

Annual Report

2006



FINNISH RAIL
ADMINISTRATION

Facts about Finland's Rail Network

First line:	Helsinki–Hämeenlinna, 1862
Gauge:	1,524 mm
Total length of railway lines:	5,905 km
Lines with two or more tracks:	570 km
Sleepers/km:	1,640
Electrified line:	3,047 km
Centrally controlled line:	2,564 km
Tunnels:	41
Railway bridges:	2,274
Bridges over railway line:	873
Number of level crossings:	3,715, including 3,230 on main lines

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The Finnish Rail Administration in Brief



The Finnish Rail Administration (RHK) manages Finland's rail network. Through planning, construction, maintenance and traffic control we ensure infrastructure on which traffic can operate every day, reliably and safely.

- RHK prepares plans for large rail projects and cooperates with different authorities and stakeholders in this work.
- RHK promotes development in its field and takes care of research, development and expert tasks as well as international cooperation in the rail sector.

Strategic goals

Competitiveness of rail traffic

Rail traffic is a competitive and efficient part of the national and international transport system.

Rail safety

Rail safety is on a top European level.

Managing environmental impacts

Traffic emissions will be reduced by making it possible to increase rail transport's market share. Negative impacts of rail activities will be reduced.

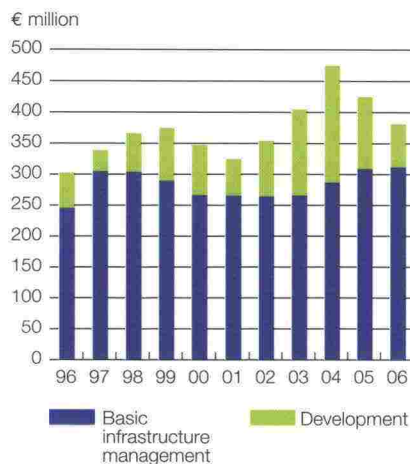
Adequacy of funding

We are working to ensure that funding for infrastructure management meets traffic needs and that financing solutions allow long-term planning.

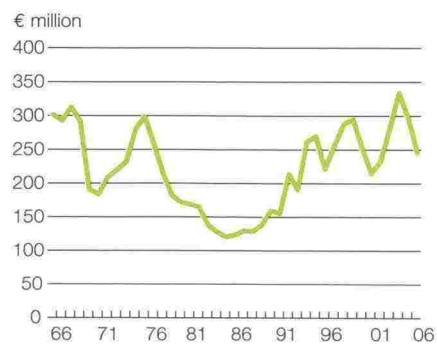
Expertise

We will maintain and develop expertise in our field, which will allow us to improve the efficiency of activities.

Expenditure on the rail network 1996–2006



Investments in the rail network 1996–2006 (At fixed 2006 prices)





- The direct line between Kerava and Lahti went into operation.
- Electrification of the Oulu–Kontiomäki–Vartius and Kontiomäki–Iisalmi line sections was completed.
- The construction of automatic train protection proceeded.
- Renewal of the Ilmala yard began.
- The Kouvola–Pieksämäki line section was renewed.
- Renewal of the Toijala–Loimaa line section began.
- Development of the rail data system continued.
- Safety and ticket inspection personnel were shifted to the Finnish Rail Agency, which went into operation on 1 September 2006.
- An environmental impact assessment was completed for the Seinäjoki–Oulu line section.
- Preparations were made to open freight traffic to competition.
- Railway Traffic 2030, a transport policy proposal, was completed and circulated for statements.
- A report concerning the need for and feasibility of the Pisara rail link was completed.
- A master plan for the airport line was approved.
- A preliminary study concerning rail connections between Helsinki and Turku was completed.
- A study concerning rail freight traffic in southeastern Finland was completed.
- RHK transferred ownership of 1,250 buildings and 520 hectares of land.

Operating conditions for rail traffic were improved significantly



We can justifiably regard 2006 as the most significant year for rail traffic since the Finnish Rail Administration went into operation. The direct line between Kerava and Lahti was completed and made it possible to revise the entire timetable structure for passenger services. Journey times between the Helsinki metropolitan area and eastern Finland were reduced considerably. With the completion of the electrification of line sections in northern Finland at the end of the year, over 80% of rail traffic is presently handled by the most efficient and environmentally friendly mode of transport.

The renewal and expansion of the Ilmala yard in Helsinki, which is important for rail

traffic in the whole nation, got under way literally at the last moment, since increased traffic and the poor condition of yard structures seriously threatened the yard's ability to act as the heart of passenger services.

Resolutions concerning projects that will begin in 2007 were also quite welcome. The renewal of the Ostrobothnian line should be seen primarily as the removal of a bad bottleneck in the rail network. We face similar challenges elsewhere in future. As an extension of the direct line, the upgrading of the Lahti-Luumäki line section will begin. Its impact will be visible mainly in journey times, but capacity will also be improved thanks to new control technology.



Fighting the ageing of the rail network has been a perennial challenge for us, and last year was no exception. Too often we have only been able to start track renewal on old line sections at the last moment and with the help of supplementary budgets; an example last year was the line between Turku and Toijala. The adequate and long-term financing of replacement investments is essential to develop the productivity of infrastructure management and rail transport.



Our operating environment changed significantly when the Finnish Rail Agency went into operation in September 2006. Responsibility for rail safety was transferred from RHK to the new agency, along with personnel.

The new agency also assumed responsibility for ticket inspection activities. RHK can now focus more clearly on the rail network and its use. The new situation also means that in this role we must show that in performing our tasks we meet the requirements in national and international legislation. For this purpose last year we worked to build a safety management system and integrate it in our operational system.

We have also renewed our organization as part of development. In connection with this we have arranged training in management and cooperation. In future we will strive to use the results in our daily activities.

A study commissioned by the Ministry of Transport and Communications concerning the feasibility of merging agencies in the transport sector has stimulated a lot of discussion. The matter has come up before, but now it is being considered as part of the Government's productivity programme.

Whatever conclusions are drawn in any further studies, two things appear to be clear. Personnel resources will be tightly controlled and a large number of people will retire in the coming years. This means that cooperation and shared resources will inevitably increase. One example is a project to achieve a joint management system.

In connection with our operating environment and the opening of freight traffic to competition, two studies were conducted under the direction of the Ministry of Transport and Communications. One of these concerns traffic control and the other the organization of training in the rail sector.

RHK is responsible for traffic control, but this service is produced by VR Limited. The transparency and neutrality of traffic control are sure to be under a magnifying glass when other operators besides VR start using the rail network. The situation with regard to training is that no school in the public education system provides skills in our field, whether this involves driving trains or building lines. Track maintenance is already supplied by other actors besides VR. It is essential to arrange economical and open training for their present and future personnel.

Ossi Niemimäki



All this shows that the past year was extremely demanding and has given us many challenges for the future. I wish to thank RHK's personnel, the outgoing Board and all our cooperation partners for making it possible for us to bring 2006 to a successful conclusion in spite of our tight resources.

Financing for infrastructure management must be ensured

The Rail Administration Board directs and supervises RHK's activities according to the Decree on the Finnish Rail Administration. Last year was exceptional in that the four-year term of the Board that went to work in 2004 concluded on 31 August 2006 as a result of the reform of the Act on the Finnish Rail Administration, and the Government appointed a new Board for a term lasting from 1 November 2006 to 31 October 2009. The legislative reform was connected to the rearranging of official tasks when the Finnish Rail Agency went into operation at the beginning of September.

The new Board is chaired by Director Tellervo Kylä-Harakka-Ruonala of the Confederation of Finnish Industries, with Government Counsellor Mikael Nyberg of the Ministry of Transport and Communications as vice chair and Professor Jorma Mäntynen of the Tampere University of Technology, Traffic Engineer Silja Siltala of the Association of Finnish Local and Regional Authorities and Senior Inspector Markku



Tellervo Kylä-Harakka-Ruonala



Mikael Nyberg



Jorma Mäntynen

Pyy representing RHK's personnel as members. The new Board held one meeting last year, at which it discussed future activities.

The outgoing Board was chaired by Managing Director Timo Poranen, with Senior Adviser Kaisa Leena Välipirtti as Vice Chair and Chairman Hannele Luukkainen, CFO Veikko Vaikkinen and Planning Manager Markku Pyy as members. It met eight

times last year. During one meeting the Board inspected track renewal and learned more about its special features.

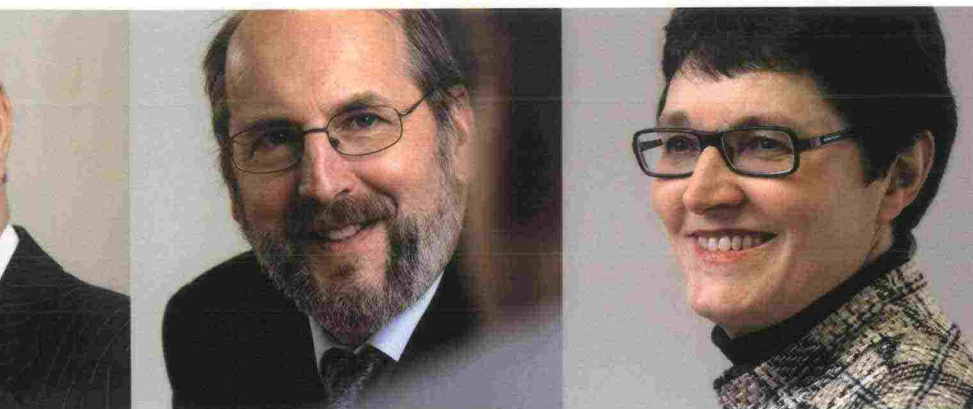
Need for adequate financing and a long-term approach

At its meetings the Board drew attention on several occasions to tight financing for infrastructure management and formulated its views on this matter in deciding on the budget proposal. The Board also established posts that are necessary to meet the challenges of the new operating environment and dealt with questions regarding the establishment of the Finnish Rail Agency, RHK's personnel programme and personnel resources, risk analysis, the opening of rail freight to competition and track fee principles.

In handling the budget proposal for 2007 the Board emphasized that financing for replacement investments should be clearly raised. In the Board's opinion, the level of financing in the state budget framework, about 100 million euros, is completely inadequate for infrastructure management and competitive rail traffic. The Board believes



The Rail Administration Board, which concluded work at the end of August, inspected track renewal on the line between Turku and Toijala.



Markku Pyy

Silja Siltala

that annual financing should be at least 170 million euros and that a longer-term approach should be taken.

Safety expertise will also be ensured in the new situation

The Board actively followed the establishment of the Finnish Rail Agency and related personnel and organizational changes. Eighteen safety experts were shifted from RHK to the new agency. In connection with this the Board established five new safety expert posts so that RHK can continue to take care of the safety tasks for which it is responsible. In establishing the post of Head of Safety the Board emphasized that in defining tasks attention should be paid to safety, quality and environmental matters and that these should be part of daily activities throughout the organization.

The adequacy of personnel resources was also discussed in other connections besides the establishment of the Finnish Rail Agency. From the start RHK's personnel has been small in relation to its tasks. In recent years resources have been increased somewhat, but according to the

state's new productivity programme, agencies' personnel frameworks are being tightened. In the Board's opinion, with changes in the operating environment due to the opening of planning, construction, maintenance and traffic to competition, improving productivity requires more personnel resources and not less.

Attention drawn to risk management

The Board drew attention to the development of risk management in administration, which has been called for in budget legislation. The Board received a risk analysis report that was commissioned by RHK and covered all its activities. According to the report, key risks for RHK involve tight personnel resources, certain functional structures and external factors such as market efficiency in the railway sector.

On the basis of risk analysis RHK has focused internal audit work. Last year this looked more closely at procurements in the track construction process.

Preparing for competition in freight traffic

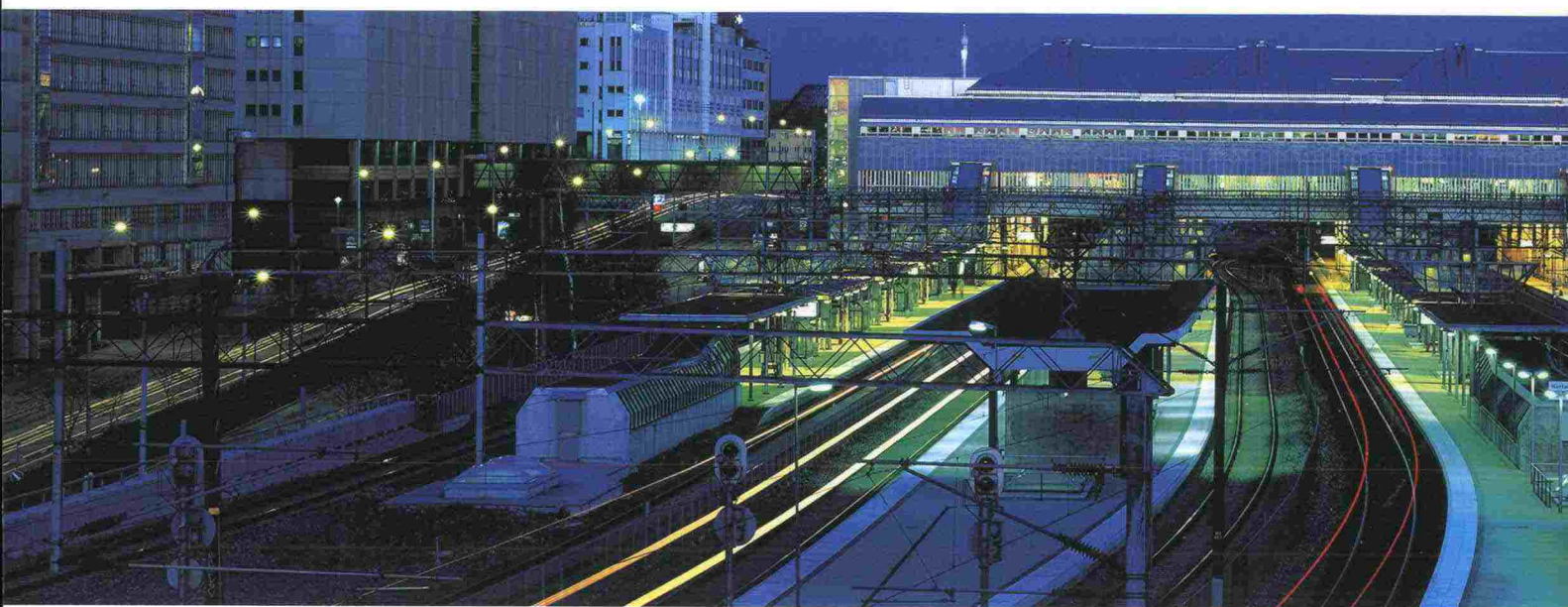
One broad subject that was discussed by the Board was the opening of rail freight traffic to competition. The Board also went over principles regarding the allocation of rail capacity.

In the background is the European Union's second railway package. Access to the rail network requires a safety certificate from the Finnish Rail Agency, an operating licence from the Ministry of Transport and Communications, rail capacity allocated by RHK and a contract between RHK and the operator concerning the use of the rail network. The Board drew special attention to the allocation of rail capacity and emphasized that RHK must have clear procedures to deal with possible disputes.

Learning about track renewal first hand

The Board took a closer look at track work when it inspected the line between Turku and Toijala, which was RHK's biggest track renewal project last year. Superstructures were renewed in the spring and summer over a distance of 60 kilometres. The project has a total budget of about 70 million euros and will take three years to complete.

During its visit the Board received a good picture of the special features of track renewal and particularly the way in which work must be done in demanding conditions, on traffic's terms and using special equipment.



The performance objectives which the Ministry of Transport and Communications set for the Finnish Rail Administration in 2006 were achieved as follows (objective in italics):

Scope of the rail network and level of service

The length of the rail network will be 5,914 km.

The objective was achieved and no line sections were decommissioned.

The length of the high-speed network (>160 km/h) in passenger traffic will be 675 km.

The objective was achieved. Kerava–Lahti and Kinni–Otava were included in the high-speed network.

The length of the 25-tonne network in freight traffic will be 423 km.

The actual figure is 378 km. The Kokemäki–

Rauma line section will be added to the 25-tonne network in 2007.

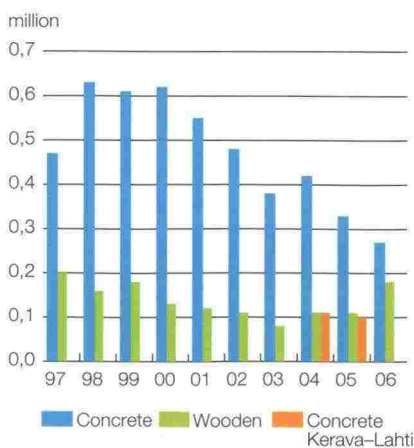
Rail network condition index

The objective for 2003–2006 is 87%. The condition index's maximum value is 100. The index is calculated as a four-year sliding average.

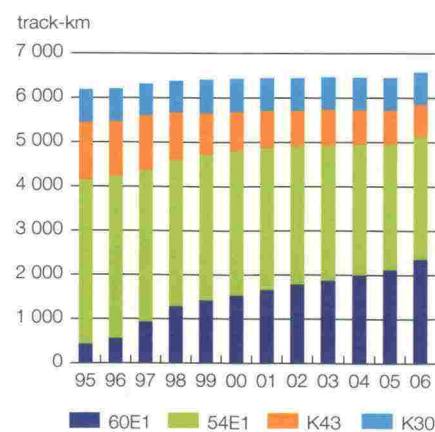
The condition index measurement in spring 2006 was 91% and the four-year sliding average in 2003–2006 was 87%.

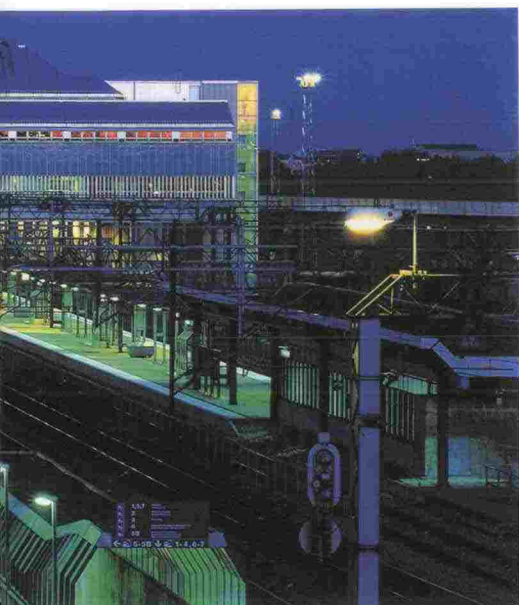
The geometric condition of the rail network is described by the rail network condition index, which is the average of spring measurements over a four-year period.

Installed sleepers 1997–2006



Types of rails on main lines 1995–2006





Obsolete superstructures

With regard to obsolete superstructures the objective for rails is 354 km in the main rail network and 1,250 km in the total rail network.

The actual figures were 304 km and 1,220 km, so the objective was achieved. Additional funds were received and used on the line between Turku and Toijala.

Traffic delays

Delays lasting over 5 minutes due to track maintenance will not affect more than 5% of long-distance passenger trains.

The objective was achieved. Delays affected 4.0% of passenger trains. In the first half of the year the figure was 4.17% and in the second half 3.90%. The worst month was April (7.58%), when frost damage disturbed traffic on several line sections. Another poor month was October

(6.45%), when defects in safety equipment and heavy snow caused considerable problems.

Safety

Number of level crossings

The number of level crossings will be 3,725.

The objective was achieved. At the end of the year there were 3,715 level crossings.

Accidents due to permanent way

The number of accidents due to permanent will not exceed five.

The objective was achieved. Two derailings occurred in 2006.

Accident fatalities

No fatalities will occur in passenger traffic accidents.

The objective was achieved.

Reducing environmental impacts

RHK will operate in accordance with the national noise abatement programme.

In 2005–2006 the focus in noise abatement work will be on the Helsinki region, then measures will be taken in other large population centres. The number of people who are exposed to rail traffic noise should not exceed 33,000 at the end of 2006.

According to a new calculation method, 43,500–53,000 people are exposed to over 55 dB from rail traffic. The objective of bringing the number down by 1,000 in 2006 was achieved. The achievement of the overall objective was mainly due to the noise abate-

ment programme in the Helsinki region, which was completed in 2005, and the completion of noise abatement measures for the direct line between Kerava and Lahti in 2006. The effectiveness of noise abatement measures in the Helsinki region will be determined by means of precise calculations in 2007.

Operational efficiency

Economy

Maintenance and operating costs for electric and telematic systems will be about 4,600 euros per track-kilometre.

Basic track maintenance and operating costs will be 7,100 euros per track-kilometre. Total unit costs will be 11,700 euros per track-kilometre.

Unit costs for electric and telematic systems were 4,315 euros per track-kilometre and other unit costs were 7,678 per track-kilometre. Total unit costs amounted to 11,993 euros per track-kilometre.

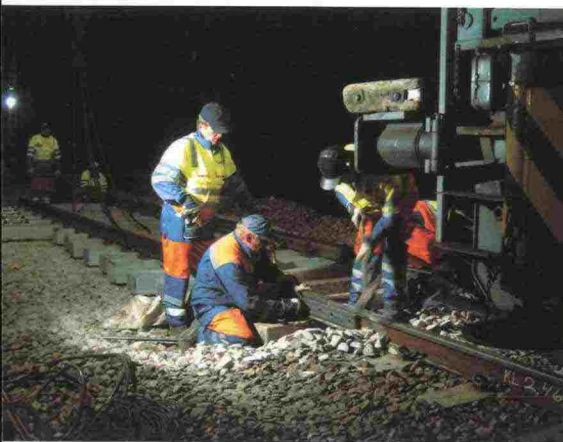
The allocation of unit costs is based on information supplied by contractors. The direct line (125 track-kilometres) was included in calculations for the time it was in service. Total unit costs exceeded the objective mainly because of frost damage in the spring.

Management of human resources

The work satisfaction index will be 3.1.

The objective was achieved. The work satisfaction index was 3.3.

Railways play an important role in Finland's transport system



The rail network is being developed to meet the needs of growing passenger and freight traffic.

The railways are a vital part of Finland's transport system, together with other modes of transport. Rail traffic provides efficient connections between cities and in commuter traffic in the Helsinki region. The railways serve as a basic carrier for industry, which underlines their significance for the economy.

Urbanization, the strong growth of the Helsinki metropolitan area, industry's need for heavy transport and the increasing importance of Russia as a trade partner will continue to spur the development of rail traffic in the future.

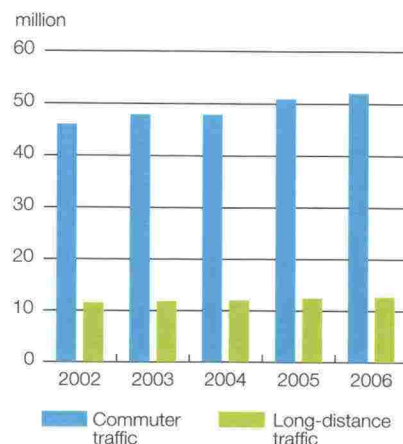
Continued growth in passenger traffic

Passenger traffic in Finland's rail network totalled 65.0 million journeys in 2006 (63.5 million in 2005). This included 52.1 million (51.0 million) in commuter traffic and 12.8 million (12.5 million) in long-distance traffic. Passenger traffic rose by about 2% compared with the year before.

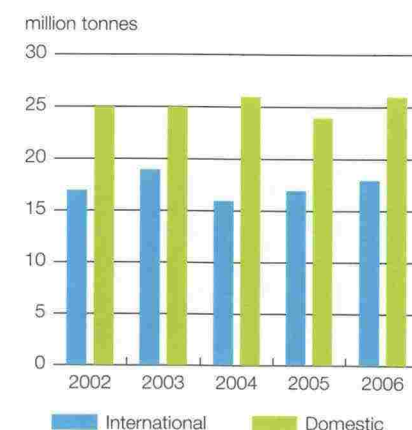
Long-distance passenger traffic increased in practically every part of the rail network. The opening of the direct line between Kerava and Lahti in September increased the number of passengers travelling to and from eastern Finland. The greatest growth

was in Lahti, Kouvola, Lappeenranta and Joensuu. The number of journeys between Finland and Russia increased by one-fourth and reached an all-time high of 337,000. As a result of the direct line timetables were speeded up and new services were added.

Passenger journeys



Freight volume



This was also visible in passenger growth in other parts of the rail network, including the main line to the north and the coastal line.

Railways account for 5% of passenger traffic in Finland. The average market share in the EU is 6%, so Finland is slightly below average in this respect.

Punctuality weakened by problems in the autumn

The Ministry of Transport and Communications has set a performance objective according to which delays lasting over 5 minutes due to track maintenance should not affect more than 5% of long-distance passenger trains. The Finnish Rail Administration achieved this objective in 2006.

RHK and VR-Group Ltd have set their own objective according to which 90% of long-distance trains should arrive at their destination on schedule or no more than

five minutes late. In 2006 the figure was 88.8% (90.0%).

The punctuality objective in commuter traffic is 97.5%, with trains arriving no more than three minutes late. The figure last year was 97.1% (97.6%).

In autumn 2006 punctuality was momentarily poor. Disturbances occurred in track availability, rolling stock and passenger information.

Key reasons for problems included frost damage in the spring, defects in safety equipment, power outages and heavy snow on the last day of October.

RHK began taking measures to improve punctuality. Safety equipment will be repaired particularly on the Turku-Helsinki and Tampere-Jyväskylä line sections. To avoid power outages, overhead lines will be replaced in entire sections rather than fixing just the damaged spot. The heating of switches will be improved at the Tampere yard.

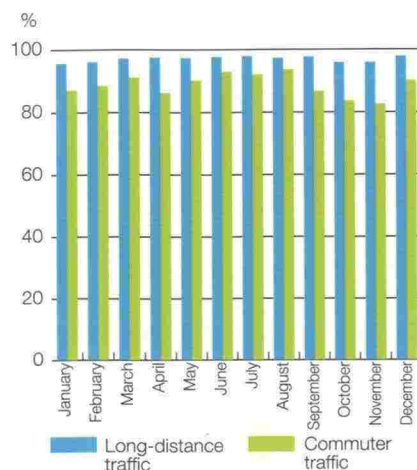
Increase in freight traffic

The forest, metal and engineering, and chemical industries use the railways to transport raw materials and products on their way to destinations in Finland and abroad. Rail transport is the most efficient option particularly if distances are long or carryings are large and regular. The average distance for rail carryings is 250 kilometres.

The volume of rail freight totalled a record 43.6 million tonnes last year (40.7 million). This was about 7% more than the year before. Domestic traffic rose by about 11% and international traffic by about 2%. International traffic is almost entirely between Finland and Russia. The sharp increase in traffic was due partly to a labour dispute in the paper industry the previous year.

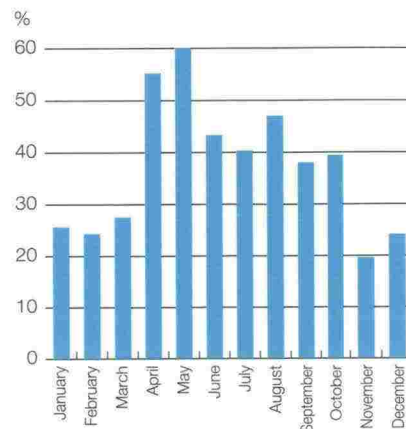
Railways' share of freight traffic in Finland is high by European standards. With a market share of about 25% Finland is above average in the EU. The average for all the member states is about 16%.

Punctuality of long-distance and commuter traffic in 2006



The punctuality limit is five minutes in long-distance traffic and three minutes in commuter traffic.

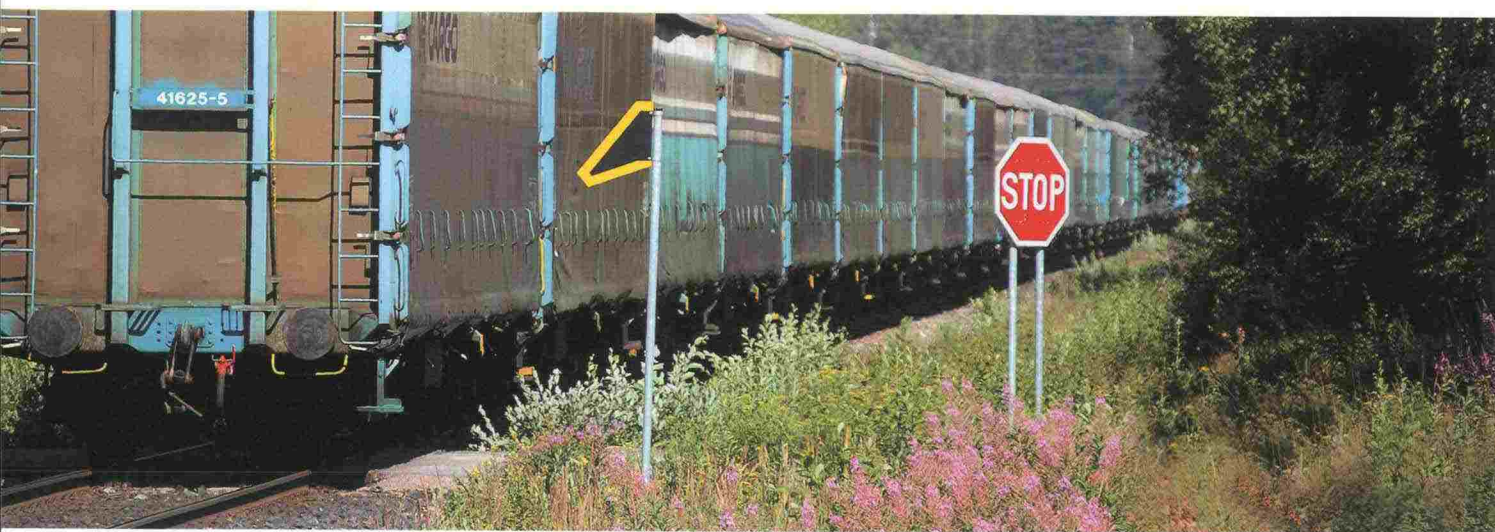
Delays due to track maintenance as a share of all delays in passenger traffic in 2006



Getting ready to open freight traffic to competition

Last year RHK prepared for an expansion of its tasks with the opening of the rail freight market to new operators in Finland at the beginning of 2007. This will allow other undertakings besides VR Limited to provide freight services on Finland's rail network.

With the opening of freight traffic to competition, RHK's role will change from infrastructure manager to provider of infrastructure services. In addition to infrastructure management RHK is responsible for coordinating different operators' timetables and ensuring balanced traffic control.



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New information system to manage rail capacity

The LIIKE information system project proceeded according to plan last year. Specification work began in November 2006 and was completed at the end of January 2007. On the basis of this work the technical design and execution of the first stage of the system will be put out to tender. This will be followed by the execution stage.

The LIIKE system will be used to allocate rail capacity and to manage timetable information and rail traffic. It will be used by RHK, traffic control and other parties such as the Finnish Rail Agency, consultants, contractors, traffic planners and operators.

RHK's goal is to integrate systems used in the management of rail capacity so that later on the functions in the present rail traffic monitoring system and train-based advance information system will be shifted to the LIIKE system.

New requirements for traffic control

RHK is responsible for traffic control and related systems in the rail network, but this service is produced by VR Limited. Traffic control ensures that trains operate safely, efficiently and on schedule. It includes the control and management of traffic required for track maintenance as well as other traffic.

With the opening of competition, requirements concerning transparency and neutrality have increased.

In 2006 traffic control employed 506 persons (527). The modernization of safety equipment, the expansion of remote control, train number automatic identification and the concentration of work in traffic control centres will continue to reduce personnel in the future.

By 2020 the control of traffic and shunting work will be concentrated in four traffic control centres, located in Helsinki, Tam-

pere, Kouvola and Oulu. In connection with this automation will increase and fewer personnel will be needed.

Progress in remote control and automatic train protection

Last year RHK expanded the remote control of rail traffic particularly in eastern Finland. The Kerava-Lahti line and the Lappeenranta yard were linked to the remote control system operated from Kouvola. The Joensuu-Nurmes, Kontiomäki-Vartius, Kontiomäki-Iisalmi and Jyväskylä-Äänekoski line sections and the Kontiomäki yard were linked to radio control and automatic train protection. Radio control and automatic train protection are under construction on the Parikkala-Savonlinna line section, and the Pieksämäki-Jyväskylä line section is being linked to the remote control system operated from Pieksämäki.

Transport policy proposal circulated

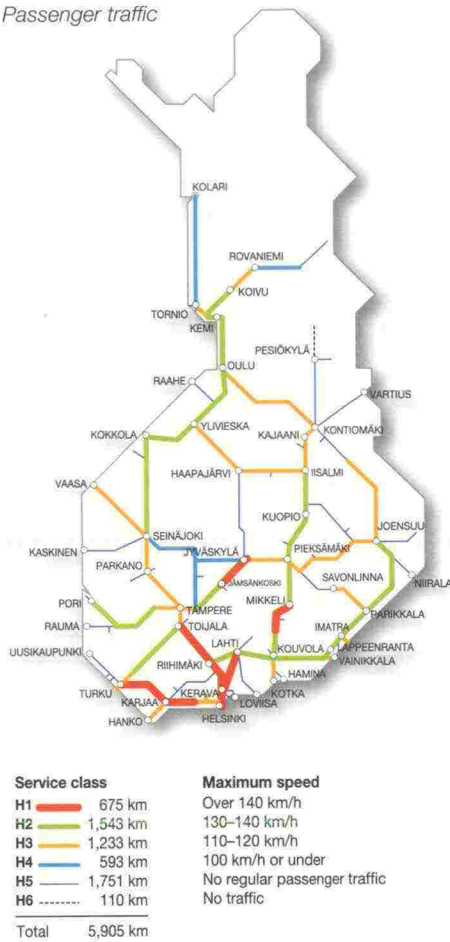
At the end of the year The Finnish Rail Administration completed a transport policy proposal entitled Railway Traffic 2030 and circulated it for statements. The plan is aimed at improving the condition and functioning of the rail network and preserving its present scope.

According to the plan, about 420 million euros a year should be spent on ensuring the day-to-day operation of the rail network in the coming years. This is about 60 million euros more than is currently being spent. The figure also includes the renewal of low-volume lines so that the rail network will remain nearly as long as it is now.

The plan adds that about 150 million euros a year should be spent on major development projects.

Rail network service classes in 2006

Passenger traffic



Freight traffic



Improving passenger information

The Finnish Rail Administration is responsible for electronic passenger information systems at stations, which include timetable displays and PA systems.

The goal in developing passenger information is to make it easier for passengers to get where they are going in all situations.

RHK's objective is to concentrate passenger information covering the entire rail network in a single national information centre. The construction of a completely new

real-time passenger information system will begin in spring 2007. About 100 stations will be linked to the system, replacing present systems and harmonizing, facilitating and concentrating the distribution of information.

Last year Oulu, Rovaniemi and Kemi as well as Haarajoki, Mäntsälä and Lahti on the Kerava–Lahti line were added to the present national passenger information system.



Major projects completed and new ones under way



Mäntsälä was added to the rail network with the completion of the direct line between Kerava and Lahti.

The Finnish Rail Administration orders planning, construction and maintenance services from engineering firms, consultants and contractors. About 70% of track maintenance work is put out to tender. In new projects and expansion investments the figure is nearly 100%. The market is undeveloped at the moment, however.

RHK also invites tenders for safety equipment, electrification work and track materials.

In investment projects RHK makes use of project management consultants, who assist RHK in contracting, financing and cost management.

Large projects completed

Last year RHK brought to completion the largest and most significant rail project in many decades when the direct line between Kerava and Lahti was opened to regular traffic on 3 September. The project stayed within the original budget of 331 million euros. The Lahti yard was also renewed in the same connection.

In December the electrification of the Oulu-Kontiomäki-Vartius and Kontiomäki-Iisalmi line sections was completed. Over 80% of rail traffic in Finland is presently handled by electric trains.

The electrification project started in 2002 and cost 71 million euros. It included 368 kilometres of line. This was the longest stretch of electrified line ever to be placed in service at one time.

The Iisalmi-Kontiomäki-Vartius line sections were also linked to automatic train protection.

Large-scale renewal of the Ilmala yard

In autumn 2006 RHK and VR Corporation began a five-year project to renew the Ilmala yard. The Ilmala yard is important for rail traffic throughout the country, since practically every passenger train in Finland is serviced there.

The project includes the renewal of safety systems, tracks, lighting and roads. The hall for long-distance trains will also be ex-

panded and new maintenance levels will be built for long-distance and commuter trains. The project has a budget of 160 million euros. RHK's share of this is 100 million euros. VR Corporation will pay 60 million euros for new buildings.

The Ilmala yard was built on a landfill in marshy terrain. This makes construction very demanding. Throughout the project train maintenance will proceed in Ilmala, which presents its own challenges.

The renewal of the Ilmala yard will result in more reliable and efficient traffic as well as improved yard safety. After work has been completed more trains can be serviced in the yard and the turnaround time will be shorter.

Three important track projects under way

In 2006 attention was increasingly turned to new track projects. The first stage of the upgrading of the Seinäjoki-Oulu line section, the upgrading of the Lahti-Luumäki line section and the alteration of the Central Pasila yard in Helsinki will begin in 2007.

The upgrading of the busy Seinäjoki-Oulu and Lahti-Luumäki line sections will improve rail capacity and allow higher axle weights and speeds. Actual construction work will begin in 2008.

The Seinäjoki-Oulu line section is mainly used in long-distance traffic between northern and southern Finland. The project will remove bottlenecks by constructing passing tracks and sections with double tracks. The first stage of the project will cost 250 million euros.

The Lahti-Luumäki project is important for traffic to and from eastern Finland and can be regarded as an extension of the direct line between Kerava and Lahti. Developing the line section is also neces-

sary for planned high-speed services between Helsinki and St. Petersburg. In the project traffic control and safety systems will be renewed and changes will be made at stations and switches. The project has a budget of 185 million euros.

The most important objective regarding the Central Pasila yard area is to move the loading site for car-carriers from downtown Helsinki to Central Pasila. Rail traffic functions will cease in the Central Pasila yard when the Vuosaari Harbour goes into operation, replacing the West and North Harbours.

RHK was appropriated about 40 million euros in 2007–2009 to make alterations and move the loading site for car-carriers to Central Pasila.

Additional track between Savio and Kerava

In March 2006 RHK started building a fifth track between Savio and Kerava. The new 3-kilometre track will be part of the Vuosaari Harbour line, which will join the main line south of the Kerava station. Construction will be completed in autumn 2008.

Further expansion of automatic train protection

Automatic train protection ensures that trains comply with speed limits and applies the brakes if necessary. Last year ATP went into operation on 423 kilometres of tracks on the Kerava–Hämeenlinna, Uusikaupunki–Nurmes, Iisalmi–Kontiomäki, Kontiomäki–Vartiuss and Jyväskylä–Äänekoski line sections.

At the end of the year Finland had 4,280 kilometres of tracks in the ATP system (3,857). An objective calling for the system to cover all lines used for passen-

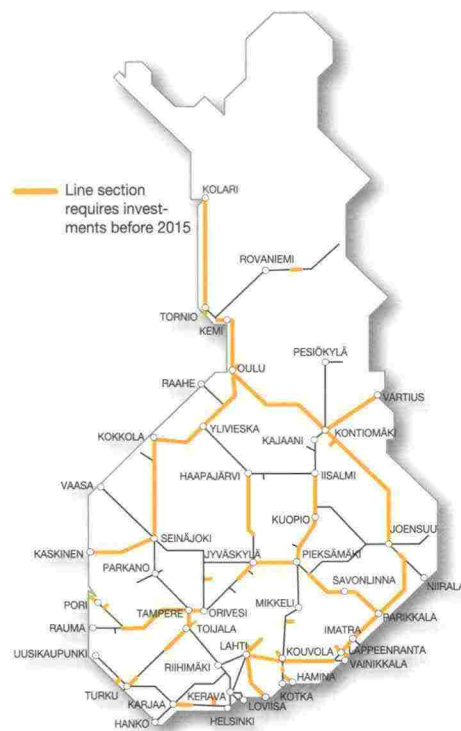
ger traffic and other lines that are important for freight traffic by the end of 2007 had to be postponed for a year because of unsure financing and difficulties in the supply of track equipment.

Progress on new line communications system

The construction of a new Railway Integrated Line Communications System nicknamed RAILI continued last year. The network is based on the European-wide GSM-R standard.

In 2006 the RAILI network's functionalities were brought up to standard and deliveries were approved. In international cooperation attention was focused on further developing GSM-R functionalities and standards to meet the requirements of the challenging operating environment. The expansion of the RAILI network continued and traffic controllers will begin using it in 2007. The network will be completed by the end of 2008.

Required investments in the rail network before 2015



Direct line speeds up traffic

The construction of the direct line between Kerava and Lahti took four years. The opening ceremonies were held on 1 September 2006.

The direct line has a total length of 74 km, including 63 km of new track. Two new stations were built on the line, in Haarajoki (Järvenpää) and Mäntsälä, which was now added to the rail network.

The direct line shortens travel times in Finland and allows the development of services between Finland and Russia. It also frees capacity on the main line to the



north. Travel times to eastern Finland have been shortened the most.



Renewing the Ilmala yard will take five years.

Rail network improved through track renewal

RHK spent 160 million euros on replacement investments or track renewal in 2006 (171 million euros in 2005). The condition of the main rail network has been improved considerably, but on the busiest lines capacity is stretched and part of the secondary network has reached the end of its service life.

The condition of the rail network will weaken if replacement investments necessary to repair and renew lines, yards, safety equipment, traffic control technology and electrification have to be postponed because of tight financing. RHK considers it important to increase funds for infrastructure management significantly in the coming years.

At the end of the year there were speed restrictions on 300 kilometres of track (350).

Significant work around the rail network

RHK renewed and developed the rail network in different parts of the country in 2006. The most significant track renewal projects were on the Turku–Toijala and Uimaharju–Lieksa line sections. Smaller projects were conducted in various places such as the Pihlajavesi–Myllymäki line section between Seinäjoki and Haapamäki, where 31,000 sleepers were replaced.

Around 440,000 sleepers were replaced in different parts of the rail network (420,000). This corresponds to about 270 kilometres of track. 216,000 metres of new rails (140,000) and 158,000 metres of reconditioned rails (60,000) were laid.

Track work was planned and scheduled so as to minimize traffic disruptions. In scheduling work attention was paid to the needs of both passenger traffic and freight

traffic. Work sites required the setting of speed restrictions and in some cases train services had to be replaced by buses. Traffic disruptions due to yard renewal generally took place on weekends.

Higher speed limit on Kouvola–Pieksämäki line section

Last year the renewal of the Kouvola–Pieksämäki line section, which began in 2003, reached completion and this made it possible to raise the speed limit to 200 km/h between Mouhu and Otava.

Seven level crossings were eliminated between Mouhu and Otava with the help of bridges and road arrangements. Substructures were strengthened with stabilization, counter-embankments, pile slabs and soil replacement.

The total cost of the project was 11 million euros. Regional development funds were mainly used for this purpose, with the EU supplying half.

Renewal of superstructures

Last summer RHK began renewing superstructures between Uimaharju and Lieksa. Short-welded rails, wooden sleepers and half ballast were replaced with long-welded rails, concrete sleepers and full ballast over a distance of 32 kilometres. Level crossings were also eliminated. Work will continue in 2007. The renewal of superstructures will ensure proper conditions for passenger and freight traffic. The project will cost about 18 million euros in all.

Short-welded rails were also replaced with long-welded rails over a distance of 12 kilometres between Pietarsaari and Pääinänen. The cost was 5 million euros.

Reports on developing rail connections

RHK, the Helsinki Metropolitan Area Council and the City of Helsinki completed a report concerning the feasibility of the Pisara rail link. This would connect the urban lines leading to the north and west with a 7.5-kilometre line running underground. The new line would have three stations, in Töölö, the city centre and Hakaniemi. The cost estimate for this project is 250 million euros.

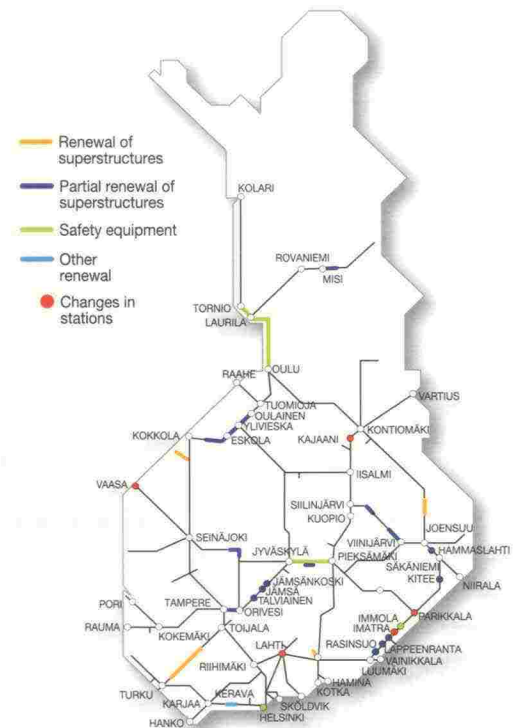
According to the report the Pisara rail link would considerably improve connections between the urban lines and the inner city and would also make it possible to develop other rail traffic using the central railway station.

RHK approved the master plan for the airport line. This passenger line will run between the Vantaankoski line and the main line to the north via the Helsinki-Vantaa Airport. The cost estimate for the project is about 420 million euros, including road arrangements.

Last year a working group completed a report concerning rail connections between Helsinki and Turku. This followed a preliminary study that was completed at the end of 2005. According to the report, developing rail connections is presently based on improving the present line and raising train speeds. A new high-speed connection via Lohja is being considered in long-term land use planning, however. In addition to the Ministry of Transport and Communications and RHK, the Ministry of the Environment, the Southwest Finland and Uusimaa Regional Councils, local authorities along the proposed line, the Helsinki Metropolitan Area Council and the Southwest Finland and Uusimaa Regional Environment Centres will participate in broad research on this subject.

RHK conducted a study concerning the development of rail freight traffic in south-eastern Finland. According to the study, in addition to the Lahti-Luumäki project, investments totalling about 400 million euros are needed to develop the rail network in southeastern Finland.

Track renewal projects in 2006



Biggest site between Turku and Toijala

The biggest renewal project in 2006 was on the Turku–Toijala line section. Work will take three years to complete and will cost about 70 million euros.

The renewal of superstructures began in the summer between Loimaa and Lieto and included the replacement of sleepers and rails and the cleaning of ballast. In the spring and summer superstructures were renewed over a distance of 60 kilometres. Work began in Lieto and ended between Humppila and Loimaa.

Work was scheduled so as to cause the minimum disturbance to passenger and freight traffic.

The Turku–Toijala line went into service in 1876. The last time it was renewed ex-



tensively was in the 1960s. The line was electrified in 2000.

Maintenance levels raised on several line sections



Lots of wooden sleepers were replaced in 2006.

The rail network is constantly maintained to keep it in safe operating condition. This includes track inspections, preventive maintenance, repairs and snow clearing.

Track inspections and maintenance require special expertise as well as special equipment and materials. Work is carried out so as to cause the minimum disturbance to traffic. The Finnish Rail Administration has made preventive maintenance a top priority.

With the setting of higher speed limits, maintenance levels were raised on several line sections. The line section between Kerava and Hakosilta on the new direct line was the first to be given a new 1AA maintenance level. This assumes a speed of 220 km/h.

First experience of tendering in track maintenance

RHK has started expanding the use of tendering in maintenance work. The partners who were selected in 2005 completed their first whole year of track maintenance in 2006. Eltel Networks Oy, Maansiirto Veli Hyryläinen Oy and the Finnish Road Administration took care of track maintenance in northern Finland. VR-Track Ltd still provides track maintenance in other parts of the country.

Experience of cooperation has been good and activities will be developed on this basis. The new actors had some difficulties recruiting skilled personnel, so more

training in track maintenance will be needed in future. Training in the railway sector will be provided by the new RHK Academy starting in 2007.

Success with track managers

A regional management model has been in use all over the country since the beginning of 2006. Track managers supervise maintenance work ordered by RHK and prepare invitations to tender.

The concept has worked well for RHK, which does not have its own regional organization.

Finland has been divided into four parts for this purpose. Pöyry CM Oy is responsible for northern, eastern and western Finland and RR Management Oy for southern Finland.

Information systems support track maintenance

Last year RHK devoted considerable attention to developing analysis and information systems connected with track maintenance.

Actors providing track maintenance and rail operators need precise, reliable and up-to-date information concerning the rail network. RHK's obligation is to provide a level playing field for everyone in the rail sector. Information management and the way in which information is distributed play a key role in this regard.

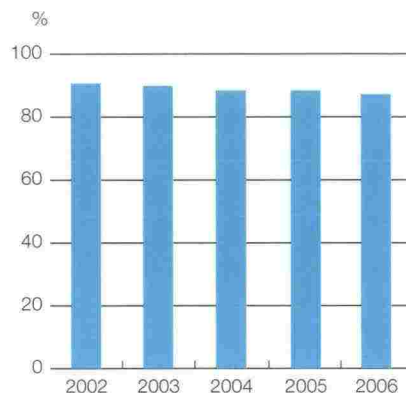
RHK continued the broad development of the rail data system that began in 2005. Last year specifications were completed and RHK prepared to invite tenders. The goal is to select a system supplier in 2007 and to begin testing the system in 2008.

The rail data system will allow RHK to manage information concerning rail infrastructure and distribute it to actors in the rail sector. The aim is to improve the quality of information, harmonize processes and provide a coherent, real-time system for the production and use of information.

Real estate transferred to Senate Properties

Real estate is part of rail infrastructure. Over the years, property that is not necessary for the railways has been transferred to the state's general property management. Buildings that had become unnecessary for railway activities as a result of the automation of traffic control, among other things, were transferred to the Ministry of Finance and then to Senate Properties at the end of 2006.

Geometric condition of the rail network (condition index)



The long-term development of the rail network is described by the condition index. This has a maximum value of 100, in which case the rail network has met requirements perfectly four springs in a row.

Mechanical track inspection on the cutting edge

■ High technology is used to support track maintenance. The EMMA track inspection wagon measures track geometry and overhead lines. The location of defects takes place with extreme precision using hinged cantilevers. During measurements action can be taken immediately if dangerous defects are observed in tracks or overhead lines.

In 2006 the reporting of measurements was made clearer and new reporting models were introduced.

For the dynamic measurement of overhead lines an old A16 wagon was refurbished and named ELLI. Equipment designed to measure track geometry, rail



profile and rail shortwave formation was installed in the wagon. Tests were conducted

in autumn 2006. The wagon will measure electrified lines at least once a year.

Ensuring safety is an integral part of daily work



A switch contact checks that a switch is in the correct position.

The Finnish Rail Administration develops and ensures rail safety so as to avoid serious accidents in rail traffic and in track work.

RHK expects personnel to have the safety expertise required for the job and cooperates with actors who are committed to safety requirements. We constantly monitor the development of safety in our activities.

Finnish Rail Agency established

European efforts to increase competition in rail traffic and infrastructure management have brought new actors to the rail system. In this connection it has been essential to pay attention to ensuring rail safety.

With the implementation of the Railway Safety Directive, the Finnish Rail Agency was established on 1 September 2006. Its task is to supervise and develop the safety and interoperability of the rail system. RHK's

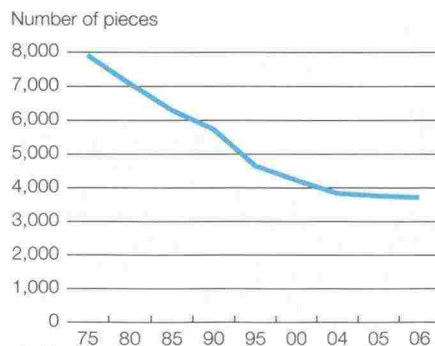
official tasks related to rail safety were shifted to the Finnish Rail Agency.

Following the establishment of the new agency, RHK can focus more clearly on in-

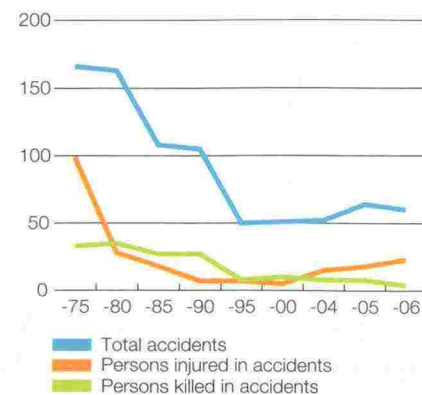
frastructure management, developing the rail system and managing rail traffic.

According to an amendment to the Railway Act, RHK must obtain a safety au-

Number of level crossings on state-owned lines 1975–2006



Development of accidents at level crossings 1975–2006



thorization from the Finnish Rail Agency. In order to do so it must have a safety management system in operation and managers and other personnel with the necessary expertise.

Part of all activities

The key principle in safety management is that ensuring safety is part of every employee's daily work. Department heads and unit managers oversee safety work in their areas of responsibility. The Director General is in charge of implementing the safety management system. The head of the Safety Unit and the rest of the safety network support the organization in ensuring safety.

RHK's safety management system was completed and went into operation on 21 December 2006.

Work accidents and accidents at level crossings cause concern

No serious rail accidents occurred last year. However, two people died in occupational accidents, one while repairing a bridge and one in the course of maintenance work.

The number of accidents at level crossings remains large. We must continue to improve safety by eliminating level crossings, building new warning equipment, improving visibility and educating the public. Four people died and 23 were injured in accidents at level crossings last year.

In 2007 RHK and its cooperation partners will conduct an extensive campaign to warn motorists of the risks at level crossings.

Two derailings occurred last year. It appears that hot-box detectors on roll-

ing stock have already prevented several accidents.

According to recommendations issued by the Accident Investigation Board, RHK will pay attention to safety at work sites so that traffic control, the electrified line operations centre, the site and work units have a correct and coherent picture of the status of the rail network in all situations. RHK will also pay attention to managing safety abnormalities and investigating accidents.

Investments in safety at level crossings

■ There are over 4,450 level crossings in Finland. This includes 3,715 level crossings on state-owned lines and about 750 on private lines, such as harbour and industrial sidings. A total of 2,963 level crossings lack safety equipment.

In the past ten years the Finnish Rail Administration has eliminated about 1,000 level crossings on key lines for passenger services and line sections where hazardous substances are transported. This includes the Helsinki-Turku, Helsinki-Tampere-Seinäjoki, Vainikkala-Kouvola-Kotka/Hamina and Riihimäki-Lahti-Kouvola line sections. In recent years about 50 level

crossings have been eliminated from the state's rail network each year.

RHK has spent 7-14 million euros on eliminating level crossings and about 1.7 million on protecting level crossings annually. Replacing a level crossing with a bridge generally costs 0.5-1 million euros, and in some cases the costs can rise to as much as 3.5 million euros. Installing booms costs about 100,000 euros per level crossing.



Environmental strategy paves the way for work



Environmental responsibility plays a key role in RHK's activities.

The Finnish Rail Administration is constantly developing environmental management. Environmental responsibility is intertwined in the organization's operating processes. Integrating environmental management into RHK's operational system makes it possible to consider environmental matters in all processes. The biggest environmental risks concern transports of hazardous substances.

RHK's environmental management strives to identify and deal with the environmental risks and impacts of infrastructure management and indirectly traffic.

According to its environmental strategy objectives RHK has started preparing strategies for reducing vibration and protecting soil and groundwater. Strategy

work provides a good basis for meeting environmental challenges.

Immediate challenges are noise and vibration

Rail traffic causes noise and vibration. According to a national study, about 50,000 people live in areas where they are exposed to over 55 dB from rail traffic. The national noise abatement programme sets RHK the objective of reducing this number by 10,000 before 2020.

Vibration projects have mainly been limited to surveying problems and conducting research. Speed limits have been used to reduce vibration. Legislation requires that attention be paid to the effects of traffic vi-

bration. No ceilings have been set, however, and this makes it more difficult to pinpoint problems than in the case of noise.

RHK's environmental programme continued projects that began the year before and started new projects according to RHK's environmental focuses. The main emphasis was on preparing environmental strategies, noise reporting to the EU, developing the environmental system, developing environmental site information, carrying out yard environment projects in Joensuu and Kouvola, and preparing a project to clean up soil and groundwater at a creosote-contaminated site in Mikkeli.

Strong efforts to reduce noise

RHK built about 40 kilometres of noise barriers in 2000–2006, at a cost of 24 million euros. Noise barriers in the Helsinki metropolitan area accounted for 13 million euros of this. In the next few years the focus will be on other busy line sections and stations.

Track renewal in itself is a good way to reduce noise. Noise levels can be over 10 dB lower after a line has been renewed. Noise can also be reduced by grinding rails. In 2006 this was done over a distance of about 300 kilometres.

The biggest challenge regarding noise control in 2006 was to start studies required by the EU. In the first stage noise studies will be conducted in urban areas with over 250,000 residents, on line sections where the volume of traffic exceeds 60,000 trains a year and on roads where the volume of traffic exceeds 6 million vehicles a year. A separate study will concern civilian airports with over 50,000 takeoffs or landings a year.

In Finland studies will start with Helsinki, the Helsinki-Vantaa and Helsinki-Malmi airports, 647 kilometres of roads and 96 kilometres of railways. The City of Helsinki, the Finnish Road Administration, RHK and Finavia will be responsible for studies. The first stage should be completed in June 2007. The second stage will cover all the sites in the directive and studies should be ready in June 2012. This work is part of the implementation of the Environmental Noise Directive.

Environmental impact assessment for the Seinäjoki–Oulu line section

RHK sent an environmental impact assessment for the Seinäjoki–Oulu line section to the West Finland Regional Environment Centre in February 2006. The contact authority issued its statement in June 2006.

Environmental impact assessment work was extensive and innovative. Interaction between residents and authorities was lively. The vibration and noise studies in this process were the first to be conducted in such a large scope in rail projects.

The environmental impact assessment included a separate report concerning vibration. The most significant risk areas were evaluated on the basis of soil properties and the location of housing in accordance

with criteria developed by the Technical Research Centre of Finland. Information concerning vibration areas in all parts of the line section was also produced. This information can be utilized in planning land use.

Speed restrictions set because of vibration

Place	Year restriction was set	Speed restriction
Nikkilä	1997	all trains 40 km/h
Liminka	1998	over 3,000 tonnes 50 km/h
Jokela	1999	over 3,000 tonnes 40 km/h
Kurikka	1999	all trains 40 km/h
Myllykoski	2000	over 3,000 tonnes 40 km/h
Koria	2001	over 3,000 tonnes 30 km/h
Hollola	2001	over 3,000 tonnes 40 km/h
Kempele	2002	over 3,000 tonnes 50 km/h
Lahti	2002	over 3,000 tonnes 40 km/h
Muhos	2002	over 3,000 tonnes 60 km/h
Oulu (Oulu–Kontiomäki))	2004	over 3,000 tonnes 45 km/h
Loimaa	2005	over 3,000 tonnes 40 km/h
Turku (Toijala–Turku)	2006	over 3,000 tonnes 40 km/h

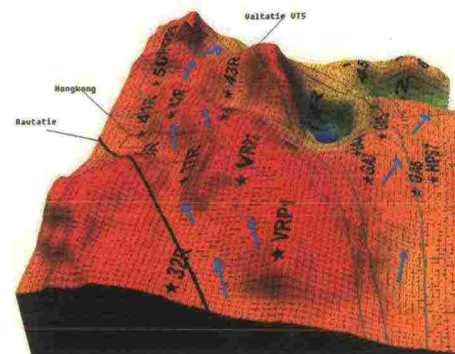
Promising results in cleaning up contaminated soil

Trials of different options for cleaning up a creosote-contaminated site in Mikkeli were completed in autumn 2006. Important information was obtained regarding methods.

Field tests were carried out in an area between the Savo line and Highway 5 from autumn 2005 to summer 2006. The methods that were tested included the biological and electrochemical purification of contaminated soil, passing contaminated

groundwater through a biologically active zone and pumping groundwater through a filter. The contaminated area was also modeled on a computer. Modelling bedrock has been an important aid in describing the flow of water.

An application for an environmental permit to clean up the area was submitted to the South Savo Regional Environment Centre at the beginning of 2007.



Research concerning vibration produces results



Building communities near railways makes it more difficult to develop rail traffic and exposes residents to noise and vibration.

The Finnish Rail Administration conducts research and development regarding infrastructure management and the whole rail system. The R&D budget in 2006 was over 6 million euros. Nearly half of this was for international cooperation projects, which promote the competitiveness of rail transport. In Finland significant cooperation partners are universities.

Last year dozens of R&D projects were under way in which RHK was the main customer or participated in the steering group.

RHK's research and development work promotes rail transport, improves infrastructure management, reduces life cycle costs, spurs innovation and broad-

ens expertise. R&D supports the railways' strengths, such as environmental friendliness and energy efficiency.

RHK's entire personnel broadly follows national and international activities in the railway field.

Research regarding vibration

In recent years a lot of R&D has been done in connection with vibration caused by rail traffic. RHK has taken part in six national or Nordic development projects regarding this problem. RHK completed a vibration strategy in summer 2006.

Economical methods to renew lines with low traffic volumes

Replacement investments for lines with low traffic volumes must be as economical as possible. In autumn 2006 trials were conducted on a stretch of the Nurmes–Kon-tiomäki line section near Valtimo to investigate ways to lower costs. Tests focused on the effectiveness of different solutions using concrete sleepers, reduced ballast and gravel support layers. In summer 2006 tests were also conducted in laboratory conditions. The trial stretch will be closely monitored.

European traffic control system

One of the most important areas of R&D last year was the gradual introduction of the European traffic control system in Finland. Development work continued on the Specific Transmission Module (STM), which will allow the use of new European train control equipment installed in locomotives on Finnish lines.

In 2006 RHK also participated in joint development projects in the infrastructure field. Joint methods have been developed to increase productivity and improve cost awareness.



New methods have been sought for strengthening soft soil.

New method to reduce vibration tested

■ In 2006 the Finnish Rail Administration tested a new method to reduce vibration in Koria on the Lahti-Kouvola line section. The method uses deep stabilization, which involves mixing a stabilizer in soft soil. This forms a series of columns that reduce vibration caused by rail traffic.

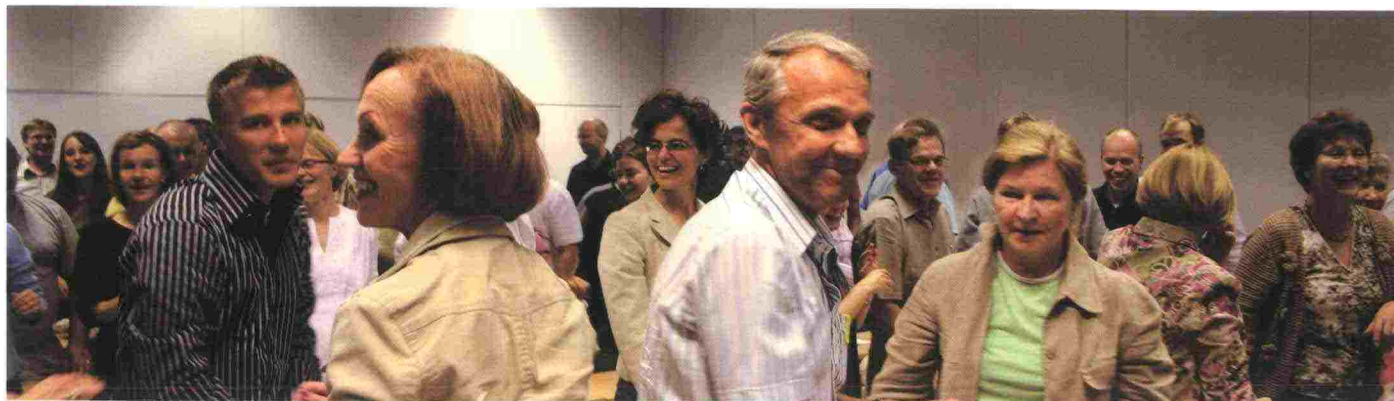
The objective was to find a new and economical solution for vibration problems. Vibration caused by rail traffic is worse in places where the soil is soft. Speed restrictions have had to be set particularly for heavy freight trains because of vibration. In Koria the maximum speed is 30 km/h.

Two deep stabilization fields were built in Koria over a total distance of about 400 metres. Two different column depths were tried: 15 and 21 metres.

Stabilization structures were completed in August, then vibration measurements were started and the effects of deep stabilization were studied near the line. The test results were promising, since the methods reduced vibration considerably.



Rail safety tasks shifted to the Finnish Rail Agency



RHK's personnel assembled for their annual development day.

The Finnish Rail Administration's organization and the scope of its activities changed significantly when the Finnish Rail Agency went into operation last autumn. Safety tasks were shifted from RHK to the new agency, along with practically all the personnel in RHK's Safety Department - 18 employees. Ticket inspection activities including 38 employees were likewise shifted to the new agency. RHK's personnel is still responsible for the safety of infrastructure management.

The establishment of the Finnish Rail Agency was a big change for personnel, mentally as well as operationally. The rearranging of safety work and new tasks have required extra effort on the part of personnel and have brought new responsibilities.

Work load increasing faster than personnel

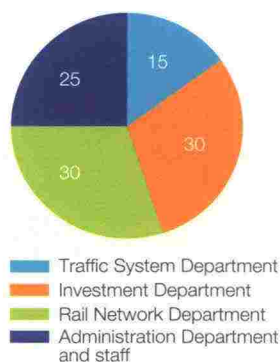
RHK's personnel resources in relation to tasks and objectives are quite small. The state's productivity programme presents new challenges for RHK, since it puts a cap on personnel. Because RHK's tasks are increasing, it will have to make broader use

of purchased services. Already over 95% of the work that is financed through RHK's budget is performed by contractors or in the form of purchased services.

The average age of RHK's personnel is 45 years. In the next five years 12 employees or 10% of personnel will retire. As a result RHK will have to recruit new personnel with the necessary expertise.

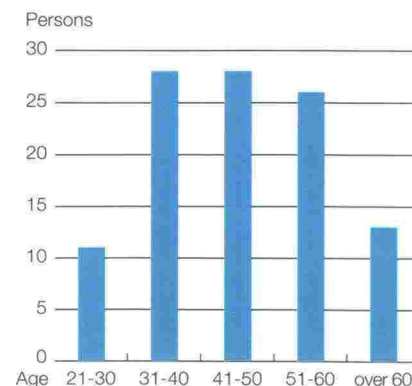
Recruiting is a challenge for RHK, since some tasks require special expertise that is hard to come by. Retirement will accelerate internal arrangements in which tasks are exchanged and people can accept new challenges. RHK also needs young employees who can learn on the job.

Employees by department in 2006, %



In 2006 RHK had 15 employees in the Traffic System Department, 30 in the Investment Department, 31 in the Rail Network Department and 25 in the Administration Department and staff. The total was 101 employees.

Age breakdown of employees



Priority given to developing personnel

RHK continued developing personnel in 2006. It placed strong emphasis on management and cooperation skills and surveying expertise. Personnel were provided training and work supervision.

Joint operational management system

In 2006 the Finnish Rail Administration, the Finnish Road Administration and the Finnish Maritime Administration started a joint operational management development project aimed at improving cost-effectiveness and harmonizing operational models and tools to meet the needs of different user groups.

In the autumn requirements were specified for the project and on this basis an operational management system will be procured and introduced. The goal is for the three agencies to have a harmonized operational management system that will replace present systems by 2009. The new system will require extensive training.

Controller function established

In 2006 RHK decided to improve the level of financial administration by establishing a controller function. One or two persons were appointed in each department to take care of controller tasks, for which they were given training.

Controllers will serve as experts and contact persons in financial matters. Together with the Financial Administration Unit they will be responsible for setting and measuring performance targets and for ensuring accountability.

Procurement strategy prepared

In 2006 a procurement strategy was prepared for RHK as a whole. The strategy calls for RHK to create possibilities for creating efficient markets and competition and maintaining competition. Personnel responsible for procurements are skilled experts and the systems they use serve procurement tasks. Procurements promote innovative and cost-effective procedures

in infrastructure management. Procurements pay attention to life cycle management and costs.

Employer-subsidized ticket a big hit

Last year RHK adopted an employer-subsidized ticket between home and work. This was highly popular among personnel and was obtained by 66 employees.

Guidelines were prepared on teleworking and the system for monitoring working hours was developed to allow more flexibility.

Talk about merging agencies in the transport sector

A study commissioned by the Ministry of Transport and Communications concerning the effects of merging the Finnish Rail Administration, the Finnish Road Administration and the Finnish Maritime Administration stimulated a lot of discussion among personnel at the end of the year. The study will continue in 2007 and will involve all personnel. RHK is actively participating in this work.

Management skills improved through training

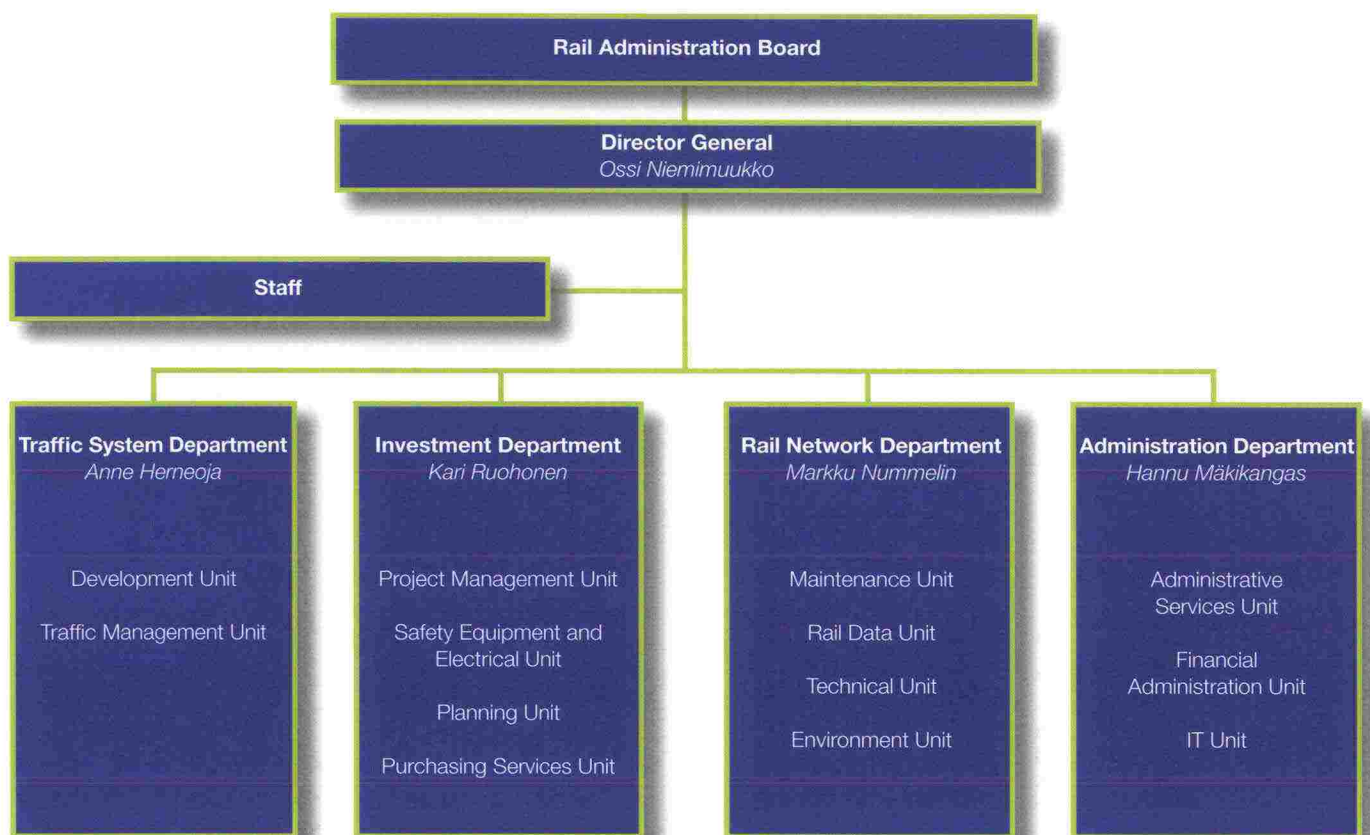
■ The Finnish Rail Administration offered personnel a chance to participate in a management course arranged by the Haaga Institute. Six managers and experts took part in this course, which lasted over a year.

One of the participants was Juha Virolainen, the head of the Purchasing Services Unit. He considered the course, which consisted of classroom work, assignments and demonstrations of proficiency, quite beneficial.

Virolainen says the course immediately stimulated interest because it was tailored for the public sector. Instruction also met expectations: it went over the basics of management comprehensively and provided tools for practical work such as personnel management.

Virolainen has been employed by RHK since May 2004 and has four other persons in his department. As a course project he helped prepare RHK's procurement strategy together with a working group.





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