

# Annual Report 2001



**Jernbaneverket**



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*Cover: Tensioning wheel – part of the catenary system  
(Photo: Rune Fossum)*

*Inside cover: Signalling control  
(Photo: Rune Fossum)*

# Director General's review

2001 was a year of learning new lessons. There has to be no room for doubting that rail is a safe form of transport. A great deal of expenditure, time and effort has been devoted to improving the safety of railway infrastructure and train operations. The series of accidents in 2000 dealt a blow to the safe reputation of our railways. Public confidence is essential to our reputation. We know that confidence takes years to build up, but only seconds to demolish. We are in the process of rebuilding public confidence, step by step, and we can see the light at the end of the tunnel.



Steinar Killi,  
Director General  
(Foto: Scanpix)

Rail traffic picked up towards the end of the year. Air traffic suffered a setback after September 11. The horrific images of hijacked passenger jets crashing into the World Trade Center in New York probably caused many air travellers, in Norway as elsewhere, to switch to other forms of transport. This was one factor behind the increase in passenger rail traffic.

The transformation of Jernbaneverket's safety culture from an incident-based to a risk-based one continued throughout 2001. An action plan for safety-related improvements was implemented during the first half of the year. This work was conducted as a dedicated project, with a view to getting the process of improvement under way faster. The transition to a risk-based safety culture will continue to dominate Jernbaneverket's activities in the years ahead.

During the year, the Government of Norway presented its National Transport Plan for the years 2002–11. The plan was subsequently approved by Parliament and will, if fully implemented, maintain rail's competitiveness over the next ten years. Unfortunately, not all the paper commitments have been backed up with hard cash. It is already clear from the State Budget for 2002 that the necessary finance to see through the first year of the plan will not be forthcoming. The capital expenditure shortfall is over NOK 600m, a level of funding 35% below that envisaged in the plan. As a consequence, rail will be unable to improve its position in relation to com-

peting forms of transport over the coming years. A political declaration on the future scope and standard of the rail network is urgently required. Current levels of funding will not produce better train services – on the contrary, we shall have to put up with continuing delays and infrequent services for the foreseeable future.

2001 also saw work start on the new double track between Skøyen and Asker, intended to eliminate Norway's worst rail traffic bottleneck. The project will proceed in stages and will dominate Jernbaneverket's construction activities for the ten-year period up to 2012. The Sande double-tracking scheme was completed in 2001, giving much greater flexibility and shorter journey times on the Vestfold line. New freight terminals are planned for Trondheim and the Stavanger area. However, figures produced by NSB and Jernbaneverket show that the Leangen terminal in Trondheim is not needed to handle current freight volumes. Jernbaneverket is therefore disputing whether it is necessary to spend NOK 500m on a facility that is not required at present, and we have asked the Ministry of Transport and Communications to look into this.

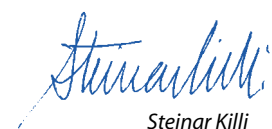
On 1 June 2001, Jernbaneverket's new organisational structure, principal objectives and strategies took effect. The six principal objectives cover safety, finance and efficiency, human resources, competitiveness, punctuality, and environmental protection. Jernbaneverket aims to help the country achieve its transport policy objectives and to pro-

mote rail as a safe, competitive form of transport, forming part of an integrated network. It is therefore essential that everyone within the organisation is familiar with the principal objectives, and that the declared strategies are followed.

Following the restructuring, the executive management team reporting to the Director General consists of four Executive Directors, the Director of Safety, and the Director of International and Administrative Affairs. During the year, Jernbaneverket also embarked on a reorganisation of traffic management. By summer 2002, this activity will have been removed from the control of the regions and integrated with central management. The Telecommunication Services business was hived off into a separate limited company, BaneTele AS, from 1 July 2001.

Jernbaneverket's finances are under control. The cash accounts show an overspend in 2001 of NOK 54.874m in relation to the budget allocation.

At 31 December 2001, Jernbaneverket had 3 577 permanent employees. Jernbaneverket is a changing organisation, and as in previous years, our staff have shown a great deal of loyalty and flexibility. I should like to thank them all for their hard work in 2001.

  
Steinar Killi

# What is Jernbaneverket?

Jernbaneverket (the Norwegian National Rail Administration) was established on 1 December 1996 as a public body reporting to the Ministry of Transport and Communications. Jernbaneverket is responsible for managing the public railway network and making it available to licensed train operators in a non-discriminatory manner. The Director General is in overall charge of Jernbaneverket. Jernbaneverket's Instructions from Government were set out in a Royal Decree dated 18 June 1999.

Railway operations involve interaction between infrastructure, traffic management and rolling-stock. Jernbaneverket's infrastructure management remit also includes responsibility for systemwide safety on the railways. This responsibility is exercised by Jernbaneverket itself taking charge of infrastructure and traffic management while ensuring, through track access agreements and capacity allocation, that train operators are in a position to comply with infrastructure and traffic management requirements in terms of rolling-stock and staff competence.

## Jernbaneverket is responsible for:

- Developing and operating a rail network that meets the requirements of society and the market in terms of safety, accessibility, speed, axleload, train frequency, loading gauge, comfort, ambience, environmental protection and public information
- Railway stations and terminals, including public spaces, access, car parks and other public facilities necessary for users of rail services
- Timetabling, i.e. allocating train paths to operators (capacity allocation)
- Traffic management, i.e. operational control of traffic on the rail network
- Regulation of the public rail network
- Studies and planning in the rail sector
- Entering into track access agreements with train operators licensed to run services on the public rail network

The public rail network is a vital part of the infrastructure of society. Development and operation of the net-

work is therefore a socioeconomic task, which has to be viewed in the same context as other socioeconomic activities.

Jernbaneverket aims to help the country achieve its transport policy objectives and to promote rail as a safe, competitive form of transport, forming part of an integrated network.

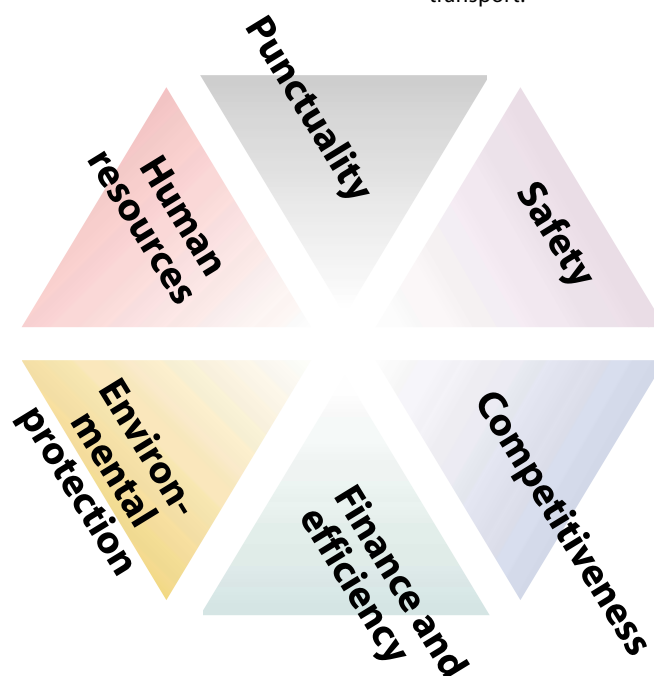
During 2001, Jernbaneverket drew up strategies and principal objectives for the following six core areas:

- **Safety**
- **Punctuality**
- **Competitiveness**
- **Human resources**
- **Environmental protection**
- **Finance and efficiency**

These objectives are intended to provide direction for the internal management of the business.

## Jernbaneverket's principal objectives are:

- Rail transport must not result in loss of human life, serious human injury, or serious damage to rolling-stock or the environment. All changes must be geared towards improving safety, to ensure that rail remains the safest form of land-based transport.
- Jernbaneverket must make better use of resources in exercising its responsibilities and conducting its operations.
- Jernbaneverket must be an attractive workplace.
- Jernbaneverket must work to increase rail's market share where rail transport is socioeconomically viable.
- At least 90% of all trains must run on time.
- Jernbaneverket must enhance the environmental benefits of rail transport.



# Organisational structure

Jernbaneverket reports directly to the Ministry of Transport and Communications. The Ministry monitors the activities of Jernbaneverket through regular departmental meetings and four-monthly reports from Jernbaneverket.

The Director General is responsible for the management of Jernbaneverket.

The Head Office is in overall charge of coordinating Jernbaneverket's operations, and sets the conditions for use of the public rail network, train services and associated activities.

The four regions play the role of owner in managing the public rail network and are responsible for traffic management at operational level.

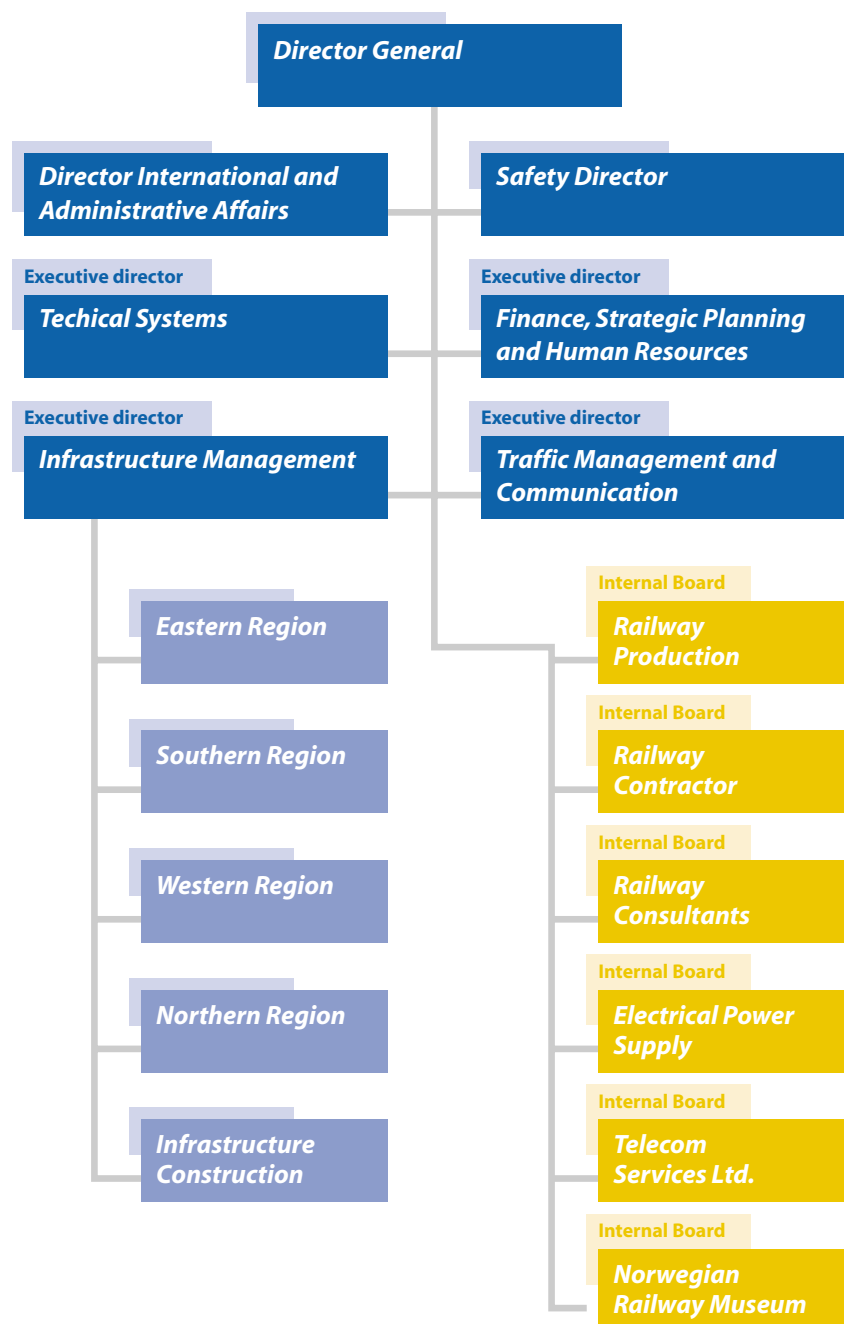
The Infrastructure Construction department acts as developer for railway construction projects, from the detailed planning stage through to completion of the new infrastructure.

The supplier units, which supply goods and services to Jernbaneverket and external clients alike, are:

- **Railway Production**, which supplies rail-related contracting services using light machinery
- **Railway Contractors**, which supplies rail-related contracting services using specialised equipment and heavy machinery
- **Railway Consulting**, Jernbaneverket's consulting engineers
- **Electric Power Supplier**, Jernbaneverket's electricity supplier
- **Telecommunication Services**, Jernbaneverket's telecommunication provider, which now has a high-speed fibreoptic network covering the whole of Norway.  
From 1 July 2001, telecommunication services became a limited company, BaneTele AS, wholly owned by Jernbaneverket.

**The Norwegian Railway Museum** is in charge of historical documentation and promoting Norwegian railway history.

Organisational chart, 31 December 2001



# The Norwegian railway network



*Train carrying aviation fuel on the Gardermoen airport line. (Photo: Rune Fossum)*

The Norwegian railway network is a first-generation network, most lines having been built between 100 and 150 years ago. There are few sections that allow the high-speed potential of modern rolling-stock to be exploited to the full.

## Capacity

Potential train density depends primarily on the number, frequency and length of operational passing loops, the number of route-kilometres with double track and the electricity supply. Other factors are the number of tracks and capacity at the end stations and terminals.

Oslo central station (Oslo S) and the Skøyen–Asker and Oslo S–Ski sections are the main bottlenecks in the network, operating at full capacity for long periods in the rush hour. Elsewhere, capacity is well utilised at certain times of day on most lines in eastern Norway and on local lines around Stavanger, Bergen and Trondheim.

Measures to increase capacity in 2001 included the opening on 5 October of a new double-track section between Skoger and Holm on the Vestfold line. As well as increasing track capacity, this has reduced journey times by 2–3 minutes, and subsequent optimisation measures will shave a further 5–6 minutes off journey times for some trains.

On the Bergen line, the passing loop

at Gullsvik was extended to 700 metres and opened to traffic in September. This has slightly increased track capacity, as well as allowing much greater flexibility in the day-to-day operation of services.

Services on the Røros line returned to normal in 2001 after the installation of automatic train control (ATC).

As in 2000, there were a number of temporary capacity reductions (speed restrictions and train cancellations) owing mainly to various trackworks. Jernbaneverket is working to reduce the extent of these temporary restrictions and to improve track availability.

## Loading gauge

Loading gauge is one of the key capacity parameters, especially for freight traffic. The various loading gauges for different lines indicate the maximum permissible height and width of loaded rolling-stock.

Work on loading gauge modifications has, over the years, been a high priority for Jernbaneverket, in part to bring Norway into line with international stan-

dards and to match popular load formats used in road transport. This applies in particular to loading gauge UIC P407, which allows higher loads and hence more efficient container traffic, and above all enables semitrailers to travel by rail.

Piggyback traffic, which has shown enormous potential on national and especially international routes, is a growth segment. To a large extent, this involves temperature-controlled consignments with a high goods value, a segment in which rail previously found it hard to complete. What is more, such traffic is largely won over from the roads.

The lines now cleared for this type of traffic are the Ofoten (temporarily P403), Nordland, Meråker (no conflict points), Dovre, Rauma, Røros (no conflict points), Kongsvinger, Østfold and Sørland lines.

Upgrading to P407 standard will continue, with the Bergen and Ofoten lines scheduled for completion in 2003.

For international traffic, the priority is to adapt parts of the network to the international loading gauge RIV-3.2,

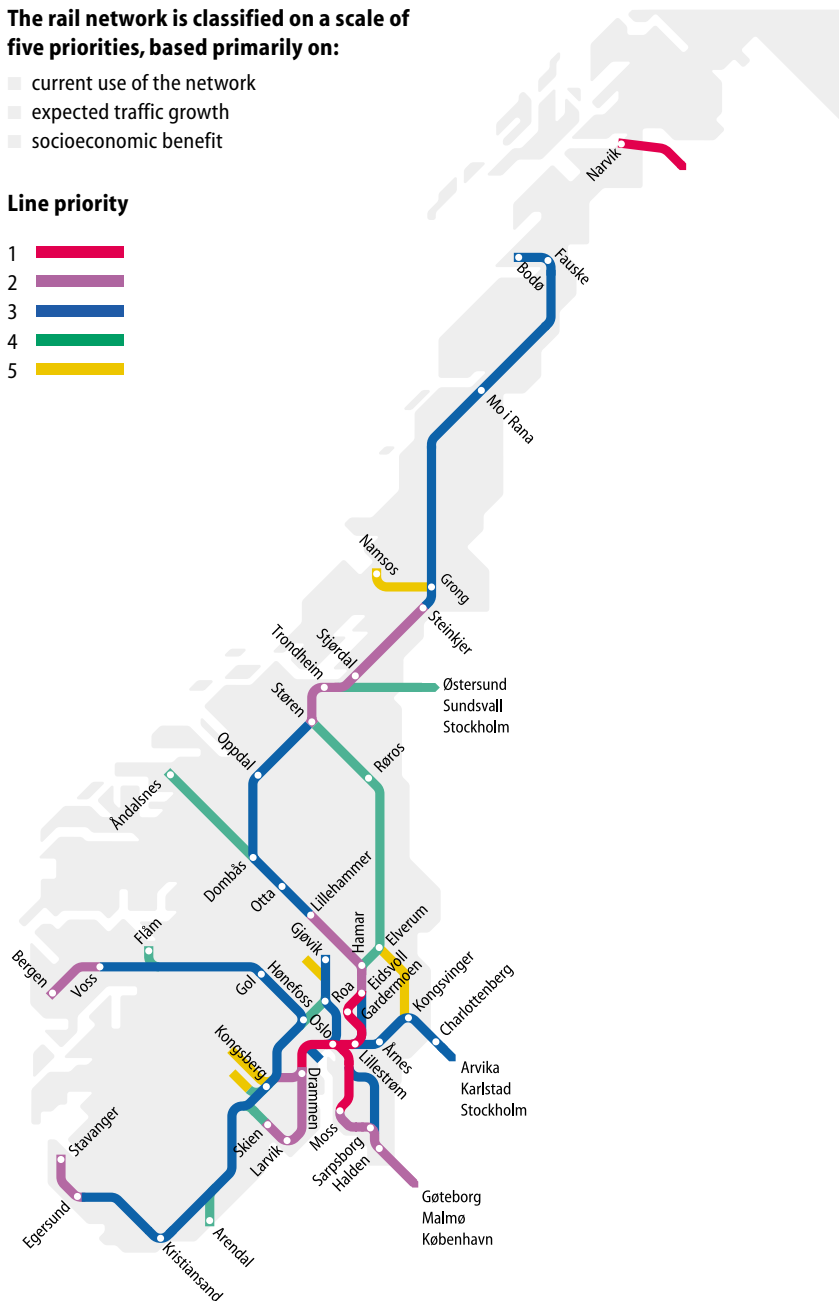
which allows the use of larger, more modern wagons. In effect, RIV-3.2 is a standard loading gauge for the European rail network north of the Alps. At present, this loading gauge is permitted only on the Kongsvinger line.

**The rail network is classified on a scale of five priorities, based primarily on:**

- current use of the network
- expected traffic growth
- socioeconomic benefit

**Line priority**

- 1
- 2
- 3
- 4
- 5



Bergen line



Gardermoen airport line



Nordland line



Østfold line



Røros line



Sørland line



The catenary has to be renewed when lines are upgraded for speeds of 160 km/h upwards.  
(Photo: Rune Fossum)

## Key figures for the Norwegian public rail network

	Route-km	Double track km	Passing loops > 600 m	Bridges	Tunnels	Level crossings <sup>1)</sup>
■ Nordland line (Trondheim – Bodø)	729	0	24	361	156	906
■ Sørland line (Drammen – Stavanger)	545	0	17	495	190	164
■ Dovre line (Eidsvoll – Trondheim)	485	0	36	384	42	432
■ Røros line (Hamar – Støren)	383	0	7	291	6	517
■ Bergen line (Hønefoss – Bergen)	372	0	18	192	155	366
■ Østfold line, west	170	63	8	190	16	106
■ Vestfold line (Drammen – Skien)	148	18	0	120	16	186
■ Gjøvik line (Oslo S – Gjøvik)	124	3	2	102	7	158
■ Kongsvinger line	115	0	7	49	0	102
■ Rauma line	114	0	1	100	6	247
■ Valdres line (Eina – Leira)	104	0	0	14	2	126
■ Solør line	94	0	0	31	0	231
■ Numedal line (Kongsberg – Rødberg)	92	0	0	22	18	271
■ Østfold line, east	80	0	1	42	2	138
■ Bratsberg line (Skien–Nordagutu)	74	0	0	69	29	118
■ Meråker line (Hell–Storlien)	71	0	0	64	1	62
■ Main line (Oslo S–Eidsvoll)	68	21	6	62	2	12
■ Randsfjord line (Hokksund–Hønefoss)	54	0	0	27	0	126
■ Namsos line	51	0	0	22	5	113
■ Airport line (Etterstad–Gardermoen)	49	49	0	25	1	0
■ Drammen line (Oslo S–Drammen)	42	42	0	58	11	2
■ Ofoten line	42	0	1	6	20	44
■ Arendal line	37	0	0	16	3	51
■ Roa–Hønefoss line	32	0	0	25	3	47
■ Flåm line	20	0	0	2	21	41
■ Airport line (Gardermoen–Eidsvoll)	17	13	0	12	2	0
■ Randsfjord line (north of Hønefoss)	16	0	0	5	0	33
■ Spikkestad line	14	0	0	12	0	9
■ Brevik line (Eidanger–Brevik)	10	0	0	0	1	13
■ Horten line (Skoppum–Horten)	7	0	0	0	0	24
■ Alnabru–Loenga	7	0	0	3	0	0
■ Stavne – Leangen	6	0	0	2	1	2
■ Alnabru – Grefsen	5	0	0	5	0	9
■ Dalane – Suldal	1	0	0	0	0	0
<b>Total</b>	<b>4178</b>	<b>209</b>	<b>128</b>	<b>2808</b>	<b>716</b>	<b>4 656</b>

- Electrified lines
- Non-electrified lines

1) Including level crossings on sidings.



# Safety

Jernbaneverket charts the risk profile of the public rail network by means of line-by-line risk surveys and related safety monitoring plans. The risk surveys for individual lines are the starting point for all safety-related analysis of infrastructure, traffic management and rolling-stock.

Jernbaneverket's safety philosophy is that rail transport must not result in loss of human life, serious human injury, or serious damage to rolling-stock or the environment (the zero vision). Our overall safety objective is to maintain existing levels of safety, and all changes must be geared towards improving safety.

In 2001, six people died in train-related accidents. Two of these fatalities were train passengers. The other four were run over by trains, two of them at level crossings.

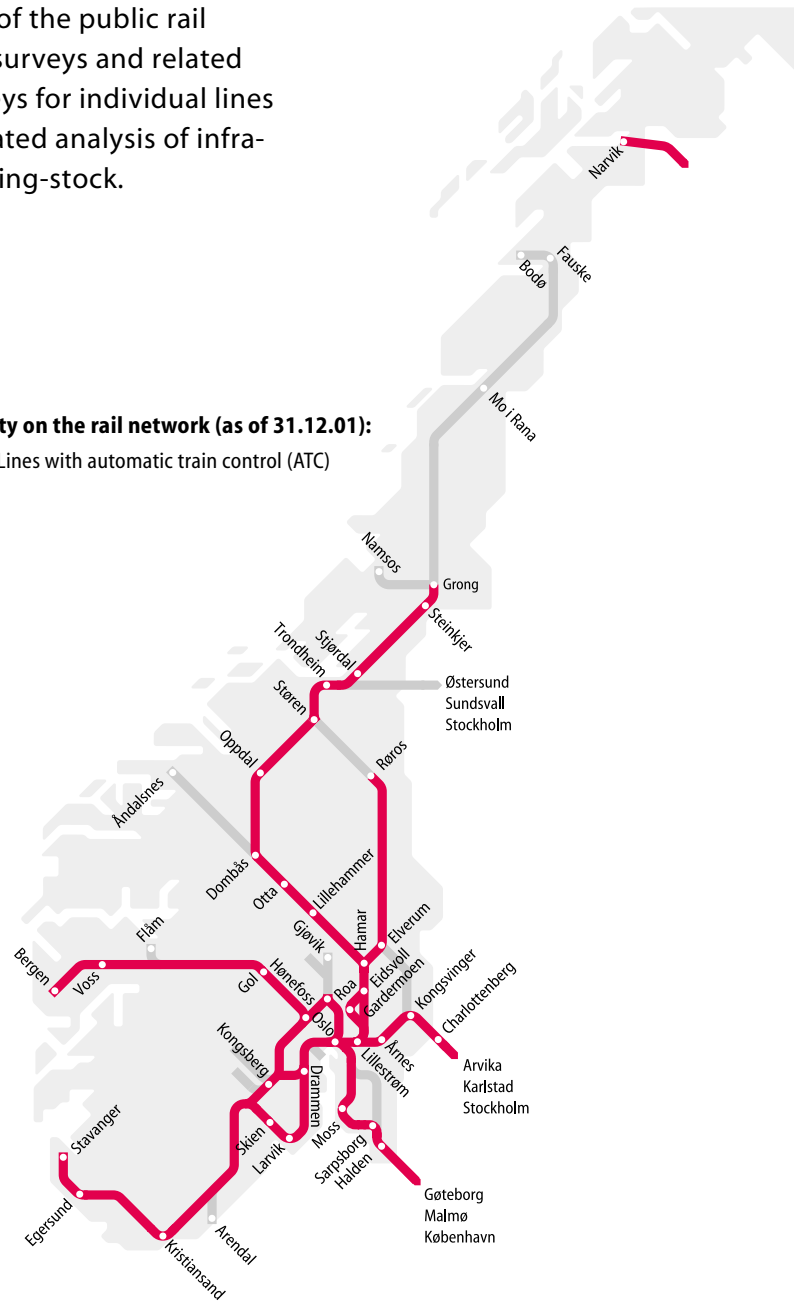
Two potentially serious incidents occurred in 2001. The first was a collision between two trains at Nittedal station on 8 April, which resulted in minor injuries. The second was a collision between a suburban train and a track machine between Skøyen and Lysaker, which also caused minor injuries.

The line safety surveys that have been carried out indicate that Jernbaneverket should focus its efforts on preventing major accidents, and on reducing the scope for collisions between trains and road vehicles or people at level crossings and elsewhere on the track. For this reason, Jernbaneverket decided in 2001 to build an emergency stop system on lines without centralised traffic control, and to equip all its rail-borne track machines with ATC. In addition, a number of important initiatives are being pursued in respect of level crossings and trespassers on the line.

Jernbaneverket staged a campaign entitled "Tougher than the Train", aimed at children and young people, to highlight the dangers of trespassing on the railway.

## Safety on the rail network (as of 31.12.01):

■ Lines with automatic train control (ATC)



## Number of train-related incidents and fatalities

	No. of incidents		No. of fatalities	
	1980–2000	2001	1980–2000	2001
Collisions	7	7	1.5	0
Derailments	16	3	0.1	0
Level crossing accidents	17	15	4.3	2
Other incidents	18	12	1.9	4 (2 passengers)
<b>Total</b>	<b>58</b>	<b>37</b>	<b>7.8</b>	<b>6</b>

### Level crossings

At 31 December 2001, there remained 4 645 unprotected level crossings in Norway. The number of level crossings eliminated during the year was 187, which was in line with the average for the previous five years. An extensive surveying process has been conducted, with a view to providing an improved basis for prioritising remedial action. Work has also started on developing alternative measures to achieve maximum benefit in safety terms. Replacing a level crossing with a grade-separated crossing is expensive, with costs in the region of NOK 3–10m including the associated roadworks.

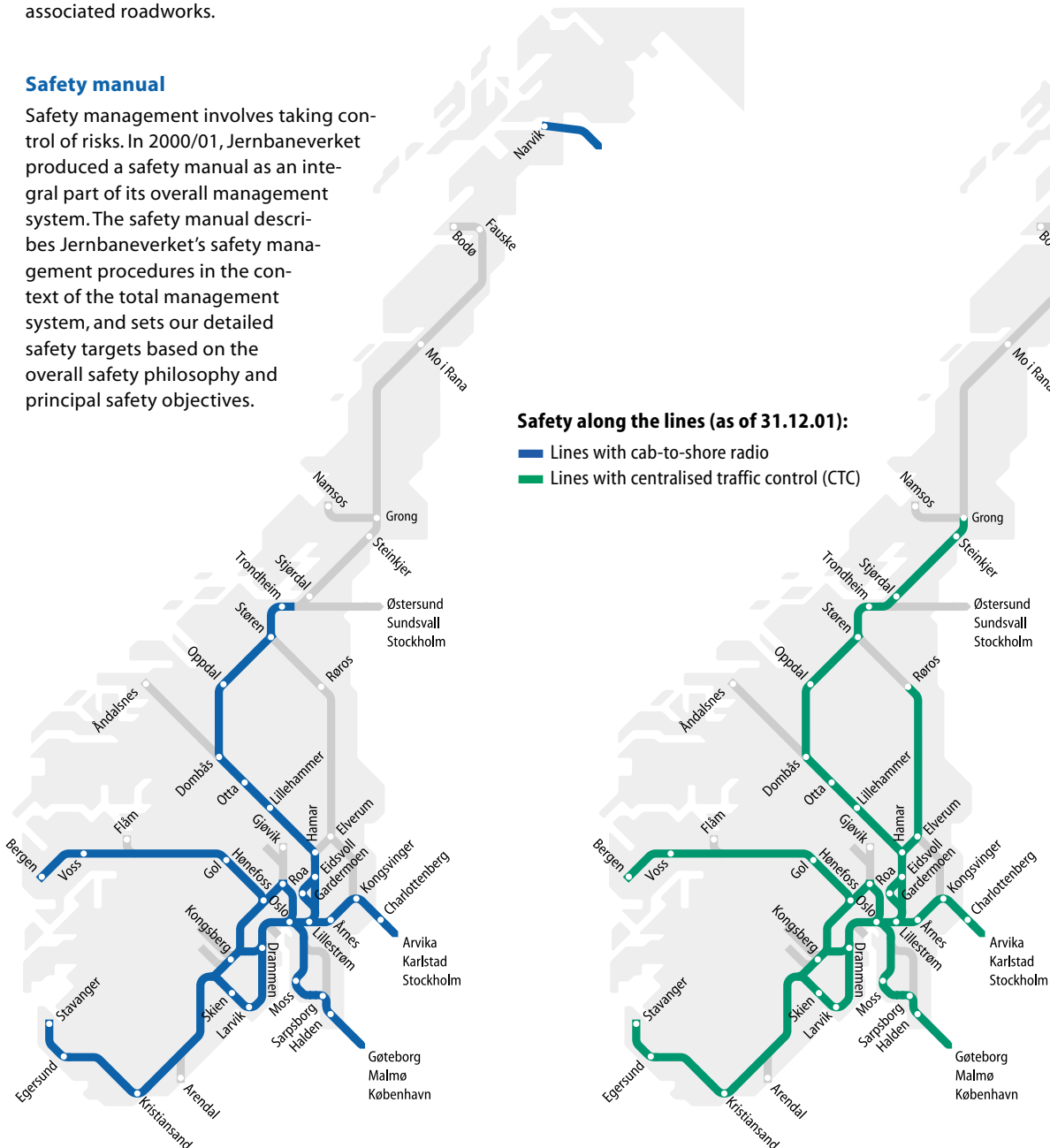
### Safety manual

Safety management involves taking control of risks. In 2000/01, Jernbaneverket produced a safety manual as an integral part of its overall management system. The safety manual describes Jernbaneverket's safety management procedures in the context of the total management system, and sets our detailed safety targets based on the overall safety philosophy and principal safety objectives.

### Responsibility for rail safety

The Ministry of Transport and Communications has clarified the extent of Jernbaneverket's responsibility for rail safety. Safety is the sum of the risks associated with infrastructure, trains and traffic management. Jernbaneverket will now specify clearer requirements, both in-house and for external players on the rail network, be they train operators or maintenance contractors. In this way,

Jernbaneverket can control the overall situation. Consequently, Jernbaneverket is committing itself to specified levels of safety for infrastructure and traffic management vis-à-vis other players on the rail network.







# Punctuality

The punctuality of train services is indicated as the percentage of trains arriving at their destination on time. For regional, suburban and airport services, a margin of three minutes is allowed; for all other trains, the margin is five minutes.

Punctuality improved in 2001 on Airport Express services, Intercity services in the Østfold region, long-distance services (particularly Signatur services on the Sørland line), and local services around Stavanger, Bergen and Trondheim. On other lines and the Oslo suburban network, there was no improvement, and punctuality was consistently poorer than in 2000. This deterioration was due to an increase in delays caused by signal failures, temporary speed restrictions and problems with NSB's multiple units.

The number of delayed trains directly attributable to infrastructure factors increased by 17% on the previous year's figure.

## Faults affecting punctuality

Jernbaneverket defines faults affecting punctuality as catenary and signalling faults that disrupt train services.

## Punctuality, % of trains arriving on time

	Long-distance	Regional	Oslo Suburban	Airport Express	Time-guaranteed freight
1991	78	76	82		
1992	80	75	81		67
1993	79	79	85		60
1994	80	85	84		63
1995	83	84	88		77
1996	80	79	83		71
1997	78	78	75		74
1998	82	82	80		75
1999	84	87	87	97	81
2000	68	81	89	94	74
2001	77	77	85	95	76

The figures for Oslo suburban services 1991–98 are based on rush-hour measurements. All other figures are based on round-the-clock monitoring.

Performance in 2001 fell well short of targets, with a significant increase in the number of catenary faults and signal failures compared with 2000.

## Temporary speed restrictions (TSRs)

TSRs are imposed for safety reasons owing to the quality of the infrastructure or planned trackworks. Timetables make allowance for planned TSRs, which do not therefore affect the punctuality of train services.

However, delays may ensue from unplanned TSRs imposed in unforeseen circumstances, such as heat-buckling,

broken rails or landslides, or as a result of the general condition of the track.

The main causes of late running in 2001 were:

- Adhesion problems due to heavy leaf-fall in the autumn
- A large number of collisions with animals throughout the year
- Bad weather conditions in the autumn
- A cold spell in Eastern Norway in December
- Infrastructure faults and TSRs
- A derailment affecting local services around Trondheim



Passengers on the platform at Dombås station  
(Photo: Rune Fossum)

# Traffic volumes on the public rail network

In terms of train-kilometres, rail traffic suffered a decline in 2001. The reduction in train-kilometres operated by NSB's passenger division largely reflects the availability of resources and the introduction of new rolling-stock, coupled with a refocusing of product segments.

Long-distance passenger traffic showed healthy growth at the end of the year, much of which was attributable to changes in domestic air services. As a result of changes in domestic and international flight schedules, Flytoget AS (the operator of the Airport Express service) saw its passenger numbers fall by 2% in 2001.

NSB's freight division continued to rationalise its wagonload operations, in preparation for partial privatisation and a refocusing of the business on intermodal operations. Intermodal traffic grew slightly during the year.

Owing to the persistent downturn in world steel markets, iron ore traffic on the Ofoten line, operated by Malmtrafikk AS, fell back by 15% to 12 million tonnes.

GM Gruppen saw its charter train traffic increase by 47% to 1 805 passengers.

At year-end, NSB's freight division became a part-privatised limited company, CargoNet AS, owned 55% by NSB BA and 45% by Green Cargo, the

Swedish railfreight company. In return for the Swedish shareholding, the Swedish intermodal operator Rail Combi AB became a wholly owned subsidiary of CargoNet AS, giving CargoNet a dominant position in the Nordic intermodal market. CargoNet AS now holds its own operator's licence and track access agreement with Jernbaneverket, bringing the number of train operators on the Norwegian network to five. Under current regulations, however, the operating licences of Flytoget AS and CargoNet AS are conditional upon their status as NSB subsidiaries, so any further privatisation will require a change in the licensing regulations.

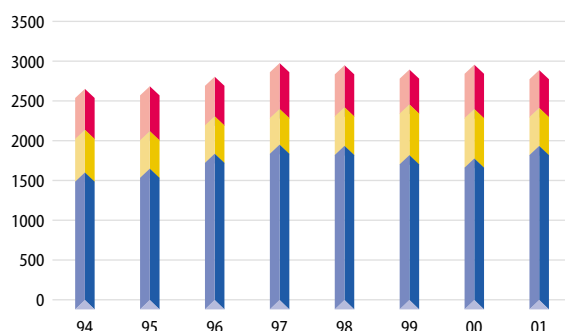
Over recent years, the NSB group and its subsidiaries have extensively rationalised their profile in terms of product scope, focusing on success in selected segments. As a result, certain requirements are no longer adequately catered for. The introduction of real competition in the rail sector is expected to enhance the competitiveness of rail transport and

bring benefits for customers.

Jernbaneverket therefore recommends further relaxation of the licensing regulations for new train operators on the national network at the earliest opportunity. As well as benefiting Norwegian companies seeking to provide a wider range of options for domestic transport, this would also place Norway in a good position to take early advantage of the further liberalisation of international freight services required under the EU's first Railway Package.

This applies primarily to freight traffic, where all the main preconditions are now in place. In this area, Jernbaneverket has also joined forces with infrastructure managers from the other Nordic countries to promote pan-Nordic freight services. The introduction of competition on domestic passenger services requires further development of regulatory structures, and more detailed regimes governing rolling-stock and ticketing systems.

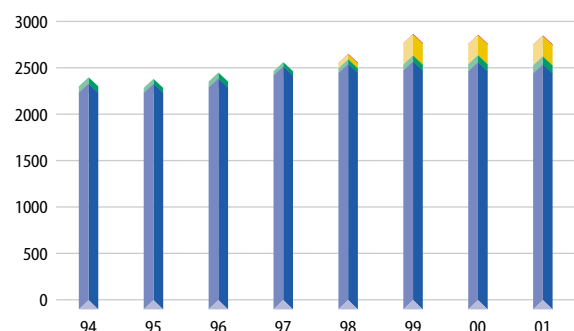
Freight traffic, million tonne-km



- ▲ Transit, Malmtransport AS<sup>1)</sup>
- ▲ NSB BA international<sup>1)</sup>
- ▲ NSB BA domestic

1) Total tonne-km based on Norwegian part of route.

Passenger traffic, million passenger-km



- ▲ Flåm Utvikling AS
- ▲ Airport Express
- ▲ NSB BA international
- ▲ NSB BA domestic



13:36 Ski

Leiblfing - Thaurer mit alle stunden





# Infrastructure operations and maintenance

Railway infrastructure operations are vital to maintaining safe and reliable train services. Operations include tasks such as track inspections, contingency staffing, fault repairs, snow clearance, monitoring and overhauls.

In addition, operations include administrative tasks and planning of capital projects, right through to approval of the overall plan. Operational expenditure also includes costs relating to the generation of income by Jernbaneverket's business units.

Jernbaneverket's total operating costs in 2001 were around NOK 1 865m, the bulk of which was accounted for by staff costs and the purchasing of goods and services.

Infrastructure maintenance involves work to maintain intended levels of safety, functionality and availability in the railway infrastructure. Maintenance operations include the replacement of components or complete installations owing to age and deterioration. Typical maintenance operations are the renewal of catenary and signalling systems, and the complete relaying of sleepers and rails. Long-term maintenance requirements are assessed on the basis of projected lifespans, and short-term maintenance requirements on the basis of status inspections. An adequate level of maintenance is a prerequisite for maintaining safety and availability in the long term.

Jernbaneverket is engaged in numerous maintenance projects, which vary in both scope and cost. These projects are crucial to maintaining current technical standards and improving safety.

## Traffic management

Traffic management involves capacity allocation, timetabling, managing capacity reductions due to engineering works, and operational traffic management (train control, dispatching and public information).

*Track coordinate fixing.  
(Photo: Rune Fossum)*



# Development of the rail network

Parliamentary Bill No. 1 (2000–01) sets out the major capital expenditure projects. The table below shows the total budgeted cost, the sum allocated for the year and the cost charged to the accounts for those projects listed in the Parliamentary Bill.

Project (NOK million)	Budgeted cost	Allocated 2001	Accounting cost 2001
Vestfold line, Sande, Skoger-Åshaugen	443.6	19.7	18.6
Vestfold line, Sande, Åshaugen-Sande-Holm	528.6	40.0	13.9
Vestfold line, Nykirke kryssingsspor	124.7	76.2	40.1
Bergen line, Gråskallen	229.5	5.9	2.2
Drammen line, Sandvika-Asker	3 285.0	295.3	339.5
Detailed planning, Lysaker station	1 031.8	24.0	23.0
Modifications for tilting trains, Sørland, Bergen and Dovre lines		121.3	125.1
Modifications for tilting trains, Kongsvinger and Østfold lines		206.0	136.8
Investment in existing infrastructure		596.1	600.1
<b>Total</b>	<b>5 643.2</b>	<b>1 384.5</b>	<b>1 299.2</b>
Section 4350, item 37*		29.0	34.1
Reimbursement section 4350, items 15–18		0.0	1.2
<b>Section 1350, item 30</b>	<b>5 643.2</b>	<b>1 413.5</b>	<b>1 334.5</b>

\* NOK 29,0 million under item 37 is a contribution to infrastructure works, received to finance upgrading of the Ofoten line for 30 tonnes axleload.

## Vestfold line, Åshaugen–Sande–Holm and Skoger–Åshaugen

The Åshaugen–Sande–Holm and Skoger–Åshaugen projects involved construction of two double-track sections, of 6.9 km and 5.8 km respectively, on the Vestfold line. Taken together, the projects will increase capacity, improve punctuality and reduce journey times on one of Norway's busiest lines. The long-term objective is continuous double track all the way from Drammen to Larvik. The two sections opened to traffic on 5 October 2001.

## Vestfold line, Nykirke passing loop

This project consists of a new passing loop with an effective length of 500 metres, forming part of a new double-track section at the southern end of block five of the Vestfold line. The scheme extends for over 1 000 metres and is designed to the standards of a future high-speed line. The line of route runs through very hilly, wooded countryside, with tunnels, deep cuttings and large embankments across areas of clayey mud. The location of the loop was chosen as the most effective in terms of train operations, in that it breaks up what is currently the longest block section on the Vestfold line. Track and signalling work is still in progress, and the earliest possible completion date is 31 May 2002.

## Bergen line, Gråskallen

At 27 km, the section between Haugastøl and Finse was the longest section of the Bergen line with no passing loops. The new passing loop constructed in tunnel at Gråskallen will improve punctuality and cut journey times, while reducing operating and maintenance costs on the line in winter. The project opened to traffic, as planned, in October 1999, and funding was allocated in 2001 for final clearing up, various outstanding works, and modifications under guarantee.

## Drammen line, Sandvika–Asker

This project forms part of the construction of a new double-track line between Skøyen and Asker. Increased capacity, higher train frequencies, improved punctuality and shorter journey times are the main objectives. The project is in two sections, Sandvika–Jong and Jong–Asker.

The scheme comprises 11.6 km of new double track, running through a built-up area in Sandvika, with new bridges over the Sandvikselva and Rønne elv rivers and highway E16. The route runs in concrete culverts between Jong and Bjørnegård, with allowance for a possible future junction with the proposed new Ringerike line. It then continues in tunnel from Bjørnegård to Asker, surfacing briefly at Åstaddammen. The appro-

ach to Asker station is in a concrete tunnel, and the station itself is to be remodelled.

Individually, the Sandvika–Jong and Jong–Asker sections will bring limited benefit in traffic terms. Coordinated development of the two sections will ensure maximum benefit for traffic and maximum efficiency in construction. The advantages of building and opening both sections at the same time will be increased capacity and improved reliability over the entire route between Skøyen and Asker.

## Sandvika–Jong

Construction work got under way in 2001 with a budget allocation of NOK 186.7m. The ongoing scheme involves construction of a four-track bridge over the Sandvikselva river, expansion of the existing twin-track line to four tracks over a 1 300-metre section, partial relaying of existing tracks, construction of two new single-track bridges over highway E16, and construction of concrete culverts as far as Bjørnegård school.

## Jong–Asker

Construction work commences in 2002 and will comprise two rock tunnels of 2 700 and 3 600 metres respectively, separated by a short surface section at Åstad/Solstad. Construction of the new



Construction works at Jong.  
(Photo: Rune Fossum)

double-track approach to Asker station will require extensive remodelling of the platforms and track layout.

### Modifications for tilting trains, Sørland, Bergen and Dovre lines

This project, which will increase line speeds and capacity, is being undertaken to coincide with the introduction of tilt-body stock on the Sørland, Bergen and Dovre lines. Measures include:

- Improving track standard through track adjustment, ballast cleaning and rail grinding
- Eliminating/securing level crossings
- Moving signals
- Replacing bridges without ballast
- Constructing new passing loops and extending existing ones
- Improving electricity supply and renewing catenary

Infrastructure modifications for tilting trains greatly benefit public transport in rural areas along the Stavanger–Oslo, Bergen–Oslo and Trondheim–Oslo lines, in that journey times between centres of population are reduced, while the frequency of services is increased. These modifications have the potential to facilitate improvements in both passenger and freight services on the lines in question. Tilt-body trainsets entered service in autumn 1999 on the Sørland line bet-

ween Oslo and Kristiansand, reaching Stavanger and the Dovre line during 2000. Work continued in 2001 to complete the projects in hand on the three lines.

### Tilting trains on the Kongsvinger and Østfold lines

The main focus of activity on these lines is on eliminating level crossings, optimising the track, and moving signals to permit higher speeds.

At the same time, Jernbaneverket is involved in extensive maintenance work on both lines. Activities include renewal of the catenary, visibility improvements and modernisation at level crossings, moving of signals where line speed is to be raised, upgrading/replacement of points, track optimisation, replacement of short bridges, ballast cleaning, rail grinding, and replacement of worn rails and sleepers.

### National Transport Plan

Jernbaneverket's action plan for the 2002–05 period was published in early October 2001. In line with the National Transport Plan 2002–11 as approved by Parliament, the action plan assumed an annual capital expenditure ceiling of NOK 1 890m. However, the budget for 2002 set a ceiling of NOK 1 288m – a shortfall of NOK 602m. As a conse-

quence, the following capital projects have been postponed:

- Planning of Farriseidet–Porsgrunn and Kolbotn–Ski
- Barkåker–Tønsberg
- Ganddal freight terminal

In addition, expenditure in the defined focus areas has been scaled down by NOK 386m in 2002.

Jernbaneverket continues to work with other agencies in the transport sector to prepare for the roll-out of the National Transport Plan for the years 2006–11. The transport administrations submitted a joint strategy document in April 2002.

Jernbaneverket contributed information on the extent and standard of the rail network to the White Paper on public transport published in spring 2002. The analysis covers various scenarios for the use of resources and the allocation of capital expenditure, as requested by the Ministry of Transport and Communications in its letter of 30 November 2001. The results of this process will provide an important basis for work on the next roll-out of the National Transport Plan. In addition, Jernbaneverket has begun work on specific, targeted studies intended to provide a basis for formulating strategic objectives at the next roll-out of the National Transport Plan.

# Railways and the environment

The transport sector faces a wide variety of environmental challenges, particularly in the areas of biodiversity, cultural heritage, climate change, air pollution and noise. A commitment to rail and other forms of public transport provides users with an alternative that is less environmentally damaging, and hence helps reduce the adverse environmental impact of the transport sector.

## Principal environmental objectives and strategies

Jernbaneverket's principal environmental objective is to reinforce the environmental benefits of rail transport. To this end, Jernbaneverket aims to:

- Develop, document and communicate rail's environmental benefits, to ensure proper use of resources
- Monitor and reduce rail's overall environmental impact
- Set defined, quantifiable environmental standards for our own operations, our suppliers and train operators
- Improve the environment at stations and the lineside

## Environmental benefits of rail

Statistics Norway has compared the energy consumption and emissions to air of various modes of transport, and its calculations show that rail is the most energy-efficient means of transporting goods, followed by sea and road. The figures from Statistics Norway also show that electric trains have the lowest energy consumption per passenger-kilometre, closely followed by the Oslo metro. To capitalise on the benefits of rail, the focus of growth should be on the areas where rail is strongest, such as long-distance freight transport. For society at large, the transfer of goods from road to rail brings major safety and environmental benefits.

## Environmental management

Environmental management forms an integral part of Jernbaneverket's management systems. Jernbaneverket's environmental management system, which is based on ISO 14001 standards, was reviewed in 2001.

## Green purchasing

Since 2000, Jernbaneverket's purchasing manual has contained guidelines on environmentally friendly purchasing. During 2001, several departments incorporated similar requirements into their own management systems.

## Grønn Stat

Jernbaneverket was involved in the Government-sponsored Grønn Stat ("Green State") project, which came to an end in its present form at the end of 2001. The Norwegian Pollution Control Authority (SFT) has published a final



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report on the project, with contributions from the participating bodies, and overall impressions of the project are positive.

### **Environmental action and reporting in the transport sector**

If individuals are to be involved in the drive for a better environment, both through personal choices and as participants in decision-making, then good access to environmental information is essential. The authorities in charge of environmental protection aim to provide easily understandable information on environmental status and developments in fields affecting the environment. In 2001, Jernbaneverket took part in work to devise a reporting system for noise levels, which is intended to provide annually updated performance figures in relation to national key targets for environmental status and impact.

### **Cultural heritage**

Jernbaneverket is working with Riksantikvaren (the Directorate for Cultural Heritage) on a national conservation plan for railway-related cultural heritage. The proposals involve the conservation of lines and objects alike. The project commenced during the 1997 Year of Cultural Heritage, and all regions of Jernbaneverket have been involved. A draft conservation plan was sent out for internal consultation and peer review within Jernbaneverket, and to a number of preserved railways, in February 2002. The plan is scheduled to be reviewed by Jernbaneverket's senior management and sent out for external consultation in the second half of 2002. It will then be sent to Riksantikvaren for further evaluation of the lines and objects to be conserved. At the same time as the plan is reviewed by senior management, administrative and financial arrangements for implementing the plan will be put in place.

### **The visual environment**

The pioneers who built the first railways placed great emphasis on landscaping and the design of buildings, settings and structures. Nowadays we still want new facilities, and the upgrading of existing ones, to reflect both aesthetic and functional considerations. The process of devising a comprehensive design programme for the visual environment at railway stations began in earnest in autumn 1999. During 2001, a draft design standard for stations was produ-

ced, setting out standards for facilities, physical design, operations and maintenance. Jernbaneverket received an international award in 2001 for the artistic decoration of the new Nationaltheatret station in Oslo.

### **Waste**

A large proportion of the materials removed during upgrading of the rail network are reused elsewhere on the network. Waste metal and wood which cannot be reused are sold for recycling, thereby yielding a source of income. The amount of production waste in 2001 was less than in 2000, probably because of differences in the level of activity and type of projects.

### **Energy consumption**

Although efficient use of energy is one of rail's environmental advantages, there is potential for further improvement. One of our goals is to reduce energy consumption. The Electric Power Supplier business has embarked on a project to install hot-air transmission systems at transformer stations, which will help conserve energy. Several regions began work on energy efficiency projects in 2001, and all regions are to produce action plans for reducing energy consumption in 2002.

### **Soil pollution**

Herbicides are used to control lineside vegetation for safety reasons. Owing to new regulations, the substances now used are less effective per application, necessitating more frequent spraying. Jernbaneverket has begun to examine alternative methods and equipment for dealing with problem vegetation in the track ballast or at the lineside. We continued to evaluate the options for cleaning up creosote contamination at the Råde impregnation plant in Østfold in 2001.

### **Collisions with animals**

A total of 1 750 collisions with animals were reported on the Norwegian railways in 2001. This represents an increase of 27% on the previous year's figure, owing partly to heavy snowfall and a backlog in clearing lineside vegetation. In Nordland and Nord-Trøndelag counties, Jernbaneverket is working with the Public Roads Administration, the County Governor, local authorities and others to devise preventive measures. We are considering setting up similar working

groups in other regions. All Jernbaneverket's regions are to draw up action plans for reducing collisions with animals in 2002.

### **Noise, vibrations and structural disturbance**

Noise is the main form of environmental pollution suffered by people living and working beside the railway. To focus attention on this problem, noise abatement measures were included as a separate programme when Jernbaneverket formulated its action plan for the years 2002–05. The main objective is compliance with the statutory limits on air pollution and noise. A detailed survey of homes thought to be exposed to railway noise in excess of the statutory limits got under way in 2001 and is expected to be completed in the first part of 2002. Remedial measures at homes where noise levels are found to exceed the limits will be initiated later in 2002.

### **Skills development**

Jernbaneverket has set up a number of specialist forums to encourage the exchange of information and improve the expertise of staff in relation to green issues. In addition, all principal departments within Jernbaneverket are running a training programme designed to increase environmental awareness.

### **Environmental Report for 2001**

Details of Jernbaneverket's environmental policies and the status of environmental programmes can be found in the Environmental Report for 2001, available online (in Norwegian) at [www.jernbaneverket.no](http://www.jernbaneverket.no) under "Miljørapport 2001".

# International activities

## European cooperation

In mid-December 2001, Jernbaneverket and the infrastructure managers of six other countries resigned from the Community of European Railways (CER) to set up their own Brussels-based interest group, European Rail Infrastructure Managers (EIM), with effect from 1 January 2002. Jernbaneverket had been a member of CER since 1993. The other infrastructure managers who resigned were from Sweden (BV), Denmark (BS), Finland (RHK), Great Britain (RT), France (RFF) and Portugal (REFER). They were later joined by the Netherlands' infrastructure manager (RIM), and at 1 March 2002 the new organisation had eight members.

The formation of EIM reflects the clearer division of tasks and responsibilities between infrastructure managers and train operators that is taking place within the European rail sector. Once the new organisation is fully operational, the Brussels office representing the interests of the four Nordic infrastructure managers will be incorporated into EIM.

The EU's first Railway Package was approved on 15 March 2001. The package includes three directives, two of which are amendments to existing direc-

tives, while one completely supersedes an existing directive. The European Commission set up four working groups to oversee implementation of the three directives, and the Norwegian Ministry of Transport and Communications was involved in all four working groups. Jernbaneverket assisted the Ministry on two of the working groups (Network Statement and Rail Market Monitoring Scheme).

## Nordic cooperation

In early 2001, a study commenced under the auspices of the Nordic Infrastructure Managers (NIM) with a view to identifying potential barriers to a free Nordic railfreight market and proposing solutions to overcome these barriers. The study findings, together with the recommendations of the directors general, were presented at a conference in Jönköping on 2 October. As a follow-up, the go-ahead was given for ten projects designed to translate some of the study recommendations into reality. Work on these projects will continue throughout 2002 and is scheduled for completion in mid-March 2003.

*Linx trains are scheduled to enter service from May 2002 (Illustration: West Art, Gothenburg, Sweden).*



# Personnel and working environment

Human resources is one of six focus areas set out in Jernbaneverket's principal objectives and strategies. Jernbaneverket aims to be an attractive workplace.

## Permanent workforce

At 31 December 2001, Jernbaneverket had 3 577 permanent employees (excluding the Telecommunication Services business, BaneTele AS). This was a reduction of 12 on the previous year-end figure.

## Overtime

Overtime payments in 2001 accounted for 9.0% of permanent salaries. This was one percentage point higher than the target figure, but still represented a fall in the number of overtime hours compared with the previous year.

## Sick leave

Jernbaneverket continued its drive to monitor and counter absenteeism in 2001. The main initiatives included proactive management, the introduction of new procedures for monitoring long-term sick leave, and a successful trial scheme involving flexible self-certification. These measures were all successful in their own right, but the combined effect was still insufficient to stabilise or reduce overall sick leave. The number of working days lost through illness in 2001 was 6.9%, an increase from 6.5% in 2000 and 6.2% in 1999. The situation at

Jernbaneverket thus reflects the trend in society at large, with the bulk of the increase being in long-term sick leave. Short-term absenteeism is stable and low. Ongoing initiatives will continue to focus on monitoring long-term sick leave, for instance by making greater use of active certification.

## Injuries leading to absence

The number of injuries leading to absence has shown a clear fall in recent years. The downward trend continued in 2001, with the figure being reduced by a further 20% on the previous year.

## Follow-up of staff survey

In autumn 2000, Jernbaneverket conducted a major survey in which all members of staff were asked for their views on job satisfaction, working conditions and management within the organisation. The survey's main finding was that levels of job satisfaction at Jernbaneverket are high. Employees enjoy one another's company, and the challenging and meaningful tasks that most believe they have. Compared with a similar survey four years previously, more employees are now satisfied with their line managers. However, there is a

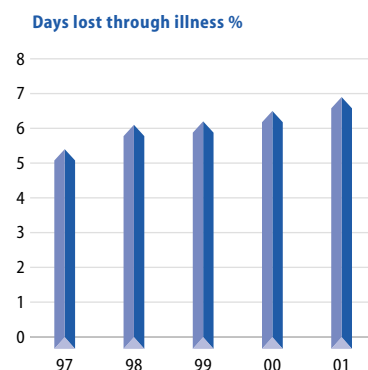
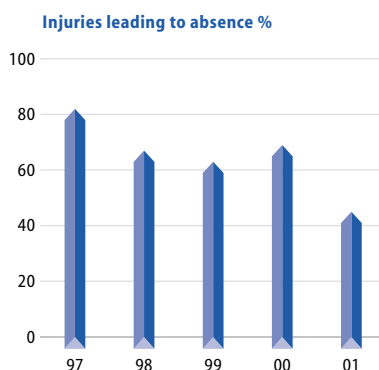
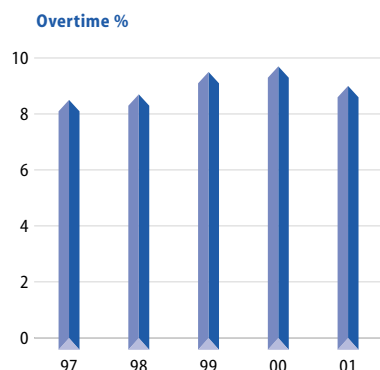
demand for more information, participation and involvement in matters concerning the individual's work situation. The keyword is more communication.

All departments worked to follow up the findings of the staff survey in 2001, and to date more than 400 improvement projects have been formulated, many of them concerning information and communication. Follow-up work will continue in 2002, and the aim is to conduct a new survey sometime in 2003.

## Skills development

During 2001, Jernbaneverket continued the process of defining skills requirements for all safety-critical posts, and these requirements will be fully integrated into the management system in 2002. Meanwhile, new skills development programmes have been devised for staff who are subject to these requirements.

All staff training in the traffic management field is conducted in-house by Jernbaneverket, in the form of courses for train dispatchers and controllers. The entire training programme was reviewed in autumn 2001, and following this review, a new curriculum is to be drawn up.





# State Accounts for 2001

*The dispatcher relays orders to the train driver.  
(Photo: Rune Fossum)*

Jernbaneverket's budget allocations for 2001 under section 1350, Expenditure, and section 4350, Income, were NOK 4 761.8 million and NOK 692.4 million respectively.

A number of changes were made to Jernbaneverket's allocations in the course of the year, owing to the incorporation of the Telecommunication Services business as a limited company (BaneTele AS), additional safety measures following the Åsta crash, changes in VAT legislation, reimbursement of sick pay, ministerial cost-cutting and correction of the 1999 accounts. Changes to Jernbaneverket's allocations for 2001 were set out in Parliamentary Bill No. 18 / Recommendation to Parliament No. 50 (2001–02), Parliamentary Bill No. 32 / Recommendation to Parliament No. 325 (2000–01), Parliamentary Bill No. 76 / Recommendation to Parliament No. 327 (2000–01), Parliamentary Bill No. 80 / Recommendation to Parliament No. 274 (2000–01) and Parliamentary Bill No. 84 / Recommendation to Parliament No. 325 (2000–01).

## **Budget allocations under section 1350, Expenditure, and section 4350, Income**

In the "Blue Book" for 2001, Jernbaneverket was allocated NOK 2 773.0 million under section 1350, item 23 "Operations and maintenance." Subsequently, Jernbaneverket was allowed to carry over NOK 34.0 million from 2000, and the allocation under item 23 was increased by NOK 21.7 million in 2001.

In the "Blue Book" for 2001, Jernbaneverket was allocated NOK 83.3m under section 1350, item 25 "Operations and maintenance, airport line". Subsequently, Jernbaneverket was allowed to carry over NOK 18.5 million from 2000 and granted an additional allocation of NOK 1.8 million under item 25 in 2001.

In the "Blue Book" for 2001, Jernbaneverket was allocated NOK 1 048.4 million under section 1350, item 30 "Investment in railway lines". Subsequently, Jernbaneverket was allowed to carry over NOK



290.2 million from 2000 and granted an additional allocation of NOK 74.91 million under item 30 in 2001.

Jernbaneverket was granted an additional allocation of NOK 420.0 million under section 1350, item 90 "Capital injection to subsidiary companies" and item 91 "Loan to BaneTele AS" in 2001.

## **Jernbaneverket's budgeted income according to section 4350 of the "Blue Book" for 2001 was as follows:**

- **item 01** "Track charges", NOK 60.0 million
- **item 02** "Sale of equipment, services, etc.", NOK 130.0 million
- **item 04** "Leasing income", NOK 30.0 million
- **item 06** "Resale of electricity for train operations", NOK 151.4 million
- **item 07** "Payment for use of airport line", NOK 83.3 million
- **item 37** "Contribution to infrastructure works", NOK 29.0 million
- **item 90** "Transfer of assets to BaneTele AS", NOK 224.0 million

In July 2001, budgeted income under item 04 "Leasing income" was reduced by NOK 15.0 million.

## **Authorisation to offset excess expenditure against excess income**

In the "Blue Book" for 2001, Jernbaneverket was authorised to use excess income under section 4350 to cover expenditure under section 1350 as follows:

"Jernbaneverket may, in the course of the year, exceed its allocations for 2001 under section 1350, item 23 'Operations and maintenance' and item 30 'Investment in railway lines', by an amount equivalent to excess book income under section 4350, item 02 'Sale of equipment, services, etc.', item 06 'Resale of electricity for train operations' and item 08 'Payment for outstanding liabilities on airport line'."

"Jernbaneverket may, in the course of the year, receive a contribution to infrastructure works from external parties, provided that any such contributors renounce all their rights in relation to the infrastructure and its design, and any future income."

"Jernbaneverket may, in the course of the year and without reference to Parliament, exceed its allocation under section 1350, item 30 'Investment in railway lines', by an amount equivalent to excess income under section 4350, item 37, 'Contribution to infrastructure works'."

"Jernbaneverket may, in the course of the year, exceed its allocation under section 1350, item 25 'Operations and maintenance, airport line', by an amount equivalent to excess book income under section 4350, item 07 'Payment for use of airport line'."

In addition to the authorisations outlined above, Jernbaneverket is authorised to increase expenditure under section 1350, items 23 and 30, if this can be offset against income under section 4350, items 15–18. Please refer to the State Budgeting Guidelines, Part II, section 6.6, regarding the changeover to direct reimbursement of sick pay.

Departure Hall,  
Oslo Central Station.  
(Photo: Tomas Bollingmo)



### Jernbaneverket's finances in 2001 (Expenditure, NOK million)

#### Section 1350 Jernbaneverket

Item	Description	«Blue book» for 2001	Adjustments/transfers	Approved budget	Accounts
23	Operations and maintenance	2 773.0	55.7	2 828.7	3 118.8
25	Operations and maintenance, airport line	83.3	20.3	103.6	93.8
30	Investment in railway lines	1 048.4	365.1	1 413.5	1 334.7
90	Capital injection to subsidiary companies	0.0	224.0	224.0	224.0
91	Loan to BaneTele AS	0.0	196.0	196.0	209.5
	<b>Total, section 1350</b>	<b>3 904.7</b>	<b>861.1</b>	<b>4 765.8</b>	<b>4 980.8</b>

#### Section 4350 Jernbaneverket

Item	Description	«Blue book» for 2001	Adjustments/transfers	Approved budget	Accounts
01	Track charges	60.0	0.0	60.0	34.3
02	Sale of equipment, services, etc.	130.0	0.0	130.0	198.0
04	Leasing income	30.0	-15.0	15.0	29.7
06	Resale of electricity for train operations	151.4	0.0	151.4	178.0
07	Payment for use of airport line	83.3	0.0	83.3	70.9
15	Reimbursement for employment creation schemes	0.0	0.0	0.0	0.1
16.11	Reimbursement of salaries	0.0	0.0	0.0	5.1
16.12	Reimbursement of employer contributions	0.0	0.0	0.0	0.8
17	Reimbursement for apprentices	0.0	0.0	0.0	1.6
18.11	Reimbursement of sick pay	0.0	0.0	0.0	36.3
18.12	Reimbursement of employer contributions on sick pay	0.0	0.0	0.0	5.1
37	Contribution to infrastructure works	29.0	0.0	29.0	34.1
90	Transfer of assets to BaneTele AS	0.0	224.0	224.0	254.5
	<b>Total, section 4350</b>	<b>483.4</b>	<b>209.0</b>	<b>692.4</b>	<b>850.5</b>

Section 1350, expenditure 4 980.8

- Increased loan to BaneTele AS 13.5

- Section 4350, income items 02, 06–37 150.6

**Net total expenditure, section 1350 4 816.7**

Approved budget allocation, section 1350 4 761.8

**Overspend on section 1350 in 2001 54.9**



# Jernbaneverket

Switchboard +47 22 45 50 00

## Head Office

Phone +47 22 45 51 00  
Stortorvet 7  
PO Box 1162 Sentrum  
NO-0107 Oslo

## Eastern Region

Phone +47 22 45 71 00  
Stenersgaten 1A (Oslo City)  
NO-0048 Oslo

## Southern Region

Phone +47 32 27 57 00  
Stømsø Torg 1  
NO-3006 Drammen

## Western Region

Phone +47 55 96 61 02  
Strømgaten 4  
NO-5015 Bergen

## Northern Region

Phone +47 72 57 25 00  
Pirsenteret  
NO-7462 Trondheim

## Infrastructure Construction

Phone +47 22 45 59 00  
Stenersgaten 1D (Oslo City)  
NO-0048 Oslo

## Railway Contractors

Phone +47 22 45 66 00  
Stenersgaten 1A (Oslo City)  
NO-0048 Oslo

## Railway Production

Phone +47 22 45 74 01  
Stenersgaten 1A (Oslo City)  
NO-0048 Oslo

## Railway Consulting

Phone +47 22 45 61 00  
Stortorvet 7  
PO Box 1162 Sentrum  
NO-0107 Oslo

## Electric Power Supplier

Phone +47 22 45 56 00  
Stortorvet 7  
PO Box 1162 Sentrum  
NO-0107 Oslo

## Telecommunication Services – BaneTele AS

Phone +47 22 45 55 00  
Jernbanetorget 1  
NO-0154 Oslo

## Norwegian Railway Museum

Phone +47 62 51 31 60  
Strandveien 132  
PO Box 491  
NO-2301 Hamar

[www.jernbaneverket.no](http://www.jernbaneverket.no)



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