworks and regional programmes are available.

The report ends with a brief discussion of some implementation issues.

2. General economic conditions

Dutch NUTS2 regions eligible for the competitiveness objective are remarkably differentiated in terms of population and density. More than two thirds of the population are concentrated in four of the twelve Dutch regions (see table 1):

- Gelderland
- Noord-Holland
- Zuid-Holland
- Noord-Brabant

Tab. 1 Eligible regions by structural indicators

	Population (thousands)	Share of national population	Population density	Share of primary sectors on total employment	Share of manufacturing on total employment	Rural/urban classification	Presence of manufacturing
Groningen	568	3.54	243	2.98	14.09	Intermediate	Low
Friesland	633	3.95	189	4.45	16.00	Intermediate	Low
Drenthe	476	2.97	180	5.63	15.31	Intermediate	Low
Overijssel	1,090	6.80	327	3.87	17.25	Intermediate	Intermediate
Gelderland	1,941	12.10	390	2.70	14.48	Urban	Low
Flevoland	335	2.09	236	4.93	11.40	Intermediate	Low
Utrecht	1,128	7.03	827	1.15	8.50	Urban	Low
Noord-Holland	2,545	15.87	958	2.01	9.26	Urban	Low
Zuid-Holland	3,424	21.35	1194	3.16	9.71	Urban	Low
Zeeland	376	2.34	208	3.94	15.81	Intermediate	Low
Noord-Brabant	2,381	14.84	483	3.07	18.66	Urban	Intermediate
Limburg	1,143	7.13	528	3.73	19.86	Urban	Intermediate
National figures	16,040	100.00	474	3.01	13.38		
EU eligible regions	313,711		129	3.34	20.18		

Source: Eurostat – see vol. I

Moreover, despite being a country densely populated (even the less densely populated areas score above the reference average), there are some regions that present a critical situation (the main examples being of Zuid-Holland, with a density 9 times bigger than the reference average, and Limburg, 4 times). This is also the main reason why the country, despite having a non negligible share of agricultural employment, does not possess areas defined as rural, but only intermediate (6 regions) and urban (6). Moreover, the Netherlands as a whole and in each single region has a share of manufacturing employment well below the reference average.

Concerning the indicators of economic performance, table 2 displays the basic data for the Dutch eligible regions. With reference to the analysis encompassing the 168 regions of the reference universe, none of the Dutch regions scores as a low performer, since there are 6 high performers and 6 intermediate (see also map 1); moreover, most of the high performing regions have a low presence of manufacturing.

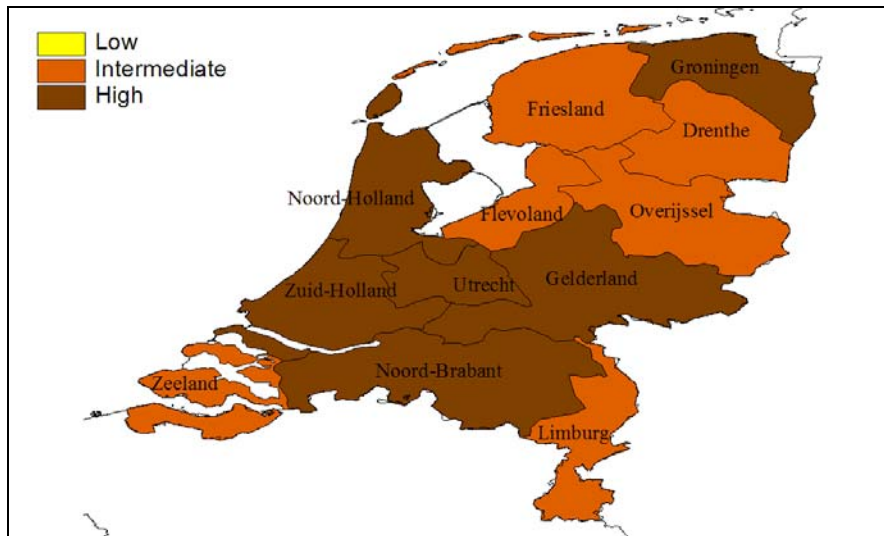
Tab. 2 Eligible regions by economic performance indicators

	GDP per capita	Rate of unemployment	Growth of GDP	Growth of GDP per employed person	Economic performance ranking
Groningen	28,944	4.16	2.49	0.81	High
Friesland	20,688	3.45	2.70	0.35	Intermediate
Drenthe	19,609	3.29	1.70	-0.21	Intermediate
Overijssel (*)	21,246	2.63	2.66	0.77	Intermediate
Gelderland (*)	21,578	2.37	2.55	0.58	High
Flevoland (*)	18,308	2.88	5.54	0.37	Intermediate
Utrecht	31,641	2.11	3.93	1.07	High
Noord-Holland	29,444	2.57	2.99	0.58	High
Zuid-Holland	26,138	2.77	2.68	0.59	High
Zeeland	21,581	2.76	1.29	0.01	Intermediate
Noord-Brabant	24,814	2.23	3.19	0.69	High
Limburg (*)	21,899	2.91	2.47	0.73	Intermediate
National average	25,087	2.65	2.87	0.63	
Average of EU eligible regions	24,162	6.42	2.34	0.99	

(*) = Borderline region between "intermediate" and high" performers.

Sources: Eurostat and DG Regio - see vol I

Map 1 Eligible regions by economic performance



The above mentioned figures should be interpreted considering that a GDP per capita of 28,944 for Groningen includes exploitation of gas reserves in the region. The profits made are allocated statistically to the region where the “well” is found and exploited. These resources are for the public part allocated to the budget of the central government.

Besides, it was removed from the GDP per capita criteria to estimate the eligibility of the Region in 1994 (objective 5b), and the region does not benefit directly because these are profits that go to the central government in the Hague.

Tab. 3 Eligible regions by economic performance indicators (comparison with the national and European eligible regions)

	GDP per capita		Rate of unemployment		Growth of GDP		Growth of GDP per employed person	
	Nether-lands (100)	<i>EU eligible regions</i> (100)	Nether-lands (100)	<i>EU eligible regions</i> (100)	Nether-lands (100)	<i>EU eligible regions</i> (100)	Nether-lands (100)	<i>EU eligible regions</i> (100)
Groningen	115	120	157	65	87	106	130	82
Friesland	82	86	130	54	94	115	56	36
Drenthe	78	81	124	51	59	73	-34	-21
Overijssel	85	88	99	41	93	114	122	77
Gelderland	86	89	89	37	89	109	92	58
Flevoland	73	76	109	45	193	236	58	37
Utrecht	126	131	80	33	137	168	171	108
Noord-Holland	117	122	97	40	104	128	92	58
Zuid-Holland	104	108	105	43	93	114	94	59
Zeeland	86	89	104	43	45	55	1	0
Noord-Brabant	99	103	84	35	111	136	110	70
Limburg	87	91	110	45	86	105	115	73

Sources: Eurostat and DG Regio - see vol. I

In detail, among the regions scoring “high” in the economic performance ranking, Utrecht and Noord-Holland reach the highest levels of GDP per capita, and also in the pace of growth of the GDP (cf. table 3). However concerning the latter indicator, the fastest rate (93% more with respect to the country and 136% more with respect to the reference averages) is achieved by Flevoland, a notorious backward region, which has still a per capita GDP level equal to 73% of the national average (76% of the reference average).

Also Groningen reaches a high position in the ranking of the economic performance, but maintains a rate of unemployment higher than the country average, which nevertheless remains well below the reference average.

Finally, compared to other European countries, the economic performances of Dutch regions are quite good, and not too much differentiated (the only notable exception being Flevoland, but only if one looks at the per capita GDP level). Thus, according to our economic analysis, strong regional priorities in the allocation of ERDF funds do not emerge.

3. Innovation and knowledge economy

The high level of economic performance achieved by Netherland is not matched, in most cases, by the country innovative effort and knowledge base, mostly scoring at an intermediate level. A few exceptions, however, emerge. First, two regions, Noord-Brabant and Limburg, display a high level of innovative and knowledge performance; at least in one case, this is mostly due to the presence of a multinational active, in high tech sectors, influencing also the high level of R&D expenditure, the exceptionally high number of EPO application per inhabitant, and the share of turnover due to innovative products.

Tab. 4 Eligible regions by indicators of innovation and knowledge economy

	R&D expenditures on GDP	EPO application per million inhabitants	Percent. of employment in high-tech manufactu.	Percent. of employment in high-tech services	Share of population with tertiary education	Share of turnover due to products new to the firms	Overall ranking
Groningen	2.17	81	1.72	3.14	27.47	42.00	Intermediate
Friesland	0.67	65	1.78	2.02	21.51	29.00	Low
Drenthe	0.59	81	2.80	3.03	18.74	30.00	Intermediate
Overijssel	1.47	129	1.21	2.76	22.49	41.00	Intermediate
Gelderland	2.23	135	0.98	3.73	26.44	36.00	Intermediate
Flevoland	2.30	89	0.64	5.34	23.48	27.00	Intermediate
Utrecht	2.11	155	0.48	5.13	37.86	29.00	Intermediate
Noord-Holland	1.77	114	0.50	3.81	33.78	35.00	Intermediate
Zuid-Holland	1.98	139	0.42	4.14	29.29	35.00	Intermediate
Zeeland	0.69	84	0.48	3.94	21.74	18.00	Low
Noord-Brabant	2.75	579	2.77	2.68	25.75	41.00	High
Limburg	2.15	182	2.77	2.12	23.38	52.00	High
EU eligible Regions	1.70	136	1.49	3.23	24.81	35.21	

Sources: Eurostat and Community Innovation Survey - see vol. I

At the opposite side of the ranking stand two regions which present a low innovative and knowledge performance, Friesland and Zeeland: these regions have an above-average presence of primary sectors and a low presence of manufacturing. The most performing

regions are also characterised by a higher share of employment in high tech services and a higher share of population with tertiary education; in this respect the paradigmatic example being the Utrecht's region, where one of the most old and famous universities was founded, with a share of graduated population equal to 38%.

4. Accessibility

4.1. Access to transport infrastructure

Concerning access to transport, Dutch regions present, on average, medium-high performances. The situation is globally better for connectivity (the network of secondary roads connecting primary nodes, see the first column of table 5), where, with the exception of the three extreme North-Western regions - which score at an intermediate level - the degree of infrastructural development is "high". These three regions are also those which record an intermediate or low (Groningen) degree of multimodal accessibility.

Tab. 5 Eligible regions by indicators of access to transport

	Connectivity to transport terminals by car	Multimodal potential accessibility
Groningen	Intermediate	Low
Friesland	Intermediate	Intermediate
Drenthe	Intermediate	Intermediate
Overijssel	High	Intermediate
Gelderland	High	High
Flevoland	High	High
Utrecht	High	High
Noord-Holland	High	High
Zuid-Holland	High	High
Zeeland	High	Intermediate
Noord-Brabant	High	High
Limburg	High	High

Transport context

The Netherland trends between 1990 and 2001¹ show quite a substantial difference with the EU 15 ones, as cars are growing at a slower rate and rail is increasing the shares of both passengers and freight. On the other hand, air is accruing its role in the passenger transport market, growing in the past ten years 50% faster than in the EU 15. Trends for urban rail and bus and coaches for passenger, as well as road haulage and inland waterways for freight, are totally in line with the EU ones.

Passenger modal shares are similar to the EU ones, slightly higher the average value for cars and railways, while for freight the role played by inland waterways in the country is unique all over Europe, and thus changing completely the shape of modal split.

Tab. 6 Trends in travel demand - pkm 1990 = 100

Years	Cars	Bus and coaches	Railway	Urban rail	Air
1970	48	86	72	98	
1980	78	101	81	107	
1990	100	100	100	100	100
1995	103	106	126	110	143
2000	109	114	133	113	235
2001	109	114	130	114	232
2001 EU 15	120	112	115	115	182

Source: EC -DGTREN.

Tab. 7 Trends in travel demand - tkm 1990 = 100

Years	Road haulage	Railway	Inland waterways
1970	51	121	86
1980	73	113	94
1990	100	100	100
1995	133	101	99
2000	144	124	113
2001	142	125	118
2001 EU 15	143	95	117

Source: EC -DGTREN.

¹ European Commission, Directorate General for Energy and Transport, European Union Energy and Transport Figures, 2003

Tab. 8 Modal shares by mode of land transport - Passengers - 2001

	Cars	Bus and coaches	Railway	Urban rail	Powered two wheels
	82.9	6.9	7.9	0.8	1.5
EU 15	80.4	8.8	6.5	1.0	3.2

Source: EC -DGTREN.

Tab. 9 Modal shares by mode of land transport - Freight - 2001

	Road	Rail	Inland waterways	Pipelines
	46.6	4.0	43.4	6.0
EU 15	75.5	13.1	6.8	4.7

Source: EC -DGTREN.

Trends projections²

Baseline trends in transport demand, emissions and vehicle stock are derived from the Tremove study³ for the period 2005-2010 and are used as background scenario for the regional analysis.

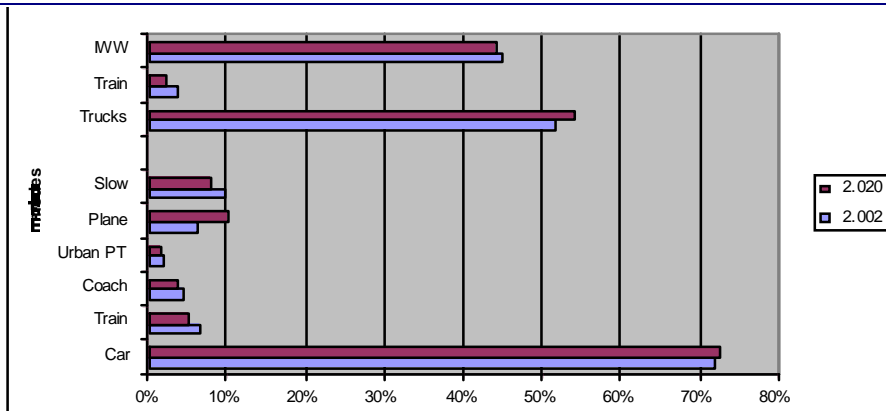
Inland waterway will continue to play a relevant role in freight transport, although the expected increase in volumes transported by this mode will remain below the overall growth in tons km; as a result, road haulage will see an increase in its market shares, while the railway sector will remain very marginal. For passengers, as for the EU 15 in general, trends will be in favour of the car and air modes, car will gain two points and air will reach the 10 % of the total demand.

The fleet of goods vehicle is expected to increase at a significant rate, due to the relevance of this sector in the Dutch economy. The emissions trends are reported in the last graph of this section.

² Trends have been derived from the Tremove database, data cannot be compared with the past trends presented in the previous section as the transport modes as well as the type of flows considered are different. Nevertheless they represent a likely trend in the absence of specific transport policies.

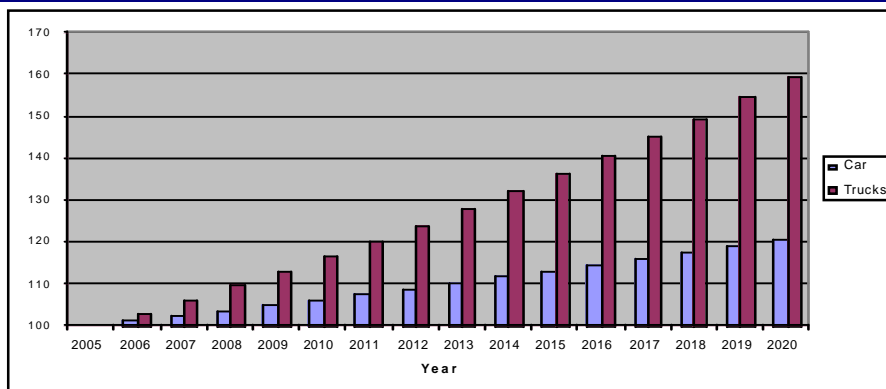
³ Tremove 2 Model has been developed by K.U Leuven and Transport & Mobility Leuven together with WSP, TRT, TRL, INFRAS and COWI, on behalf of DG ENV (2005)

Fig. 1 Freight and passengers modal shares



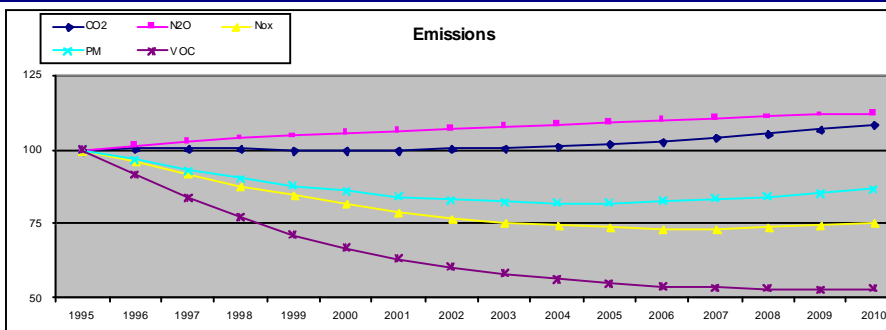
Source: Tremove.

Fig. 2 Road vehicles stock



Source: Tremove.

Fig. 3 Trends in transport emissions



Source: Tremove.

Regional analysis

Fig. 4 Population density

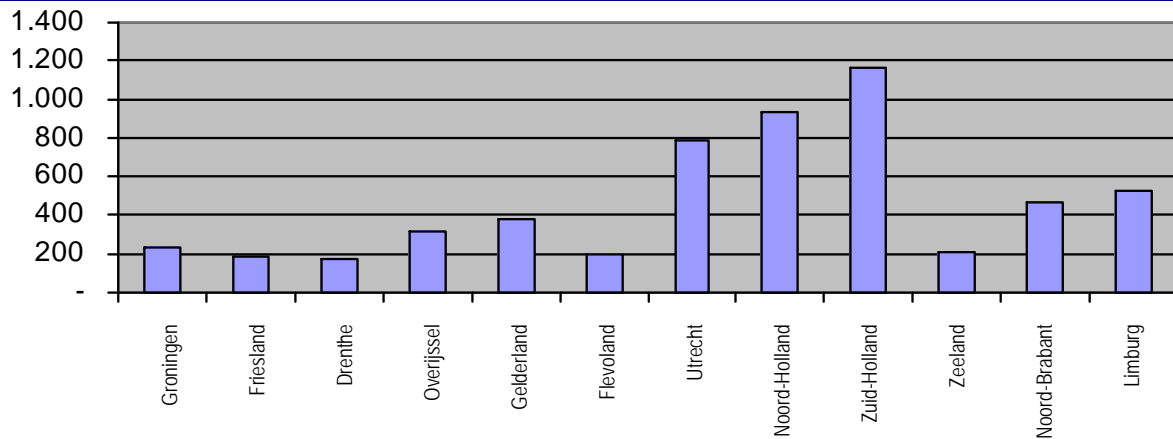
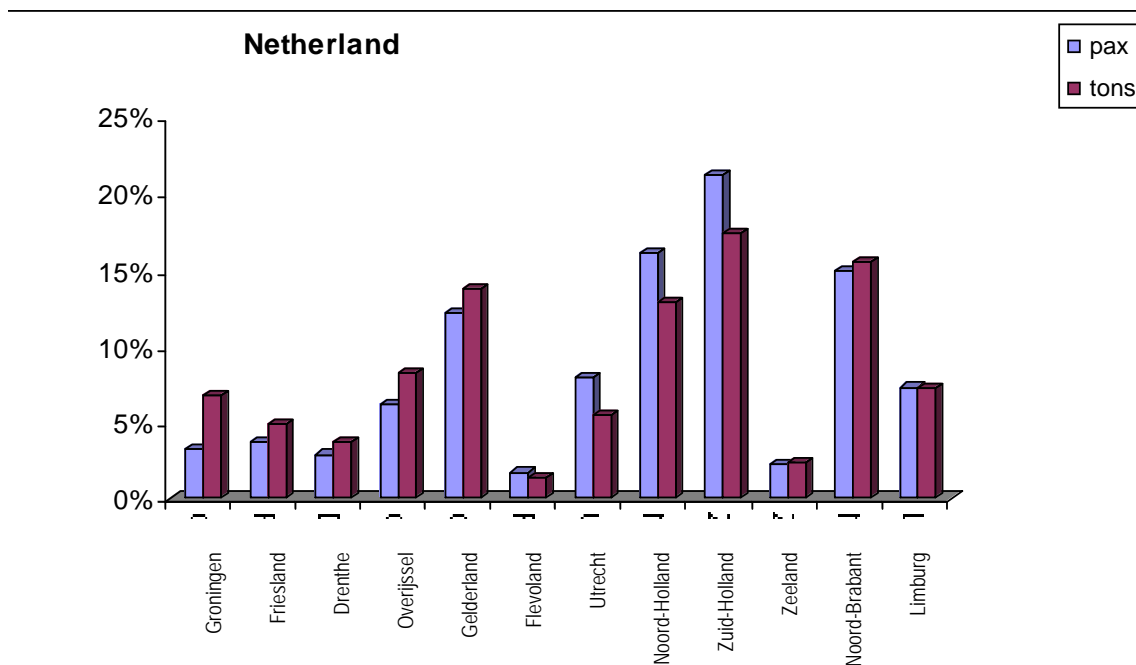


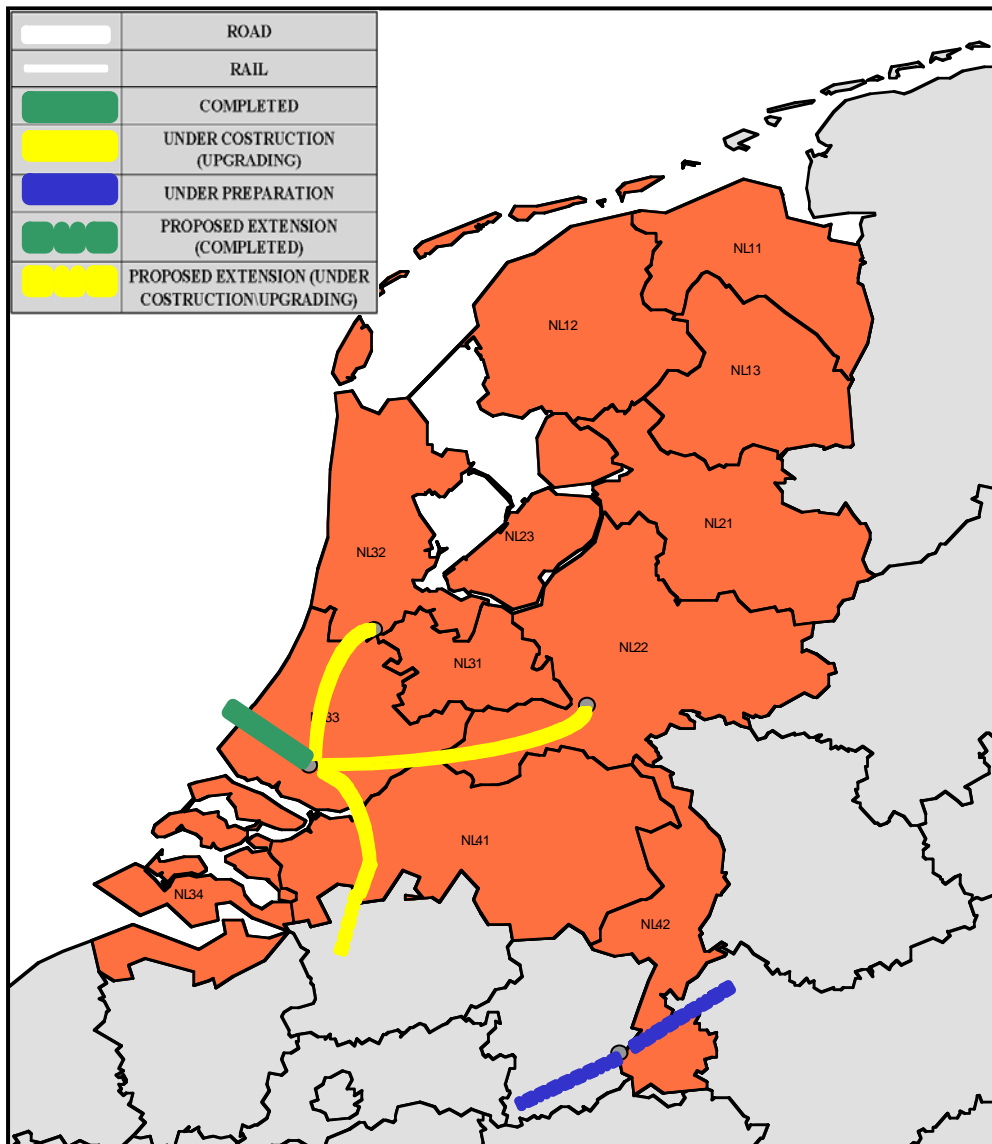
Fig. 5 Traffic flows % of total traffic attracted/generated by each region



Source: Scenes.

In three regions population density is very high in comparison with the rest of the country: Zuid Holland, Noord Holland and Utrecht; 7 regions can be considered of medium density, between 200 and 600 inhabitants and for the remaining 2 regions, density is below 200 inhabitants per square km. In all the three high density regions, the concentration of passenger flows is very high, while freight flows exceed the passenger one in many of the medium density regions. Low density regions are characterised by a more homogeneous mix of flows.

Map 2 TEN-T PRIORITY PROJECTS



The priority projects connecting the Netherlands with the rest of Europe, are:

- the High Speed Railway line Paris-Bruxelles – Koln - Amsterdam-London
- the Betuwe line
- the Rhine-Meuse- Main-Danube waterway
- the western Europe motorway of the sea

4.2. Access to telecommunications and information technologies

Table 10 shows the level of diffusion of TLC and ICT technologies across the Netherlands. With the partial exception of Friesland and Drenthe, which suffer from a lower diffusion of PC and Internet access within families, the country shows a high degree of access to these technologies, both for firms and households. In particular, concerning the latter, we see that, with a few exceptions, a large majority (around 70%) of Dutch families strongly spend in ICT equipment and services, which may play an important role for the accumulation of human capital of the country.

Tab. 10 Eligible regions by access to TLC/ICT

	Share of firms with Internet access	Share of firms with a Web site	Share of households with PCs	Share of households with Internet access	Share of households with broadband Internet access	Overall ranking
Groningen	87.3	62.7	58.9	41.6	5.3	High
Friesland	84.0	58.4	58.9	41.6	5.3	Intermediate
Drenthe	83.6	57.8	58.9	41.6	5.3	Intermediate
Overijssel	84.3	58.8	70.0	47.8	18.3	High
Gelderland	84.6	59.1	70.0	47.8	18.3	High
Flevoland	82.8	56.8	70.0	47.8	18.3	High
Utrecht	88.7	64.6	69.9	49.6	12.6	High
Noord-Holland	87.8	63.4	69.9	49.6	12.6	High
Zuid-Holland	86.5	61.7	69.9	49.6	12.6	High
Zeeland	84.7	59.2	69.9	49.6	12.6	High
Noord-Brabant	86.0	61.0	67.3	48.2	6.6	High
Limburg	84.7	59.2	67.3	48.2	6.6	High
EU eligible Regions	86.01	56.33	49.29	35.19	5.05	

Sources: ESPON and INRA.

The Netherlands is without any doubt one of the best performers in the TLC and especially in the IT industry, with a rich endowment in both industries, by all indicators (fixed and mobile telephony, PC and Internet penetration): it stands at the 2nd and 3rd level for fixed and mobile telephony; at the 2nd and 1st for PC and Internet availability:⁴ It comes as no surprise that the Netherlands ranks among the heavier spenders in ICT (7.10% of GDP).

Economic performance is tightly related to ICT access, although the latter outperforms usually the latter.

From the point of view of ICT access, its overall performance is intermediate to high, but it is somehow mixed and split between supply and demand related applications. Indeed, access for households is very good, wide and homogeneous across the whole spectrum of applications (3rd, 5th and 3rd, respectively, for PC penetration, Internet access and broadband Internet access across countries), with a remarkable fit between different technologies, within each area of application. The same fit applies also to business-related applications, although they, on the contrary, enjoy a much more limited access, and the Netherlands rank 11th and 10th, respectively, for Internet access and web site.

Of peculiar interest the good position held in leading applications, where the country provides an access that is better, although only marginally, than the access to mature applications.

Tab.11 Ranking of the best performing eligible region by variable

	Share of firms with Internet access	Share of firms with a Web site	Share of households with PCs	Share of households with Internet access	Share of households with broadband Internet access
Ranking	11	10	3	5	3

The country has a compact and homogeneous character from a cultural as well as economic point of view and it enjoys an homogeneous development of ICT, that shows in the limited regional variability across the whole set of indicators. The only exception to such a pattern is broadband Internet access, where regional differences are high and such that the country pulls together advanced and more traditional contexts.

⁴ see Annex III.

Although differences are always minor, definite regional patterns may be highlighted, with the same regions being consistently at the top or at the bottom of rankings.

Tab. 12 Max and min value, by geographical area

	Share of firms with Internet access	Share of firms with a Web site	Share of households with PCs	Share of households with Internet access	Share of households with broadband Internet access
High	88.7	64.6	70.0	49.6	18.3
	Utrecht	Utrecht	many	many	many
Low	82.8	56.8	58.9	41.6	5.3
	Flevoland	Flevoland	many	many	Drenthe

Tab. 13 Ranking of regional spread, by variable

	Share of firms with Internet access	Share of firms with a Web site	Share of households with PCs	Share of households with Internet access	Share of households with broadband Internet access
Ranking	8	7	9	10	2

5. Environment and risk prevention

5.1 General analysis

Tables 14-17 illustrate the environment and risk prevention situation of the Dutch economy. Table 14 tells that 5 regions out of 12 encounter problems in the energy sustainability: three of them because of low levels of energy efficiency and renewable resources (Groningen, Zeeland and Limburg), another two because of lack of electricity self-sufficiency (Drenthe and Noord-Brabant).

All of them with scarce renewable sources of electric energy. Concerning transport, three critical situations emerge: Zuid-Holland, Zeeland and Limburg, mainly due to the fact that they are natural crossroads leading to important industrial and metropolitan areas, or located along main ways of communication.

Concerning natural assets, the overall endowment is particularly poor, mainly because of the high density of the country, the intensive agricultural exploitation and the nature of some territories, which, having been created by the emersion of land from water, possess some chemical characteristics unsuitable for reforestation and the creation of natural resorts. The interpretation of the poor results in terms of natural/rural assets in Dutch regions, as well as the respective policy consequences, should follow the same argumentations already proposed for the Belgian case, with which they have strong similarities. The emphasis is not just on naturalness and wilderness, but, more generally, on diversification of human activities and of intervention over space; thus, on diversity of landscape and human settlements.

Finally, concerning natural and technological risk, a generalised situation of low natural risk and low-intermediate technological risk emerge: the only partial exception being Zuid-Holland, affected by a high level of polluting sites attributable to the petrol-chemical pole of the Rotterdam area.

Tab. 14 Eligible regions by indicators of energy sustainability

	Electricity efficiency	Electricity self-sufficiency	Renewable sources of electric energy	Overall ranking
Groningen	2.933	0.178	0.000	Low
Friesland	5.352	0.227	0.000	Intermediate
Drenthe	6.264	0.000	0.000	Low
Overijssel	4.665	0.153	0.000	Intermediate
Gelderland	4.637	0.095	0.386	Intermediate
Flevoland	5.524	0.728	0.000	High
Utrecht	7.129	0.127	0.000	Intermediate
Noord-Holland	5.660	0.154	0.000	Intermediate
Zuid-Holland	5.763	0.157	0.000	Intermediate
Zeeland	1.574	0.140	0.000	Low
Noord-Brabant	4.291	0.125	0.000	Low
Limburg	3.160	0.190	0.000	Low
EU eligible Regions	3.646	0.254	0.202	

Source: EUROSTAT - NEW CRONOS (Regio) - see vol. I

Tab. 15 Eligible regions by indicators of transportation impact

	Vehicles density	Non-fuel transportation	Traffic intensity	Overall ranking
Groningen	0.084	0.004	-0.187	Intermediate
Friesland	0.050	0.011	-0.187	Intermediate
Drenthe	0.086	0.030	-0.187	Intermediate
Overijssel	0.146	0.027	0.082	Intermediate
Gelderland	0.181	0.025	0.082	Intermediate
Flevoland	0.060	0.036	0.082	Intermediate
Utrecht	0.381	0.056	1.263	Intermediate
Noord-Holland	0.280	0.039	1.263	Intermediate
Zuid-Holland	0.439	0.031	1.263	High
Zeeland	0.060	0.004	1.263	High
Noord-Brabant	0.243	0.022	1.129	Intermediate
Limburg	0.244	0.014	1.129	High
EU eligible Regions	0.218	0.031	0.400	

Source: EUROSTAT - NEW CRONOS (Regio) - see vol. I

Tab. 16 Eligible regions by indicators of natural/rural assets

	Degree of protection	Wilderness degree	Anthropic degree	Urban/Rural typology	Overall ranking
Groningen	0.001	0.014	0.048	1.000	Low
Friesland	0.051	0.041	0.022	1.513	Low
Drenthe	0.075	0.134	0.047	1.000	Low
Overijssel	0.079	0.095	0.071	1.000	Low
Gelderland	0.195	0.054	0.055	1.000	Intermediate
Flevoland	0.000	0.067	0.033	1.000	Low
Utrecht	0.015	0.138	0.138	1.000	Low
Noord-Holland	0.063	0.062	0.115	1.000	Low
Zuid-Holland	0.053	0.030	0.183	1.000	Low
Zeeland	0.041	0.017	0.038	1.000	Low
Noord-Brabant	0.044	0.146	0.112	1.000	Low
Limburg	0.071	0.150	0.129	1.000	Low
EU eligible Regions	0.088	0.310	0.103	2.819	

Source: IRENA Database and ESPON-CORINE Landcover Database - see vol. I

Tab. 17 Eligible regions by indicators of natural and technological risk

	Natural risk			Technological risk	
	Flood hazard potential	Share of burnt areas	Overall ranking	Polluting sites density	Overall ranking
Groningen	0.000	0.000	Low	0.303	Intermediate
Friesland	0.000	0.000	Low	0.052	Low
Drenthe	0.000	1.493	Intermediate	0.299	Intermediate
Overijssel	0.000	0.000	Low	0.088	Low
Gelderland	0.000	0.000	Low	0.312	Intermediate
Flevoland	0.000	0.000	Low	0.041	Low
Utrecht	0.000	0.000	Low	0.069	Low
Noord-Holland	0.000	0.246	Low	0.370	Intermediate
Zuid-Holland	0.000	0.000	Low	0.987	High
Zeeland	0.000	0.000	Low	0.375	Intermediate
Noord-Brabant	0.000	0.000	Low	0.275	Intermediate
Limburg	0.000	0.000	Low	0.634	Intermediate

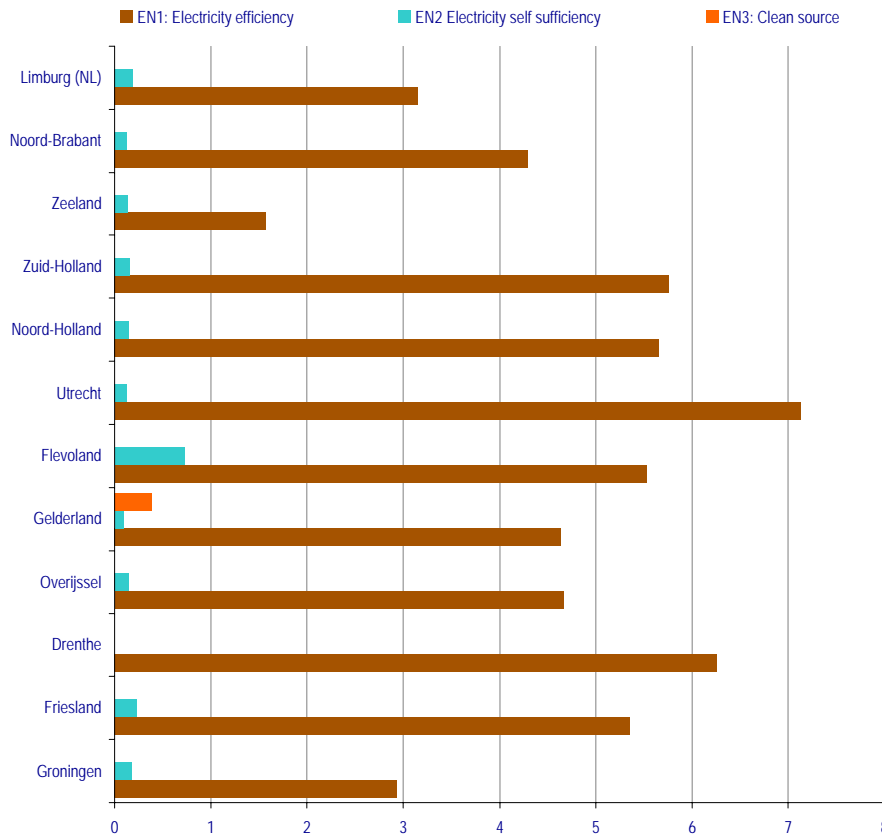
Source: ESPON Database and EPER-EEA - see vol. I

5.2 Specific Features

Energy context

According to the energy balances, the Netherlands is very dependent on produced and imported fossil fuel. Crude oil and gas, which are locally produced, are the first source of energy, followed by coal. Nuclear and renewable energy assume a marginal position in electricity production, far from gas and coal. Industry is the first consumer of fossil energy and electricity, followed by the transportation sector (for Petroleum Products) and Commerce and Public Services (for electricity consumption).

Fig. 6 Energy Indicators



EN1 = GDP PPP/ total electricity consumption; EN2 = Total electricity production capacity/ total electricity consumption; EN3 = (Total electricity production capacity – Thermal power – Nuclear power)/ Total electricity production capacity

EN1 – Electricity efficiency; EN2 – Electricity self-sufficiency; EN3 – “Clean” sources.

The average electricity efficiency of the Dutch eligible regions is higher than the European Union one. 5 regions demonstrate a high efficiency (beyond the national average). The maximum is reached by *Utrecht*, where every gigawatt hour enables to produce around 7 million euros GDP and the minimum is represented by *Zeeland* (with only 1.5 million euros per gigawatt hour). Low values are also registered in *Groningen* or *Limburg*, but these efficiency degrees still remain significant at the European level.

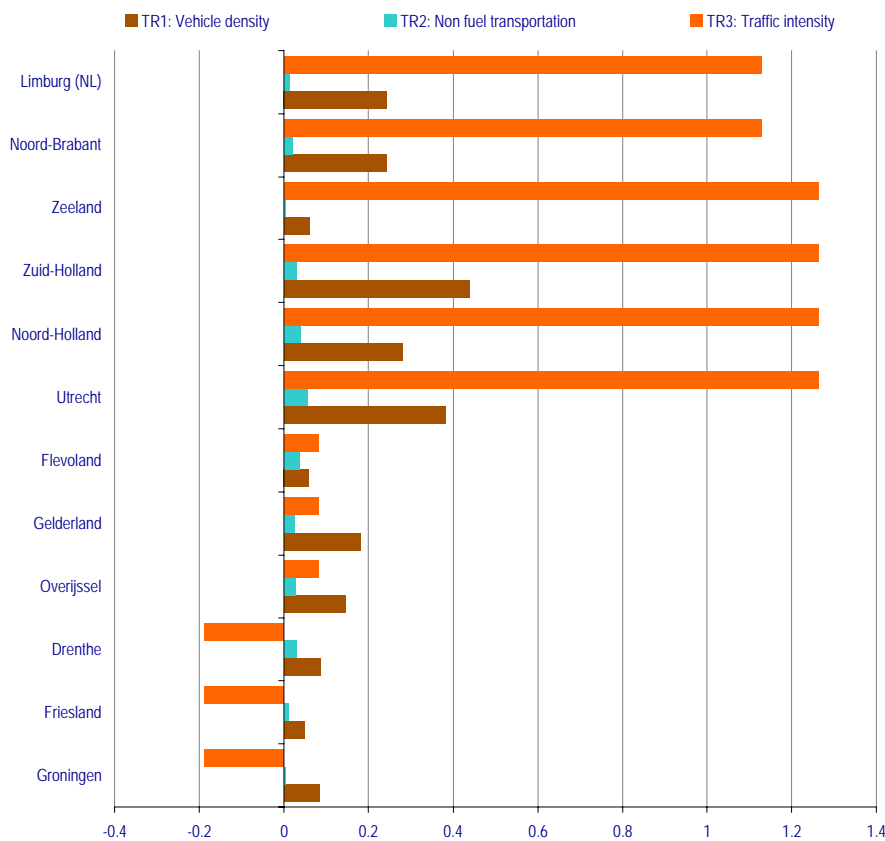
Apart from *Flevoland*, the regional auto-sufficiency remains rather low, with a minimum achieved by *Gelderland*. But this very region is the only one which shows a significant electricity production capacity from clean energy sources.

According to the “Composite indicator of energy sustainability” (the indicator which combines the previous three), the only energy sustainable region is *Flevoland*. All the other regions

present an intermediate or low energy sustainability value. The reason why ranking is so bad is mainly due to the lack of regional self-sufficiency in electricity production and to the absence of renewable energy production capacity in electricity production.

Transport and environment

Fig. 7 Transport Indicators



TR1 = total number of vehicles/ total area; TR2 = electricity consumption in the transport sector/ total electricity consumption;

TR3 = (number of driven trip/ total area) + (total number of kilometres made by journeys/ total area)

1) Every transport indicator - TR1, TR2 and TR3 – should be interpreted according its own dimension (and colour in column chart). Indicators cannot be compared with each other because of the difference in scales used. See Annex.

The value of the traffic intensity indicator (TR3) could be some time negative because of the method of normalization used to calculate it. Such a normalization method allows us to summarize the two heterogeneous variables which make up the indicator (“total number of driven intra-regional trips/Total Area” and “Total number of kilometres made by journeys produced-generated by the region/Total Area”). Values produced by normalization are relative and not absolute values.

TR1 – Vehicles density; TR3 – Traffic intensity.

The regional average vehicle density in Netherlands is similar to the one estimated at the Union level (around 1.800 vehicles per Km²). The highest density is reached in the region of *Zuid-Holland*, where 4.390 vehicles are registered every square kilometre, and the minimum in

the *Friesland*, with only 500 vehicles/Km². A part from Zeeland, the indicator vehicle density is well correlated to the traffic intensity one, which shows high values in around 50% of the eligible regions.

TR2 – Non fuel transportation

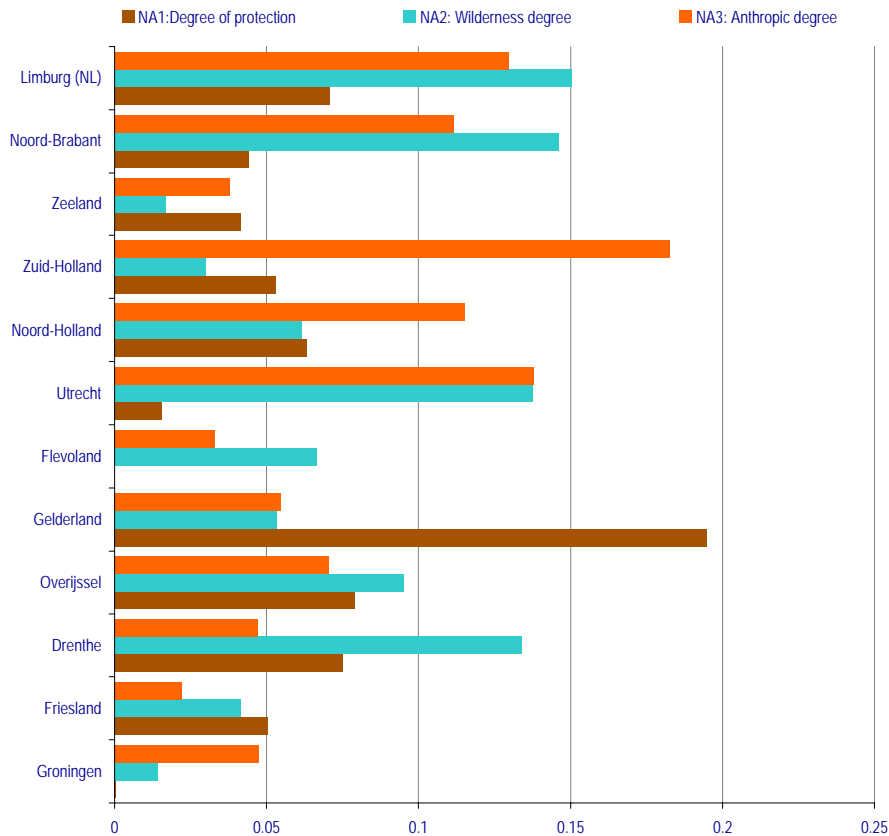
Non fuel transportation, that is to say electricity consumption in the transport sector, is not quite developed in Netherlands, but the regional average observed is in line with the Union value. The Regions with major electricity consumption in transport are urban areas where public transport is well developed. The maximum is registered in *Utrecht*, with around 5.6% of the total electricity consumption in the transport sector.

According to the synthetic indicator “Composite indicator of transportation impact” (a mix of the previous indicators), all the Dutch regions show a high value of environmental impacts. The regions which present the highest impacts are *Zeeland*, *Zuid-Holland* and *Limburg*, while all the others are ranking in the intermediate category.

Nature and biodiversity

Netherlands belongs to the Atlantic biogeographical region.

Fig. 8 Biodiversity Indicators



NA1 = area under nature protection/ total area; NA2 = forest + semi-natural areas/ total area; NA3 = artificial surface/ total area

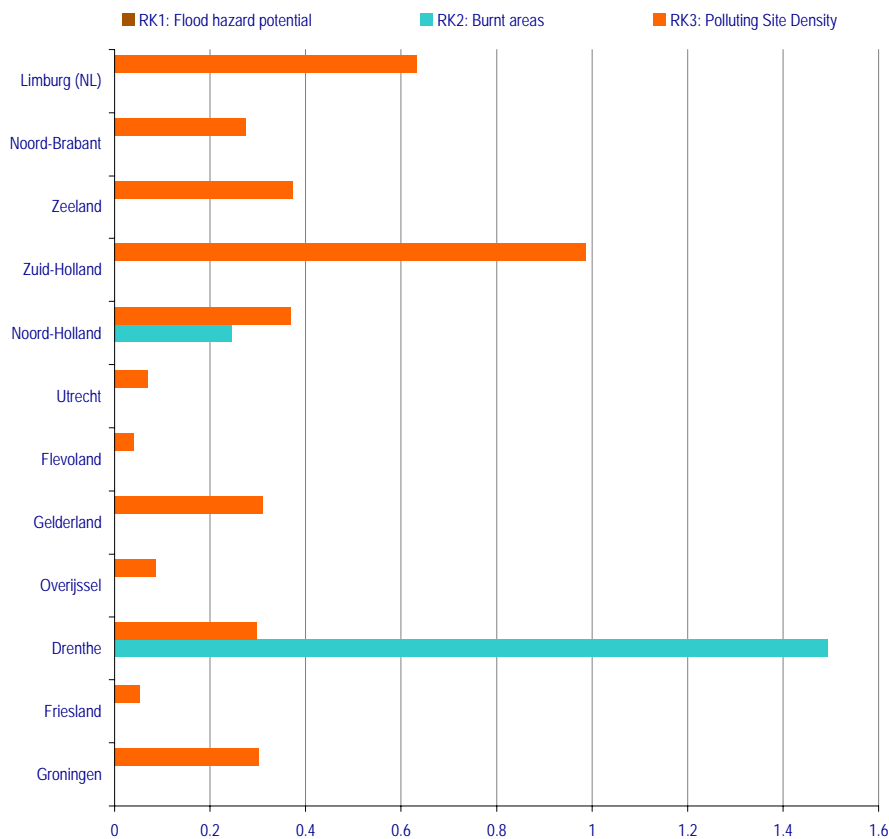
Indicators NA1 – Degree of protection (Natura 2000 network); Indicator NA2 – Wilderness degree; Indicator NA3 – Anthropogenic degree; NA4 – Urban-Rural typology

Netherlands does not demonstrate a high degree of nature protection (areas under Natura 2000 network), since the estimated average is about half the Union one. This situation is mostly due to the high urban density and the low surface of the available Forest and Semi natural areas. The degree of protection is not closely correlated to the Wilderness degree in fact, where anthropic degree is high, the number of sites under Natura 2000 network remains small. All the regions are classified among regions with high urban influence and low human intervention.

Risk Prevention

Risk prevention regards here Flood hazard, burnt areas and polluting site density (sites under IPPC Directive).

Fig. 9 Risk Prevention Indicators



RK2 = (size of burnt areas/ total area) *1000; RK3 = number of installations under IPPC obligation/ total area (hundreds km²)

RK1 – Natural hazards with anthropic implications – Regional flood hazard potential; RK2 – Natural hazards with anthropic implications – Size of burnt areas.

Netherlands is not concerned by flood hazards and only two rural regions are involved in forest fires: *Noord-Holland* and *Drenthe*. In any case, value regarding fires is very low compared to the Union average and let Netherlands immune from such a natural hazard.

RK3 – Polluting sites Density.

The average number of industrial sites under IPPC directive, and consequently potentially polluting areas, is slightly higher than the Union one. Regions mostly interested by such a

typology of risks are *Limburg* and *Zuid-Holland*. While *Friesland*, *Flevoland*, *Utrecht* and *Overijssel* assume a very low concentration of hazardous industrial sites and could be considered as relatively safe according to technological risks.

6. Implementation of Structural Funds

All the twelve Netherlands regions are eligible for the regional competitiveness and Employment objective. In the current period they are all Objective 2 regions but Flevoland, in a transitional support from Objective 1. Netherlands has currently four multi-regional programmes under Objective 2:

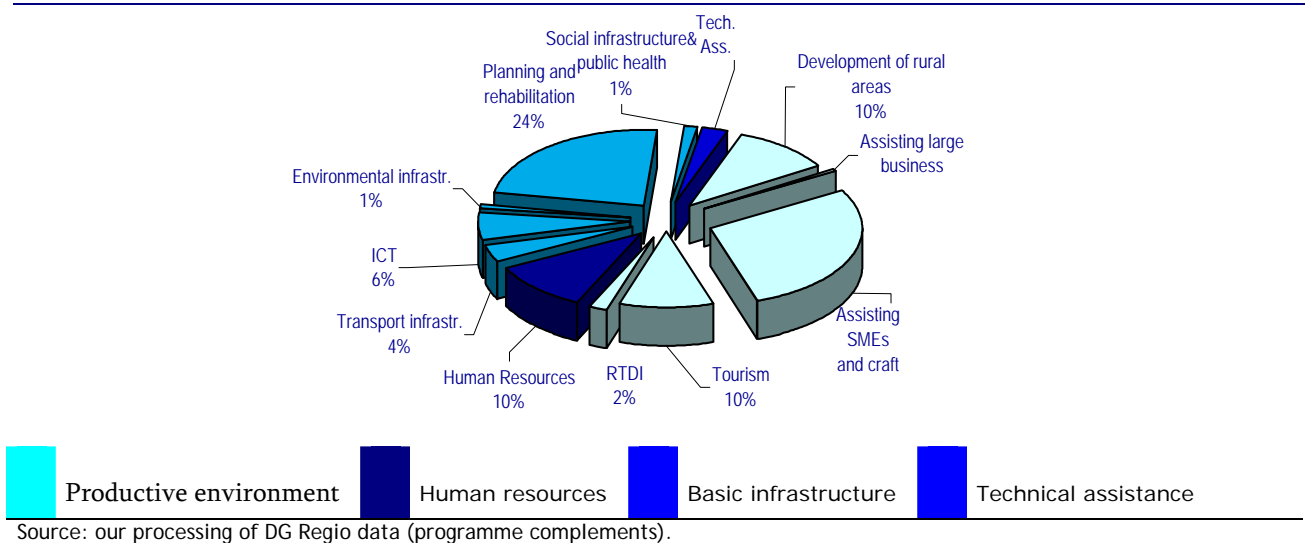
- “North Netherlands” programme applies to a large part of the provinces of Drenthe, Groningen and Friesland;
- “East Netherlands” programme covers a number of rural areas in the provinces of Gelderland, Overijssel and Utrecht, a number of industrial zones in Twente as well as the Arnhem-Nijmegen region;
- “South Netherlands” programme covers rural areas in the provinces of Noord-Brabant, Limburg and Zeeland;
- “Urban Zones in the Netherlands” programme covers 11 zones in nine towns: Amsterdam (Bijlmer & Amstel, Groot-Oost), Rotterdam (Delfshaven, Feijenoord), Den Haag (Centrum-Zuid), Utrecht (Westflank), Enschede (Stedelijk Hart), Arnhem (Kern), Nijmegen (Kanaalgebied), Eindhoven (St.Ew) and Maastricht (Noord);

The Objective 2 operative programmes have a total contribution from ERDF of 897 million Euro (it is mono-fund), including 36 million Euro of performance reserve.

In Objective 2 regions one fourth of ERDF commitments are allocated to interventions other than Lisbon objectives. In Flevoland this portion falls to 16%.

Besides this data, an important impact of Structural Funds in Netherlands lies in stimulating private investment and innovation, underlined by the frequently massive over-subscription of innovation related measures. RTDI measures, in particular, show high absorption rates and high rates of private co-financing. This should also be due to strong performance of Objective 2 starting in the second half of the 1994-99 period.

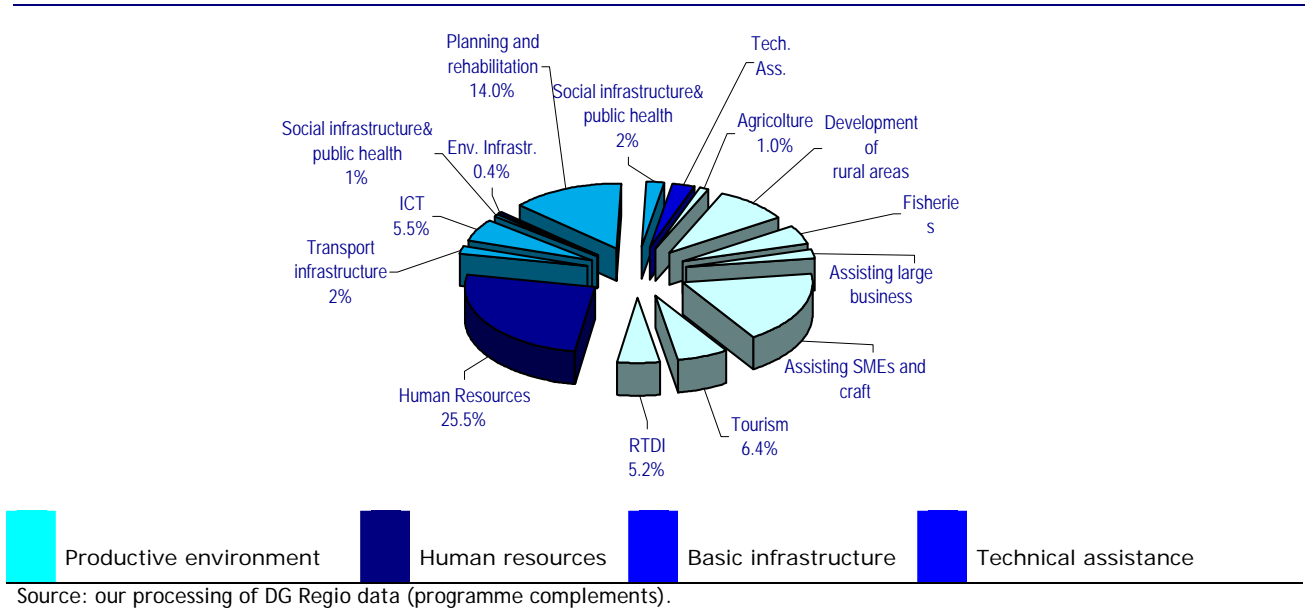
Fig. 10 EU Contribution by typology area - Netherlands, Objective 2 (2000-2006)



Objective 1 programme has a total EU contribution of 132 million Euro, including 6 million Euro of performance reserve.

The Flevoland operative programme overall aim is to encourage innovative industries with a high potential (especially SMEs) and guarantee a high quality environment beneficial to tourism and leisure activities.

Fig. 11 EU Contribution by typology area - Flevoland, Objective 1 (2000-2006)



In regions other than the Objective 1 regions the Netherlands benefits from Objective 3 measures as well as specific support measures for restructuring of the fisheries sector.

Netherlands receive support also for three URBAN II "Amsterdam", "Rotterdam" and "Heerlen" programmes for the revitalisation of neighbourhoods in crisis.

7. Policy Priorities assessment

7.1. Findings from the statistical analysis

Table 18-19 summarises findings on innovation, TLC, ICT and access to transport. First, a clear “national champion” emerges, in terms of the pair - matching between all the indicators: Noord-Brabant, registering a level of high performance across all the areas. Instead, turning at the mismatches, two noticeable situations emerge:

- on one side, a widespread characteristic in Nederland is that several regions have the innovation & knowledge economy indicators below to the economic performance: Groningen (also in term of transport connectivity), Friesland, Utrecht, Noord-Holland, Zuid-Holland and Zeeland;
- on the other side, there are regions in which the level of economic performance is below to what the access to TLC and ICT would let suppose: however, this situation, at least for the access to TLC and ICT, shows a lesser degree of criticality, since is more concerned with the adoption and not the creation of new technologies, as in the first case. Moreover, the overall levels of transport connectivity and accessibility appear good, the only exception being Groningen (in term of multimodal potential accessibility).

Tab. 18 Eligible regions: economic performance versus innovation & knowledge economy, access to ICT and access to transport

	Economic performance	Innovation and knowledge economy		Access to TLC and ICT		Access to transport	
	Ranking	Ranking	Joint analysis	Ranking	Joint analysis	Criticality	Joint analysis
Groningen	High	Intermediate	Uncorrelated	High	High performers	Low accessibility	Strongly uncorrelated
Friesland	Intermediate	Low	Uncorrelated	Intermediate	Intermediate		Non problematic
Drenthe	Intermediate	Intermediate	Intermediate	Intermediate	Intermediate		Non problematic
Overijssel	Intermediate	Intermediate	Intermediate	High	Unexploited potential		Non problematic
Gelderland	High	Intermediate	Uncorrelated	High	High performer		Non problematic
Flevoland	Intermediate	Intermediate	Intermediate	High	Unexploited potential		Non problematic
Utrecht	High	Intermediate	Uncorrelated	High	High performer		Non problematic
Noord-Holland	High	Intermediate	Uncorrelated	High	High performer		Non problematic
Zuid-Holland	High	Intermediate	Uncorrelated	High	High performer		Non problematic
Zeeland	Intermediate	Low	Uncorrelated	High	Unexploited potential		Non problematic
Noord-Brabant	High	High	High performer	High	High performer		Non problematic
Limburg	Intermediate	High	Unexploited potential	High	Unexploited potential		Non problematic

Moving environment and risk prevention, several critical areas emerge. Concerning energy sustainability, particular attention should be devoted to those regions labelled with “low”, especially those showing problems of energy efficiency: Groningen, Zeeland and Limburg. Serious problems of traffic congestion arise in Zuid-Holland, Zeeland and Limburg. Further, the problem of the lack of natural assets is evenly distributed across regions and, face to the problems of high density of the country, cannot be addressed so easily by the policy intervention. Finally, the Zuid-Holland area is particularly affected by technological risks.

Tab. 19 Dutch eligible regions: economic performance versus innovation & knowledge economy, access to ICT and access to transport

	Innovation and knowledge economy		
Economic performance	High	Intermediate	Low
High	Noord-Brabant	Groningen, Gelderland Utrecht, Noord-Holland Zuid-Holland	
Intermediate	Limburg	Drenthe, Overijssel Flevoland	Friesland Zeeland
Low			

	Access to TLC and ICT		
Economic performance	High	Intermediate	Low
High	Groningen, Gelderland Utrecht, Noord-Holland Zuid-Holland Noord-Brabant		
Intermediate	Overijssel, Flevoland Zeeland, Limburg	Friesland Drenthe	
Low			

	Access to transport (connectivity)		
Economic performance	High	Intermediate	Low
High	Gelderland, Utrecht Noord-Holland, Zuid-Holland Noord-Brabant	Groningen	
Intermediate	Overijssel, Flevoland Zeeland, Limburg	Friesland Drenthe	
Low			

As a consequence, several policy indications emerge in the field of innovation and knowledge economy and environment and risk prevention for Nederland.

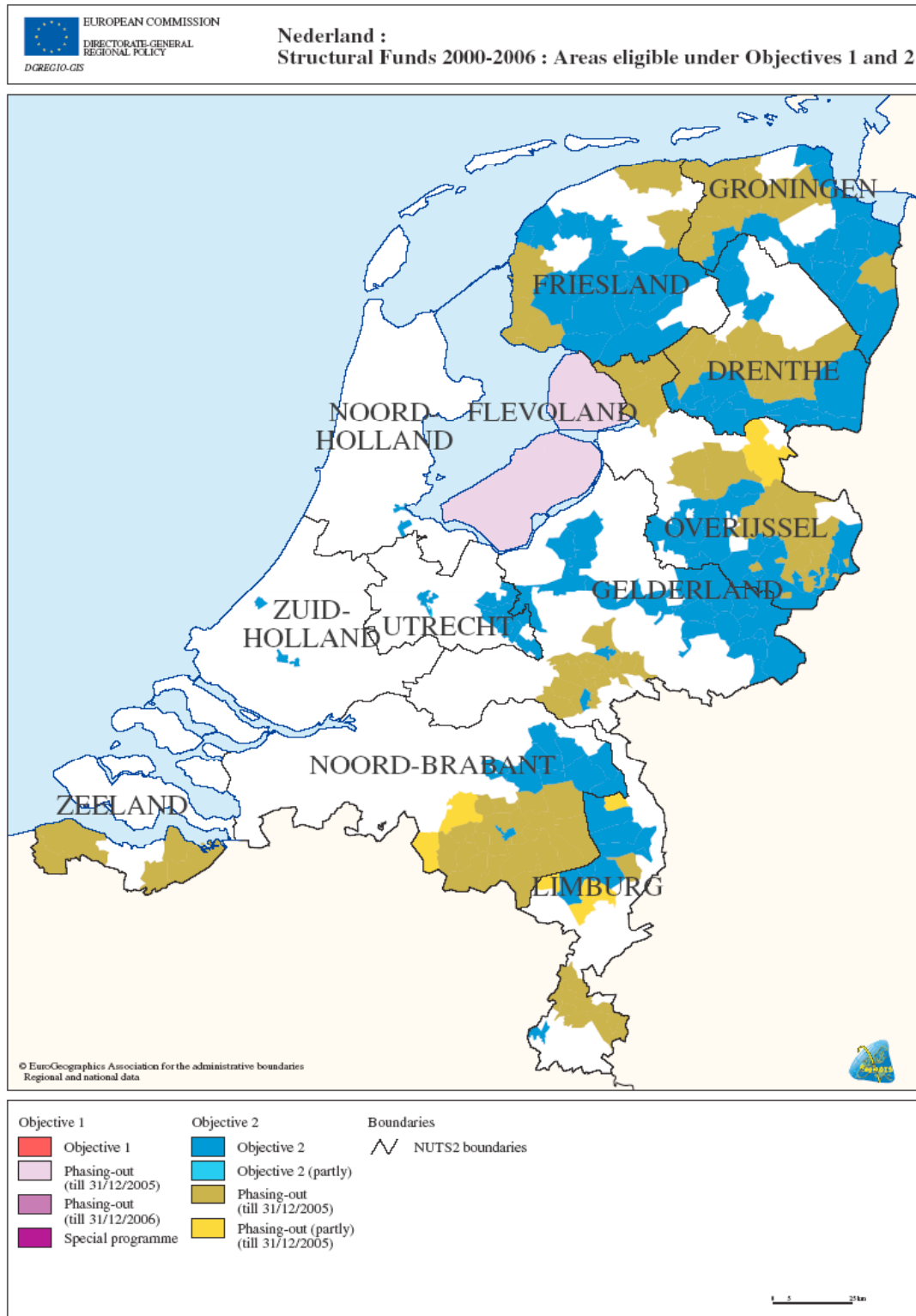
Tab. 20 Eligible regions: economic performance versus environment and risk prevention

	Economic performance	Energy sustainability	Transport impact	Natural/rural assets	Natural risk	Technological risk
Groningen	High	Low(*)	Intermediate	Low(*)	Low	Intermediate
Friesland	Intermediate	Intermediate	Intermediate	Low(*)	Low	Low
Drenthe	Intermediate	Low(*)	Intermediate	Low(*)	Intermediate	Intermediate
Overijssel	Intermediate	Intermediate	Intermediate	Low(*)	Low	Low
Gelderland	High	Intermediate	Intermediate	Intermediate	Low	Intermediate
Flevoland	Intermediate	High	Intermediate	Low(*)	Low	Low
Utrecht	High	Intermediate	Intermediate	Low(*)	Low	Low
Noord-Holland	High	Intermediate	Intermediate	Low(*)	Low	Intermediate
Zuid-Holland	High	Intermediate	High(*)	Low(*)	Low	High(*)
Zeeland	Intermediate	Low(*)	High(*)	Low(*)	Low	Intermediate
Noord-Brabant	High	Low(*)	Intermediate	Low(*)	Low	Intermediate
Limburg	Intermediate	Low(*)	High(*)	Low(*)	Low	Intermediate

(*) Critical cases.

7.2. Findings from the field analysis

Map 3 Eligible areas



North Netherlands (Groningen, Drenthe, Friesland)

Context

North Netherlands is made up with three provinces: Groningen, Friesland and Drenthe. Agricultural activities and traditional manufacturing companies characterize Friesland, while Groningen and Drenthe have a stronger innovation base with a university and small-scaled companies.

Main activities are:

- Agriculture and food processing (dairy, sugar and potatoes),
- Shipbuilding industries and
- Plastic and chemical industries
- Machinery industries

Main problems are:

- The lack of jobs;
- The competition from low salary countries in Eastern Europe;
- A lack of innovation coming from the fact that enterprises are relatively small (SME) and do not have their own research departments and the larger firms have their Research Development centres based in the western or southern part of the country.

The 2000-2005 programming period

The Operational program of North Netherlands Region has three priorities for ERDF intervention (365 M Euros for the three provinces):

- Businesses and accessibility to industrial sites : renovation of sites for business,
- Development of urban activities: social and economic activity for the unemployed,
- Action towards labour market: one measure was added after mid term evaluation outcomes in favour of knowledge economy.

The programme is only funded by ERFD because the Ministry of Economic Affairs has not agreed for ESF funding for the Objective 2 programme. ESF has been re-centralized in 2000 by the State after frauds had been found for the 1994-1999 programming period.

The eligibility of the area has not been well - defined and is subject to a number of administrative problems and nuts 3 level is not matched for a strategic approach if the objective 2 area is too small.

Projects were implemented in the following fields of activities:

- Water and energy technology
- Sensors technology
- Schemes for SMEs to adopt innovation (visited by EC commission member)
- Broadband networks (examples: Groningen, Leeuwarden)
- Data exchanges on internet between providers (ICT)

Main failures were due to bureaucratic matters that are mainly the non-retroactivity measure from the E.C. procedures. This does not give enough flexibility to ERDF to reallocate it between the different priorities and made it necessary to add a measure within the same priority.

Other difficulty comes from the content of the programme has broad orientation that does not correspond to M.E.A. main orientations. For example, Ministry of Economic Affairs did not accept urban development projects because they prefer to have the money spent on priorities of its own. As a member of the Steering committee, the M.E.A. has a contract signed with S.N.N., regional agency in charge with the management of all economic and social development programs in North Netherlands Region. As an important contributor to the programme, the M.E.A. is rather influential within the management of the programme.

The future programming period

The common goal of the central government and the provincial and local authorities is to step up innovation efforts and to have spin-offs from Netherlands economic performance and become by being a link between the Randstad and NorthEastern Europe.

As the State government decided to concentrate on Lisbon and Gothenburg strategy oriented programmes, the provinces of North Netherlands (Groningen mostly) selected their own priorities for 2007-2013 programming period which orientated towards the reinforcement of a knowledge based economy. That is for instance:

- Improving physical business environment, as location opportunities starters, improvement accessibility economic nucleus

- Promoting business activities/investments, knowledge transfer and screening branches for SMEs on opportunities for export, R&D, new processes and cooperation

But it is also:

- An improved physical business environment in urban areas, as better exploitation railway station area, facilities for small scale industrial sites and premises, accommodations knowledge-based enterprises
- A better use of urban opportunities linked to existing education, health & culture facilities and promotion of small-scaled economic activities within cities.

More in relation to human resources the promotion and transfer knowledge of innovation between knowledge institutes and business should be encouraged. Choices have become necessary and were made therefore by members of local parliaments to restrict financial support to industrial sites development and investment schemes of firms.

As for the sharing of responsibilities, it should turn in the view of M.E.A. to have a more centralistic way of management of structural funds and fewer funds to manage for S.N.N., the local common agency responsible for that in North Netherlands during the period 2007-2013.

A quick look at some promising developments projects shows that some potential exist and should be supported. The Energy Valley is creating a cluster of energy-related activities, notably for renewable energy, knowledge infrastructure and the location of commercial activities. Eems Delta is based on the better positioning of the Delta towards Northern and Eastern Europe including hinterland links by water. The Lofar project also aims at developing advanced knowledge in antenna technology, optics and digital signal processing.

Figure 11 Priorities for the Northern Netherlands: a link between the Randstad and Northeastern Europe



South Netherlands (Noord-Brabant, Limburg, Zeeland) and East Netherlands (Gelderland, Overijssel)

South Netherlands has been started shifting from traditional industries support to high tech industries development support by promoting innovation, ICT applications, new starters, product development, quality improvements and knowledge transfer but also by strengthening competitiveness of tourism and related branches and, with strong support to innovative approaches, cooperation, product renewal, ICT applications & quality improvements.

Recent experiments of spin-over from Philips have shown it was possible and successful to create clusters from former employees by Philips to create their own company on the condition that they were given strong bases of knowledge transfers and could sub-contract with the

major firm. The priority will still concentrate in order to improve knowledge transfers and not to create new scientific infrastructures. This might come from closer and better relationships between universities, SMEs and big companies wherever they exist.

It is then very important to upgrade and stimulate networks and clusters and to find relevant of organization. Accessibility cannot be considered as a priority since they are efficient or they are “money consuming” for the local authorities or the government and cannot take all the subsidies for only few projects. In the case of South Netherlands and East Netherlands, it is obvious that funds are likely to be concentrated on innovation and knowledge economy.

Significant projects in South-eastern Netherlands (implementation of the declarations of intent between the Netherlands and Flanders, Eindhoven - Leuven-Aachen pilot project, coordinating and strengthening national and regional initiatives) could bring strength to economic and innovative performances of this area.

There is potential in the region for advanced knowledge industries. With high competition climate, there is a risk for Eindhoven Brainport that it loses its strong position. It has therefore to become a more internationally attractive region for research institutes. Cooperation between institutes must be stepped up and the application of technological know-how by the private sector will have to be encouraged and improved.

In East Netherlands, Enhancing and promoting innovation in SMEs is a merely significant objective as the quality of science – industry knowledge transfer is mixed: the share of R&D financed by the firms but performed by universities and technological institutes is large in the Netherlands but the share of Dutch firms cooperating with public knowledge institutes is comparable to EU average⁵. According to the economic performance versus innovation debate, Gelderland and Overijssel are in intermediate ranking position. European funds intervention could then concentrate on innovation and to a lower extent on environment and risk prevention.

Some projects are currently implemented and are favourable to the strengthening of innovative potential like the Food Valley (Wageningen/Gelderse Vallei) and the Health Valley (around Arnhem/Nijmegen) and advanced logistics (mainly in Central Gelderland). These are economic clusters based on three mutually complementary universities (Twente, Wageningen and Nijmegen), colleges of higher vocational education and related research institutes.

⁵ The location of R&D in the Netherlands, CPB report 2004

Figure 12 Priorities for the Eastern Netherlands: utilizing knowledge concentration

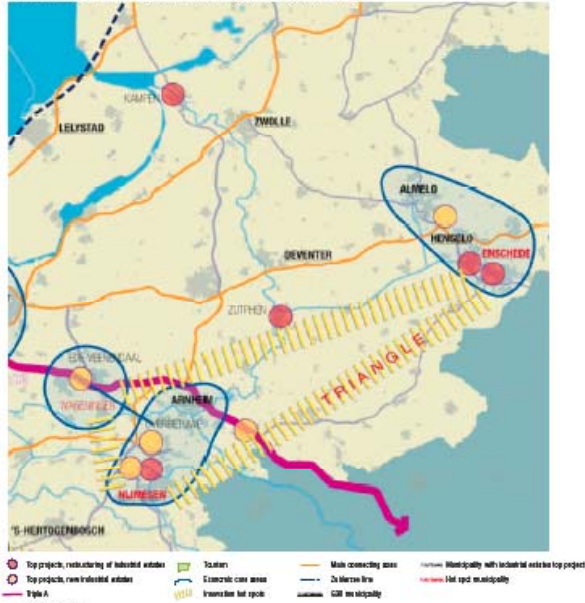


Figure 16 Priorities for the Southeastern Netherlands: towards a top technology region



Flevoland

The improvement of the production environment should still focus on promising industries such as information and communication technologies, medical technology, biotechnology, pharmaceuticals, environmental technology, food processing, metallurgic industry and processing of synthetic materials.

Within this framework, activities will be targeted mainly on small and medium-sized companies. SME actions will particularly address innovation and internationalisation, including the further promotion of e-commerce.

Business solutions in all these fields a tailor-made approach, since companies and their products are showing a huge variety.

Although Flevoland already has a number of facilities, the total infrastructure for education and training is still not up to date. Attracting specific training facilities, which can offer a significant contribution to the general business environment, will also be important.

The knowledge infrastructure is a further point of attention. Here, the aim is to achieve a better spread of knowledge and establish links between sources of knowledge or experience and companies that can turn this into commercial successes.

An excellent business environment is the first and most important factor to attract new companies. In this respect, Flevoland needs further extensions and improvements of business facilities are necessary to keep pace with the latest demands in the business environment of the current period. Flevoland therefore could both attract new companies and continue to offer the right conditions for a further expansion of businesses already established in the region.

Urban zones in the Randstad (Utrecht, Zuid Holland, Noord Holland)

Priorities for this area should be guided by risk prevention and the reduction of transportation impact. However it is not obvious that Netherlands wish to have European funds on transports infrastructures in the next programming period. Actually, problems are more related to traffic congestion than on improving secondary networks links to TEN – Transports. Furthermore, Zuid Holland is likely to be the more exposed area for technological risks in the whole country considering the geographical situation of Rotterdam and that of the oil refining industries that are quite close to urban habitation areas. Otherwise, this part of Netherlands is more concerned with social and urban problems that are not supposed to be eligible to Competitiveness and Employment Objective but rather to ESF future programming single document.

Implementation issues

Innovation and knowledge based policy in the Netherlands⁶

The Netherlands is working towards the Lisbon goals, the aim of which is to create dynamic and competitive knowledge-based economy. The Dutch government's innovation policy promotes the Netherlands as an attractive climate for innovation. If the Netherlands is to be an innovation leader at international level, the focus and mass of innovation must be increased in strategically important regions. The Innovation Memorandum (Innovatebrief)⁷ has outlined

⁶ Peaks in the Delta. Regional Economic Perspective. Creating Space for Enterprise. M.E.A., 2004.

⁷ Ministry of Economic Affairs, 2003: *Action for innovation*.

these priorities. The Enterprise Memorandum⁸ describes the government strategy to improve the business climate.

Of course, there is also room for region specific innovation policy. The M.E.A. wants to promote it over the next few years by boosting aspects of innovation process that take place at regional level such as professional training, technology transfer, encouraging start-ups and knowledge networks. Some promising regional initiatives are already under way. They include the Horizon project in SouthEast Brabant, the "Using knowledge to make knowledge" initiative in South Holland and the Triangle concept in the Eastern Netherlands. All these initiatives aim at strengthening the knowledge infrastructure of the regions.

Some strong innovative regions, called "hot spots", have been identified and share various characteristics:

- The presence of an above average number of internationally competitive, innovative businesses;
- A high level of organisation among all players connected with innovation;
- The presence of high quality knowledge infrastructure

Southeast Brabant (Eindhoven area) and the Eastern Netherlands share those characteristics because they display:

- A public sector characterised by high R&D intensity
- A university that is among the top 10 the E.U. according to CORDIS indicators
- A structured approach to innovation in the form of the Horizon action plan (around Eindhoven)

Of course, talking about innovative regions in the Netherlands, any analysis should take into account the presence of the five multinational firms that can create great distortions (Philips, Unilever, Shell, AKZO, DSM). When corrected from these distorting factors North Netherlands and Limburg appear to be less prominent and South Netherlands, especially SouthEast Brabant , are well represented.

⁸ Ministry of Economic Affairs, 2003: Enterprise Memorandum announces 43 policy actions designed to remove the main obstacles to business (including business start-ups) in the Netherlands.

Taking into account these facts and policies should be one of the guidelines to define the main priorities in the future programming period but specific and local issues should be kept aside by the structural funds.

Main priorities

A National Strategic Framework has been made from a working group made up with 9 ministries (Internal affairs, agriculture, infrastructures, spatial planning, research and education, financial affairs and economic affairs). M.E.A. is the coordinator of these.

- Innovation and entrepreneurship
- More Research and development and innovation
- Increase of knowledge transfers between university and business
- Infrastructures are very important but they won't be eligible to structural funds
- Increase the level of public transportations as the use of car is wide spread (commuters working in Rotterdam and Amsterdam and living outside the Randstad). This is not a priority.

Taking the figures of section 6 on 2000-2006 programming period, there should be fewer funds on tourism and planning or rehabilitation and much more on RTDI and SMEs. So innovation policies will be more connected to structural funds, as regional innovation programmes in Eastern regions will be implemented more intensively.

Sharing of responsibilities

The current programming period is characterized by one national programme for Objective 3 for ESF and four regional programmes for ERDF whereas there should be five or six programmes in the next programming period with all provinces eligible to these programmes.

- One specific programme for Utrecht, Amsterdam, Rotterdam and the Hague (City development)
- South Netherlands (Noord-Brabant, Limburg, Zeeland Amsterdam and the Hague)
- North Netherlands (Groningen, Friesland, Drenthe)
- West Netherlands (Flevoland)

- East Netherlands (Gelderland, OverijsselEindhoven)

A debate took place with the Council of the twelve provinces (IPO) and with the united municipalities on the strategic aspects of the “employment and competitiveness” Objective. It resulted from this debate the above priorities and a number of programmes that has not yet been clarified (5 or 6).

ANNEX I: Methodology for transport indicators

The multi-index approach

Finding a unique measure of the transport conditions in a given region, even if the analysis is focused on one main aspect like accessibility, is a very difficult task. Both demand and supply conditions play a role and both can be seen from different perspectives so that each indicator is hardly more than just a limited point of view. For that reason, we decided to use different indicators, namely three indexes:

- Infrastructure Usage Index - IUI_j
- Accessibility Index - AI_j
- Connectivity Index - CI_j

The Infrastructure Usage Index measures the level of road and rail demand entering the region and leaving the region (i.e. generated and attracted traffic excluding trips starting and ending in the same region) in comparison to the supply of major roads and rails. The index is computed separately for road and rail and for passenger and freight⁹ by taking the ratio between the demand and the length of the main infrastructures (e.g. motorways, dual carriageway roads, etc.). Thus four separate ratios are computed. Then the logarithm of each ratio is computed and a weighted average of the four logs is computed where the weights are the modal shares of road and rail on passenger and freight demand. The weighted average is the Infrastructure Usage Index. The index is greater for zone where the ratio between demand and supply is higher, that is where infrastructure are more exploited.

The Accessibility Index is a synthetic measure of multimodal potential accessibility. It is based on the assumption that the attraction of a destination increases with its size (in terms of population or GDP) and declines with distance, travel time and costs. The accessibility model used in the ESPON study assumes the centroids of NUTS3 regions as origins and destinations and, then, calculates the minimum travel time (with respect to different modes of transport, that is by road, rail and air) between the various centroids. This indicator of potential accessibility contains parameters that need to be calibrated so that it cannot be expressed in

⁹ Generated and attracted traffic is estimated from the results of the European transport model SCENES.

familiar units. The higher is the index the higher is the accessibility. As a consequence, NUTS3 data are standardised to the average accessibility of the EU25 countries. NUTS2 indicators have been computed by the Statistical Team by averaging NUTS3 data provided by the ESPON database.

The Connectivity Index is expressed as the reciprocal of the hours needed to reach by car different transport nodes (rail stations, motorways accesses, seaports and airports) starting from the centroid of each NUTS3 region. Thus, regional centroids are taken as origins while transport terminal as destinations. The higher is the index the higher is the connectivity. Again such an indicator is available for NUTS3 European regions from ESPON and it has been averaged by the Statistical Team to obtain NUTS2 indexes.

All three indexes provide a piece of the story and there is not a hierarchy among them. As the analysis in section 2 will show, the Infrastructure Usage Index is somewhat correlated to the Accessibility Index, in the sense that zones where the former is greater than the median (showing a lower performance in terms of availability of infrastructures with respect to the generated and attracted demand), also the latter is greater than the median (showing a better performance in terms of accessibility). In other words, not surprisingly, the most accessible zones tend to be attract and generate more demand, in relative terms, than less accessible zones.

Furthermore, more than the numeric values, the most useful information is how the regions within a country are ranked according to each index and especially which performs better and which worse. When a region underperforms according to all the indexes, this is a hint that some problems exist concerning accessibility, and vice-versa if a region overperforms.

Therefore, the analysis consisted in the following steps:

- a) For each index the median across the NUTS2 regions of a given country has been computed: $MED(IUI)$, $MED(AI)$, $MED(CI)$. The median has been preferred to the mean because in most of the countries the distribution of the indexes is strongly asymmetrical and so the mean can be influenced by one or two very high (or low) values.
- b) Each region in the country has been classified as underperforming or overperforming in terms of each of the three indexes: underperforming have been considered those regions where the index is lower than the median (for the accessibility and the connectivity index) or, vice-versa, higher than the median (for the infrastructure usage index). This classification allows to compare regions in terms of a specific index.

- c) For each region has been computed the ratio between the value of the index for that zone and the median value computed above across all the zones of the country: $AI_j/MED(AI)$ and $CI_j/MED(CI)$ for the accessibility and the connectivity index or, vice-versa, the ratio between the median value and the value of the index for the zone: $MED(IUI)/IUI_j$ for the infrastructure usage index. These ratios are greater than one for zone overperforming and lower than one for the regions underperforming.
- d) For each region the three ratios computed above have been summed. The higher is the sum and the better the region performs. However, as the aim of the analysis is not computing a super-index, the value of the sum is not really relevant in itself. Instead, the average and the standard deviation of the sums have been computed. The zones where the sum of the ratios is lower than the average minus one standard deviation ($SUM_j < Average - DevSt$) can be considered as highly problematic with respect to the average conditions in the country. The zones where the sum of the ratios is lower than the average minus 75% of standard deviation ($SUM_j < Average - 0.75 * DevSt$) can be considered as problematic even if at a less extent. On the opposite side, zone where the sum is higher than the average plus one standard deviation ($SUM_j > Average * DevSt$) can be considered as those with less problems concerning their accessibility.

This analysis mixes quantitative and qualitative indications to provide a comparative picture of region's performances. It should be stressed that the results make sense in relative terms (e.g. comparing the regions each other) rather than in absolute terms. In other words, a region can perform worse than other regions of the country but this does not mean that the accessibility is absolutely poor; if the overall situation is good in the whole country, even regions classified as underperforming can enjoy a good level of accessibility.

Multi index analysis

The multi index analysis is based on three different indicators:

- Infrastructure Usage Index - IUI_j
- Accessibility Index - AI_j
- Connectivity Index - CI_j

All Dutch regions are fully included in the analysis, whose results are reported in the following table. 50% of the regions have an Infrastructure Usage Index above the mean value, all the high density ones plus Fleverland, Groningen and Gelderland. The last two are also underperforming from the accessibility and connectivity point of view, while the other four

ones (Flevoland, Zuid Holland, Noord Holland and Utrecht) are performing very well, as far as these two indicators are concerned. In particular for Nord Holland and Zuid Holland, the negative performance of the UI index is out-balanced and the summary results are definitively positive. Only for one region, the Noord Brabant, all the three indexes are better then the means.

The summary statistics suggest that there are three regions where the transport situation is relatively worse than the average: Groningen, Drenthe and, to a less extent, Friesland. Drenthe and Friesland are the less populated regions of the country, while Groningen is more densely populated and presents an underperformance for all the three indexes considered. Conversely, Noord-Holland and Zuid-Holland show a good performance with respect to the rest of the country.

Indexes for the NUTS2 regions of the Netherlands

NUTS2 region	IUI	AI	CI	Summary
Groningen	48.7	75.0	2.9	2.17
Friesland	41.3	86.0	2.8	2.41
Drenthe	42.6	87.0	2.5	2.30
Overijssel	40.7	110.7	4.2	2.94
Gelderland	44.9	122.0	3.6	2.79
Flevoland	46.6	126.0	4.8	3.07
Utrecht	50.8	152.0	6.3	3.54
Noord-Holland	48.6	151.9	7.3	3.82
Zuid-Holland	51.8	142.3	11.4	4.64
Zeeland	40.9	110.0	4.4	2.99
Noord-Brabant	42.6	125.3	5.2	3.24
Limburg (NL)	41.4	140.3	3.8	3.07
Median	43.8	123.7	4.3	3.08
St. Dev.				0.69

ANNEX II: Telecom indicators levels

Sources and definitions

The source is: ESPON project 1.2.2 Telecommunication Services and Networks: Territorial Trends and Basic Supply of Infrastructure for Territorial Cohesion.

Main telephone lines per 100 inhabitants:

Level 1 = >70

Level 2 = 60-69

Level 3 = 50-59

Level 4 = 40-49

Level 5 = 30-39

Level 6 = <30

Cellular mobile subscribers per 100 inhabitants:

Level 1 = >90

Level 2 = 80-89

Level 3 = 70-79

Level 4 = 60-69

Level 5 = 50-59

Level 6 = <50

Estimated PC per 100 inhabitants:

Level 1 = >50

Level 2 = 40-49

Level 3 = 30-39

Level 4 = 20-29

Level 5 = 10-19

Level 6 = <10

Internet (users per 10000 inhabitants):

Level 1 = >5000

Level 2 = 4000-4999

Level 3 = 3000-3999

Level 4 = 2000-2999

Level 5 = 1000-1999

Level 6 = <1000

ANNEX III: Methodology for environment indicators

Sources and definitions

Indicators at regional level Nuts II

1 - Energy

Indicator	Definition	Year	Source
EN1	GDP / total electricity consumption	2000	EUROSTAT – New Cronos (Regio)
EN2	Total electricity production capacity/ total electricity consumption	2000	EUROSTAT – New Cronos (Regio)
EN3	(Total electricity production capacity – Thermal power – Nuclear power)/ Total electricity production capacity	2000	EUROSTAT – New Cronos (Regio)
Energy sustainability	Energy sustainability indicator + Energy efficiency indicator	2000	EUROSTAT – New Cronos (Regio)

2 - Transport

Indicator	Definition	Year	Source
TR1	Vehicles Density: Total Number of Vehicles/Total Area	2000	EUROSTAT – New Cronos (Regio)
TR2	Non-fuel Transportation: Electricity Consumption in the Transport Sector/ Total Electricity Consumption	2000	EUROSTAT – New Cronos (Regio)
TR3	Traffic Intensity: (Total number of driven intra-regional trips/Total Area) + (Total number of kilometres made by journeys produced-generated by the region/Total Area)	2001	EUROSTAT – New Cronos (Regio)
Transportation impact	Traffic intensity sustainability indicator – Clean transportation indicator		EUROSTAT – New Cronos (Regio)

3 - Natural resources

Indicator	Definition	Year	Source
NA1	Degree of protection: Area under Nature Protection/Total Area	2003	Irena Database
NA2	Wilderness degree: (Forest Area + Semi-Natural Area)/ Total Area	1996	Espon Corine Landcover Database
NA3	Anthropic degree: Artificial surface/ Total Area	1996	Espon Corine Landcover Database
NA4	Urban-Rural typology	1996	Espon Corine Landcover Database
Natural/rural assets indicator	$(\text{factor score} - \text{lowest score}) / (\text{highest score} - \text{lowest score}) * 100$		

4 - Natural hazard and Technological risk

Indicator	Definition	Year	Source
RK1	Natural hazards with anthropic implications-1: Regional flood hazard potential	1996-2002	Espon Database
RK2	Natural hazards with anthropic implications-2: (Size of burnt areas/Total area)*1000	2000	Espon Database
RK3	Polluting Sites Density: Number of Installations under IPPC obligation (IPPC Sites)/Total Area (hundreds Km2)	2000-2001	Eper-EEA
Natural risk indicator	$[(RK1 - \text{lowest value}) / (\text{highest value} - \text{lowest value}) * 100] + [(RK2 - \text{lowest value}) / (\text{highest value} - \text{lowest value}) * 100]$		

ANNEX IV: Bibliography and sources of information

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