



Extract from the report to the  
Public Accounts Committee on  
the new capital budgeting model  
used in the development of the  
project on *The new railway line  
Copenhagen-Ringsted*

September  
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# 1. Introduction and conclusion

## 1.1. Purpose and conclusion

1. This report concerns whether the Ministry of Transport and Building (Ministry of Transport) and Banedanmark have complied with the principles of the *new capital budgeting model* when they estimated the construction costs and implementation of the project concerning the new railway line Copenhagen-Ringsted (the project). This is the first time that the new capital budgeting model has been used for developing a railway project.

2. The project concerns the construction of a new electrified dual-track line on the approximately 60 kilometres long stretch between Copenhagen and Ringsted via Køge. When opening, the line must be ready for use at speeds of 200 km/h, but should be prepared for speeds of 250 km/h. The Danish parliament passed the Construction Act for the New Line Copenhagen-Ringsted via Køge on 26 May 2010 (Act no. 527), which involved total costs of DKK 11.5 billion, including contingency provisions of DKK 2.6 billion (2015 prices). It appears from the Construction Act that the project and budget have been developed based on the new capital budgeting model, as specified in the appropriation request.

3. According to Act no. 16 /24/10 2006, the purpose of the new capital budgeting model is to increase the reliability of budgets and the quality of the information that provides the basis for decisions concerning major construction projects. Through the Ministry of Transport's implementation of the new capital budgeting model it has been clarified that the purpose of the model is to develop a cost estimate that reflects the actual capital expenditure as accurately as possible. The model implies that the budget, to the widest possible extent, should draw on experience gained in connection with the implementation of previous similar projects and on proposed types of tenders and contracts, etc. Moreover, the budget should be subjected to risk assessment, the robustness of the basis for decision should be subjected to external review, and the budget should be adjusted to include contingency provisions, the size of which should be determined based on data from similar projects. The model also implies that risks associated with the project should be managed in a way that underpins the financial management of the project, and that changes to the project and to the assumptions underlying the project should be documented continuously.

4. The Ministry of Transport and Banedanmark expect the new railway line to be put into operation at the end of 2018, as planned. The project will be halfway through the implementation phase in mid-2015 and based on the current forecast, the Ministry of Transport and Banedanmark estimate the total costs of the project at DKK 8.2 billion. This means that Banedanmark is anticipating reductions in spending of DKK 0.7 billion, and is not expecting to use the contingency provisions of DKK 2.6 billion. The Ministry of Transport and Banedanmark have informed Rigsrevisionen that the forecast is subject to considerable uncertainty, since the project is only halfway through implementation and because contracts concerning key parts of the project are still outstanding.

*The project is implemented by a project organisation established in Banedanmark, which is an agency under the Ministry of Transport.*

5. The purpose of the study is to assess whether the Ministry of Transport and Banedanmark have planned and implemented the project in compliance with the principles of the new capital budgeting model. The report answers the following questions:

- Have the Ministry of Transport and Banedanmark estimated the construction costs of the project in compliance with the principles of the new capital budgeting model?
- Has Banedanmark implemented the project in compliance with the principles of the new capital budgeting model?

## CONCLUSION

The Ministry of Transport and Banedanmark have not planned and implemented the project concerning the new railway line Copenhagen-Ringsted in full compliance with the new capital budgeting model. Therefore, neither the accuracy of the budget nor the quality of the basis for decision fully reflect the intention of the new capital budgeting model. Rigsrevisionen finds that the Ministry of Transport and Banedanmark should draw on the experience gained from the project to ensure that the budgeting of future major construction projects become more accurate and the quality of information providing the basis for decisions underlying such projects is enhanced.

The Copenhagen-Ringsted line is the first new railway that is being built in Denmark for several decades and Banedanmark has therefore not had access to data on volumes and prices from comparable projects. To compensate for the lack of available data, Banedanmark researched foreign-based projects and subsequently adjusted the budget and total costs of the project. Changes and variances emerging in the course of the implementation of the project are documented by Banedanmark regularly through the financial management of the project.

Banedanmark's planning of the project included a risk analysis, which disclosed a number of risks associated with the project. Banedanmark concluded that the contingency provisions made would suffice to prevent and address the identified risks, but failed to estimate their potential financial consequences. Banedanmark has not regularly – throughout the implementation phase – recorded how project risks have been addressed or how the assessments of risk included in the risk index have underpinned the financial management of the project.

The proposals for implementation of the project in relation to, for instance, types of contracts and project organisation, were described in very general terms in the basis for decision. Rigsrevisionen finds that a more elaborate description and assessment of various scenarios for the implementation of the project would enhance the quality of the basis for decision and the budget. In this project, for instance, the choice of type of contracts turned out to be of significance for the distribution of cost items in the budget and the accuracy of the distribution.

The Ministry of Transport commissioned an external body to perform a quality assurance review of the basis for decision for the project, but failed to ensure that the review of the budget was performed at a sufficiently detailed level. Consequently, a number of budget errors and deficiencies were not identified prior to the adoption of the construction act in 2010.

According to Banedanmark's latest forecast, the contingency provisions of DKK 2.6 billion will not be used and spending will be reduced by approximately DKK 0.7 billion. The new capital budgeting model does not prescribe how savings in spending should be handled, i.e. whether they can be used as an internal budget reserve. Nor does the model specify whether the appropriation for the project should be adjusted at the request of the Ministry of Transport, for instance, when the assumptions underlying the project change and the costs of contracts turn out lower than estimated. Lastly, the new model for capital budgeting does not offer any guidance on how expected reductions in spending should be reported to the Danish parliament. Rigsrevisionen finds it important to ensure that the new model for capital budgeting does not lead to systematic overestimation of construction costs in major projects.

Rigsrevisionen recommends that, going forward, the Ministry of Transport should:

- Consider expanding the model with guidance on whether and how expected reductions in spending can be committed to other aspects of the projects.
- Consider the reporting requirements to ensure, for instance, that the members of parliament are also informed of project forecasts and potential reductions in spending.
- Specify the degree of detail that should apply to the description of budget assumptions in the basis for decision concerning proposed tender strategies, types of tender, project organisation and time schedules.
- Maintain the focus on provisions demonstrated by the Ministry of Transport in its evaluation of the new capital budgeting model. According to the evaluation, going forward, the ministry intends to consider whether contingency provisions should be adjusted depending on type of project. Rigsrevisionen recommends that the ministry, in this connection, should also consider whether it would be appropriate to provide a model for reducing contingency provisions as risks, over the length of the project, decrease.