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Multi-annual contracts for rail infrastructure quality

SUMMARY OF THE IMPACT ASSESSMENT

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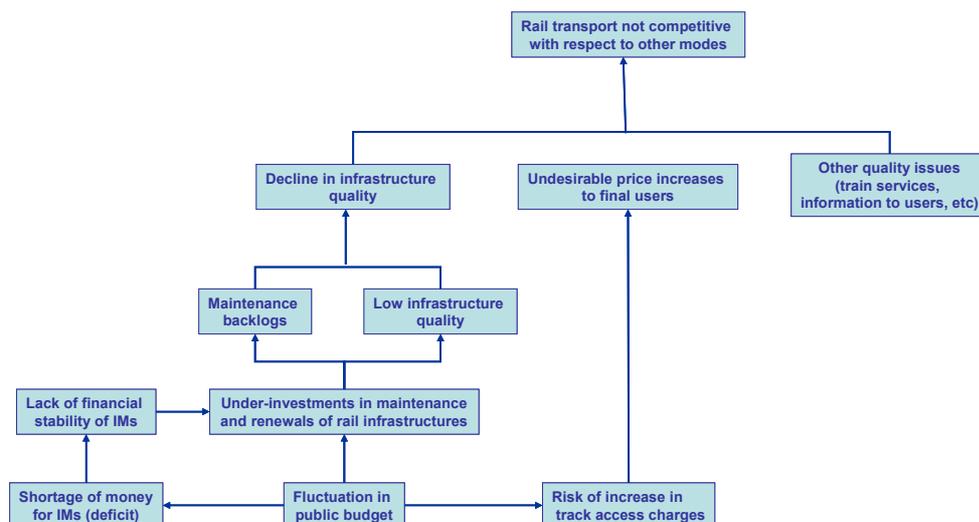
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1. THE NATURE OF THE PROBLEM

This report sets out the main impacts of three different policy options for multi-annual contracts for rail maintenance financing.

The major problem is the declining infrastructure quality in certain parts of the Community, which results from inappropriate funding of infrastructure maintenance. If this problem remains unresolved, maintenance backlogs will build up and will eventually constrain railways' ability to compete with other modes of transport.

Figure 1-1 – Problem Tree



2. CONSULTATION OF INTERESTED PARTIES

The EC acknowledges the importance of consulting stakeholders on problems regarding rail maintenance financing. The consultations carried out in 2006–2007 helped formulate the policy options and assess the likely impacts of taking action in this area.

3. OBJECTIVES

The main objectives of a strategy on multi-annual contracts are:

- to help rail be competitive vis-à-vis other modes of transport;
- to shift towards a more cost-effective form of rail infrastructure maintenance which is better geared to users' needs;
- to create the conditions for infrastructure managers to attain financial stability and management independence.

4. POLICY OPTIONS

DG TREN identified and presented in its Consultation Document, issued on 12 July 2007, the following policy options.

Option A: "Business as usual": multi-annual contracts in only some Member States, with the others deciding on an annual basis to cover past losses incurred by the infrastructure manager. The Commission collates best practice on negotiating, amending and extending multi-annual contracts, including a format for reporting infrastructure condition.

Option B: Obligations regarding the reporting, consultation and publication of information on infrastructure quality and the costs of maintenance. Member States, assisted by their regulatory bodies, have to agree, monitor and enforce quantified targets on cost reduction. Infrastructure managers publish at least annual results. It remains up to Member States whether they conclude multi-annual contracts in addition to regulatory measures.

Option C: The obligations under option B plus multi-annual agreements are made mandatory through revised EU legislation. The state consults stakeholders on a proposal for multi-annual contracts before letting a new contract and then negotiates the size and the quality of the network, which are then monitored. Discretionary intervention by the state is strictly limited to cases provided for in the contract, while the infrastructure manager pursues the agreed objectives under broad management independence.

5. ANALYSIS OF IMPACTS¹

5.1. Economic impacts

5.1.1. Reduced maintenance costs

According to the answers received, cost savings are expected to be higher (between 2% and 10% higher) thanks to the increased efficiency resulting from better scheduling of works and the economies of scale resulting from longer (and therefore bigger) outsourcing contracts (between 5% and 10% bigger). Internal personnel costs (between 0.1% and 3%) appear to be more difficult to compress, even in the medium-term framework of the multi-annual contracts. Table 5-1 summarises the costs savings (million€ and % of costs).

¹ Numbering of impacts is consistent with the long version of the impact assessment. Data have been collected from sources such as infrastructure managers' annual reports (2005), study on multi-annual contracts conducted for DG TREN by Ecorys (2006), international railway statistics of UIC (2005), Eurostat statistics (2005) and a survey conducted for the present impact assessment (2007).

Table 5-1 – Estimate of impacts on maintenance costs reduction²

| | <i>Multi-annual contracts will determine maintenance cost savings because of</i> | <i>NO (multi-annual contracts already in use)</i> | <i>NO (maintenance fully covered by charges)</i> | <i>NO (no outsourcing)</i> | <i>No (maintenance fully outsourced)</i> | <i>YES</i> | <i>Total savings (Million Euro)</i> | <i>% of total maintenance costs in countries with impacts</i> | <i>% of total maintenance costs in EU-25</i> |
|----|--|---|--|----------------------------|--|------------|-------------------------------------|---|--|
| 4a | efficiency in the use of resources | 5 | 4 | | | 16 | 337,12 | 3,50% | 2,59% |
| 4b | efficiency in outsourcing maintenance | 5 | 4 | 2 | | 14 | 110,07 | 2,30% | 0,85% |
| 4c | personnel reduction | 5 | 4 | | 1 | 15 | 91,34 | 0,99% | 0,70% |
| | Total | | | | | | 583,53 | 6,77% | 4,12% |

5.1.2. *Impacts on infrastructure charges*

The following table summarises the impacts of maintenance costs savings on infrastructure charges, in 16 countries (Member States – MS).

Table 5-2 – Expected charges reduction due to maintenance cost savings

| | <i>In MS with 100% of cost savings allocated to charges reduction</i> | <i>In MS with 50% of cost savings allocated to charges reduction</i> | <i>In MS with 0% of cost savings allocated to charges reduction</i> |
|--|---|--|---|
| Average charges reduction per train.km | 0,21 € / train.km | 0,07 € / train.km | 0 € / train.km |

The reduction in charges appears to be quite low compared with infrastructure charges averaging usually between 2 and 4 €/train km, because: (1) the estimated savings are less than 7% of total maintenance costs and (2) the charges do not cover maintenance costs only, but also other infrastructure managers' cost items.

5.1.2.1. *Direct impacts on infrastructure quality (Impacts 3a and 3b)*

Setting up a public system for monitoring the costs and quality of infrastructure is likely to put more pressure on infrastructure managers. It will make infrastructure service provision more transparent. This, together with the possibility of demand-tailored maintenance and renewal policies under multi-annual planning, will increase the quality of infrastructure and thus also the quality of service.

² The likelihood of the impacts is expressed in terms of the number of countries where the impact is / is not observed.

Such impacts will occur only in a limited number of countries, as most of the EU countries have high average levels of infrastructure quality (Table 5-3).

Table 5-3 – Impacts on infrastructure quality

| | <i>Estimated magnitude on safety (%)</i> | <i>Estimated magnitude on punctuality (%)</i> | <i>Safety difference after-before the multi-annual contract (# derailments per million train km)</i> | <i>Punctuality difference after-before the multi-annual contract (%)</i> |
|------------------------|--|---|--|--|
| Average values (EU 25) | 5,630% | 2,823% | -0,036 | 2,556% |

The following economic impacts have to be assessed in a more qualitative form³. As an indication of the order of magnitude, the following table gives the number of Member States where the different impacts are likely to occur, as well as the corresponding length of track.

Table 5-4 – Qualitative assessment of economic impacts

| <i>N.</i> | <i>Impact description</i> | <i>NO (multi-annual contracts already in use)</i> | <i>NO (maintenance fully covered by charges)</i> | <i>NO (there is no outsourcing)</i> | <i>No (maintenance fully outsourced)</i> | <i>No (quality very poor)</i> | <i>YES</i> |
|-----------|--|---|--|-------------------------------------|--|-------------------------------|-----------------------|
| 1 | Improved competitive position of rail transport | 72.776 km (5 MS) | | | | | 248.378 km (20 MS) |
| 4d | Possibility of avoiding training costs for unskilled labour | 72.776 km (5 MS) | | | 4.698 km (1 MS) | | 243.680 (19 MS) |
| 4e | Additional (unplanned) savings generated by incentives for managers (and possibly staff) | 72.776 km (5 MS) | | | | | 248.378 km (20 MS) |
| 6b | Better quality and better availability of the service for final users | 72.776 km (5 MS) | | | | 26.060 km (3 MS) | 229.288 km (17 MS) |
| 7 | Costs savings used to reduce State financial commitments ⁴ | 72.776 km (5 MS) | 22.104 km (4 MS) | | | 26.060 km (3 MS) | 207.183 km (13 MS) |
| 2 | Tendering of infrastructure management | 72.776 km | | | | 26.060 km | 229.288 km |

³ The magnitude of the impacts is expressed in terms of km of track in the network where the impact is expected; the corresponding number of Member States (MS) is in brackets.

⁴ The likelihood of this impact has been evaluated disregarding the hypotheses on impacts on charges.

| <i>N.</i> | <i>Impact description</i> | <i>NO (multi-annual contracts already in use)</i> | <i>NO (maintenance fully covered by charges)</i> | <i>NO (there is no outsourcing)</i> | <i>No (maintenance fully outsourced)</i> | <i>No (quality very poor)</i> | <i>YES</i> |
|-----------|---------------------------|---|--|---|--|-----------------------------------|------------|
| | | (5 MS) | | | | (3 MS) | (17 MS) |

5.2. Social impacts

Impact n.6 a) - Impact of reduced infrastructure charges on service price for infrastructure users

The expected reduction in infrastructure charges is likely to reduce total train operating costs for railway undertakings and, potentially, the transport service price⁵. The decrease of transport service price is estimated at between 0.003% and 4.917 % in the eight countries where all infrastructure managers' cost savings are supposed to be allocated to reduced charges, and between 0.121% and 2.646% in the seven countries where only a portion of the infrastructure managers' savings are used to reduce the charges.

A shift from road traffic to rail is likely to happen in 14 countries (where a service price reduction >0% is expected). The total estimated reduction in road traffic⁶ will be 6.545 million tonne km (i.e. 861 million vehicle km) per year. Other social impacts have been evaluated in qualitative form⁷.

Table 5-5 – Qualitative assessment of social impacts

| <i>N.</i> | <i>Impact description</i> | <i>NO (multi-annual contract already in use)</i> | <i>NO (maintenance fully covered by charges)</i> | <i>NO (there is no outsourcing)</i> | <i>No (maintenance fully outsourced)</i> | <i>No (quality very poor)</i> | <i>YES</i> |
|-----------|--|--|--|---|--|-----------------------------------|-----------------------|
| 8 | Security of employment facilitating new job creation | 72.776 km (5 MS) | | | | | 248.378 km (20 MS) |

⁵ Theoretically, railway undertakings could try to recover part of their operating deficit (if any) or use the saved resources for other purposes (e.g. new rolling stock investments). Within this IA, however, it is assumed that the savings will be entirely transferred to final users, as already stated in the Inception Report.

⁶ The analysis was focused on freight traffic only, because the elasticity of demand for passenger transport shows a higher variance between Member States than does freight transport elasticity. Furthermore, an average value for passenger transport elasticity is not available, while there is an average value for freight transport in the literature.

⁷ The magnitude of the impacts is expressed in terms of km of track in the network where the impact is expected; the corresponding number of Member States (MS) is in brackets.

| N. | Impact description | NO (multi-annual contract already in use) | NO (maintenance fully covered by charges) | NO (there is no outsourcing) | No (maintenance fully outsourced) | No (quality very poor) | YES |
|----|--|--|--|---------------------------------|--------------------------------------|---------------------------|-----------------------|
| 9 | Stable financial perspective, generating more secure jobs, increased staff satisfaction and job quality. | 72.776 km (5 MS) | | | | | 248.378 km (20 MS) |
| 10 | Improved transparency regarding financing of infrastructures. | 72.776 km (5 MS) | | | | | 248.378 km (20 MS) |

5.3. Environmental impacts

Impact n.11 - Impact of rail traffic increase on the environment

Given the calculated road traffic reduction and the emission factor of the pollutants (g / vehicle km), the expected impact of multi-annual contracts on air pollution will be as follows⁸.

Table 5-6 – Impacts on environment

| | Reduced emissions due to the reduction in road traffic (tonnes / year) | Increased emissions due to the increase in rail traffic (tonnes / year) | Total net effect (tonnes / year) |
|------|---|--|-------------------------------------|
| NOx | - 6.482,9 | + 783,3 | - 5.699,6 |
| PM10 | - 161,3 | + 47,4 | - 113,9 |
| CO2 | - 608.933,1 | + 44.173,5 | - 564.759,5 |

These impacts concern only the 15 countries where such impacts are possible: no multi-annual contract in the current situation, charges covering (but not totally) maintenance costs, infrastructure quality not very poor.

5.4. Impacts on administrative costs

5.4.1. Impact n.5 Administrative costs

With multi-annual contracts, infrastructure managers make commitments regarding reporting, consultation and publication of information on infrastructure quality and maintenance costs.

⁸ Emission factors for the more significant pollutants (CO₂, NO_x, PM) have been applied to the estimated reduction in road traffic in order to estimate environmental benefits. The emission factors are derived from the TREMOVE database.

Two cases have been considered: In case a), only data on the quality of transport service are collected, e.g. number of lines with speeds below theoretical speed. These data are already available and so occasion little additional cost. In case b) infrastructure managers measure track condition with dedicated measurement trains. This is likely to have an impact in the 21 Member States where such equipment is not already in use. In the light of the above, and assuming a multi-annual contract in the Member State, administrative costs are estimated as follows:

- total costs for the duration of the multi-annual contract if each Infrastructure Manager purchases and uses exclusively measurement trains: **€ 513.8 million as initial investment plus € 35.2 million per year operating costs;**
- total costs for the multi-annual contract taking into account the possibility of buying and selling the measurement train service in the European network (i.e. sharing the trains among the networks): **€ 69.44 million as initial investment plus € 4,75 million per year variable costs.**

Administrative costs which are likely to arise for the independent body (regulatory body) in charge of monitoring contract performance as regards fixed objectives and of resolving disputes between the State and the Infrastructure Manager, where objectives are not met, have been estimated at⁹:

- small networks: € 299 200 per year;
- medium to large networks: € 545 600 per year.

6. COMPARING THE OPTIONS

A multi criteria analysis (MCA) compared the three policy options described in the previous chapters. **Table 6-1** shows the impacts for the three options and their relative weights, while **Table 6-2** gives the score for each option, calculated as the weighted average of the scoring of the single impacts.

Option C gets the highest score, reflecting the coherence of this option compared to the others, and to the objectives of the multi-annual contracts.

⁹ See the Summary Report for the hypotheses used for estimating the number and the unit costs (FTE) for staff costs (specialised professional for monitoring and reporting and specialised technicians) and for RB's other operating costs.

Table 6-1 –Multi Criteria Analysis of the Policy Options

| Identified impact | Unit of measure | Option A | Option B | Option C | SCORING | | | WEIGHT |
|---|--|-----------|-----------|-----------|----------|----------|----------|--------|
| | | | | | Option A | Option B | Option C | |
| 4a) Infrastructure Managers' cost savings due to increased efficiency of use of resources | Million Euro | 257,0 | 257,0 | 337,1 | 2 | 2 | 3 | 1 |
| 4b) Infrastructure Managers' cost savings due to increased efficiency in outsourcing maintenance activities | Million Euro | 95,7 | 95,7 | 110,1 | 2 | 2 | 3 | 1 |
| 4c) Infrastructure Managers' cost savings due to more advanced personnel reduction policies | Million Euro | 76,4 | 76,4 | 91,3 | 2 | 2 | 3 | 1 |
| 4d) Infrastructure Managers' cost savings due to avoidance of training costs for unskilled labour | km of track in countries experiencing the impact | 163.104,3 | 163.104,3 | 243.679,5 | 2 | 2 | 3 | 0,25 |
| 4e) Additional (unplanned) Infrastructure Managers' cost savings generated by incentives for managers | km of track in countries experiencing the impact | 167.802,3 | 167.802,3 | 248.377,5 | 1 | 1 | 3 | 0,25 |
| 3) Improvement of infrastructure quality (reduced No. of derailments) | Reduction of No. of derailments per million train km | -0,009 | -0,036 | -0,036 | 0 | 3 | 3 | 1 |
| 3) Improvement of infrastructure quality (% increase in punctuality) | Increase in punctuality | + 2,73% | + 2,56% | + 2,56% | 2 | 3 | 3 | 1 |
| | Impacted traffic (Million train km) (*) | 1.291,5 | 1.776,5 | 1.776,5 | | | | |
| 5) Investment cost for Infrastructure Managers for implementation of system | Million Euro | 222,7 | 583,3 | 583,3 | 3 | 1 | 1 | 0,75 |
| 5) Management cost for Infrastructure Managers for implementation of system | Million Euro / year | 15,2 | 39,9 | 39,9 | 3 | 1 | 1 | 0,5 |
| 5) Cost for Regulatory Bodies for specialised professional for monitoring and reporting and for the monitoring office | Million Euro / year | 3,3 | 9,9 | 9,9 | 3 | 1 | 1 | 0,5 |
| 6a) Price reduction for final users (passengers, shippers) | % price reduction | 0,76% | 0,76% | 0,70% | 1 | 1 | 3 | 1 |
| | Impacted traffic (Million train km) (**) | 2.361,3 | 2.361,3 | 3.972,6 | | | | |
| 6b) Better quality and better availability of service for final users | km of track in countries experiencing the impact | 167.802,2 | 229.287,5 | 229.287,5 | 2 | 3 | 3 | 0,5 |
| 1) Improved competitive position of rail transport | km of track in countries experiencing the impact | 167.802,2 | 167.802,2 | 248.377,5 | 2 | 2 | 3 | 0,5 |
| 2) Tendering of infrastructure management | km of track in countries experiencing the impact | 167.802,3 | 167.802,2 | 229.287,5 | 2 | 2 | 3 | 0,25 |
| 7) Costs savings used to reduce State financial commitments | km of track in countries experiencing the impact | 167.802,3 | 167.802,3 | 207.183,3 | 2 | 2 | 3 | 0,75 |

| Identified impact | Unit of measure | Option A | Option B | Option C | SCORING | | | WEIGHT |
|---|--|------------|------------|------------|----------|----------|----------|--------|
| | | | | | Option A | Option B | Option C | |
| 8) More stable financial perspective for Infrastructure Managers and maintenance suppliers potentially leading to improved security of employment | km of track in countries experiencing the impact | 167.802,3 | 167.802,3 | 248.377,5 | 2 | 2 | 3 | 0,5 |
| 9) Stable financial perspective, allowing more secure jobs, and also increasing staff satisfaction and job quality | km of track in countries experiencing the impact | 167.802,3 | 167.802,3 | 248.377,5 | 2 | 2 | 3 | 0,5 |
| 10) Improved transparency regarding financing of infrastructures | km of track in countries experiencing the impact | 167.802,3 | 167.802,3 | 248.377,5 | 2 | 2 | 3 | 0,25 |
| 11) Environment: air pollution | NOx tonnes/y | -5.075,9 | -5.075,9 | -5.699,7 | 2 | 2 | 3 | 0,5 |
| 11) Environment: air pollution | PM10 tonnes/y | -101,4 | -101,4 | -113,9 | 2 | 2 | 3 | 0,5 |
| 11) Environment: climate | CO2 tonnes/y | -502.947,1 | -502.947,1 | -564.759,6 | 2 | 2 | 3 | 1 |

(*) The scores are based on the impact level (% of increase in punctuality) weighted by the impacted traffic.

(**)The scores are based on the impact level (% of price reduction) weighted by the impacted traffic.

Table 6-2 – Total scoring of the Policy Options

| Final score | |
|-------------|-------|
| Option A | 25,50 |
| Option B | 26,50 |
| Option C | 37,00 |

7. MONITORING AND EVALUATION

A set of core indicators for the main policy objectives has been identified according to the criteria used for the European Commission's impact assessment guidelines (the “SMART” criteria): Specific, Measurable, Accepted (by staff, stakeholders), Realistic (closely related to the objectives to be reached) and Time-dependent. Furthermore, the indicators have been selected so as to be credible for the non-expert, unambiguous and easy to interpret; easy to monitor and manipulation-proof.

Indicators have been chosen to measure impacts on “infrastructure” parameters (e.g. infrastructure quality) and the economic and financial aspects of infrastructure management (e.g. Infrastructure Managers’ financial stability). The proposed set of indicators will be fleshed out according to ex-ante conditions of each network and to individual choices by each Member State.

Case a) – Basic set of infrastructure quality and financial indicators

All quality and economy parameters that do not require sophisticated measurement tools (such as the measurement trains described in the chapter “administrative costs”). For infrastructure quality, these are the minimum requirements to check on how infrastructure quality is changing in terms of its impacts on service (“perceived infrastructure quality”). All economic indicators are also included.

Case b) – Extended set of infrastructure quality indicators

Indicators for case b) will include all the indicators chosen for case a) plus further quality indicators based on train measurement parameters.