A Checklist for Evaluation of Railway Projects/Railways

(Extracts taken from - 'A guide to the Economic Appraisal of Projects in Developing Countries - HMSO, 1977)

1. OUTLINE AND BACKGROUND OF PROJECT

i) State whether the project involves the construction of a new line(s), the rehabilitation of a line or the modernisation of (part of) the system.

ii) Who has carried out the economic and engineering surveys for the project? Where possible, examine a copy of their report (preliminary or final), including a map.

iii) Given the major reasons for the investment, e.g. the need to provide expanded services in a particular area, the low efficiency of railway services generally, the high cost of maintaining and constantly repairing an old track etc.

iv) Where the project consists of a new line, state its route and any class and tonnage of traffic it is expected to carry. Show how the line relates to the general system of transport in the area.
v) In the case of a modernisation scheme, outline the major proposals, e.g. replacement of steam by diesel, rationalisation of system etc.

vi) Will the additional growth of rail transport facilities provided by the proposed project be in line with the expected increase in rate of growth of the economy for as long as you can forecast?

2. TECHNICAL ASPECTS

Use the Common Check-list of Building and Construction Aspects. In addition the following questions should be answered:-

i) Give length and route of proposed line, plus any branch lines. Mention any studies (e.g. geological, topographical, etc) which have influenced the alignment of the railway.

ii) Provide information on the proposed railway track as follows:

   a) single track or double track; if single track what provision is made for passing loops?

   b) maximum train loads that the track must bear, and the maximum and average speed at which trains will run
c) size of locomotives that the track will carry

d) average and maximum gradients of the line, and its curvature

e) the loading and track gauges, and braking and coupling system: state whether these are the same as for the rest of the railway network in the country where a large percentage of the line's traffic is expected to be "through traffic"

f) bridges and/or tunnels to be constructed (give details of their specifications, including any factors which will have a major effect on their overall cost of construction)

g) signalling requirements

iii) Outline the specifications defining the proposed standards of quality of construction (or rehabilitation), with justification for any standards which are specifically adopted to fit the local situation.

iv) Provide information on the proposed motive power as follows:
a) motive power of the railway, e.g. diesel, steam, electric
b) how this relates to the power situation in the country concerned (e.g. does it have plentiful cheap supplies of oil, coal and/or electricity)?
c) the price basis for sales of the power source to the railway (e.g. long run marginal cost, special discounts etc.)
d) whether a generally heavy or intermittent flow of traffic is expected to run on the line (e.g. state the average number of trains that is expected to use the line per day and per week).
v) List the construction work included in the project, e.g. stations, houses for staff etc.
vi) Are there any associated investments necessary for the success of the proposed project, e.g. the construction or upgrading of a road along which a large proportion of the Railway's traffic must first travel? If so, are they being undertaken, and by
whom? Who is providing the finance for any associated projects of this kind?

vii) Provide information on past, present and prospective traffic movements as follows:

a) What is the past, present and expected growth of freight in net ton miles (for as long a period ahead as possible), in terms of total traffic and major commodity groupings e.g. minerals, agricultural products, forest products etc? What are these estimates based on? Is a map of traffic movements available?

b) What is the past, present and expected average length of haul by major commodity groupings?

c) What is the past, present and expected growth of passenger traffic over the same period.

d) What degree of probability can be attached to these forecasts?

viii) What is the expected length of life of the railway and the main items of equipment and structures?
3. ECONOMIC, MANAGEMENT AND FINANCIAL ASPECTS

Use the Common Check-list of Economic, Management and Financial Aspects (Check List No 1). In addition, the following information, relating specifically to railways benefits, is useful:

Benefits

Receipts

i) What are the expected total receipts year-by-year from freight and passenger traffic separately? What system of rates and fares will be operated and how will these relate to prices in competitive modes of transport - in particular what role will taxation play in pricing policy?

Operational Savings

i) What are the expected operating costs on the expected volume of traffic by main categories, i.e.

a) crew costs

b) running costs of locomotives and rolling stock

c) track maintenance

d) signalling costs

e) terminal costs

f) general administration
List the major factors responsible for any expected operational savings, e.g. lower annual track maintenance costs due to improved condition of the line, more economically fuelled locomotives etc.

ii) Sub-divide the future expected volume of traffic into that traffic which, in the absence of the project, would have travelled by rail and that which would have travelled by road.

iii) On that volume of traffic which would have travelled by rail (either on the old unimproved line or on another alternative line) state:
   a) Present annual track maintenance costs.
   b) The cost of operating existing rolling stock per annum.

iv) On that volume of traffic which is expected to be divided from the roads state:
   a) Present lorry operating costs, by main types of lorry.
   b) What would be the additional handling costs incurred in transferring this traffic from road to rail.
c) What would be the loss of time and convenience incurred in transferring from road to rail.

Generated Production

i) Is the project expected to stimulate economic activity in any areas, e.g. by lowering general transport costs in the region, or by opening up a previously economically isolated area? Say whether any expected increase in output, directly attributable to the project, consists of the growth of new activities and/or the expansion of existing ones.

Increase in passenger traffic

i) What is the expected increase in the growth of passenger traffic per annum due to the project? How much extra revenue would this mean for the railway per annum?

LOCOMOTIVES AND ROLLING STOCK

1. OUTLINE AND BACKGROUND OF PROJECT

i) State the number and kind of rolling stock required, e.g. locomotives, wagons, rail cars, etc.
ii) Will the rolling stock replace some existing equipment or will it increase the total fleet?

iii) What is the size, age structure and motive power (e.g. steam diesel, etc.) of that part of the existing rolling stock which is to be replaced and/or increased?

iv) What are the characteristics of the most recent stock in use, e.g. by type, motive power, make and country or origin?

v) What is the average operating performance for existing stock of a type comparable to the ones which are to be provided, e.g. percentage availability, route miles per annum, hours in service per week, etc.

vi) State briefly the type of terrain and climate in which the locomotives will operate, noting the range of temperature, humidity, altitude and annual rainfall likely to be encountered.

vii) What is the Government policy regarding competition between rail and other modes of transport?

2. TECHNICAL ASPECTS

i) Have adequate arrangements been made for the maintenance of the locomotives?
ii) Does the project include provision for the purchase of spares for a number of years? If so for how long?

iii) Is the present system's location and structure of marshalling yards satisfactory in the light of existing and projected freight patterns, and of the existing road network?

iv) Does the railway's rate structure and common carrying liability seriously distort the volume and pattern of traffic away from what it would be in their absence, e.g. does any traffic travel below cost and/or below rates charged by any competitors which have no common carrying obligations? What arrangements will be made to deal with the "peakiness" of demand for rolling stock?

v) Are the proposed rolling stock items comparable from a service and maintenance point of view to all or part of the existing rolling stock? Where the new equipment is not comparable in this respect, what are its corresponding service/maintenance requirements?
vi) Are the proposed rolling stock items comparable from an operating point of view to all or part of existing equipment? Have any arrangements been made to train and recruit skilled personnel to operate and maintain the new equipment and if so are they adequate?

3. ECONOMIC, MANAGEMENT AND FINANCIAL ASPECTS

Use the common check list of Economic, Management and Financial Aspects (Check List No 1). In addition, the following information relating specifically to locomotives and rolling stock, if useful.

Costs

i) What is the total capital cost of the proposed items of rolling stock? Where more than one type of equipment is involved, e.g. cars and locomotives, give costs by each type of equipment.

ii) What are the expected annual operating costs of the proposed rolling stock, e.g. fuel, wages, maintenance, interest and depreciation? What are the present corresponding annual operating costs on any items of equipment which it is planned to replace?
iii) Will any associated investments be necessary for the full benefit of the project to be realised, e.g. new signalling facilities, any track repairs, strengthening of bridges, etc.? If so, is it being undertaken and by whom? Who is providing the finance for any associated investments?

Benefits

i) What is the expected length of life of the proposed items of rolling stock?

ii) Where the proposed rolling stock will replace old equipment, what is.

a) the planned phasing out period of the old equipment?

b) the annual revenue likely to be received for freight being carried in the old equipment at the time it will be replaced by the new?

iii) What sort of traffic will the new rolling stock transport? What is the expected rate of growth of this sort of freight over as long a period as you can say? Is any freight being lost at the moment through insufficient or inadequate rolling stock facilities.