

Executive Summary

Like every modern industrialized nation, Germany needs major projects if it is to remain competitive on the international market. This applies to infrastructure and buildings alike. The Federal Government spends around two billion euros on buildings and eleven billion euros on transport infrastructure every year, and this figure is set to increase significantly.

However, many major projects are not delivered within budget or on schedule and exhibit distinct signs of procedures that do not represent value for money. To ensure that the public develop greater confidence in major projects, that public funds are spent efficiently and that the good international reputation of the German planning and construction industries is preserved, the former Federal Ministry of Transport, Building and Urban Development founded the "Construction of Major Projects" Reform Commission in April 2013.

The Reform Commission comprises 36 high-level experts from industry, academia, the public sector and associations. It identified shortcomings and developed proposed solutions and recommendations for action as to how true-cost pricing, cost transparency, efficiency and the ability to meet deadlines can be improved in the field of major projects.

The recommendations relate primarily to major public sector projects with a high level of investment. As a guide, the Commission has specified a minimum amount of 100 million euros. However, the most important elements of the recommendations can also be applied to smaller projects at all levels of the public sector building sphere if these projects meet criteria that are typical of major projects. These include a long period of delivery, a high level of complexity and great political or societal significance. In addition, many of the recommendations for action can be applied to major private sector projects.

Failings in the field of major projects in Germany have many causes:

- The construction costs are frequently calculated before robust plans are available. In some cases, the estimates are politically motivated, disregard existing risks and are frequently way below the actual costs that are likely to be incurred.
- In some cases, failure to accurately identify the client's wishes and to take account of the distinctive features of the project at the start of planning result in costly modifications to planning and construction activities.
- Major projects are not always planned in sufficient detail. Inadequate collaboration between the parties involved results in incompatible plans for different parts of the project. IT-based methods, such as building information modelling (BIM), which can help to prevent such planning errors, are hardly used. In addition, construction work sometimes starts before planning has been concluded. This likewise usually results in cost-intensive corrections.
- No project is risk-free. Despite this, it is often the case that neither clients nor contractors have a timely and continuous risk management system with precautionary measures with regard to alternative action, the schedule and the cost ceiling. Even if risks are considered, they are usually not reflected in the budget. Thus, occurring risks are frequently the cause of cost increases and failure to meet deadlines.
- The client's competence, as well as the management competence in companies, do not always meet the requirements of major projects. In addition, in many cases the organizational structures of clients and contractors lack a clear definition of responsibilities and decision-making powers, channels and deadlines.
- There is often no regular and independent management controlling or internal and external settlement of disputes. Moreover, there is a lack of transparency regarding the status of the project, costs, risks and deadlines vis-à-vis the public.
- Invitations to tender for construction works are sometimes issued on the basis of non-concluded planning activities and are thus susceptible to amendments. Construction contracts are frequently awarded solely on the basis of the tender price. However, the cheapest tenderer does not always offer the best value for money. Rather, potential contractors sometimes bid below cost with the aim of using planning shortcomings and modifications to make subsequent amendments for cost recovery. This sometimes results in a loss of quality and favours disputes surrounding amendments. Major projects are thus frequently characterized by mistrust and disputes rather than collaboration and cooperative partnerships.

The Reform Commission is calling on all stakeholders to implement a fundamental culture change in the planning and delivery of large projects. In particular, this involves complying with the following ten recommendations:

1. Cooperative planning in a team

Before the start of planning, the client should get together with the user to accurately analyze the need for the project and identify the project requirements in detail. This requires project-specific expertise to be involved. No funds should be provided from the budget unless there is an independent review of the identification of needs.

To prepare the plans, the client should appoint an interdisciplinary planning team at an early stage. This team should regularly exchange information on the status of planning plus costs, risks and scheduling, as well as continuously coordinating all planning elements. It may be appropriate to involve the building companies in the planning process on a case-by-case basis.

Once planning has been completed, modifications should not be approved and made transparent until there has been a thorough assessment of their impact on costs, risks and deadlines.

2. First plan, then build

The client should not commence construction until a consolidated document has been prepared containing the detailed design of the entire project and detailed information on costs, risks and the schedule. Construction on the basis of partial building permits should not commence unless they involve fully separable component projects or fully separable trades.

3. Risk management and capturing risks in the budget

The identification, analysis and assessment of risks and the development of appropriate countermeasures should be made mandatory and should be a prerequisite for the provision of funds.

Risk management should be based on ISO 31000 and DIN EN 31010. It should start in the analysis of requirements, continue throughout the project and be monitored and documented. The client should determine at the start of the project the methods to be used to capture and quantify the risks, including the use of digital methods (building information modelling). All project partners (planning, construction and project management) should be timely involved in the process of risk management in order to ensure that op-

portunities and risks are identified in due time and countermeasures are timely implemented.

Risks that have been plausibly described and assessed by experts with regard to the probability of their occurrence and level of costs in the event of an incident should be taken into account in the budget. It should be compulsory to name them when applying for funds from the public budget. For a better assessment of risks, risks that have occurred in ongoing projects should be captured and made available in databases.

4. Contract to be awarded to the tenderer who represents best value for money, not to the cheapest

The client should invite tenders for construction works not exclusively on the basis of the price, but should also include qualitative assessment criteria. Qualitative criteria include not only the planning and technical value or operating and consequential costs, but also the quality of answers to questions regarding the execution of work and risk management.

5. Cooperative project partnership

At the start of a project, all parties involved should commit at executive level to project management based on partnership (e.g. project charter). A culture of cooperation should prevail in which all contracting parties consider themselves to be equal partners and are provided with the same information.

To provide strong incentive mechanisms for effective cooperative partnership, there should be legal rules explicitly governing the permissibility of bonus/malus arrangements and the use of target price systems.

6. Out-of-court settlement of disputes

The client of a major project should enshrine an internal and an external conflict resolution mechanism in the contracts with the parties involved in the project. To this end, the public sector should remove legal obstacles to the conduct of external dispute settlement procedures and provide rules of procedure for mediation and adjudication from which public sector clients can select the appropriate instruments in any given case.

7. Mandatory value for money assessment

Within the scope of the appropriate value for money assessment to be conducted in accordance with Section 7 of the Federal Budget Code, the client should by default carefully examine various business models. This should be a prerequisite for the provision of funds from the budget. The decision regarding the

selection of the business model for project implementation and, if appropriate, a deviation from the basic model of the separation of planning and construction should be taken solely on the basis of the value for money assessment.

8. Clear processes and responsibilities/centres of excellence

Clients should carefully consider how to organize project management and project control tasks and ensure that they have the necessary personnel, expertise and practical experience for the functions they perform themselves. If contracts for project control tasks are awarded to third parties, these parties must demonstrate their experience, skills and capacity. Clients should have personnel of their own for client tasks that cannot be delegated.

Clients should define, at an early stage and clearly, the project schedules, decision-making channels, decision-making competencies, responsibilities and obligation of the parties involved in the project to provide information and record them in writing in a manual. This also includes establishing the prerequisites and procedure for approving plan modifications.

A client who does not have adequate personnel and expertise should be able to use centres of excellence that are available to various public sector clients. To this end, the public sector should create appropriate centres of excellence.

9. Greater transparency and control

Clients should create an organizational structure that ensures clearly defined control. Starting at the outline

design stage, independent and continuous management controlling should be established to review costs and deadlines.

Clients should conduct timely, open and continuous public participation. This includes regularly informing the public about costs, deadlines, project modifications and risks.

The first figures relating to project costs and the date of completion should also include the project risks. Clients should not communicate them to the public until sufficiently robust plans are available.

10. Use of digital methods – building information modelling

Clients - like all other parties involved in a project – should make greater use of digital methods, such as building information modelling (BIM), throughout the course of the project. They can significantly support the planning and delivery of the project, for instance through the visualization of project variants, the preparation of consistent planning through collision tests and the smooth execution of construction through simulation.

To encourage the greater use of digital methods such as BIM, the Federal Government should develop a phased plan that gradually creates the conditions that will enable greater use to be made of BIM in the planning and delivery of major projects. To this end, in particular, digital requirements have to be defined, standards harmonized and strategies for using BIM in planning and construction developed.