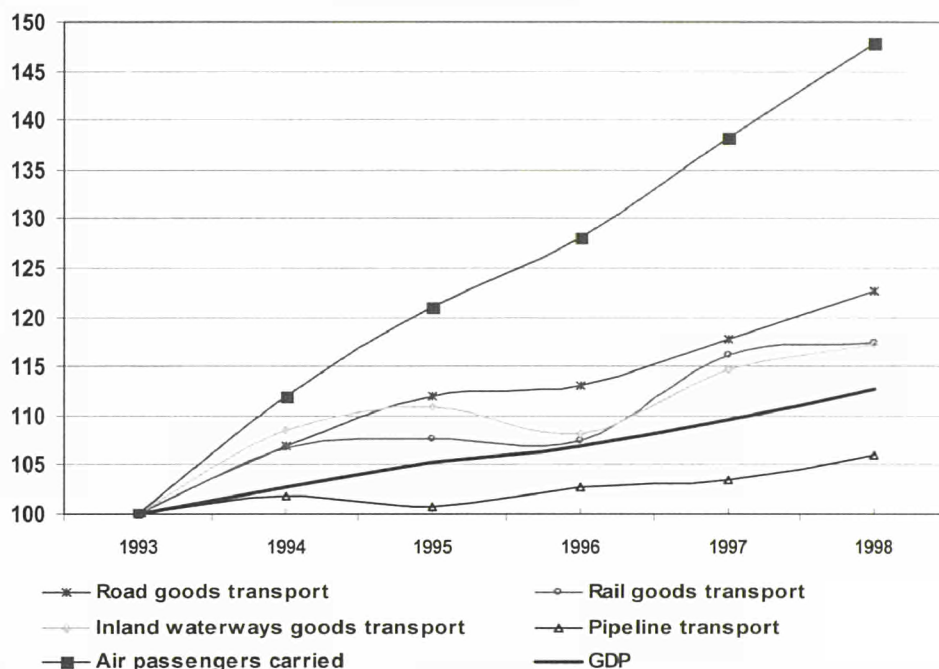


# Highlights of the Panorama of transport 1970-1999

*All modes of transport except pipelines increased faster than the gross domestic product*

Vincent Tronet

Figure 1: Development of EU-15 transport: growth by mode (1993=100)



## Highlights

The transport sector in the European Union accounts for an estimated 4% of the Union's gross national product and employs more than 6 million people.

Road goods transport has been constantly growing and takes a largely dominant position in freight transport. Meanwhile, the share of rail has decreased in the past 30 years.

In passenger transport, the constantly growing demand for personal mobility has mostly been met by an important increase in the number of passenger cars. On average, every EU citizen performs 35 km per day, three quarters of this daily distance are covered by cars. Subsequently, the road network has been developing fast. The length of the motorway network for instance tripled in less than 30 years. Conversely, the adding of new high-speed lines to the rail network has not been able to compensate the putting out of service of other parts of the network.

Compared to the other transport modes, it is air travel that progresses most: between 1993 and 1998, the number of passengers carried in international traffic increased by 47%.

Despite the fact that road transport at Community level more than doubled between 1970 and 1998, the number of fatalities decreased by 44%. Still, road accidents claimed more than 42 000 lives in 1998.

At the beginning of the 1990s, the share of the transport sector in the total final energy consumption overtook that of industry and stood at 31%. The transport sector is responsible for 28% of all CO<sub>2</sub> emissions from fossil fuels.

**More detailed information on all these domains is available in the *Panorama of Transport Edition 2001***

## Statistics in focus

### TRANSPORT

THEME 7 – 3/2002

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## Development of transport since 1970

**Table 1: EU-15 average annual growth by transport mode (%)**

|   | 1970-98        | 1990-98        | 1997-98        |
|---|----------------|----------------|----------------|
| <b>Total goods transport<sup>1</sup></b>      | <b>+ 2.44</b>  | <b>+ 2.75</b>  | <b>+ 3.47</b>  |
| Road goods transport                          | + 4.03         | + 3.78         | + 4.13         |
| Rail goods transport                          | - 0.58         | - 0.75         | + 1.14         |
| Inland ww. goods transp.                      | + 0.55         | + 1.43         | + 1.22         |
|   | <b>1993-99</b> | <b>1997-98</b> | <b>1998-99</b> |
| <b>Air transport - passengers<sup>2</sup></b> | <b>+ 8.01</b>  | <b>+ 6.99</b>  | <b>+ 7.40</b>  |

<sup>1</sup> road, rail, inland waterways, pipelines.

<sup>2</sup> international traffic only.

Source: Eurostat, Energy and Transport DG.

Transport has shown a steady growth since the 1970s. Factors that determine this global develop-

ment are changes in the structure, location and production methods of manufacturing industries, growing professional mobility, increased car ownership, more leisure time and higher disposable income.

In 1998, EU-15 passenger transport demand was 35 passenger-kilometres per person per day.

Passenger air transport is growing particularly fast (average annual increase of 8% since 1993).

Road haulage has been constantly growing and takes a largely dominant position in freight transport.

Meanwhile, the share of rail goods transport has generally been decreasing over the last 30 years; transport over inland waterways shows a moderate increase.

## Infrastructure and equipment

The EU offers a generally dense transport network. Physical links remain vital for further realisation of the internal market and the reinforcement of economic and social cohesion. These aspects are the key elements behind the Trans-European transport Network (TEN), aiming at the integration of national networks. The goal is to offer high quality infrastructures combining all modes of transport and allow optimal use of existing capacities. A complete TEN is estimated to be a reality in 2010. Of the 14 priority projects, 3 have already been completed. Whereas the motorway network has more than tripled since 1970 in EU-15, the overall length of

railway lines in use have steadily decreased and stands 10% lower today. The adding of high speed lines to the network has not been able to compensate the putting out of service of other parts of the network.

Between 1970 and 1998, the total length of navigable inland waterways in the 9 EU Member States able to perform transport activities using this mode decreased by nearly 13% (or 4 158 km).

The opening of the Rhine-Main-Danube canal in the early 1990s increases the interest of the network, notably with regards to traffic to and from Austria and beyond.

**Table 2 : Length of transport networks by country (km)**

|                                  | B       | DK     | D       | EL     | E       | F       | IRL    | I       | L     | NL      | A       | P      | FIN    | S                    | UK <sup>4</sup> | EU-15     | EU-15 index 1970=100 |
|----------------------------------|---------|--------|---------|--------|---------|---------|--------|---------|-------|---------|---------|--------|--------|----------------------|-----------------|-----------|----------------------|
| <b>1970 Railways<sup>1</sup></b> | 4 232   | 2 352  | 43 777  | 2 571  | 13 668  | 36 117  | 2 189  | 16 089  | 271   | 3 148   | 5 907   | 3 591  | 5 870  | 11 550               | 19 330          | 170 662   | 100                  |
| Motorways                        | 488     | 184    | 6 061   | 11     | 387     | 1 553   | 0      | 3 913   | 7     | 1 209   | 478     | 66     | 108    | 403                  | 1 183           | 16 051    | 100                  |
| Other roads                      | 93 539  | 62 592 | 541 370 | 34 692 | 139 221 | 710 384 | 86 695 | 281 405 | 4 949 | 81 890  | 102 053 | 41 763 | 73 444 | 110 846 <sup>3</sup> | 356 155         | 2 610 152 | 100                  |
| Pipelines <sup>2</sup>           | 52      | -      | 3 358   | -      | 1 099   | 3 609   | -      | 1 860   | -     | 323     | 604     | -      | -      | -                    | 1 634           | 12 539    | 100                  |
| Inl. waterw.                     | 1 553   | -      | 6 808   | -      | -       | 7 433   | -      | 2 337   | 37    | 5 599   | 350     | -      | 6 000  | -                    | 1 631           | 31 748    | 100                  |
| <b>1980 Railways<sup>1</sup></b> | 3 971   | 2 015  | 42 765  | 2 461  | 13 542  | 34 382  | 1 987  | 16 133  | 270   | 2 760   | 5 847   | 3 588  | 6 096  | 11 382               | 18 030          | 165 229   | 97                   |
| Motorways                        | 1 203   | 516    | 9 225   | 91     | 2 008   | 5 264   | 0      | 5 900   | 44    | 1 780   | 938     | 132    | 204    | 850                  | 2 683           | 30 838    | 192                  |
| Other roads                      | 124 710 | 68 405 | 591 929 | 37 367 | 147 644 | 796 514 | 89 796 | 290 370 | 5 050 | 91 628  | 103 553 | 50 410 | 74 490 | 96 504 <sup>3</sup>  | 337 077         | 2 808 943 | 108                  |
| Pipelines <sup>2</sup>           | 458     | 77     | 3 387   | -      | 1 753   | 5 254   | -      | 3 069   | -     | 391     | 777     | -      | -      | -                    | 3 166           | 18 332    | 146                  |
| Inl. waterw.                     | 1 510   | -      | 6 697   | -      | -       | 6 568   | -      | 2 337   | 37    | 4 843   | 350     | -      | 6 057  | -                    | 1 631           | 30 030    | 95                   |
| <b>1990 Railways<sup>1</sup></b> | 3 479   | 2 344  | 40 981  | 2 484  | 12 560  | 34 260  | 1 944  | 16 086  | 271   | 2 798   | 5 624   | 3 592  | 5 867  | 10 801               | 16 914          | 160 005   | 94                   |
| Motorways                        | 1 631   | 601    | 10 809  | 190    | 4 693   | 6 824   | 26     | 6 193   | 78    | 2 092   | 1 445   | 316    | 225    | 939                  | 3 180           | 39 242    | 244                  |
| Other roads                      | 138 575 | 70 173 | 617 390 | 38 312 | 156 243 | 801 274 | 92 303 | 297 419 | 5 013 | 102 498 | 104 807 | 61 222 | 76 855 | 132 619 <sup>3</sup> | 378 934         | 2 941 018 | 113                  |
| Pipelines <sup>2</sup>           | 301     | 444    | 3 547   | -      | 2 678   | 4 948   | -      | 4 086   | -     | 391     | 777     | -      | -      | -                    | 2 422           | 19 594    | 156                  |
| Inl. waterw.                     | 1 513   | -      | 6 669   | -      | -       | 6 197   | -      | 1 366   | 37    | 5 046   | 351     | -      | 6 237  | -                    | 1 631           | 29 047    | 91                   |
| <b>1998 Railways<sup>1</sup></b> | 3 410   | 2 232  | 38 126  | 2 503  | 12 303  | 31 727  | 1 909  | 16 041  | 274   | 2 808   | 5 643   | 2 794  | 5 867  | 11 156               | 16 847          | 153 640   | 90                   |
| Motorways                        | 1 682   | 861    | 11 427  | 500    | 8 269   | 9 303   | 103    | 6 453   | 115   | 2 360   | 1 613   | 1 252  | 473    | 1 439                | 3 421           | 49 271    | 307                  |
| Other roads                      | 144 168 | 70 601 | 650 000 | 39 000 | 155 004 | 971 064 | 95 732 | 307 000 | 5 060 | 111 212 | 104 748 | 70 000 | 77 352 | 136 593 <sup>3</sup> | 392 545         | 3 193 486 | 122                  |
| Pipelines <sup>2</sup>           | 300     | 336    | 2 370   | -      | 3 691   | 5 746   | -      | 4 235   | -     | 391     | 777     | -      | -      | -                    | 3 953           | 21 799    | 174                  |
| Inl. waterw.                     | 1 529   | -      | 6 740   | -      | -       | 5 732   | -      | 1 477   | 37    | 5 046   | 351     | -      | 6 245  | -                    | 1 153           | 28 310    | 89                   |

Source: Eurostat, UIC, UN-ECE, national statistics

<sup>1</sup> Railways: Length in use. Data refer to main railway companies (UIC-members). <sup>2</sup> Pipelines: only oil-pipelines longer than 40 km are considered. <sup>3</sup> does not include private roads open to the public (approx. 74 000 km).

<sup>4</sup> data refer to Great Britain

Estimates in italic.

**Table 3 : Means of transport – key indicators EU-15**

|      |   | 1970   | 1980   | 1990   | 1995   | 1997   | 1998   |
|------|---|--------|--------|--------|--------|--------|--------|
| ROAD | Cars (million)                                      | 60,78  | 102,61 | 142,77 | 159,06 | 165,26 | 168,98 |
|      | Buses and coaches (1 000)                           | 332    | 444    | 484    | 486    | 506    | 510    |
|      | Goods vehicles <sup>1</sup> (1 000)                 | 7 408  | 10 628 | 15 747 | 17 851 | 18 915 | 19 377 |
|      | Trailers and semi-trailers (1 000)                  | 1 693  | 3 250  | 6 409  | 6 977  | :      | :      |
| RAIL | Locomotives (units)                                 | 46 958 | 48 038 | 43 989 | 41 383 | 26 760 | 25 720 |
|      | Passenger vehicles <sup>2</sup> (units)             | 96 797 | 95 858 | 86 326 | 80 183 | 74 679 | 74 279 |
|      | Goods transport wagons <sup>3</sup> (1 000)         | 1 508  | 1 221  | 839    | 661    | 563    | 552    |
| IWW  | Self-propelled goods vessels <sup>(4)</sup> (units) | 30 483 | 21 714 | 16 999 | 15 721 | 14 593 | 14 321 |

<sup>1</sup> Lorries and tractors. <sup>2</sup> Coaches, railcars and trailers. <sup>3</sup> Data relate to main railway companies (UIC members). <sup>4</sup> Including tugs and pushers.

Sources: Eurostat, IRF, UIC, national statistics.

Estimates in italic.

Nearly 170 million passenger cars were circulating on EU roads in 1998, 178% more than in 1970. The car density doubled in the last 25 years and stood at 451 cars per 1 000 inhabitants (extremes : Luxembourg : 572 ; Greece : 254). There are practically no signs of saturation.

At EU level, the number of buses and coaches increased by 54% between 1970 and 1998 ; the situation differs however in the individual Member States. Keeping in mind the importance of goods transport by road, it is obvious that the number of goods vehicles experienced a considerable increase (+ 162%) over the same observation period.

The notable decline of rail transport equipment

should be looked at with caution : in the frame of the railway privatisation process, a growing part of equipment is outsourced or leased. Since figures refer mostly to material owned by railway companies, this rolling stock does not appear in statistics anymore.

Conversely, nearly half of the inland waterway vessels really disappeared. Assisted by various 'scrappage schemes', mostly smaller vessels, unable to operate economically, were removed from the fleet. The fact that the transport performances did not drop indicates a remarkable increase in transport efficiency.

### Goods transport : traffic and transport performances

In goods transport, road transport constitutes the most important mode. On the basis of transport performance (expressed in tonne-kilometres), national road goods transport is globally far more important than international transport, except for smaller Member States where limited national transport markets push hauliers to look for opportunities abroad (see Table 4 and 5). This is clearly reflected by the transport performances of cross-trade and cabotage transport (see methodological notes for definitions).

When national rail transport is expressed in the number of tonnes forwarded, a slight decline was observed at EU level (on the basis of available data). However, when expressed in tonne-kilometres, an increase has been registered. Only 11% of the volume of goods cover a distance of less than 150 km, the equivalent number for road haulage is 35%, showing the higher importance of rail for longer distances. Quite notable is the performance of inland waterway in the Netherlands, 12 times higher than Dutch national rail transport (in 1998).

**Table 4: National goods transport by country and mode – in million tkm**

|                | 1985                |                     |                  | 1990                |                     |                  | 1998    |        |                  |
|----------------|---------------------|---------------------|------------------|---------------------|---------------------|------------------|---------|--------|------------------|
|                | Road <sup>(1)</sup> | Rail <sup>(2)</sup> | Inland waterways | Road <sup>(3)</sup> | Rail <sup>(4)</sup> | Inland waterways | Road    | Rail   | Inland waterways |
| Belgium        | 10 380              | 2 537               | 1 676            | 12 616              | 2 629               | 1 694            | 16 693  | 2 166  | 1 500            |
| Denmark        | 8 342               | 608                 | -                | 9 354               | 568                 | -                | 10 108  | 476    | -                |
| Germany        | 98 615              | 37 802              | 12 964           | 120 168             | 33 092              | 14 108           | 202 230 | 35 763 | 14 483           |
| Greece         | 10 352              | 291                 | -                | 12 485              | 222                 | -                | 19 322  | 121    | -                |
| Spain          | 74 144              | 8 795               | -                | 69 924              | 8 750               | -                | 91 329  | 9 174  | -                |
| France         | 91 100              | 37 494              | 4 503            | 118 200             | 33 482              | 4 266            | 145 459 | 32 267 | 3 449            |
| Ireland        | 3 727               | 601                 | -                | 3 878               | 589                 | -                | :       | 469    | -                |
| Italy          | 98 445              | 7 097               | 199              | 115 786             | 9 088               | 118              | :       | 11 415 | :                |
| Luxembourg     | 206                 | 87                  | 1                | 454                 | 113                 | 1                | :       | :      | 1                |
| Netherlands    | 18 189              | 1 062               | 6 718            | 22 581              | 1 020               | 6 897            | 28 240  | 763    | 8 845            |
| Austria        | :                   | :                   | :                | :                   | :                   | :                | 11 715  | 3 093  | 127              |
| Portugal       | 8 636               | 1 137               | -                | 10 978              | 1 283               | -                | 14 693  | 1 638  | -                |
| Finland        | :                   | :                   | -                | :                   | :                   | -                | 24 397  | 6 313  | -                |
| Sweden         | 21 177              | 18 419              | -                | 26 519              | 19 102              | -                | 32 674  | 18 635 | -                |
| United Kingdom | 100 544             | 16 812              | -                | 132 968             | 16 078              | -                | 155 431 | :      | -                |

<sup>(1)</sup> I, E: 1986; P: 1987 - <sup>(2)</sup> E, P: 1986 - <sup>(3)</sup> L: 1992 - <sup>(4)</sup> D:1989

**Table 5: International goods transport 1998 - by mode in million tkm**

|                | Rail   | Inl. ww. | Road                    |             |          |
|----------------|--------|----------|-------------------------|-------------|----------|
|                |        |          | international "regular" | cross-trade | cabotage |
| EU-15          | 85 849 | 69 353   | 251 785                 | 27 749      | 2 007    |
| Belgium        | 4 903  | 3 897    | 19 900                  | 3 848       | 323      |
| Denmark        | 600    | -        | 10 796                  | 390         | 167      |
| Germany        | 30 084 | 36 660   | 41 884                  | 3 855       | 96       |
| Greece         | 191    | -        | 1 272                   | 0           | 0        |
| Spain          | 2 148  | -        | 32 814                  | 703         | 22       |
| France         | 16 241 | 2 743    | 40 291                  | 2 811       | 251      |
| Ireland        | -      | -        | 950                     | 200         | 10       |
| Italy          | 10 992 | -        | 19 754                  | 300         | 47       |
| Luxembourg     | 400    | 35       | 1 300                   | 3 000       | 258      |
| Netherlands    | 3 015  | 24 939   | 36 809                  | 7 014       | 572      |
| Austria        | 7 990  | 1 079    | 14 610                  | 4 753       | 31       |
| Portugal       | 410    | -        | 9 954                   | 352         | 24       |
| Finland        | 3 572  | -        | 2 413                   | 64          | 71       |
| Sweden         | 4 803  | -        | 2 916                   | 56          | 117      |
| United Kingdom | 500    | -        | 16 122                  | 403         | 18       |

Source: Eurostat, DG Energy and Transport

Compared to 1990, international road goods transport increased by nearly 40% at EU-15 level, international rail goods transport by 17% and international inland waterways transport by 12%.

In international road transport, cabotage transport, fully liberalised since mid-1998, is growing fast. Together with cross-trade transport, it can be of considerable importance for road haulage companies of smaller Member States, like the Benelux countries.

With over 30 million tkm in 1998, Germany is first with regards to international rail goods transport, well ahead of France and Italy. With no competition from inland waterways, Spain displays very low figures, explained by the different rail gauge of the network.

The importance of the Rhine axis for international inland waterway transport is reflected by the numbers registered for Germany and the Netherlands. These two countries are responsible for 89% of the total EU-15 international inland waterway transport.

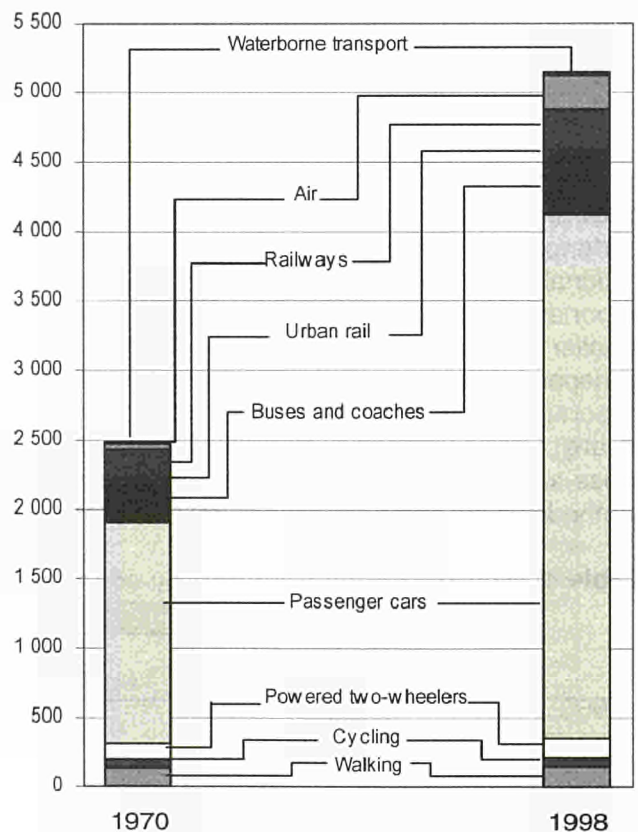
## Passenger transport: traffic and transport performances

Total passenger transport performance in the European Union has more than doubled between 1970 and 1998, passing from 2 485 to 5 150 million passenger-kilometres (+107%). The increased demand has largely been satisfied by the use of private cars, performing roughly three-quarters of all passenger-kilometres. Transport performance by car increased particularly fast in Greece, Spain and Portugal, where both road network construction and car ownership developed rapidly compared to other Member States. In France, Sweden and Luxembourg cars are used most with an average of around 12 000 km per year (EU-average: 10 073 km).

Compared to the other transport modes, transport performances of rail experienced only a modest increase. Since the early 1990s, growth has been slow in most countries and a certain stagnation can be observed in Germany, Greece, Italy, Austria and Portugal. Compared to 1970 however, the number of passenger kilometres progressed in all Member States, with the exception of Belgium (-6%). Highest growth could be observed in Ireland and the Netherlands. It is on average the French and the Austrians who travel most by rail with 2.9 and 2.8 km per person per day respectively (EU average: 2.1 km).

It is however air transport that experienced the highest relative increase. The total number of passengers carried in international traffic from and to the EU countries in 1999 was 369.3 million. International intra-EU traffic increased by 9.3%, extra-EU traffic by 5.6% compared to the previous year (1998).

**Figure 2: Passenger transport (1 000 million pkm)**



Source: DG Energy and Transport.

Since 1993, the year that Eurostat started its aviation data collection, international passenger air transport has been growing at an average rate of 8% every year. Average annual growth between 1993 and 1999 has been highest in Belgium and Ireland (over 12%). Not a single Member State displayed an average annual growth rate of under 5%.

**Table 6: Top-15 airports: total number of passengers carried in international intra-EU traffic**

| Rank 1999 | Airport              | Total pass. carried 1999 | Change 1998-99 (%) | Rank 1998 |
|-----------|----------------------|--------------------------|--------------------|-----------|
| 1         | London/Heathrow      | 24 098 568               | 3.0                | 1         |
| 2         | Airport system/Paris | 21 111 959               | 8.0                | 2         |
| 3         | Amsterdam/Schiphol   | 20 003 853               | 8.7                | 3         |
| 4         | Frankfurt am Main    | 15 783 960               | 9.6                | 4         |
| 5         | London/Gatwick       | 14 388 102               | 2.2                | 5         |
| 6         | Bruxelles/National   | 14 230 076               | 8.8                | 6         |
| 7         | Palma de Mallorca    | 13 846 800               | 10.0               | 7         |
| 8         | Kobenhavn            | 12 123 674               | :                  | :         |
| 9         | Dublin               | 10 813 253               | 8.6                | 9         |
| 10        | Manchester Internat. | 10 301 849               | 2.3                | 8         |
| 11        | München              | 8 634 178                | 13.5               | 11        |
| 12        | Madrid/Barajas       | 8 172 549                | 14.9               | 13        |
| 13        | Düsseldorf           | 8 171 674                | 6.1                | 10        |
| 14        | Stockholm/Arlanda    | 7 935 192                | 10.1               | 12        |
| 15        | London/Stansted      | 7 215 294                | 46.4               | 21        |

Source: Eurostat.

In international intra-EU traffic, 10 airports display passenger volumes of over 10 million. The airport of London-Stansted experienced an exceptionally high growth and climbed from position 21 in 1998 to position 15 on 1999.

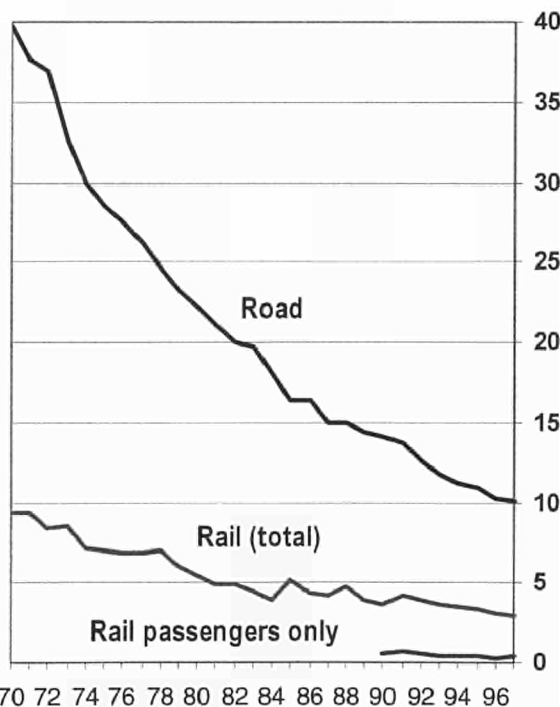
In extra-EU traffic, 5 airports recorded over 10 million passengers in 1999.

Germany leads in traffic to non-EU European countries with a share of 26% of the passengers carried. The United Kingdom has a clear dominance in traffic with America (nearly 38%) and Asia (35%). France holds the first position in traffic with Africa. The high share (34%) is mainly due to important traffic with North African destinations.

## Transport safety

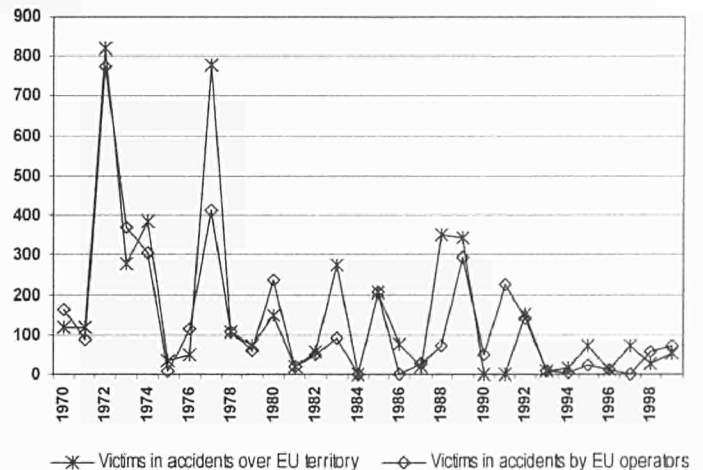
In 1998, 44 000 lives were lost in road and rail accidents, more than 1.7 million persons were injured. The vast majority of fatalities occur in road accidents. Despite a doubling of road transport at Community level, the number of victims decreased by 44% since 1970. Important differences exist between the individual Member States.

**Figure 3: Number of fatalities in EU-15 accidents (per 1 000 million pkm)**



Source: Eurostat, UIC.

**Figure 4: Number of fatalities in air accidents 1970-1999**



NB: Accidents during training and test flights, accidents involving aircrafts of armed forces and accidents in business flying excluded. In-flight accidents due to sabotage, terrorist attacks and war risks included. Source: Airclaims

The number of rail victims is relatively low. The absolute number of fatalities fluctuate around 1 000 since the mid-1980s. A single major accident can seriously influence the statistics. It should be noted that most victims of rail accidents are not passengers: most fatalities have been recorded in accidents at railway level crossings, during shunting procedures and track maintenance works without claiming victims among passengers in trains.

The relative safety of air transport is difficult to establish. Less than 5% of the accidents occur during the cruising phase of a flight. A long haul flights are thus not particularly more dangerous than short haul flights. Despite the important increase in traffic, a decline in aircraft accident fatalities can be observed.

## Energy consumption and emissions

The transport sector is one of the main sources of pressure on the environment. Since 1960, the share of transport in the total final energy consumption has been constantly increasing. In the beginning of the 1990s, it overtook the consumption of the industry sector and stood at 32% in 1998.

Within the transport sector (without considering international maritime transport and pipelines), the share of road transport is over 82%. Rail transport stands at less than 3%, inland waterways at 2% whereas the

remaining 13% are attributed to air transport. Apart from electricity used for rail traction, nearly the entire energy demand is covered by fossil fuels, with presently little possibility for substitution.

Increased car ownership and mobility requirements together with a still growing share of goods transport by road offset the general tendency of lower consumption through more fuel-efficient vehicles.

At EU-level, the aviation sector recorded the highest relative increase: +84% between 1985 and 1998.

**Table 7: Final energy consumption (all products) of the transport sector – EU-15 (million tonne-oil equivalents)**

|                          | 1985             | 1990         | 1995         | 1996         | 1997         | 1998         | Share 1998 (%) |
|--------------------------|------------------|--------------|--------------|--------------|--------------|--------------|----------------|
| Final energy consumption | 823.2            | 862.2        | 897.5        | 935.2        | 931.0        | 944.7        | 100            |
|                          | <i>of which:</i> |              |              |              |              |              |                |
| Industry                 | 264.4            | 265.2        | 257.5        | 259.6        | 262.6        | 261.5        | 27.7           |
| Services, households     | 355.9            | 343.1        | 364.3        | 392.2        | 379.6        | 384.3        | 40.7           |
| <b>TRANSPORT</b>         | <b>202.8</b>     | <b>253.8</b> | <b>275.7</b> | <b>283.4</b> | <b>288.8</b> | <b>298.8</b> | <b>31.6</b>    |
|                          | <i>of which:</i> |              |              |              |              |              |                |
| Rail                     | 6.9              | 6.9          | 7.4          | 7.6          | 7.6          | 7.6          | 0.8            |
| Road                     | 170.4            | 212.5        | 229.0        | 234.6        | 238.6        | 246.0        | 26.0           |
| Air                      | 21.1             | 27.8         | 32.5         | 34.4         | 36.0         | 38.9         | 4.1            |
| Inland navigation        | 4.3              | 6.7          | 6.7          | 6.9          | 6.5          | 6.4          | 0.7            |

Fossil fuel combustion produces carbon dioxide (CO<sub>2</sub>) and other emissions like nitrogen oxide, volatile organic compounds and particulate matter. CO<sub>2</sub> emissions remain the most significant indicator. Obviously, road transport takes the lion's share.

Resulting from incomplete combustion, harmful pollutants may interact chemically or physiologically to produce secondary pollutants like 'summer smog' and high ozone levels.

Substantial progress has been made in reducing emission levels of road vehicles. This not only concerns the level of CO<sub>2</sub> – mainly linked to the quantity of fuel burned – but also levels of noxious substances. Various emission standards have been enforced in the past and new standards (like "Euro-IV" - applicable in 2005) have been decided upon. The oil industry will make low-sulphur fuels available, helping the automotive industry to introduce environmentally more sustainable vehicles.

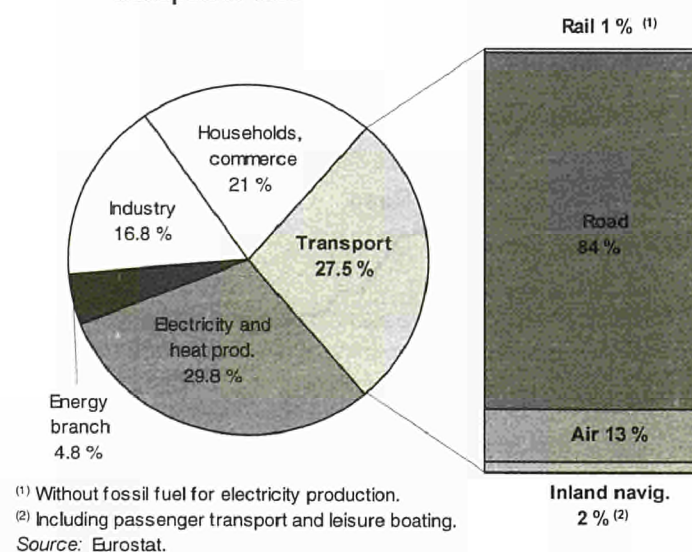
The emission of noise has been getting increased attention over the last years. Various EU standards have been set for passenger cars, lorries and powered two-wheelers.

In aviation, the International Civil Aviation Organisation (ICAO) plays a leading role in policy guidance and the application of regulatory measures.

The Commission actively participates in the development of new standards (noise and gaseous emissions).

There are few very noisy aircraft (11 passenger and 2 cargo planes) left in the EU fleet. Those aircraft, certified according to ICAO's 'Chapter 2' will no longer be allowed on EU airports from the 1<sup>st</sup> of January 2002 onwards.<sup>1</sup>

**Figure 5: CO<sub>2</sub> emissions from fossil fuels in EU-15 – share of transport in 1998**



## ➤ ESSENTIAL INFORMATION – METHODOLOGICAL NOTES

This "Statistics in Focus" announces the publication of the second edition of the "Panorama of Transport Edition 2001", which describes, via annual statistics, the most important features of transport in the European Union. The Panorama has a thematic approach rather than a modal one. This approach allows for an easy comparison between the various modes of transport. In general, statistics from 1970 to 1999 are presented.

Data presented in this "Statistics in Focus" as well as in the "Panorama of Transport" are primarily based on transport and traffic statistics collected in the frame of various European Directives and Regulations (draft Regulation with regards to air transport). Another important source for mainly structural data is the so-called 'Common Questionnaire', a questionnaire jointly elaborated and exploited by Eurostat, ECMT (European Conference of Ministers of Transport) and UN-ECE (United Nations – Economic Commission for Europe).

The use of external statistical sources in this publication is very limited: mainly data from UIC (International Union of Railways – Figure 2) and Airclaims (Figure 3) have been used. If no source indication is displayed, information has been taken from Eurostat sources, mainly available in Theme 7 of the New Cronos database.

**Definitions of the various kinds of road transport based on the Glossary for Transport Statistics** (prepared by the Intersecretariat Working group on transport statistics – Eurostat, ECMT (European Conference of Ministers of Transport), UN-ECE (United Nations – Economic Commission for Europe)).

**National road transport:** Road transport between two places (a place of loading/embarkment and a place of unloading/disembarkment) located in the same country irrespective of the country in which the vehicle is registered. It may involve transit through a second country.

**International road transport:** Road transport between two places (a place of loading/embarkment and a place of unloading/disembarkment) in two different countries. It may involve transit through one or more additional country or countries.

**Cross-trade road transport:** International road transport performed by a road motor vehicle registered in a third country (a third country is a country other than the country of loading/embarkment or than the country of unloading/disembarkment).

Example: transport of goods loaded in Spain and unloaded in France, by a lorry registered in Germany.

**Road cabotage transport:** Road transport performed within one country by a motor vehicle registered in another country."

Example: transport of goods loaded and unloaded in Italy, by a lorry registered in the United Kingdom.

From the point of view of the declaring country, cabotage transport is considered 'international transport', since it takes place in another country than the country where the vehicle is registered (and thus declared). From the point of view of the physical movement of goods however, cabotage transport can be considered as national transport, since the goods are loaded and unloaded in the same country.

A country declares international road transport for haulage companies registered in that country including transport performed abroad. Thus, unlike international rail and inland waterway transport, the territorial principle does not apply.

### Table 2: Length or transport networks by country:

With regards to the category 'other roads', definitional problems between countries might subsist.

Inland waterways: only navigable inland waterways are considered. Definition of navigable inland waterway: "A stretch of water, not part of the sea, over which vessels of a carrying capacity of not less than 50 tonnes can navigate when normally loaded. This term covers both navigable rivers and lakes and navigable canals".

This publication was prepared with the assistance of Jelle Bosch, Artemis Information Management

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New Cronos,  
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