EVALUATION AS A TOOL FOR IMPROVED MANAGEMENT OF STRUCTURAL FUND PROJECTS: THE CASE OF RAIL PROJECTS IN GREECE

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The views expressed in this paper are those of the authors and do not necessarily reflect the views of the Ministry of Transport and Telecommunications

1. INTRODUCTION

The aim of this paper is to demonstrate the importance of evaluation as a tool for improving the planning and implementation procedures of rail projects in Greece, by using the mid-term evaluation of the Operational Programme ‘Railways, Airports, Public Transport’ (OP RAPT) as an example of application.

The Operational Programme ‘Railways, Airports, Public Transport’, of the Ministry of Transport & Communications, falls within the sectoral programmes of the 3rd Community Support Framework for the programming period 2000-2006. The Programme comprises interventions relating to railways, airports, public transport and road safety. The timeframe for the implementation of the Programme is seven years (1/1/2000 - 31/12/2006).

The total budget of the OP amounted (at the time of the evaluation study) to M€ 2,938 of which M€ 1,963 (67% of the total) had been allocated for the expansion and upgrade of the country's rail network (the total budget of the OP RAPT now stands at M€ 2,587). Thus, the OP RAPT, together with the Cohesion Fund, are the main sources of funding for the rail projects of the 3rd Community Support Framework in Greece. The Final Beneficiaries (implementing agencies) of the OP rail projects are Hellenic Railways Organisation (OSE S.A.) and its subsidiary, ERGOSE S.A. Responsibility for the overall monitoring of the OP and Cohesion Fund lies with the OP RAPT Managing Authority.

According to Regulation (EC) 1260/99 (Articles 41-43), evaluation forms an integral part of the programmes, being of crucial importance for their approval and revision. This Regulation stipulates that the mid-term evaluation of operational programmes should be carried out in the middle of the programming period (i.e. at the end of 2003), followed by an update (i.e. October 2005), from which the data used in this paper have been drawn.

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2. METHODOLOGICAL APPROACH

2.1 Overview

The methodology and elaboration of the mid-term evaluation was based on the following three components:

- Data collection and review, including identification of deficiencies and weaknesses
- Exploitation of the above data by using simple but reliable methods to assess, estimate and forecast quantified objectives and indicators of the operational program (OP)
- Analysis of deviations as well as assessment and presentation of results in a clear, concise and impartial manner in order to provide a clear picture of the course of the OP at all levels.

In order to conduct an in-depth analysis of critical project parameters (e.g. procedures for cost estimation and monitoring), a number of case studies were carried out.

With respect to matters relating to the definition and quantification of indicators, the relevant working papers of the European Commission were taken into consideration, along with the relevant guides on evaluation (see bibliography).

2.2 Monitoring and Evaluation Indicators

In order to evaluate the actions of the Operational Programme, the following indicators were used. They are considered to combine simplicity of calculation together with accuracy in drawing the real picture of the projects’ progress.

- The ‘contracted budget’ indicator: calculated as the ratio of the contracted out budget to the total approved budget for the intervention(s)
- The ‘financial absorption’ indicator: calculated as the ratio of total disbursements over the total approved budget for the interventions
- The ‘physical implementation’ indicator: calculated as the ratio of total payments of works performed over total estimated cost until completion
- The ‘effectiveness’ indicator: calculated as the ratio of cumulative disbursements to the respective cumulative project budget for the time period being examined and
- The ‘efficiency’ indicator: calculated as the ratio of the physical implementation indicator to the financial absorption indicator. It is used to highlight “value for money” and potential deviations from the initial cost estimates.
In addition to the above, indicators for assessing the administrative capacity of the Final Beneficiaries (project implementing agencies) and the Managing Authority have, also, been used as follows:

- Average time from the expression of interest to carry out a project to the enrolment of this project in the operational programme (OP) and
- Average time from the enrolment of such a project to the contracting of its first sub-project.

2.3 Risk Assessment for Financial Losses

The necessary financial resources for the implementation of the OP were determined on the basis of the latest available data from design studies, financial absorption rates, physical implementation progress rates etc. Subsequently, based on historical cost data and the relevant experience of the Evaluation Consultant, the following were checked:

- The sufficiency of allocated funds for the complete implementation of the OP
- The ability of implementing the OP within the prescribed time frame.

The ability for timely implementation of the OP depends on the time required for the design and tendering of the projects, as well as on the capacity to absorb funds during the period of implementation of the various projects. Both parameters can be estimated on the basis of relevant data provided by the Final Beneficiaries.

Regarding the degree of fund absorption, a number of alternative scenarios were examined on the basis of the maximum monthly fund absorption achieved by Final Beneficiaries in similar projects, e.g. taking into consideration the maximum monthly absorption, the average of 5 or 10 of the maximum monthly values, etc. Based on the above analysis, the risk for financial losses (till 31/12/2008, when project funding is suspended) has been classified into four categories:

- Zero risk: estimated achievement of 100% fund absorption, for the OP level being examined
- Low risk: estimated loss of funds does not exceed 20% of the total budget for the level being examined
- Medium risk: estimated loss of funds lies between 20% and 50% of the total budget
- High risk: estimated loss of funds exceeds 50% of the total budget.

2.4 Risk Assessment for Target Achievement

The targets of the OP are measured in terms of the standard output and result indicators, used in evaluation theory. The degree of these indicators’ achievement depends mainly on the physical progress, which in turn depends on the absorption of funds, along with cost overruns (in comparison with the
initial cost estimations). The degree of target achievement has been classified according to the percentage of the target value that is estimated to be attained by the target date (31/12/2008), as follows:

- **Doubtful**: Less than 20% of the target value
- **Low**: 20 to 50% of the target value
- **Medium**: 50 to 80% of the target value
- **High**: 80 to 100% of the target value will be attained by the target date.

2.5 Quality Assessment of the Implementation, Management and Control Mechanisms

The evaluation of the various mechanisms involved in the OP has the following main aims:

- To assess the effectiveness of the overall management and control system of the OP
- To identify best practices, draw attention to weak points and recommend and implement corrective actions.

At the level of project implementing agencies, the following aspects were examined:

- The adequacy of their organisation and staff
- The degree of adherence to the initial planning
- The availability and efficient use of planning and monitoring tools such as:
  - Time and cost planning and control
  - Risk assessment and risk management
  - Standard tender documents and drawings
- The effectiveness of cooperation with management and control bodies and in particular with the Managing Authority.

At the level of the Managing Authority, the examination focused mainly on the availability and use of a monitoring and control system for the projects of the OP, which is the primary responsibility of the MA.

In addition to the data and information collected from various sources, structured interviews were also conducted with directors and key staff of the OP Final Beneficiaries as well as of the Managing Authority.

3. FINDINGS

3.1 Programme Planning

Programme planning was found to be adequate and satisfactory regarding identification of needs, definition of priorities and selected strategy. One omission in the programme planning stage was the lack of systematic
recording of assumptions and risks relating to the OP, by using, for example, the Logical Framework Approach.

The quantification of OP objectives was not equally successful and shows a tendency towards over-optimistic planning on the part of Final Beneficiaries. The deviations (lags) from programme planning were mainly due to:

- Significant underestimation of the time necessary for project preparation (design and tendering stage)
- Serious weaknesses regarding the keeping and systematic processing of historical time and cost data, which could serve as a realistic basis for the initial quantification of the OP projects.
- Significant underestimation of the workload to be carried out by Final Beneficiaries due to the complex and particularly demanding CSF management and control regulations.

3.2 Operational Programme Progress

The course of implementation of the rail projects and actions included in the OP RAPT was measured by means of the evaluation indicators (see section 2.2), the values of which are summarised in Table 1 below. This table clearly shows that the implementation of the railway interventions was considerably lagging. The best performance was attained by the Attica Suburban Railway projects and in particular the Acharnes Railway Centre (ARC) – Athens International Airport section, due to the tight deadlines imposed by the hosting of the 2004 Olympic Games.

3.3 Risk of Financial Losses

The risk of funds being lost for the rail projects and actions included in the OP RAPT is estimated by means of the indicators presented in section 2.2. The risk level faced by the various interventions is summarised in Table 2. It can be seen, that the railway construction projects demonstrated a medium degree of risk, concerning potential financial losses. More detailed estimations predicted a financial loss of about 30% of the total budget.
<table>
<thead>
<tr>
<th>Name of Intervention</th>
<th>Contracted Budget (%)</th>
<th>Financial Absorption (%)</th>
<th>Physical progress (%)</th>
<th>Effectiveness (%)</th>
<th>Efficiency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Restructuring of Greek Railways (OSE SA)</td>
<td>13.00</td>
<td>8.01</td>
<td>7.57</td>
<td>10.75</td>
<td>94.43</td>
</tr>
<tr>
<td>Athens – Thessaloniki – North Border railway line</td>
<td>21.14</td>
<td>17.79</td>
<td>17.89</td>
<td>24.42</td>
<td>100.56</td>
</tr>
<tr>
<td>Constituent projects:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tithorea - Lianokladi railway section</td>
<td>26.35</td>
<td>25.20</td>
<td>24.56</td>
<td>36.87</td>
<td>97.47</td>
</tr>
<tr>
<td>Lianokladi - Domokos railway section</td>
<td>5.01</td>
<td>3.47</td>
<td>3.55</td>
<td>3.71</td>
<td>102.22</td>
</tr>
<tr>
<td>Localised interventions for speed improvements</td>
<td>33.88</td>
<td>24.71</td>
<td>26.10</td>
<td>38.55</td>
<td>105.62</td>
</tr>
<tr>
<td>Signalling – Remote Management</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>-</td>
</tr>
<tr>
<td>Installations – Equipment - Procurements</td>
<td>50.40</td>
<td>49.25</td>
<td>50.07</td>
<td>54.88</td>
<td>101.68</td>
</tr>
<tr>
<td>Supplementary and supportive actions</td>
<td>61.31</td>
<td>28.96</td>
<td>29.69</td>
<td>43.19</td>
<td>102.54</td>
</tr>
<tr>
<td>Attica Suburban Railway</td>
<td>84.49</td>
<td>43.72</td>
<td>25.99</td>
<td>54.50</td>
<td>59.44</td>
</tr>
</tbody>
</table>

NB. The Athens – Thessaloniki – North Border railway line is composed of the following projects: Tithorea - Lianokladi railway section; Lianokladi - Domokos railway section; localised interventions for speed improvements; signalling and remote management; and equipment, procurements and supplementary actions.
Table 2: Risk of Financial Losses  
Data as of September 2005

<table>
<thead>
<tr>
<th>Name of Intervention</th>
<th>Approved funding (€)</th>
<th>Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Restructuring of Greek Railways (OSE SA)</td>
<td>90,000,361</td>
<td>High</td>
</tr>
<tr>
<td>Athens – Thessaloniki – North Border railway line</td>
<td>1,311,500,000</td>
<td>Medium</td>
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<td>Constituent projects:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tithorea - Lianokladi railway section</td>
<td>565,500,000</td>
<td>Medium</td>
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<tr>
<td>Lianokladi - Domokos railway section</td>
<td>304,000,000</td>
<td>Medium</td>
</tr>
<tr>
<td>Localised interventions for speed improvements</td>
<td>274,000,000</td>
<td>Medium to low</td>
</tr>
<tr>
<td>Signalling – Remote Management</td>
<td>133,000,000</td>
<td>Medium</td>
</tr>
<tr>
<td>Installations – Equipment - Procurements</td>
<td>12,000,000</td>
<td>Low</td>
</tr>
<tr>
<td>Supplementary and supportive actions</td>
<td>23,000,000</td>
<td>Low</td>
</tr>
<tr>
<td>Attica Suburban Railway</td>
<td>561,000,000</td>
<td>Medium</td>
</tr>
</tbody>
</table>

3.4 Implementation, Management and Control Mechanisms

3.4.1 OSE SA

The main weaknesses, which according to the mid-term evaluation report are evident in OSE and are reflected in the considerable lag in the course of projects, are the following:

- Difficulty to respond in a timely and reliable manner to the management demands of CSF III, resulting in considerable delays in the process of enrolling projects in the Programme
- Considerable delays during preparation of tender documents, mainly due to the large number of projects and the understaffing of the relevant directorates.

3.4.2 ERGOSE SA

ERGOSE SA is an OSE SA subsidiary, which has the main responsibility for implementing and administering the rail projects. The findings were as follows:

- Weaknesses in monitoring the time and cost of projects due to the lack of an integrated project monitoring system
- Fragmentation of design contracts and time-consuming, bureaucratic procedures for control and approvals, resulting in frequent deviations from programmed timetables
• Organisational weaknesses, in particular the lack of effective coordination among the different departments

3.4.3 Managing Authority

The evaluation study ascertained that the Managing Authority (MA) was generally performing its task adequately and its cooperation with the Final Beneficiaries, (as stated by the latter) was judged to be constructive and productive. The major weaknesses identified here, were connected to the understaffing of the MA and the lack of an integrated high level monitoring system for the OP.

4. PROPOSALS FOR IMPROVEMENT

4.1 Programme Planning

• Recording and utilisation of historical data (time, cost, quality, risk) on completed projects, which can serve as a realistic and reliable basis for future planning
• Systematic recording, by the Final Beneficiaries, of the assumptions and risks that the projects may face and preparation of contingency plans,

4.2 Implementation, Management and Control Mechanisms

4.2.1 OSE SA

• Strengthening of the Directorate of Strategic Planning & Development and the IT Directorate, given the high volume of contracts that will require tendering and supervision
• Set-up of a task force to efficiently tender and monitor structural fund projects. Hiring of a specialized IT consultant in order to assist the IT directorate and cover the needs in skilled personnel

4.2.2 ERGOSE SA

• Application of the already planned organisational restructuring, especially regarding the engineering design departments
• Improvement and acceleration of procedures relating to the supervision, checking and approval of designs
• Set-up and mandatory use of standard (unified) tender documents and drawings.
• Development of an integrated time and cost monitoring system, by applying the method of earned value management, and drafting of a small number of standard reports, which will be addressed to the organisation's upper and middle management. The aim of these reports will be to brief management rapidly and comprehensively and facilitate the setting and readjustment of priorities as well as the implementation and follow up of corrective measures.
4.2.3 Managing Authority

- Support from an external consultant, in order to cover the immediate staff needs
- Training of MA staff in state of the art project supervision, management and control tools and techniques
- Acceleration of procedures for the implementation of a high level monitoring system for the OP projects.

5. CONCLUSIONS AND FOLLOW-UP ACTIONS

In conclusion, the evaluation study of the rail projects:

- provided the opportunity for a comprehensive, well-documented and in-depth study of the programming, progress and management of projects
- produced conclusions that were useful not only at the level of Final Beneficiaries (OSE, ERGOSE) but also at senior management levels (Ministry of Transport and Communications, Ministry of Economy and Finance, European Commission)
- provided an overall, coherent and detailed picture of the situation regarding the OP
- served, by means of its targeted proposals, as a useful tool for improving the management of the OP projects.

In particular, the evaluation study:

- assessed the OP planning stage and proposed corrections
- improved and rationalised the system of project monitoring and evaluation indicators
- established a quantifiable approach for estimating the progress of projects
- introduced a method for estimating delays and risk of financial losses
- highlighted the importance of critical magnitudes for the monitoring of projects, which had previously been underestimated and
- case studied problem projects and proposed corrective actions and, finally, it
- constituted the basis for the mid-term (and all subsequent) reviews of the Operational Programme.

As a consequence, it must be noted here, that many of the above mentioned proposals were followed up and implemented by the Final Beneficiaries and the OP Managing Authority. In particular:

- OSE SA hired an external consultant for developing a master plan for the restructuring of its information technology systems and assisting the IT directorate in the tender process preparation. As a result substantial
process improvements and considerable delay reductions have already been reported.

- ERGOSE proceeded to improvements in the standardisation of tender documents for all kinds of projects (i.e. service contracts, construction projects and procurements) as well as re-organisation and implementation of a comprehensive MIS in the design departments. As a result, a considerable acceleration with respect to supervision, checking and approval of engineering designs has already been reported; and finally

- The managing authority hired an external consultant to assist in the monitoring and control of the operational programme and to transfer the necessary know-how to the permanent staff.

REFERENCES


