

Competitive dialogue in Norwegian public infrastructure projects

Paulos Abebe Wondimu¹, Jardar Lohne Dr.², and Ola Lædre Ph.D.³

¹Ph.D. Candidate, Department of Civil and Environmental Engineering, Norwegian University of Science and Technology (NTNU), 7491 Trondheim, Norway/Senior Engineer, Norwegian Public Roads Administration (NPRA), Norway, (corresponding author). paulos.wondimu@ntnu.no/ paulos.wondimu@vegvesen.no

²Research scientist, Department of Civil and Environmental Engineering, NTNU, jardar.lohne@ntnu.no

³Assoc. prof., Department of Civil and Environmental Engineering, NTNU, ola.ladre@ntnu.no

Abstract

Competitive dialogue (CD) is a relatively new procurement procedure introduced in 2004 by the European Parliament for particularly complex contracts. The Norwegian Public Roads Administration (NPRA) has limited experience with the procedure, but they are planning to use it in several future projects. Limited research was found concerning the practical issues of CD. This paper explores the experiences of Norwegian practitioners to identify such issues and suggests measures for the success of future projects using the procedure. In addition to a literature study, a document study and twenty-two semi-structured in-depth interviews with key informants from six cases selected from the Norwegian public infrastructure projects were carried out. Both the client and the suppliers value the potential of CD. However, several challenges were identified, such as lack of practical experience with CD, ethical challenges, determining the MEAT (Most Economically Advantageous Tender) criteria, evaluation based on the MEAT criteria, and varying market interest. This paper contributes to construction engineering and management practice to increase the understanding of CD by suggesting what kinds of measures ought to be taken for the success of future projects using the procedure.

Keywords – Competitive dialogue; procurement procedure; public projects; innovation; early contractor involvement.

Introduction

Public procurement can be used as an instrument for advancing the goals of innovation policy (Uyarra and Flanagan, 2010). Public procurement carried out in a way that facilitates early contractor involvement (ECI) has been found to stimulate innovation, increase project control and achieve time gains (Lenferink et al., 2012; Chen and Manley, 2014). ECI is one method that can be used to reduce rework (Love Peter et al., 2015) and transaction

costs in projects (Li et al., 2013). Globally, several approaches have been used to implement ECI within the context of public procurement. These include alliancing, best value procurement (BVP), partnering, public-private partnership (PPP), integrated project delivery (IPD) and competitive dialogue (CD) (Kent and Becerik-gerber, 2010; Wondimu et al., 2017b).

Competitive dialogue (CD) is a relatively new procurement procedure introduced in 2004 by the European Parliament for particularly complex contracts (European Commission, 2006). It is a procedure that can be used to engage suppliers in the early phase of a project to support innovation (Edler and Georghiou, 2007; Korthals Altes and Taşan-Kok, 2010). In Finland, for instance, public traffic infrastructure owners have developed an alliancing project delivery method based on CD in order to implement ECI (Lahdenperä, 2009). In the Netherlands, CD and BVP have been used as approaches to implement ECI in the public sector (Van Leeuwen, 2011; Lenferink et al., 2012). Van Leeuwen (2011) explains how it is possible to combine CD with BVP to establish a procurement procedure that prioritizes qualification over price. In sum, CD has been found to enable the market to suggest innovative solutions (Kautsch et al., 2015) through the early involvement of suppliers, and to establishing an innovative public client-supplier relationship (Essig and Batran, 2005).

The Norwegian Public Roads Administration (NPRA) is currently planning a mega project, the E39 Coastal Highway Route along the west coast of Norway. The project cost is estimated to be approximately 40 billion U.S. dollars. One of the main ambitions of the project is to make the E39 ferry free by replacing the eight ferry services crossing the major fjords with bridges and submerged tunnels. The fjords are up to 1,300 meters deep and 7,500 meters wide. As a consequence of the technical challenges involved, the NPRA needs to bring suppliers' knowledge and experience into the project to boost innovation. The NPRA plans using CD to achieve innovation through early contractor involvement.

Public procurement regulations vary from country to country, this even if all countries in Europe should follow the EU public procurement directives. Experiences with the implementation of new procurement procedures are thus country specific. The EU directive (2004/18/EC) does not regulate in detail how CD should be conducted, nor what phases should be included in CD (European Commission, 2006). Thus, CD has been practiced in different ways in different countries. CD is a novel procurement procedure in Norway. The NPRA has used the procedure in only six projects. So far, limited research has been done on CD in the Norwegian context. Furthermore, limited international research has identified practical issues of CD.

This study fills addresses the experiences of Norwegian practitioners through the following research questions:

- How is CD implemented?
- What are the experiences from using CD?
- What measures ought to be implemented for the success of future projects using CD?

Primary data collection is limited to six public infrastructure projects. Three of the projects are yet not completed. The long-term effects of the procurement procedure are consequently not explored in this study.

Theoretical background

Procurement procedures

The European Public Procurement Directive (2014/24/EU) identifies six procurement procedures for public works, supply and service contracts, notably:

- (1) Open procedure
- (2) Restricted procedure
- (3) Competitive procedure with negotiation
- (4) CD with pre-qualification dialogue with competitors before bidding
- (5) Innovation partnership
- (6) Use of the negotiated procedure without prior publication (European Parliament, 2014)

CD is of particular interest since it is a procedure that can be used to involve contractors – through individual dialogue with prequalified and shortlisted suppliers – in early phases of complex projects.

Competitive Dialogue (CD)

CD was introduced in 2004 by the European Parliament for particularly complex public contracts (European Commission, 2006) with special concern for providing an improved method for awarding such contracts (Arrowsmith and Treumer, 2012). Its introduction could be regarded as evidence of public clients seeking to foster an increased level of collaboration (Plane and Green, 2012). It is explicitly aimed at projects that require careful research and development of the best solution to address a specific client's needs (Wondimu et al., 2017a). Furthermore, it is a flexible procedure that secures competition and dialogue (Albano and Sparro, 2010).

The revised version of the European Public Procurement Directive (2014/24/EU) has widened the possibilities of using CD in 2014. The procedure is no longer limited to particularly complex projects. Instead, the revised directive describes five circumstances in which the procedure can be used: now it can be used on the same grounds as the competitive procedure with negotiation. The revised version of the EU directive is clearer and more straightforward than previous versions regarding when it is possible to use CD (Telles and Butler, 2014).

In CD, all interested suppliers can apply to participate in the project and provide company information. In the next stage, after pre-qualification and shortlisting based on the information provided by suppliers, the client invites a limited number of suppliers to participate in the dialogue phase (Wondimu et al., 2017a). After the dialogue phase, the client should assess the received tenders by the award criteria specified in the contract notice and select the Most Economically Advantageous Tender (MEAT) (Hoezen et al., 2015). MEAT (price-inclusive multi-criteria selection) is the weighted sum of various aspects of a product or service that provides value to the project (Wondimu et al., 2016). It makes sure that other selection criteria are considered in addition to price, notably by taking into consideration qualitative environmental and social aspects (Uttam and Le Lann Roos, 2014). The MEAT evaluation method clarifies the winning probability of the most optimal value-price ratio (Sebastian et al., 2013).

CD originated as a means to facilitate procurement of complex projects where procurement is based on open output specifications in order to leave room for private innovation e.g. through ECI and through giving suppliers flexibility to suggest their solutions (Petersen, 2010). In addition, the procedure was meant to create more dialogue, competition and mutual trust in the procurement of complex projects (Hoezen et al., 2015). Bougrain (2012) illustrates that when CD is combined with PPP, it helps to create coherence in a project and to minimize life-cycle cost. Furthermore, the solutions implemented on the projects were more cost-effective and more closely matched the client's requirements. The flexibility the procedure provides in the pre-contract and tendering phases has been found to force suppliers into a more pro-active mindset. CD has played a central role in the formation of integrated teams (Aapaoja et al., 2013). It has also facilitated a better understanding between parties (Hood and Smith, 2013). CD is a procurement procedure that allows a dialogue between a client and several suppliers before contract signing. International qualitative cases studies show that actors value the potential of CD.

The dialogue phase

The EU directive does not regulate in detail how the dialogue should be conducted nor what phases are included in CD (European Commission, 2006). Thus, CD has been practiced in different ways. For example, Sundaraj and Eaton (2013) state that the three main phases in CD are pre-dialogue, dialogue and post-dialogue. According to Burnett (2009), the number of dialogue meetings varies. This author also found variation in the objectives of the dialogue phases, how the different sub-dialogue phases are conducted, the time assigned for the dialogue phase, and the information to be requested from the bidders. Furthermore, these variances were found concerning whether or not solutions should be eliminated in the dialogue phase and, crucially, the position that the project client needs

to arrive at by the end of the dialogue phase.

The dialogue is an intervening phase between the tender announcement and the submission of final tenders. CD consists of several rounds of closed one-to-one dialogue meetings between the client and the potential suppliers. During the dialogue phase, all aspects of the tender can be discussed openly (European Parliament, 2014). The client can ensure that its long-term commitments are taken into account since CD offers the contracting parties the opportunity to discuss subjects such as sustainability and renewable energy objectives (O'Brien and Hope, 2010).

The current methods of conducting the dialogue phase of CD can be summarised as 1) merging solutions, 2) sketch solutions, 3) consecutive, 4) consultative (Burnett, 2009) and 5) successive stages approaches (Soliño and Gago de Santos, 2010).

In 1) a merging solutions approach, the client invites several solutions and then narrows the differences between them towards a single merged solution before the final bid. (Burnett, 2009). Following this, the suppliers subsequently submit tenders based on the merged solution. Such submission makes it easier for the client to compare the tenders (Haugbølle et al., 2015). In 2) a sketch solutions approach, the client first asks for sketch solutions and then one or more progressively detailed solutions. In 3) a consecutive approach, the dialogue is divided into technical/operational and financial aspects of the offer. The dialogue meetings are arranged successively, first on technical and then on financial aspects. In 4) a consultative approach, the dialogue occurs on a provisionally preferred solution of the client. Then, the client invites the suppliers to propose amendments or comment on this solution and develops the solution based on the dialogue (Burnett, 2009). Finally, in 5) a successive stages approach, the dialogue typically takes place in several stages to reduce the number of solutions discussed and bidders involved (Soliño and Gago de Santos, 2010). Since the EU directive does not regulate in detail how the dialogue phase should be conducted, this phase is practised in different ways in different countries.

Earlier studies and practical issues of CD

International research on CD seems to have mainly concentrated on its legal complexities and consequences, only a limited number of earlier studies have identified practical issues. For example, Arrowsmith and Treumer (2012) critically examine legal difficulties in the application of CD across Europe by describing grey areas and legal complexity. Nagelkerke et al. (2008) compare CD with the negotiated procedure regarding room for flexibility. Eriksson and Westerberg (2011) discuss project performance as consequences of procurement procedures, such as CD, on a conceptual level. Soliño and Gago de Santos (2010) discuss the probable effect of CD when it is used to launch PPP projects from a transaction cost economics perspective. Korthals Altes and Taşan-Kok (2010)

discuss CD from a governance perspective on relational networks. The only exceptions identified – having their research mainly on practical experiences – are Hoezen et al. (2012), who discuss contracting dynamics, and Lenferink et al. (2013), who discuss public-private interaction. However, both studies are limited to Dutch cases.

A review of CD carried out in the UK indicates that the procedure does reach its objectives when implemented in an appropriate manner (Sundaraj and Eaton, 2013). The EU has tried to improve the procedure with a revised version of Public Procurement Directive 2014/24/EU. However, according to Telles and Butler (2014), the revised version ought to have made CD even more useful and easier to use. They pointed out some practical issues that should have been resolved by the revised directive, such as payment of solution development (it says nothing about a loser's fee), high transaction costs (the procedure is not simplified) and non-binding dialogue (what the supplier's "offer" during dialogue can be changed at the tender stage).

The major disadvantage of CD is its relatively high transaction cost. This transaction cost was calculated based on transaction costs economics theory published by Williamson (1985) and is supported by researchers' experiences and observation in case studies (Siemonsma et al., 2012). CD is time-consuming and labor-intensive for both the client and suppliers. In order to select the qualified supplier, the client ought to conduct several dialogues and document each of them for the sake of transparency. The suppliers prepare detailed documentation after each dialogue meeting as well. This is equally resource demanding (Wondimu et al., 2017a). Nagelkerke et al. (2008) claim that the procedure is not as flexible as it supposed to be. Furthermore, Dorn et al. (2008) claim that fraud and corruption risks may be increased, especially when the procedure is entered into repeatedly, since the procedure implies an extended period of discussion between public officials and representatives of firms.

Based on the above, CD is of interest as a subject for study because it is a procedure that can be used to improve outcomes through ECI by involving contractors in early phases of complex projects. The procedure allows a dialogue between a client and several suppliers before contract signing. International qualitative cases studies show that actors value the potential of CD. However, since the EU directive does not regulate in detail how CD should be conducted, it has been practiced in different ways in different countries. Identifying how it is practiced in Norway and exploring the experiences of clients and contractors for that country adds new information to the body of knowledge about CD. Furthermore, CD is a relatively new procurement procedure, and the number of studies on practical issues concerning CD is limited. This study fills part of this knowledge gap by exploring the experiences of Norwegian practitioners.

Methodology

The overall approach used to address the research questions is qualitative, comprising a literature review followed by six Norwegian case studies using semi-structured interviews and a document study to collect data. This method is preferred over other possible methods because we seek to shed light on present circumstances. According to Yin (2014), the choice of research method in large part is dependent on the chosen research questions. The more the research questions seek to explain present circumstances (e.g., how and why some social phenomenon works), the more that case study will be relevant.

Literature review

A comprehensive literature review – using the search engines Google Scholar and Oria – was carried out to identify similar work within the field of research. The search words used include competitive dialogue, public procurement, early contractor involvement and combinations of these. Citation chaining according to the principles laid out by Ellis (1993) was also used to identify relevant literature. Based on the review, a theoretical framework with case-specific challenges was established following the recommendations of Blumberg et al. (2014).

Case projects and interviewees

Following the literature review, six cases were selected. These were the only projects where the NPRA has used CD. All six cases are considered to be complex since the client was not able to determine which of several possible solutions would be best suited to satisfy its needs. In four of the six projects, CD was used to procure suppliers that build infrastructure projects. In the other two projects, it was used to procure a company that operates a ferry service and to procure a company that studies the feasibility of a fjord-crossing concept. Table 1 provides an overview of the six examined cases. Losers' fee (the third column in the table) is illustrated in the findings and discussion part of section 1.2. The interviewees' position in each case is presented in Table 2.

Table 1: Overview of case projects, and of the respective interviewees

Cases	Contract size (MEUR)	Losers' fee (1000 EUR)	Project type	Contractual agreement	Start-up year
1)E6 Helgeland North	180	60+200	62 km new road	Design-Build (DB) with 15 years of operation and maintenance	2015
2)E6 Helgeland South	205	100+230	58 km new road	DB with 15 years of operation and maintenance	2016
3)E6 Trondheim-Stjørdal	55	25	0.6 km new road	DB	2009
4)Fv32 Lilleelvkrysset, Porsgrunn	17	50	0.5 km new tunnel	DB	2015
5)E39 Sognefjorden	N/A	40+20	Feasibility study	Design contract	2012
6)E39 Lavik – Oppedal	93	300	Ferry service	10 years of operation	2012

Losers' fee (the third column in the table) is illustrated in the findings and discussion part of section 1.2

Table 2: Overview of interviewees' positions

Cases	Interviewees' positions
1	Construction manager, project manager ¹ and representative from NPRA head office (3 from client) & project manager, quality manager ¹ and geotechnical engineer ² (3 from contractors).
2	Three construction managers, project manager ¹ and representative from NPRA head office (5 from client) & quality manager ¹ , tender manager, project director, tender manager, geotechnical engineer ² and regional tender manager (6 from contractors).
3	Construction manager, project manager and process manager ³ (3 from client) & geotechnical engineer ² (1 from contractor).
4	Construction manager, project manager and process manager ³ (3 from client) & geotechnical engineer ² (1 from contractor).
5	Project manager and process manager ³ (2 from client).
6	Two procurement leaders from NPRA and process manager ³ (3 from client).

¹The project manager and the quality manager were involved in the dialogue phase of cases 1 and 2.

²The geotechnical engineer was involved in dialogue phase of cases 1, 2, 3 and 4.

³The process manager in cases 3, 4, 5 and 6 was the same person.

Data collection

Twenty-two in-depth semi-structured interviews with key professionals involved in CD were carried out using an interview guide based on the research questions according to the prescriptions of Yin (2014). All the interviews except one were carried out face-to-face. They lasted between one and two hours. All interviews were recorded, transcribed and the transcriptions were sent to the interviewees for confirmation.

The case study was followed by a document study, carried out in order to complete the findings. The document study included internal documents and documents received from interviewees such as contract documents, dialogue invitation documents, offer evaluation protocol and the NPRA internal report. Given that one of the authors of this paper was employed by the NPRA during the research, full access to internal case documents stored digitally was ensured.

Data analysis

After the data was collected through interviews and the document study, the analysis followed the recommendations of Creswell (2013).

The data analysis steps described by Creswell (2013) are:

- 1) organize and prepare raw data (transcripts, field-notes, images, etc.) for analysis
- 2) read through all data

- 3) code the data (hand or computer)
- 4) use the coding process to generate themes or description
- 5) interrelate themes/description
- 6) interpret the meaning of themes/descriptions.

The data – transcripts from the 22 interviews – were hand-coded and analyzed hand-in-hand with data collection and findings write up. The codes were developed based on the theory being examined. The codes are categorized into phases and challenges/positive experiences. Through the coding process, themes for challenges and positive experiences were generated. These themes were interrelated and appeared as major findings and are also used as sub-headings in the findings section.

Findings and discussion

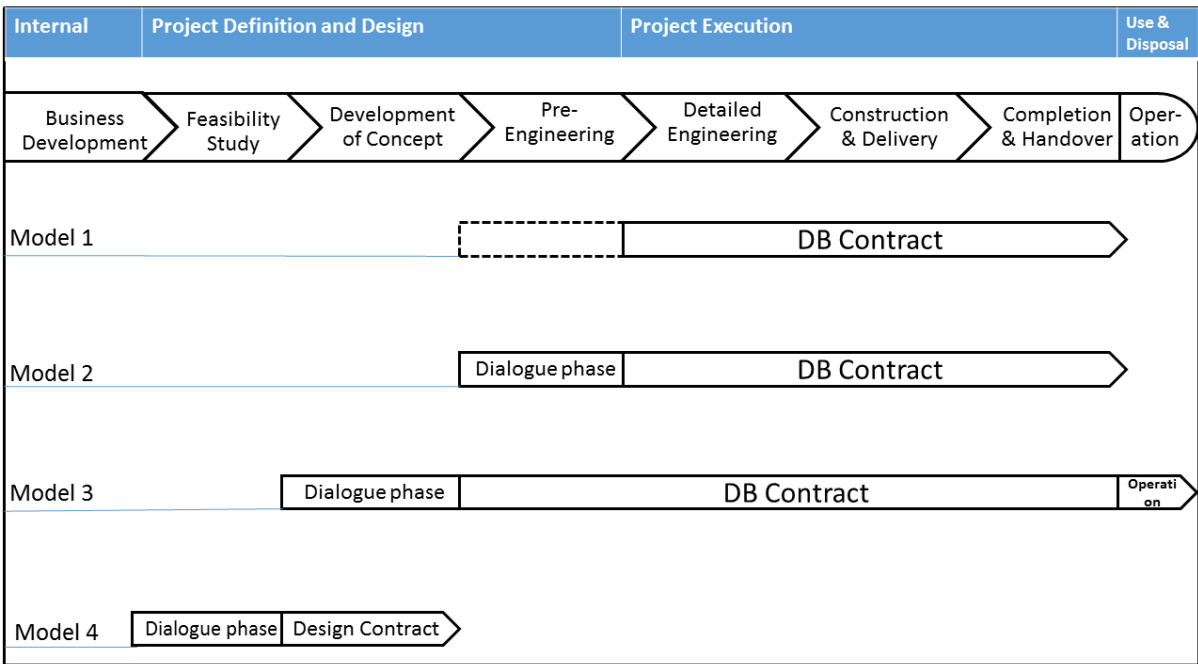
CD implementation

Five phases of CD have been identified from this study. These are the preparation phase, pre-qualification phase, dialogue phase, evaluation phase and project execution phase. Under the preparation phase, the first step is to attract as many qualified suppliers as possible to show their interest in the project. It is followed by pre-qualification phase. In this phase the client major activities are ranking, shortlisting and inviting optimal numbers of best-qualified suppliers to the dialogue based on pre-qualification criteria. During the dialogue phase, the main activity is developing project solutions that fulfill the award criteria and the project goals. In the dialogue phase, competitors are dealt with individually. Each of them present their solution during individual dialogue meetings and obtain feedback from the client on their proposed solution. At the end of the dialogue phase, the client distributes the final tender document and invitation to competitive tender. Under the evaluation phase, the client awards the contract to the winning supplier based on the evaluation result of awarding criteria. In Table 3 the major activities in CD divided into the five phases and suppliers involvement are presented.

Table 3: Major activities in CD

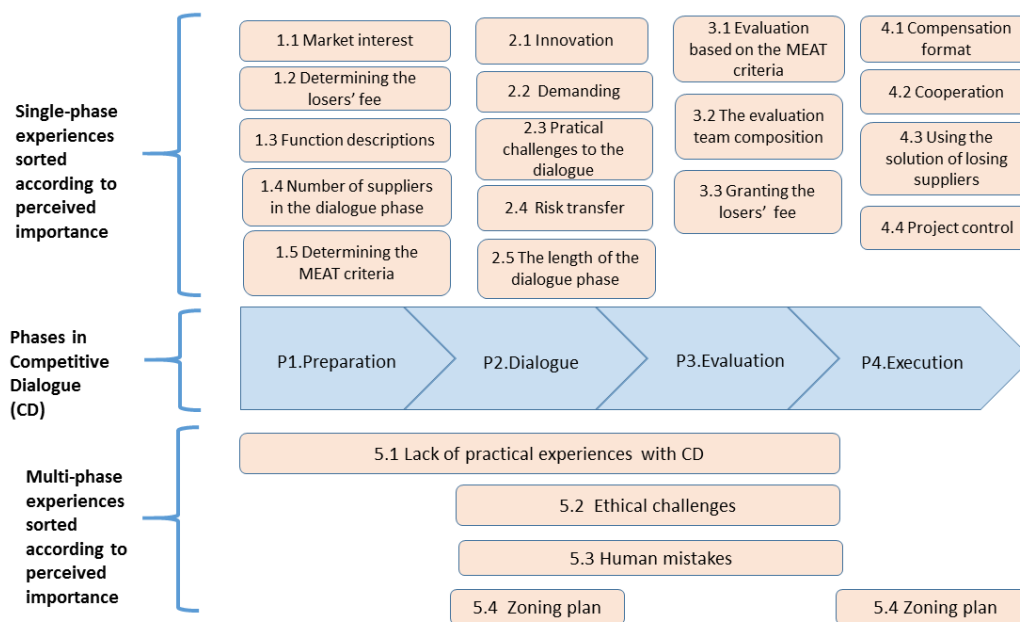
Phases	Activities	Suppliers Involvement
Preparation	Preparation of tender document	Before supplier involvement
	Preparation of plan for dialogue	
	Assessing and communication with the supplier market	
Pre-qualification	Client announcing the project and invitation to participate	Any supplier who applied to be considered
	Suppliers submission of prequalification document	
	Evaluation of prequalification document	
	Prequalification and shortlisting	
Dialogue	Invitation to participants to dialogue and distribution of the draft tender document	Shortlisted suppliers (≥ 3)
	Suppliers develop and submit sketch proposals	
	Dialogue meetings and feedback on the supplier's solutions (individual meetings with each supplier)	
Tender submission and Evaluation	Client handout of the final tender document and invitation to competitive tender	
	Suppliers preparation and submission of tender	
	Tender evaluation	
	Contract awarding	
Project execution	Contract signing	One supplier

During this study, three major project implementation models used with CD were identified. These models are illustrated in Figure 1 as models 2, 3 and 4. The first model, model 1, is based on a design-build (DB) contract and does not have a dialogue phase. It is presented in Figure 1 as a reference to explain the other three models that include a dialogue phase. These three models illustrate the approaches that CD was used together with a DB contract in the case projects. Model 2 was used in case project 3 and 4. Model 3 was used in case project 1, 2 and 6. Model 4 was used in case project 5.



Experiences and measures

This section is organized according to A) experiences from using CD and B) discussions and recommendations on what measures ought to be implemented for the success of future projects using CD. The experiences presented below are a combination of both positive experiences and challenges practitioners faced (practical issues). These experiences are categorized into four phases as presented below in Figure 2. The experience can be single-phase or multi-phase. The authors have prioritized these experiences based on their perceived importance, with the most important at the top.



The major findings from each case are presented in Table 4.

Table 4: Major experiences of cases one by one

Phase	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6
Preparation	Market interest, Determining the losers' fee, Function description, Determining the MEAT criteria	Deciding on the losers' fee, Determining the MEAT criteria	Market interest, Determining the losers' fee, Determining the MEAT criteria	Determining the losers' fee, Determining the MEAT criteria	Determining the losers' fee, Number of suppliers in the dialogue phase, Determining the MEAT criteria	Determining the losers' fee, Determining the MEAT criteria
Dialogue	Innovation, Demanding, Practical challenges to the dialogue	Innovation, Demanding, Practical challenges to the dialogue, Risk transfer	Innovation, Demanding, Practical challenges to the dialogue	Innovation, Demanding, Practical challenges to the dialogue	Innovation, Demanding, Practical challenges to the dialogue	Innovation, Demanding, Practical challenges to the dialogue, The length of the dialogue phase

Evaluation	Evaluation based on the MEAT criteria, Evaluation team composition	Evaluation based on the MEAT criteria, Evaluation team composition	Evaluation based on the MEAT criteria, Evaluation team composition	Evaluation based on the MEAT criteria, Evaluation team composition, Granting the losers' fee	Evaluation based on the MEAT criteria, Evaluation team composition	Evaluation based on the MEAT criteria, Evaluation team composition
Execution	Compensation format, Cooperation, Using the solution of losing suppliers, Project control	Cooperation, Using the solution of losing suppliers, Project control	Cooperation, Project control	Cooperation, Project control	Cooperation, Project control	Cooperation, Project control
Multi-phase	Lack of practical experience with CD, Ethical challenges, Human mistakes, Zoning plan	Lack of practical experience with CD, Human mistakes, Zoning plan	Lack of practical experience with CD	Lack of practical experience with CD, Ethical challenges, Human mistakes	Lack of practical experience with CD	Lack of practical experience with CD

1. Preparation phase

1.1 Market interest:

A) Low market (supplier) interest in the projects constituted the major challenge in case projects 1 and 3. However, market interest increased significantly when comparable project implementation models were used for the second time in cases 2 and 4 respectively. Three major challenges were identified for the suppliers:

Finding a competent local partner

One of the pre-qualification criteria in case 2 was experience in winter operations of roads. For this, suppliers were dependent on the experience of local subcontractors. However, all potential subcontractors were already teamed up with established suppliers. As a result, the international suppliers were not able to fulfill the pre-qualification requirements.

Understanding the pre-qualification criteria

In case 2, all of the international suppliers found it difficult to provide the correct pre-qualification information. They submitted irrelevant documents, rendering it difficult for the client personnel to evaluate them. In addition, reference persons were too high up in the organization to be able to properly describe the suppliers' potential project contributions.

Understanding the project risk

In case 3, the risk was described only in Norwegian. As a result, it was difficult to find any international supplier interested in the project. In total, only three suppliers showed interest in participating in this project. According to the interviewees, the interest should have been higher. For all suppliers, the understanding of risk was challenging since the procedure was perceived to be new.

B) In sum, the challenges proved to be more significant for international suppliers than for the suppliers already established in the Norwegian market. Three measures have been identified to increase overall market interest, notably communication with suppliers, repeated use of implementation models, and strategic plans.

First, clients need to gain attention from the market and to get support from the suppliers regarding the major project challenges. To obtain attention from the market, an initial information meeting and consecutive one-on-one meetings should be held at the beginning of the preparation phase. In this information meeting, an overall description of the project, its implementation model, and the implementation model risk should be explained. The latter is of particular importance since clarity concerning risk is the key factor suppliers consider before they decide to get involved or not. Secondly, an information meeting ought to be held with interested suppliers just before announcing the project. In this meeting, the potential suppliers obtain relatively detailed information about the project to decide whether to participate in the project.

The communication should not be limited to suppliers already established in the Norwegian market, but should also reach international suppliers. Of particular importance is that the project and the implementation model risk are explained in an understandable way for international suppliers.

Market interest increased significantly when implementation models were used the second time. Even if the sample size is too limited to come up with a clear conclusion, the findings suggest that market interest increases with repeated use of a model. One possible explanation is that suppliers' awareness of the risk level increased when the implementation models were used for the second time.

When the suppliers become sure that they will make money when participating in this way, successful completion of the first project and repeated use of the same implementation model can thus increase market interest significantly. Furthermore, a strategic plan showing the upcoming projects' implementation model could

also contribute to increased market interest. When the suppliers market sees that several projects are coming in the near future with similar procurement procedures and implementation models, they typically become more prepared.

1.2 Determining the losers' fee:

A) CD is a demanding procedure for both client and suppliers. As a consequence, the client in the examined cases compensated the suppliers with a losers' fee. In three of the six cases, the fee was paid in two stages. The first stage fee compensated for submitting the initial sketch solution. The second stage fee compensated for participating in the dialogue phase and developing the project together with the client. However, it was a challenging task for clients to determine the level of the losers' fee. On the one hand, the compensation should be attractive enough for suppliers to get involved in the project. If the suppliers in the market are busy, it is even more important that the loser's fee be sufficient. On the other hand, the compensation should not significantly increase the project budget. Likewise, it should not be so high that it attracts suppliers not interested in executing the project. It should suit the market situation.

B) One coherent method of calculating this compensation could be to cover the external expenses of the suppliers, such as expenses for consultant services up to a maximum level. The suppliers shall not expect to obtain profit from participating in the dialogue phase; their potential profit would instead come during the project execution phase. The suppliers themselves, as in the case of a traditional procurement procedure, would cover their internal expenses. It is their cost of doing business. The problem with this philosophy is that companies will include recovery of losses in their next project bid(s), thus making the next client the losers. Breaking this pattern would be a significant and innovative achievement for CD.

1.3 Function descriptions:

A) One motive for using CD is to increase supplier involvement. The client in case 1, however, described the tasks in too much detail in the dialogue frame document. Based on lessons from case 1, the client detailed the dialogue frame document far less in case 2. It was a shift from input-based towards outcome-based requirements.

B) One advantage of detailed function descriptions is that the client controls the technical solutions. The advantages of having less detailed function descriptions are increased flexibility for the suppliers, fewer potential conflicts, fewer constraints in the discussions during the dialogue phase and facilitating innovative solutions in the project.

1.4 Number of suppliers in the dialogue phase:

A) The number of suppliers in the dialogue phase varied from 3 to 5 in the case projects. The interviewees found

it difficult to determine the number of suppliers that should be invited to the dialogue phase. By inviting many suppliers, the client is able to obtain several innovative solutions. In addition, and equally important, more competing suppliers increases the likelihood of lower prices. Since CD has been used only in a few projects in Norway, it will be beneficial if more suppliers participate and thereby become experienced with the procedure. As a probable consequence, it will be easier for the client to get a sufficient number of participants in future CD projects.

B) One of the advantages of inviting few suppliers is that the suppliers' probability of winning the project (hit rate) increases significantly. This limited invitation could motivate the suppliers to invest more resources in the project development phase. The second advantage could be that fewer suppliers need to spend resources in the dialogue. The client typically also needs to spend fewer resources when the dialogue includes fewer suppliers.

The optimal number of suppliers can vary depending on project size, complexity and the client's interest/ability to expend resources. However, the interviewees – both from the client and supplier side – tended to propose three as an optimal number of suppliers in the dialogue phase.

1.5 Determining the MEAT criteria:

A) In all projects, the client determined the MEAT criteria and their weight in the preparation phase. However, it was difficult for the client in all projects to determine this before the range of the suppliers' solutions was known.

B) The client's previous experience from similar types of projects is the easiest way to determine the MEAT criteria. Consulting suppliers, designers, and sub-suppliers in a branch meeting is another possible way to find reasonable, objective MEAT criteria. The branch meeting provides ideas, but the client is still in charge. Furthermore, the project risk analysis from quality assurance (QA2) report could be used to decide the MEAT criteria and weighting. In the QA2 report, external consultants evaluate the project and identify the major risks of the project on behalf of the Norwegian Ministry of Finance.

2. Dialogue phase

2.1 Innovation:

A) The client interviewees claimed that they have acquired innovative, value-adding and improved solutions in all six case projects. One of the client representatives from case 4 stated:

We had twelve alternative solutions before the dialogue phase started. However, at the end of the dialogue phase, one of the suppliers came up with a new solution better than all these twelve.

One of the client representatives from case 3 stated:

The CD lasted longer and cost almost NOK three million extra compared with the estimated cost of using a

traditional procedure. However, the client saved approximately NOK 300 million as the winning supplier developed an innovative foundation solution for quick clay.

B) When suppliers come up with innovative solutions not described in handbooks and standards, they are more vulnerable than suppliers who come up with standard solutions. The reason is that suppliers that have new solutions just get temporary approval during the dialogue phase by the control and approval department of the NPRA. After the contract is signed, the supplier must go through a new process to get final approval. It is the supplier's responsibility to fulfill all documentation and get approval after contract signing. Without this final approval, the supplier must come up with a standard or another acceptable solution. The final approval process might take a long time, which could affect the supplier in the project execution phase. When the NPRA has both the client and the approval roles – while the suppliers take the risk of obtaining the final approval – this may discourage innovations.

To some degree, close cooperation during the dialogue phase between the client representatives and the control and approval department of the NPRA could decrease the vulnerability of innovative suppliers.

2.2 Demanding:

A) All of the interviewees agreed that CD is a demanding, time-consuming and expensive procurement procedure. It demands the full attention and cooperation of the participants. It is time-consuming due to the dialogue phase. It is expensive due to the losers' fee. Furthermore, each dialogue meeting involves much work both before and after the meeting for both contracting parties.

B) Smaller and less complex projects typically require comparatively simple forms of dialogue. Such a dialogue could prevent turnkey contract offers being rejected because of not fulfilling the client's requirements. A simpler dialogue could help the suppliers to discuss and understand the client's expectations in small and customary projects. Such a dialogue could help both the client and supplier to understand the project before they submit the final offer. It could also help to prevent conflicts during project execution due to unclear contract documents and project descriptions. CD is too demanding for small and less complex projects, and unfortunately, the current EU directive does not allow for simple dialogue.

2.3 Practical challenges to the dialogue:

Several practical challenges were identified in the dialogue phase. They are presented in Table 5. In the Table, the challenges were identified by interviewees, and the recommendations are based on data analysis.

Table 5: Practical challenges to the dialogue (not in prioritized order)

Challenges	Explanation of the challenges	Recommendations
Unnecessary documentation	In case 1 and 2, the client requested unnecessary documentation that was not used later on.	Starting from the first dialogue meeting, the suppliers should build only the necessary documentation that will be used to evaluate the final offer.
To have active dialogue	The client representatives did not respond to solutions that were not the best. On the other hand, the client discovered that some of the suppliers did not share their solutions.	It is important to have a process leader with experience that activates and guides the dialogue phase in the right direction.
To have qualified persons	Clients experienced lack of sufficiently qualified persons to answer the questions of the suppliers.	It is important that the client involves necessary expertise – in-house or external – at appropriate times.
Demands honesty, openness, and trust	Both the suppliers and the client found it challenging to be as honest, open and trustful as the procurement procedure demands.	Honesty, openness, and trust are at the core of CD. If one of the parties has a hidden agenda, the dialogue could be challenging.
Lack of transparency	The suppliers maintained that a lack of transparency characterized the client concerning the weighting of sub-awarding criteria. Due to this, some suppliers reported having spent significant resources on unimportant factors.	The client cannot determine the weighting of sub-awarding criteria in the early phase of the project. However, that weighting should be communicated during the dialogue phase (while emerging).

2.4 Risk transfer:

A) One of the reasons for using CD is to decrease risk. During the dialogue phase, suppliers can discuss unclear contract conditions. Consequently, the risk transferred to the supplier decreases and the supplier might reduce the

risk buffer in the price. Quite simply, CD reduces risk by facilitating information flow between the parties. As a result, the client obtains lower bids.

B) Based on experiences from the case projects clients and suppliers can decrease the project risk in the dialogue phase. As a result, the client obtains bids with lower risk buffers.

2.5 The length of the dialogue phase:

A) According to interviewees, the length of the dialogue phase should suit the market situation to attract suppliers. If the project development phase is taking place in a busy market, it is better if the dialogue period last longer. Project complexity should also be considered. For very complex projects, the dialogue phase should be sufficiently longer.

B) Prolongation of the dialogue phase make sure that the suppliers have enough resources and time to develop solutions that fulfill the client's requirements. Dialogue meetings typically takes place as frequently as every 14th day, so if the number of meetings is not substantially increased, this does not affect total execution time significantly. This measure renders the project attractive for the market, thus increasing market interest, which in return benefits the client.

3. Evaluation phase

3.1 Evaluation based on the MEAT criteria:

A) It was challenging for clients to evaluate the suppliers objectively on the MEAT criteria (Most Economically Advantageous Tender). Clients used different procedures in the case projects. First, it was challenging to determine which evaluation scale to use. For example, it is possible to use a categorical 1-4 scale or 1-10 scale, where the difference between 1 and 2 equals the difference between 2 and 3 with subjective evaluation.

Second, using the scale can also be challenging. One approach is that the best one gets the highest score and the worst one gets the lowest score. The opposite approach is to allow all the contractors to get the same score. If all contractors get a similar score on each of the MEAT criteria, the price will be the decisive criteria, and this is not the intention for using MEAT.

Third, there are two possible ways to agree on the specific scores for the suppliers. Each member of the evaluation group can give their scores before a common average is calculated. The other approach is to use one agreed-upon score for each supplier for each criterion. If the commonly agreed-upon score between the team members is used, loud speaking members might influence the evaluation too much.

Fourth, the suppliers did not know if they were being evaluated on an absolute basis or relative to each other. With absolute evaluation, fulfilling the minimum requirements gives a full score. That means suppliers will

strive to fulfill the basic requirements, but not more than that. With the relative evaluation, the suppliers get rewarded for suggesting innovative solutions above the minimum requirements.

Fifth, it was not clear for the suppliers if they would share a pre-set number of points or if all the suppliers could get the maximum number of points. If the suppliers share a pre-set number of points, and all of them suggest the best solutions, they still are rewarded an average number of points. The other option is that all suppliers with innovative solutions obtain the maximum number of points.

B) These five challenges can be resolved by standardization of the evaluation process and increased transparency. Without this, the client can manipulate the prioritization of the suppliers. The most significant problem for the suppliers seems to be the uncertainty regarding how the evaluation was carried out.

3.2 The evaluation team composition:

A) There are two possible ways to compose the evaluation team. The first one is to use personnel involved in the dialogue phase. The second is to bring in completely new personnel.

B) If the same personnel are involved in the dialogue and participate in the evaluation team, they could be biased if they developed a good impression of one supplier during the dialogue phase. A good impression does not guarantee good performance.

On the other side, using the same personnel during the dialogue and evaluation phase could make the evaluation process easier. These personnel have an understanding of the project from the dialogue phase and they have contributed to the supplier solutions. Therefore, it could be advantageous to use the same personnel in both processes.

The likelihood of a biased evaluation could be decreased by involving new personnel, while the knowledge from the dialogue phase could be retained by keeping the personnel involved in the dialogue in the evaluation team.

3.3 Granting the losers' fee:

A) In case 4, one of the pre-qualified suppliers was not able to develop a solution that could fulfill the client's requirements. Regardless, the unqualified supplier was allowed to be involved in the entire dialogue phase and thereby became qualified to a losers' fee compensation. This case indicates that the losers' fee led some suppliers to stay unnecessarily long in the process, in fact, longer than they would have done without the possibility of compensation.

Compensation should be paid for those who are involved in the entire dialogue phase. In three of the six cases, the losers' fee was paid in two stages. The first one was for those who submitted the initial sketch and the second one was for those who participated through the entire dialogue.

B) It is reasonable that to have a losers' fee arrangement with two stages. However, the client should evaluate the suppliers through the dialogue phase to compensate only those qualified.

4. Execution phase

4.1 Compensation format:

A) In all the case projects, a fixed sum compensation format was used. This compensation format proved to entail challenges concerning optimization solutions found during the execution phase. One challenge with fixed sum is that the client does not benefit from savings developed by the suppliers during the project execution phase. At the same time, it is difficult to force the suppliers to suggest solutions that increase quality or reduce maintenance costs. None the less, in case 1 the supplier managed to come up with significant savings during the project execution phase. After negotiation, the suppliers accepted a contract to prepare the road for a speed limit at 90 km/hr. instead of the original 80 km/hr. Even though the formal dialogue was over, the parties continued the dialogue during the project execution phase. In return for the cost savings of the suppliers, the client negotiated for better quality.

The compensation format could influence how the client reacts to different solutions from the supplier in the project execution phase. If the supplier comes up with solutions in the execution phase that demand cooperation and a significant contribution from the client, the client might be less motivated to cooperate or to take a significant risk. However, if the supplier comes up with a solution that also enables savings during operation and maintenance, such a solution could be interesting for the client.

B) In future projects, other alternative compensation formats could be tried to extend the cooperation between the client and the supplier from the dialogue phase into the execution phase regardless of the type of solution.

4.2 Cooperation:

A) The client achieved good cooperation with the suppliers in all six case projects. The cooperation during the dialogue phase seemed to lead to improved cooperation during the project execution phase.

In case 1, a cooperation group of 2 individuals from the supplier and 3 from the client at a senior level was established. This group met four times a year and discussed challenges that the project execution group was

not able to solve. The purpose of this group was to see the challenges from a big-picture perspective, avoid conflict and maintain cooperation. So far, none of the projects has experienced conflicts that has ended up in court.

A feeling of “this is our project” was observed on the supplier side. As the supplier developed the project through the dialogue phase, all members of the supplier’s organization were more motivated than usually. For example, in case 3, the client observed that the supplier was motivated on basis of the solutions chosen being their own. The client experienced that the discussions in the project execution phase were based on a common desire for better solutions for the project. One of the client representatives stated:

They were not in the old paradigm where “the solution is the client’s solution.” They worked hard to prove to the world that it was possible to build with their solutions within the estimated cost.

Since the both consulting company and the operation and maintenance supplier participated in the dialogue phase, cooperation with the major supplier was improved. This cooperation resulted in a perception of improved project execution and better quality end-product in all six cases.

B) The findings indicate that the dialogue phase can be the basis for good cooperation during the execution phase.

4.3 Using the solutions of losing suppliers:

A) In the case projects, the client let the suppliers develop their tender based on their solutions. However, the winning supplier might not be the only one that has developed good solutions for the project. Due to the confidentiality requirements in the dialogue phase, the client could not share the loser suppliers’ solution with the winner. All solutions developed during the dialogue belonged to the respective suppliers. So, the client was not able to implement solutions from the losing suppliers, even if their solutions were better.

B) A means of addressing this challenge could be that the client pays a higher losers’ fee and thereby buys the concepts developed by the losing suppliers. However, this alternative could affect the dialogue phase. The suppliers might not be as open as they could be since it might benefit their competitors. Another option could be to share the savings resulting from the losing suppliers’ solutions. An approach where the winner’s and losers’ solutions are merged, as described in the theoretical section of this paper, could also be used.

4.4 Project Control:

A) Both the client and supplier experienced better project control compared with their previous experience in projects with design-build contracts without a dialogue phase. The client identified three reasons for better project control. First, the client can influence the suppliers’ solutions during the dialogue phase by adapting the MEAT criteria. Second, in cases 1 and 2, CD was combined with a design-build contract and fixed sum compensation

leaving much of the responsibility to the supplier. Third, in cases 1 and 2, the suppliers were responsible for 15 years of operations and maintenance. Following this, the client felt better project control during the execution phase. Furthermore, there was less need for quantity control. As a result, the client needed only a small staff during the execution phase.

For the supplier, there were two reasons for experiencing improved project control. First, the supplier gained a thorough understanding of the project during the dialogue phase when the client and the supplier developed the solutions together. Second, the suppliers could discuss their solutions with the client. The suppliers felt it was possible to influence the project and use their construction experience from previous projects. This early involvement led to a better start for the supplier compared to their previous experience with traditional project delivery models.

B) Improved project control provides a win-win situation for both the client and the supplier. They both control matters that are important to them, and the dialogue is used to clarify what matters to the other side. In this way, both the project performance and the end-product can be improved.

5. Multi-phase

5.1 Lack of practical experience with CD:

A) Since CD is a new procedure, both the client and suppliers reported a lack of practical experience with the method. Hiring an external process leader – with expertise in CD (in cases 3-6) – and transferring knowledge between projects (from case 1 to case 2) are the approaches used by the NPRA to overcome this challenge. According to one of the interviewees in case 3, assigning an enthusiastic person willing to learn and implement new solutions helped the client to achieve good results. If the personnel who get involved in CD do not adapt their attitude, they can threaten the success of the entire procedure.

One of the interviewees in case 1 stated:

Personnel with experience from traditional procurement procedures found it difficult to adapt their attitude. Some of the client personnel had to leave the project, while others managed to change attitude after internal discussions.

B) Several measures can compensate for the lack of practical experience with CD and make sure that experiences are transferred between projects. First, the client can have one or more process leaders that are available for projects using CD. Second, if the client repeats the procedure in future projects, both the client's and the suppliers' experience levels will increase. Third, including experienced personnel in an inexperienced project organization will compensate for the lack of practical experience.

5.2 Ethical challenges:

A) The interviewees identified at least two ethical challenges from CD. When a client decides to use CD, he should make sure that the dialogues with the respective suppliers are confidential. The client cannot expose one supplier's solution to the other suppliers.

In case 1, one of the suppliers' solutions forced the client to accept a change in the zoning plan. Since the client had to give the same information to all the suppliers, other suppliers were made aware of the changes in the zoning plan. That made it clear for the competing suppliers that one of the suppliers had an improved solution within that part of the zoning plan. The challenge for the client is whether to accept the supplier's idea (thereby optimizing the project, but partly revealing the supplier's solutions), or to reject the change (thereby keeping it confidential, but missing the optimization possibilities).

In case 4, the client had listed twelve different technical tunnel solutions in advance of the procurement phase. One of the losing suppliers suggested a thirteenth solution, which was considered too far out of the box. The client was not prepared for this to happen and rejected this solution. The winning supplier suggested a fourteenth solution that the client accepted.

B) It is a challenge for the client to decide when to accept and when to deny when suppliers suggest new solutions. The client cannot say yes to all suggested solutions but must guarantee fair competition between the suppliers. To sum up, CD has ethical challenges when it comes to balancing confidentiality and equal treatment of the suppliers' suggested solutions.

5.3 Human mistakes:

A) Human mistakes, both from the client's and suppliers' sides, could have consequences. For example, in case 1, the client gave the wrong eRoom (an online project collaboration software) access to one of the suppliers' personnel. In case 4, one of the suppliers uploaded his documents into a common eRoom where all suppliers had access. These mistakes could lead to disqualification of the entire procurement process. The client responded to the mistakes in both cases by being open and informing all the suppliers about what happened.

In case 2, one of the suppliers submitted the envelope with the final price offer to the wrong address, disqualifying this supplier from the project. The supplier lost the money invested in the dialogue phase and the development of project solutions. Furthermore, the supplier was not eligible to receive the second stage losers' fee because of this disqualification.

B) In future projects, the use of an electronic bid submission system could prevent mistakes such as submitting the bid envelope to the wrong address. Using separate eRooms for each supplier could prevent

uploading of documents in wrong eRooms. In addition, establishing a procedure where at least two persons participate during uploading of sensitive information into an eRoom could prevent similar mistakes.

5.4 Zoning plan:

A) The zoning plan was restrictive during the dialogue phase in case 1 and case 2. One of the restrictions was that the zoning plan corridor was too narrow. In both cases, the client had made a 30-meter wide zoning plan following the center line of the existing road. To keep the existing road open for traffic while building the new road is demanding for the supplier. So, it can be convenient to let the traffic use the existing road while building a new, parallel road. With only 15 meters available on each side of the center line, it was difficult to build a new road without traffic disturbances.

Another restriction experienced was the fact that it was time-consuming to change the zoning plan. In case 1, several sections of the zoning plan were changed during the execution phase. Every time the suppliers came up with a solution that was not in alignment with the approved zoning plan, it had to be changed.

B) If the zoning plan were 30 meters wide on one side of the center line of the existing road, the supplier would have been able to construct the new road beside the existing road. This would have decreased the traffic disturbance. Another approach would have been to have a 60-meter-wide zoning plan with 30 meters on each side of the road. Then it would have been possible to build the new road while keeping the existing one and may also have reduced the need for changes in the zoning plan. A wider plan could have helped the project to meet both of the restrictions.

The third approach to mitigating the restrictions could be to have a longer dialogue phase in which the zoning plan could have been revised. However, this solution has its shortcomings. CD is demanding and expensive for both the client and suppliers. Having a longer dialogue phase could affect the market interest when the suppliers find out that the dialogue phase is becoming even more demanding and expensive. The client risk could also increase if the zoning plan revision and approval process take longer than expected. Thus, the project execution phase might be delayed.

The fourth possible approach could be to involve the suppliers and to have the dialogue phase before the zoning plan is approved. The fourth approach could look like the ideal situation for using CD, but then the project might turn out to be unattractive for suppliers, since they will not bind their key personnel to a single project for an extended time. Another drawback for the client is that it would be difficult to fairly evaluate the bids of the suppliers if they suggest solutions that are difficult to compare.

The zoning plan restricts possibilities for new solutions. The cases met the restrictions with different approaches. However, since each project is unique, the same approaches might not work for all projects.

Conclusions

The study reported on in this paper set out to 1) explore how CD has been implemented in Norway, 2) explore experiences from using the procedure and 3) suggest measures that ought to be implemented for the success of future projects using CD.

Even if the projects claim to use the same procurement procedure, it appears that the procedure was practiced in slightly different ways. Overall, the analysis of the experiences from the six Norwegian projects shows that both the client and the suppliers value the potential of CD. No major differences in responses regarding interviewee roles and status were observed. This result aligns with findings from international cases where the actors also valued the potential of CD.

However, several challenges were identified, such as lack of practical experience with CD, ethical challenges, determining the MEAT (Most Economically Advantageous Tender) criteria, evaluation based on the MEAT criteria, and varying market interest. Figure 2 provides a complete overview of the experiences that the client and the suppliers faced while practicing CD in the six examined cases. Some of the experiences originate from the preparation, dialogue, evaluation and project execution phases (single-phase). Some of the experiences stem from several phases. The first contribution of this study is that it can be concluded that to conduct dialogues between the client and suppliers during the procurement before contract signing, positively influences the cooperation and project control of both parties during the execution phase.

Some of the measures that need to be implemented by clients entering CD projects are as follows:

- Increase the use of function descriptions during the preparation of the tender document
- Provide awarding criteria that demand innovation
- Be prepared to hear and accept new solutions/ways of working during the dialogue phase
- Learn to give more freedom for the suppliers during the project execution phase in order to stimulate innovation.

On the other side, suppliers should also be prepared to exercise the freedom the procedure provides them to suggest new and innovative solutions. Additionally, individual improvements addressing the respective experiences identified in Figure 2 are presented in the discussion section. Many of the suggested improvements could be implemented in the *project preparation* phase by the client. Furthermore, in the *dialogue phase*, the

benefit of the supplier's contribution could increase if the client gives even more flexibility than was provided in the examined cases. The client and the supplier can reinforce positive experiences and weaken challenging experiences by implementing the individual improvements suggested in this study. This study complements the limited earlier research that addressing practical issues of CD to improve the procedure in practice. The second contribution of this study is the identification of how CD practice can be improved.

This paper contributes to construction engineering and management practice to increase the understanding of CD by suggesting what kind of measures should be taken for the success of future projects using the procedure. Although this research is based on the NPRA's infrastructure projects, the study findings and practical experiences will be relevant for other public owners in Europe that are planning to use CD.

The third contribution of this study is the identification of areas in CD that could be focused on future research. In the future, experiences from additional cases could be explored in order to strengthen the findings of this study and to explore whether other projects have experienced the same or different challenges related to CD. Furthermore, the long-term effect of CD could be studied through a life-cycle assessment of finished projects.

Appendix: Interview Guide

1. Startup questions
 - Can you tell me about your background / experience?
 - What is your position in the company and in this project?
 - What was your previous experience of competitive dialogue (CD) procurement procedure before this project?
 - Why did the project use competitive dialogue?
 - What factors meant to use competitive dialogue procurement procedure in this project?
 - For which projects is competitive dialogue suitable?
2. How was competitive dialogue done (timeline, selection criteria, and participants)?

Prequalification phase

- How many showed interest in participating? How many were pre-qualified?
- What were the pre-qualification criteria?
- How were pre-qualification criteria set?
- What is your opinion about the pre-qualification criteria?

Dialogue phase

- How many dialogues have you had?
- How was the dialogue phase carried out?
- Which persons participated in the dialogue and were they the right person?
- What were the topics in the dialogue meetings?
- To what extent did municipal zoning plan create obstacles in the choice of solutions (was the regulatory plan restrictive in the dialogue)?
- Were there different themes for the various dialogue meetings?

Evaluation phase

- What were the final award criteria?
- How were the award criteria determined?
- Why exactly were these criteria used / why not other criteria?
- To what extent did these criteria work according to the Norwegian Public Roads Administration's expectations?
- How can these award criteria add value (in terms of project control, time gains and innovation?)

3. What are the experiences from using competitive dialogue?

- What are the positive experiences from using competitive dialogue?
- What were the biggest challenges of using competitive dialogue (internally in SVV, between SVV and the contractor)?
- How did you overcome the challenges?
- How was the cooperation between SVV and the contractor?
- How was the collaboration internally with the contractor (between the operation & maintenance contractor, the consultant and the major contractor)?
- How does the competitive dialogue improve quality of the project (both in process and perhaps in product)?
- Should the dialogue phase be longer or shorter? Why?
- What benefit came out of the process (Quality, process and maybe in product?)

- How much additional cost was competitive dialogue compared to a traditional procurement process (in time and money)?
 - What ethical challenges did you encounter during the process?
 - Did you experience that actors use the process in an ethical way?
4. What could have been done differently?
- What do you think of competitive dialogue procedures in future projects?
 - What is your opinion about the award criteria?
 - Which award criteria should be changed, removed or added to future projects?
 - What should the Norwegian Public Roads Administration do to reinforce the positive experiences and avoid the challenges in the future use of competitive dialogue?
 - What should be done by contractors in order not to meet the same challenges in future use of competitive dialogue?
 - What do you think of compensation for approved offers?
 - How much compensation is attractive enough for contractors?

Data Availability Statement

Data generated or analyzed during the study are available from the corresponding author by request.

References

- Aapaoja, A., Herrala, M., Pekuri, A. & Haapasalo, H., (2013). The characteristics of and cornerstones for creating integrated teams. *International Journal of Managing Projects in Business*, 6, 695-713.
- Albano, G.L. & Sparro, M., (2010). Flexible strategies for centralized public procurement. *Review of Economics and Institutions*, 1.
- Arrowsmith, S. & Treumer, S., (2012). *Competitive dialogue in EU procurement*: Cambridge University Press.
- Blumberg, B.F., Cooper, D.R. & Schindler, P.S., (2014). *Business research methods*: McGraw-Hill education.
- Bougrain, F., (2012). Energy performance and public private partnership. *Built Environment Project and Asset Management*, 2, 41-55.
- Burnett, M., (2009). Using Competitive Dialogue in EU Public Procurement - Early Trends and Future Developments. *Eipascope*, 17-30.

- Chen, L. & Manley, K., 2014. Validation of an Instrument to Measure Governance and Performance on Collaborative Infrastructure Projects. *Journal of Construction Engineering and Management*, 140, 04014006.
- Creswell, J.W., 2013. *Research design: Qualitative, quantitative, and mixed methods approaches*: Sage publications.
- Dorn, N., Levi, M. & White, S., 2008. Do European procurement rules generate or prevent crime? *Journal of Financial Crime*, 15, 243-260.
- Edler, J. & Georghiou, L., 2007. Public procurement and innovation—Resurrecting the demand side. *Research policy*, 36, 949-963.
- Ellis, D., 1993. Modeling the information-seeking patterns of academic researchers: A grounded theory approach. *The Library Quarterly*, 63, 469-486.
- Eriksson, P.E. & Westerberg, M., 2011. Effects of cooperative procurement procedures on construction project performance: A conceptual framework. *International Journal of Project Management*, 29, 197-208.
- Essig, M. & Batran, A., 2005. Public-private partnership—Development of long-term relationships in public procurement in Germany. *Journal of Purchasing and Supply Management*, 11, 221-231.
- European Commission, P.P.P., 2006. Explanatory Note-Competitive Dialogue-Classic Directive. *Directorate General Internal Market and Services*.
- European Parliament, C.O.T.E.U., 2014. Directive 2014/24/EU of the European Parliament and of the Council of 26 February 2014 on public procurement and repealing Directive 2004/18/EC Text with EEA relevance. *Official journal of the European Union*.
- Haugbølle, K., Pihl, D. & Gottlieb, S.C., 2015. Competitive Dialogue: Driving Innovation Through Procurement? *Procedia Economics and Finance*, 21, 555-562.
- Hoezen, M., Voordijk, H. & Dewulf, G., 2012. Contracting dynamics in the competitive dialogue procedure. *Built Environment Project and Asset Management*, 2, 6-24.
- Hoezen, M., Voordijk, H. & Dewulf, G., 2015. Procuring complex projects using the competitive dialogue. *International Journal of Project Organisation and Management*, 6, 319-335.
- Hood, J. & Smith, T., 2013. Perceptions of quantifiable benefits of local authority risk management. *International Journal of Public Sector Management*, 26, 309-319.
- Kautsch, M., Lichoń, M. & Whyles, G., 2015. Tools of innovative public procurement in health care in Poland. *Innovation*, 28, 312-323.

- Kent, D.C. & Becerik-Gerber, B., 2010. Understanding construction industry experience and attitudes toward integrated project delivery. *Journal of construction engineering and management*, 136, 815-825.
- Korthals Altes, W.K. & Taşan-Kok, T., 2010. The impact of European public contract law on networks of governance: a relational approach. *European Planning Studies*, 18, 971-988.
- Lahdenperä, P., 2009. Project alliance. *The Competitive Single Target-Cost Approach. VTT Tiedotteita–Research Notes*, 2472.
- Lenferink, S., Arts, J., Tillema, T., Vanvalkenburg, M. & Nijsten, R., 2012. Early Contractor Involvement in Dutch Infrastructure Development: Initial Experiences with Parallel Procedures for Planning and Procurement. *Journal of Public Procurement*, 12, 1-42.
- Lenferink, S., Tillema, T. & Arts, J., 2013. Public-private interaction in contracting: Governance strategies in the competitive dialogue of Dutch infrastructure projects. *Public Administration*, 91, 928-946.
- Li, H., Arditi, D. & Wang, Z., 2013. Factors That Affect Transaction Costs in Construction Projects. *Journal of Construction Engineering and Management*, 139, 60-68.
- Love Peter, E.D., Ackermann, F., Teo, P. & Morrison, J., 2015. From Individual to Collective Learning: A Conceptual Learning Framework for Enacting Rework Prevention. *Journal of Construction Engineering and Management*, 141, 05015009.
- Nagelkerke, M., Van Rijn, M., Huith, G. & Van Valkenburg, M., Year. Competitive Dialogue: Abyss or Opportunity?ed.^eds. *3rd International Public Procurement Conference Proceedings*, 275-294.
- O'brien, G. & Hope, A., 2010. Localism and energy: Negotiating approaches to embedding resilience in energy systems. *Energy Policy*, 38, 7550-7558.
- Petersen, O.H., 2010. Emerging meta-governance as a regulation framework for public-private partnerships: An examination of the European Union's approach. *International Public Management Review*, 11, 1-21.
- Plane, C.V. & Green, A.N., 2012. Buyer-supplier collaboration: the aim of FM procurement? *Facilities*, 30, 152-163.
- Sebastian, R., Claeson-Jonsson, C. & Di Giulio, R., 2013. Performance-based procurement for low-disturbance bridge construction projects. *Construction Innovation*, 13, 394-409.
- Siemonsma, H., Van Nus, W. & Uyttendaele, P., 2012. Awarding of Port PPP contracts: the added value of a competitive dialogue procedure. *The flagship journal of international shipping and port research*, 39, 63-78.

- Soliño, A.S. & Gago De Santos, P., 2010. Transaction costs in transport public–private partnerships: comparing procurement procedures. *Transport Reviews*, 30, 389-406.
- Sundaraj, G. & Eaton, D., 2013. Quantifying robustness in PFIs. *Journal of Financial Management of Property and Construction*, 18, 26-52.
- Telles, P. & Butler, L., 2014. Public Procurement Award Procedures in Directive 2014/24/EU. *Novelties in the 2014 Directive on Public Procurement*, Djof Publishing.
- Uttam, K. & Le Lann Roos, C., 2014. Competitive dialogue procedure for sustainable public procurement. *Journal of Cleaner Production*, 403-4016.
- Uyarra, E. & Flanagan, K., 2010. Understanding the innovation impacts of public procurement. *European Planning Studies*, 18, 123-143.
- Van Leeuwen, M., 2011. Using Best Value PiPS Procurement in Europe, Need for Compromise? *Journal for the Advancement of Performance Information & Value*, 3.
- Williamson, O. 1985. E., 1985, The Economic Institutions of Capitalism: firms, markets, relational contracting. *New York*.
- Wondimu, P. A., Hailemichael, E., Hosseini, A., Lohne, J., Torp, O. & Lædre, O. 2016. Success factors for early contractor involvement (ECI) in public infrastructure projects. *SEB16 Build Green and Renovate Deep*. Tallinn and Helsinki: Elsevier`s Energy Procedia.
- Wondimu, P. A., Lohne, J. & Lædre, O. 2017a. Motives for the Use of Competitive Dialogue. *25th Annual Conference of the International Group for Lean Construction*. Heraklion, Greece.
- Wondimu, P.A., Svalestuen, F., Hailemichael, E., Hosseini, A., Lohne, J. & Lædre, O., 2017b. Implementation of Early Contractor Involvement (ECI) in Norwegian Bridge Projects Procurement. *Home of Construction Researchers on Economics and Organisation in the Nordic Region*. Gøteborg.
- Yin, R.K., 2014. *Case study research: Design and methods*: Sage publications.