Design-build Contracts in the Nordic Countries

Can the use of design-build contracts in road construction be optimised?

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Preface

This report has been prepared by the ad hoc group for design-build contracts of the Nordic Road Association (NVF). The group was formed in autumn 2016 for the specific purpose of studying how to optimise the use of design-build contracts in road construction. The group, which consists of Nordic consultants, contractors and employers, has studied the conditions in Denmark, Finland, the Faroe Islands, Norway and Sweden, respectively.

The study is descriptive and serves perfectly as a collection of examples which each country can use based on their own strategies and in their own work to develop the design-build contract format. We have therefore tried to describe the conditions in the Nordic countries as well as what seems to work under which conditions.

However, the study also makes some recommendations, i.e. more normative suggestions for what the industry needs to do to benefit more from this form of contract.

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NFV's ad hoc group for design-build contracts

Summary

The ad hoc group has held six meetings to discuss the optimisation of design-build contracts based on the terms of reference provided by NVF's board of association.
These discussions quickly revealed unity across the group in respect of what defines a design-build contracts, including what parameters and criteria that are instrumental in ensuring the success of individual design-build contracts.
However, the group acknowledged that the individual countries apply and succeed differently when it comes to design-build contracts. The work in the group therefore switched focus towards providing recommendations on how to promote the development of design-build contracts in the best possible way. These recommendations are supplemented by various examples on measures taken in the individual countries.

To optimise the use of design-build contracts, we have identified the following three success criteria:

1. Use of market dialogue
2. Structured employer execution models
3. Focus on skills

Market dialogue is imperative if the industry is to adopt the design-build contract format and unfold its potential. By referring to a number of specific examples such as the Swedish project 'Förnyelse i Anläggningsbranschen' (Innovation in the Construction Industry) (FIA), we show how important it is that the players in the industry engage in a dialogue with each other and establish a common understanding in the industry of when it makes sense to use design-build contracts, which execution models are compatible with which types of design-build contracts and what it takes for the employer, consultant and contractor, respectively, if the use of design-build contracts is to lead to increased production and innovation.

Structured employer execution models involve establishing a proper and structured dialogue about the individual project. The report concludes that it is important that the employer, consultant and contractor understand the project execution model and accept the reasoning behind the selected model. The report also concludes that it might be sensible for the employers to make some 'package solutions' as part of their employer strategy. It will thus benefit all parties if the execution models are not picked randomly but rather adhere to a clearly defined employer strategy.

Focus on skills is the third area which this report considers an important success criterion and an area we recommend that the industry focuses more on. Indeed, design-build contracts calls for a completely different set of skills from employers, consultants and contractors.

The descriptive parts of the report also serve to promote implementation and focus on creating changes in the industry. We therefore hope that the report is not simply read and shelved, but that our work on the report is followed up by industry meetings, seminars and the like where our discussions can be carried on and experience can be brought into play – on the individual countries' own terms. More specifically, the report features a chapter titled 'Implementation' which outlines how to continue working on the experience gained in the report.

A key takeaway from this project has been that even the choice of contract is made in a specific historical and market context. The group therefore wanted to describe the context of the examples used in the report and the historical background which the examples shed light on. This background is in many ways country-specific. The employer strategies share many features in the Nordic countries, but they have also included very different elements. Differences in time, in historical and transport-policy backgrounds, differences in markets, etc. In the report, we have tried to describe these differences with the idea that the countries may learn from each other and thus initiate a development where the experience of other countries may be applied in a situation relevant to a specific country.

Terms of reference

This report was commissioned in autumn 2016 by the Board of the Nordic Road Association (NFV), which wanted a clarification of how to optimise the use of design-build contracts in the Nordic countries, or as formulated in the terms of reference, to understand 'why the Nordic countries are not better at exploiting the full potential of design-build contracts.'

To get answers to this question, the Board of Association set up an ad hoc group, 'the ad hoc group for design-build contracts'. The group was to be composed of three persons from each country: an employer, a consultant and a contractor.

The group was given the following terms of reference:

The ad hoc group is charged with studying how to optimise the value of design-build contracts.

The group will select its own study design, but may solve the assignment by answering the following questions:

- *Why are the Nordic countries not better at exploiting the full potential of design-build contracts?*
- *What design-build contracts experience in particular does the group assess that the Nordic countries can learn from?*
- *What are the barriers to developing design-build contracts in the Nordic countries?*
- *What is needed to promote the value of design-build contracts?*
- *What elements in the design-build contracts should be in focus to ensure optimised operation of the facility? Where are the biggest cost/benefits (is it e.g. drainage, pipes, concrete or something completely different)?*
- *What cost models are applied in the different Nordic countries?*
- *How do you optimise the distribution of risk among the parties involved?*

Participants: Three persons from each country. The group consists of participants from both the private and public sector.

We started our work by discussing the terms of reference, and quickly realised that the more technical questions asked in the terms of reference (such as 'whether the biggest cost/benefits lie in drainage, pipes or concrete?') were not important in terms of finding optimisation potentials. Instead, it was the cultural and institutional factors, i.e. the formal and informal circumstances, that direct the use of design-build contracts in the Nordic countries.

We therefore use a lot of space in the report to describe national conditions and we show that there are relatively large differences between the countries in terms of maturity, grants, the size of projects and framework conditions.

However, we also provide some suggestions for what can be done to promote the use of design-build contracts, viz.: market dialogue, structured execution models and focus on skills.

The report has 10 chapters. The primary chapters of the report follow an introductory section where we define the concept of 'design-build contracts' and describe how we understand a project 'execution model'. The primary chapters are:

Market analyses
In this chapter, we describe the market conditions in each of the five Nordic countries covered by the report. The period covers 2017-2023. The purpose of this chapter is to provide an overview of the markets in which the form of contract and execution models must be decided. The chapter is divided into countries.

Success criteria
In this chapter, we apply a series of examples to illustrate what has worked or not worked and under which circumstances. Across the often considerable national differences, we try to formulate some generic factors and show the conditions that need to be present in order to benefit from the design-build contract format, what parameters can be tweaked, etc. We conclude by emphasising three particularly important success criteria:
1) Market dialogue
2) Structured employer execution models
3) Focus on skills

Examples
In this chapter, we provide a number of examples from the Nordic countries. The examples are divided into four groups:

1. Specific examples of contracts
2. Examples of the countries' transport plans and decision-making structures
3. Examples of market dialogue
4. Examples of procurement methods

The process quickly revealed that the national transport plans were important in terms of the use of the design-build contract format in the various countries, including in particular the question of the extent to which the plans are binding in relation to the government budget. We therefore provide some examples of national transport plans and their impact on the country's use of design-build contracts. We have also discovered that market dialogue plays an important role and that the Scandinavian countries have some really good examples of successful market dialogues.

Conclusion
We finish by making a conclusion and giving our suggestion for what is needed to promote the value of design-build contracts in the Nordic countries.
This will include a chapter where we summarise the work of the group and make recommendations as to how the group's work may be continued by and communicated to the industry. We also make some recommendations for what the individual countries should focus on in the future. Furthermore, we provide a plan for a follow-up workshop with the Nordic countries which we would like to organise in 2019 as well as a session at Via Nordica 2020.

Definition

Design-build contract

To begin with, we give our definition of a design-build contract. We are far from being the first to work with this concept. In the contract standard 'Buildings and civil engineering works – Vocabulary – Part 2: Contract and communication terms' (ISO 6707-2:2017), the International Organization for Standardization (ISO) defines design-build contract as:

Design-build; Building contract work or part of it where the contractor is in charge of planning and of the execution of the project

Source*:* https://www.iso.org/standard/70040.html

The Nordic standardisation organisations have translated this standard. This is the Norwegian version:

totalentreprenør
kontraktspart som har påtatt seg prosjektering og utførelse av kontraktsgjenstanden
Standards Norway, NS 8407:2011, section 1.8

For the purpose of this report, we use the same definition. A design-build contract is a form of contract where the contract with the contractor (i.e. the design-build contractor) involves both design and execution.

The design-build contractor therefore holds overall contractual responsibility in respect of the employer for the design and the execution of the project.

The figure on the next page shows the subject matter of the assignment as the second step in an overview of forms of contract.

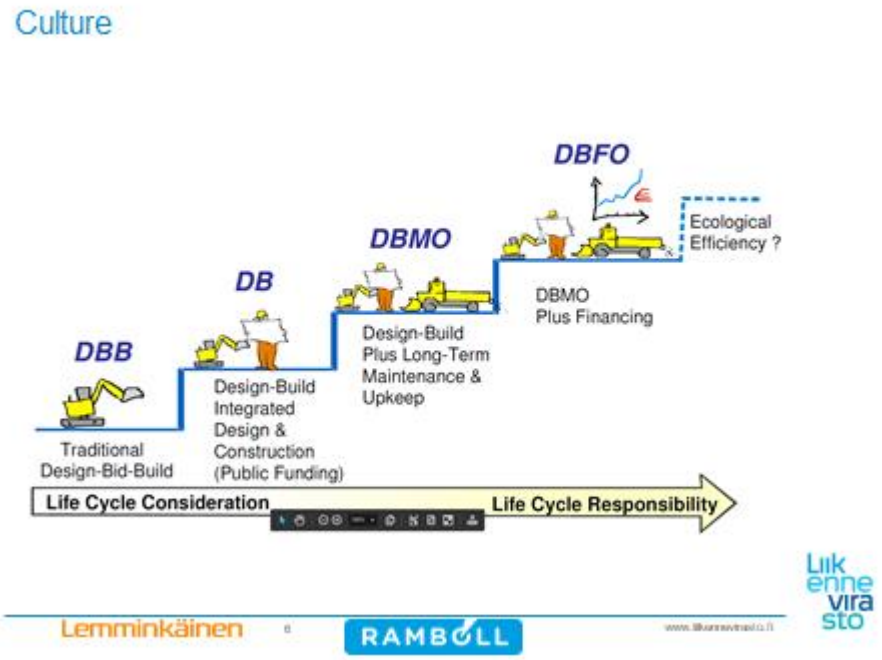

Figure 1 Culture

However, we quickly realised that it would not do with this definition alone and that we would have to expand the subject matter to include the execution models of which the design-build contracts form part.

Execution model

Accordingly, the form of contract 'design build' does not say anything about how the contract is concluded (procurement method), how the contract sum is calculated (calculation method), how the assignment is described (functional or detailed description), the scope of the work (both in terms of design and execution) or the degree of freedom the contractor has in terms of performing the work. Together, these factors constitute the project's *execution model*.

How the factors actually work depends less on the individual factors and more on their interaction. The form of contract, design-build contract, will therefore work differently when applied in the various execution models. For instance, a design-build contract with a functional description will work very differently from a design-build contract with a detailed description. Similarly, a design-build contract procured through a pure price competition will work very differently from a design-build contract procured by direct negotiations or by using e.g. 'Best Value Procurement' (BVP).

Accordingly, when discussing the use of design-build contracts in road construction in this report, it is not possible to do so without also considering the execution models of which the design-build contracts form part. On the contrary, a key point will be to understand how different execution models will be able to either inhibit or promote the exploitation of the potential of the design-build contract form of contract. It is also important to understand what execution models best match the individual projects.

Market analyses

In this chapter, we will describe the markets in which the Nordic road infrastructure projects are tendered as well as market trend expectations until 2023. The market impacts the choice of form of contract. Both in terms of the specific historical development in the market in respect of e.g. the economic framework and the general competitive conditions. We have chosen to highlight the main trends in the six countries. For more in-depth descriptions of the market conditions in the individual countries, please refer to the appendix 'Detailed country descriptions'.

Norway
Norway is experiencing a period of intense activity in public investments in general, not least when it comes to road construction. In road construction, the activity level towards 2023 is expected to lie between NOK 30 and 35 billion with an expected peak around 2020 of NOK 35 billion (see figures and detailed description in Appendix 1). In Norway, the biggest projects are getting bigger, and the share of the total market of the biggest projects is growing rapidly. The share of projects over NOK 1 billion is thus expected to increase, while the share of projects of less than NOK 1 billion is expected to fall. At present, Norway can expect individual contracts in the region of NOK 4 billion and two PPP contracts are expected to reach as high as NOK 8 billion.

The Norwegian market for design-build contracts is experiencing strong growth. The market is characterised by two major employers; one (Nye Veier AS) with a very homogenous portfolio, the other (Norwegian Public Roads Administration) with a more heterogeneous portfolio. The two employers have therefore chosen different employer strategies. Nye Veier's employer strategy is to carry out almost everything as design-build contracts, something that goes perfectly with a homogenous project portfolio. Due to its more heterogeneous project portfolio, the Norwegian Public Roads Administration cannot apply the same strategy. Nonetheless, the Norwegian Public Roads Administration wants to increase its use of design-build contracts from the current level of 5% to 40% in the future.

In summary, we see a Norwegian market which increasingly uses the design-build contract format, which has to do with the fact that the infrastructure projects are becoming bigger. As mentioned, Norway has two major employers in the public construction market. The Norwegian Public Roads Administration and Nye Veier AS. A municipal reform entering into force in 2020 means that some of the current main roads will be transferred to the council county districts in 2020, which will then also become a key player in the Norwegian construction market. In our projections, we have assumed that the council country districts will continue the contract strategies made in the Norwegian Public Roads Administration's current plans.

Since Nye Veier carries out practically all its contracts as design-build contracts, the Norwegian Public Roads Administration currently decides the total share of design-build contracts in the market. In 2015, the Norwegian Public Roads Administration adopted an employer strategy that entails that the share of design-build contracts for the Norwegian Public Roads Administration's projects must reach 30-40% in the future. By comparison, approximately 5% of the Norwegian Public Roads Administration's contracts are tendered as design-build contracts.

There are considerable differences between the two major public employees when it comes to selecting execution model. Nye Veier consistently selects 'Best Value Procurement' (BVP), a model we will describe later in the report, which focuses on added value within a maximum price, whereas the Norwegian Public Roads Administration has traditionally used conventional competitive procedures focusing on lowest price.

Sweden

We find that the market for design-build contracts is more mature in Sweden than in many of the other Scandinavian countries. One of the reasons for this is that, back in 2003, Sweden initiated a very thorough dialogue with the central players in the market on e.g. design-build contracts on the initiative of the executive directors of the former Swedish Road Administration and Swedish Rail Administration. This took place under the headline 'Förnyelse i anläggningsbranschen (FIA)' (Innovation in the Construction Industry), which was a fixed-term project (2003-2012) aimed at creating innovation in the construction industry. The Swedish Road Administration and the Swedish Rail Administration have since merged into the Swedish Transport Administration, which covers both roads and railways. For the same reason, our description in Appendix 1 of the market conditions in Sweden covers the infrastructure market in a wide sense and therefore cannot be compared directly with e.g. the more specific descriptions we referred to above of the road construction market in Norway. However, we assess that, subject to this reservation, we have still made a relevant overall description of the market conditions for design-build contracts in the Nordic countries.

In 2014-2015, Sweden reached its target of tendering 50% of infrastructure contracts as design-build contracts. Initially, the goal was to reach this target in 2018, so it happened a number of years earlier than expected. However, our assessment of Sweden's 'maturity' does not solely rely on the considerable share of design-build contracts in the market but also on the fact that a clear structure can be seen in the execution models used. A clear employer strategy based on the thorough market dialogue between 2003 and 2012 means that there is no free choice when it comes to execution models. The various execution models are linked to the different contract categories, and the Swedish Transport Administration has prepared a structured matrix which the market knows well, and which is intended to ensure that the right contract form and execution model are chosen for the right project. (See Appendix 1 under 'Sweden')

As employer, the Swedish Transport Administration has been working intensely with its role as employer. Under the headline 'pure awarding entity', the Swedish Transport Administration has also launched a number of innovations which this working group has found interesting, including in particular the model 'Samverkan Hög'. 'Samverkan Hög' is a model used to select the form of contract and the related execution model. The model is named according to the highest level of cooperation in the model. Under the highest level of cooperation, the contract is tendered in a manner which requires a high degree of cooperation and shared understanding of objectives among the parties. In other words, the parties share many of the same interests. Instead of being solely responsible for their own part of the project, the parties joins a community where together, they must balance the planning of the project, solution models and skills subject to a high degree of shared responsibility and risk. Later in the report, we have described the various forms of contract and their related execution models used by the Swedish Transport Administration in its role as awarding entity. However, this is clearly one of the areas where we have uncovered some experience that the other Nordic countries may benefit from.

During the past 8-10 years, the development in Sweden has moved towards tendering a greater percentage of road and rail construction projects as design-build contracts. Looking ahead towards 2018-2021, approximately 55% of the market for major infrastructure projects in Sweden will consist of

design-build contracts. Add to this the projects tendered as ‘Samverkan Hög’, which are mostly tendered as design-build contracts. The ratio of design-build contracts to contracts for separate works is therefore assessed to be: 70% design build contracts (including ‘Samverkan Hög’) and 30% subcontracts for separate works (by volume). (See Appendix 1 under ‘Sweden’)

As mentioned, Sweden invested in a very thorough market dialogue in the years 2003 to 2012. The dialogue involved how to create innovation and higher efficiency in the construction industry, however, the contract form ‘design-build contracts’ formed part of the dialogue as a key means offering a host of innovation and efficiency potentials. In our opinion, the reason why Sweden has managed to reap some of the benefits and has understood how to exploit some of the potentials of this form of contract, is that they have continued to work in a highly structured manner on how to use this form of contract. As part of its employer strategy, the Swedish Transport Administration has created matrices for which execution models that match with which forms of contract. We believe that this entailed that, not only the initial market dialogue, but also the subsequent dialogues about the specific projects become good and thorough. The parties know the framework for the dialogue, which we consider an advantage for all parties involved. Not all execution models can be pulled from the shelf for any type of project. The employer has already made some choices and prepared matrices that illustrate these choices. The dialogue between the employer, consultant and contractor takes place within the predefined perimeters.

The largest contractors in the market for building and construction in Sweden are PEAB, Skanska and NCC, while ÅF, SWECO and WSP account for the highest revenue when it comes to the consultancy market (Note: No direct comparison can be made with the other countries in this report, since the information about their market shares is specifically linked to the market for road construction)

Finland

Finland started to focus on the design-build contract format in earnest around 2000. We also characterise the Finnish market for design-build contracts as mature. Finland has also developed the contracting models and has started using a model called the ‘Alliance model’. The Alliance model is characterised by the employer and one or more service providers (consultant, contractor, etc.) cooperating as one team. In fact, Finland has focused strongly on developing the team spirit in the use of design-build contracts and the alliance contracts. As we will demonstrate, the recruitment to the common team is carried out based on interviews, in which also personal and cooperative skills are assessed – sometimes even with the help of a psychologist, who will assist in composing the optimum team. In many ways, Finland may be described as a ‘first mover’. Finland was also one of the first countries in the world to return a road to the state after a PPP project.

However, the Finnish construction market is stagnant with only 1% growth in 2018. The share of design-build contracts varies each year, which is due to the fact that each project is evaluated individually, and that both forms of contract and execution models are decided from one project to the next. Finland applies practically all procurement procedures. The largest contractors are YIT (formerly Lemminkäinen), Skanska, SRV and Destia. The largest consultants in the market are: Ramboll, Sitowise, Sweco, WSP and Pöyry

Denmark

The use of design-build contracts in road construction was introduced in earnest as part of the Danish Road Directorate’s procurement strategy in 2010-2011. It was during the same years that the first, and so far only, PPP project in road construction was carried out. Indeed, it was the learning gained from

this process that served as a catalyst for starting to focus more on design-build contracts in Denmark. Another element was the heavily intensified activity following the Danish parliament's adoption of 'A green transport policy' in 2009.
The Danish Road Directorate therefore saw a need for making the Danish market attractive to foreign tenderers to ensure continued optimised competition. The market dialogue with the foreign players clearly revealed that they had no interest in subcontracts and main contracts and that a certain volume would be required to get them to enter the Danish market.
In order to kickstart the development, all contracts above DKK 100 million were generally made as design-build contracts. The parties would then have to argue if they wanted the type of procurement procedure to be main contracts and subcontracts.

Most of the projects from e.g. 'A green transport policy' will soon be completed, and since no new projects have been granted to the same extent, investments have started to show a declining trend within the traffic area, and particularly within the road area, in 2017-2019.

However, the Danish Road Directorate has initiated a number of major projects, including the extension of E45 Østjyske Motorvej between Aarhus S and Skanderborg S and E20 Vestfynske Motorvej. In terms of planning, feasibility studies have been initiated for a new eastern ring road in Copenhagen (harbour tunnel) as well as an extension of E45 from Randers to Vejle, and an EIA survey is being conducted for a new motorway in central Jutland.
The largest contractors in the market are M.J. Ericsson, Arkil, Barslund and MT Højgaard, while the largest consultants are COWI, Ramboll, ÅF – Hansen & Henneberg and Sweco.

The Faeroe Islands
In the Faeroe Islands, the employer typically orders the project, the consultants do the designing and the contractors execute the project. Most construction works are public. The largest employers are: Landsverk, the municipalities and a number of publicly owned companies. The consultants are typically Faeroese consultants, who might hire foreign experts.

Generally, design-build contracts are not considered relevant for the Faeroese market for road construction since the market is too small. Nor do the contractors show any particular interest in design-build contracts.

However, several of the elements of design-build contracts such as the form of cooperation, early involvement, distribution of responsibility, etc. may advantageously be implemented in the Faeroese building and construction industry. It should therefore be expected that the Faeroe Islands will start to see more and more of these elements in Faeroese construction projects in the future.

The Faeroese market for road construction is characterised by a few, large contractors who bid on the large (and small) public projects. The contractors are mainly Faeroese contractors who may choose to hire foreign labour. The exception is a large-scale tunnel project – ES tunneller – of which NCC is the contractor. NCC is a known player in the Faeroese market which both the Faroese employers and consultants know well. Expectations for the development in the market for road construction are practically no growth. The market is expected to a total of approximately DKK 40 million in 2018, 2019 and 2020 (see Appendix 1 'The Faeroe Islands').

Success criteria

Drivers of design-build contracts

As part of our work, we have decided to identify, in particular the following drivers for succeeding with design-build contracts in road construction in the Nordic countries:

- The award process
- Early involvement
- Risk management
- Degrees of freedom
- Assignment and skills allocation

How exactly we arrived at these drivers has perhaps not been adequately documented in this report. We are sorry about that. Our work involved various good discussions at our meetings, which we have unfortunately not managed to address and incorporate into this version of the report.

Still, it should be mentioned that, in our opinion, these drivers are what makes it possible to optimise the individual design-build contracts.

Together with the actual form of contract, the award process will be one of the key elements in the project execution model and thus decisive to how the design-build contract works in practice. One of the strategic goals of a design-build contracts is to achieve optimum integration between planning and execution skills in the project. This involves exploiting the execution skill in the planning phase and the planning skill in the execution phase. This requires early involvement of the executing parties.

In design-build contracts, the contractor assumes a greater obligation and thus a greater risk. The condition for the transfer of risk from the employer to the contractor is that the transfer is not just a trade of risk but that it creates a process where the contractor is able to manage the risk in a way that makes the risk premium the contractor charges the employer lower than the cost the employer would have had by having the risk. A successful transfer places demands on the award process, early involvement, the degrees of freedom in the project as well as the assignment and skills allocation between the parties.

The right degrees of freedom for the contractor are decisive to being able to exploit the potential of design-build contracts as the form of contract. Without adequate degrees of freedom, responsibility and degree of influence will not follow each other and design-build contracts becomes a pure trade of risk that cannot be controlled or influenced by the one carrying the risk. (This should not be understood as if the employer should surrender its management right in the project. However, if the employer chooses to assume management of the contractor within areas covered by the contractor's degrees of freedom, then the employer will have to accept the consequences in respect of costs, time, etc.). An important element of a good design-build contract strategy for the employer will therefore be acute awareness of the degrees of freedom the contractor must have, and how to enter into an agreement with a contractor who is authorised to exercise such freedoms as well as how the parties are to cooperate to exercise the freedoms in the best possible way as part of the project execution.

Development of design-build contracts

As mentioned, we believe that the above drivers will make it possible to optimise the individual design-build contract.

However, the group's discussions and collection of experience have revealed that some market and structural conditions are important for being able to exercise these drivers in the best way. The various markets may be described as mature in terms of being able to fully exploit the options of the design-build contract.
The ad hoc group has devised three key elements that might help promote maturity in the industry and the market.

- Use of market dialogue
- Structured employer execution models
- Focus on skills

Market dialogue

It is imperative with a close dialogue about the development if the industry is to adopt the design-build contract format and unfold its potential. We refer to a number of specific examples, e.g. the Swedish project 'Innovation in the Construction Industry' (FIA), to show how important it is that the industry players engage in a dialogue with each other and establish a common understanding in the industry. This applies to both when it makes sense to use design-build contracts and which execution models that match with what types of design-build contracts. Moreover, it is important to discuss what it will take for the employer, consultant and contractor, respectively, if the use of design-build contracts is to lead to increased productivity and innovation. The above-mentioned drivers can also be determined as part of this market dialogue.

Structured employer execution models

It is important to establish a good and structured dialogue about the individual project. The employer, consultant and contractor must all understand the project execution model and accept the reasoning behind the selected model.
It may therefore be sensible for the employers to make some 'package solutions' as part of their employer strategy. It will thus benefit all parties if the execution models adhere to a clearly defined employer strategy. This means that the design-build contracts will not be selected more or less randomly, but instead be based on a structured model where the projects are assessed on the basis of fixed criteria. E.g. the above-mentioned drivers.
This is not the same as saying that different elements cannot be included in e.g. the award criteria. However, a fixed framework and a range of execution models will make it easier for the market to optimise its services.

Focus on skills

Following the brainstorming at the first meeting, skills were one of the elements we wanted to discuss to see what drives a design-build contract and ensures optimum execution. However, it was not until half-way through our discussions that we realised that skills were actually one of the key elements. Across the Nordic countries, this is probably the *least* developed element and the element holding the greatest real potential. We therefore recommend that the industry starts to focus more on this area. Indeed, design-build contracts call for a completely different set of skills from employers, consultants and contractors.

Obviously, technical specialist skills are still needed. However, it is important to address the fact that the responsibility for specialist skills actually changes, see the model stated in the section on definitions. Moreover, it is important that particularly executive officers at all parties involved increasingly focus on cooperation and framework management. Accordingly, more attention should be paid to personal skills.

Examples

We chose to conduct the six meetings by having each country hold one meeting in which the host country would also make a national presentation on its design-build contracts experience. This, together with the many small and large examples provided by the individual group members in the discussions, meant that we wanted to include a section describing examples of their experience.
We have focused on examples related to the success criteria and drivers mentioned in the preceding section.

The examples are divided into the following groups:

1. Examples of market dialogue
2. Examples of procurement methods
3. Specific examples of contracts
4. Examples of the countries' transport plans and decision-making structures

1. Examples of market dialogue

Example 1 Sweden: Innovation in the construction industry (FIA)

The change in the industry started 15 years ago with the FIA project - Innovation in the construction industry.

The FIA project started in 2003 on the initiative of the executive officers of the Swedish Road Administration and the Swedish Rail Administration.

Members of FIA have covered everything from awarding entities (the Swedish Transport Administration and several municipalities) to various businesses (contractors, technical consultants, material suppliers). The Swedish Transport Administration has financed the project, while the other members have contributed with their resources and skills.

FIA's members have worked to promote FIA's goals for innovation
in the construction industry:

- Higher efficiency, which results in higher quality, lower costs and increased profitability.
- Improved interaction and cooperation between the parties of the industry.
- Better incentives to focus on research and skills development.
- More effective communication of already existing knowledge and skills.
- Recruitment to be ensured by creating a more positive image of the industry in the public via the innovation work.

The purpose has been to get more roads and railways for the money and to create the opportunity for stable and good profitability for the suppliers.

From the onset, FIA was intended as a temporary project and was therefore discontinued in spring 2012. The Swedish Transport Administration subsequently assumed the role of managing the programmes and tools created under the framework of FIA.

Dialogue with the market players
In 2011, a meeting was held with contracting and technical consulting companies. A total of eleven companies participated. They had been asked beforehand to prepare an answer to the question:

- What measures are the most important in order to increase productivity and innovation in the construction industry?

The invited companies showed great enthusiasm and there was general consensus that the way the awarding entity works need to change. The companies requested clear 'ground rules' that provided continuity and equal ground rules for equal qualifications regardless of who represents the employers. The committee noted that several of the company representatives mentioned that there is currently one dominant awarding entity, and that it is important that the Swedish Transport Administration is aware of its dominant position.

The contracting companies said that there was a need for more design-build contracts. When handled correctly, design-build contracts drive development and 'give the industry momentum'. However, procurement of design-build contracts must be prepared so that it is easy to influence. It should also be taken into account that design-build contracts have **high procurement costs** and that this form of contract should not be used to transfer the risk to the executing party. Here, the parties pointed to the possibility of compensating companies for submitting tenders.

Several companies also addressed the fact that procurement should be carried out from a **life-cycle perspective** and include operation and maintenance over a certain period of time. The companies also highlighted the importance of using **incentives** (bonus/penalties) and a bonus scheme to serve as a catalyst for and create commitment from the contractor, that more emphasis should be placed on the **soft factors** in procurement and that it should be possible to submit alternative tenders in connection with construction projects.

The technical requirements should be reassessed from a productivity perspective. Both contracting and technical consulting companies addressed the importance of better **industry thinking**. The industry must move towards industrialisation through standardisation, repetition and large-scale operations. The awarding entity must allow for specialisation, prefabrication and repeatability.

It must also be possible to work with **company-unique solutions**. Many highlighted the importance of good cooperation between the parties and development of **cooperation forms. Improved foresight** and planning of procurement were called for. It is important to ensure an even distribution during the year and such an inflow of jobs that allows the technical consulting companies to maintain their skills. The use of BIM was addressed. It was noted that it is important to clarify its usability at all stages, and that the customer should require 3D/BIM as part of the procurement.

The technical consultancy companies had strong views on the business model for procurement of consultancy, which they felt did not promote productivity and innovation. The hourly rate is decisive when it comes to procurement.
The businesses want increased use of **fixed-price contracts** and compensation models that reward quality and skills. Let the parties do what they do best and cooperate in the interface, was another point raised.

Another meeting was held with the eleven companies in March 2012. The companies were positive about the change process initiated by the Swedish Transport Administration. One of the viewpoints presented was that the companies want to compete on other things than price, e.g. **technical**

solution, project completion date, less disturbances and ability to execute. It is also important that the Swedish Transport Administration gives the suppliers a **greater degree of freedom** in connection with design builds.

The technical consultancy companies noted that contractors choose consultants based on quality, which is interesting to the consultants. The value of awarding entities, consultants and contractors cooperating early on in the project was also noted. In complex projects, it is highly valuable that the parties are able to make quick decisions. That is why it is crucial that the Swedish Transport Administration uses experienced project managers and that it maintains a **high level of skills.**

Example 2 Denmark: Procurement strategy 2010-2011 and later examples of market dialogue

The use of design-build contracts in road construction was really introduced as part of the procurement strategy in 2010-2011. It was during the same years that the first and so far only PPP project in road construction was carried out. Indeed, it was the learning gained from this process that served as a catalyst for starting to focus more on design-build contracts. Another element was the considerable increase in activity. The Danish Road Directorate therefore saw a need to make the Danish market attractive to foreign tenderers to ensure continued optimised competition.

The market dialogue with the foreign players clearly revealed that they had no interest in contracts for subcontracts and main contracts, and that a certain volume was required to get them to enter the Danish market.

In order to kickstart the development, all contracts above DKK 100 million were generally made as design-build contracts. The parties would then have to argue if they wanted the type of procurement procedure to be main contracts and subcontracts.

A number of design build contracts have been tendered through the years, which have been evaluated regularly against the measures taken. Both the internal measures and those measures that via paradigms and procurement-law aim more directly at consultants and contractors. An ongoing dialogue with the industry about the measures taken has been ensured via supplier meetings and individual meetings. However, it has only resulted in a more direct involvement in the form of workshops on various topics in a few cases.

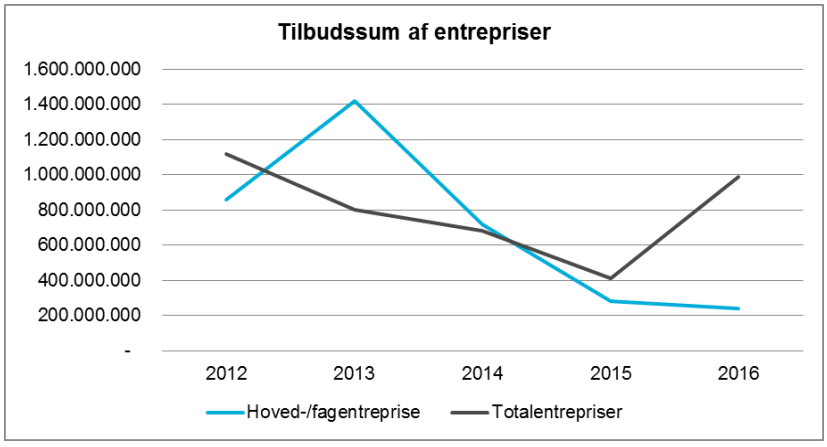

Figure 2 Tender price for contracts, Main Contract / contract for separate works, Design-builds

Procedure with market dialogue

During the past years, a number of procedures have been conducted with various forms of market involvement in connection with both construction and operation tasks. The following table X illustrates

some of these procedures, which have been evaluated in order to define some criteria for when these are best used. These recommendations are provided in table 1.

Competitive dialogue	Competitive procedure with negotiations	Market dialogue in general (ex)
The motorway Kliplev-Sønderborg (2009-2010, approx. DKK 1.6 bn)	Concession agreement on establishment of charging stations along the motorway network (2017, approx. DKK 15 m)	Expansion of E45 Skanderborg-Aarhus (2017, approx. DKK 500 m)
Inlet link Frederikssund (2016, approx. DKK 1 bn)	Concession agreements regarding new service facilities (2017, approx. DKK 6 bn)	Procedure 2017 (overall operation tender) 2017, approx. DKK 250 m/year
Storstrømsbroen (2017, approx. DKK 2 bn)	Framework agreement on recruitment (2017, approx. DKK 1 m)	Cable vehicle for Ny Lillebæltsbro (2016, approx. DKK 4 m)
Toll station Inlet link Frederiksund (2018, total contract value approx. DKK 140 m)	Framework agreement on laboratory services (2017, approx. 20 m)	Sale of market garden and nursery (2017, approx. m)
	Motorway south of Regstrup (2017, approx. 200 m)	Toll station Inlet link Frederikssund
		Framework agreement on laboratory services (2016, approx. DKK 20 m)
		Concession agreements – service facilities and charging stations
		General contractor dialogue on in-situ versus element bridges

Table 1: Competitive dialogue

Competitive dialogue	Competitive procedure with negotiations	Market dialogue in general
- Large, non-standardised projects - Complex projects (design, financing format, organisational setup, maintenance) - Uncertainty regarding final solution design (in respect of the budget) - Must be a clear business case to achieve savings through dialogue	- (Some) certainty as to the desired product, uncertainty as to the value of individual elements (technical and legal) - Tight budget and therefore at wish to be able to negotiate the exclusion of elements and adjust the tender documents - Criteria not as clear, but it is always nice to be able to negotiate....	- Uncertainty as to the market's abilities, interest or size/number of players - Uncertainty as to the delimitation and composition of the service

Table 2 Evaluation, competitive dialogue

However, it is important to engage in some general considerations in particularly about time and transaction costs before deciding on which form of dialogue to use.

- 'Competitive dialogue' is time-consuming and resource-intensive for both the awarding entity and the tenderers.
- 'Competitive procedure with negotiations' is not significantly more resource-intensive than an ordinary procedure, as it typically involves adjusting existing tenders. However, it will take extra time in the procurement process.

In connection with 'Other market dialogue', the time might be well spent on a well-prepared and focused market dialogue. Conversely, a lopsided market dialogue may at worst give a false sense of security and provide wrong information.

2. Examples of procurement methods

Example 3 Best Value Procurement (BVP)

Introduction

BVP is a new procurement method that is now used for several projects in Norway.
Nye Veier AS has chosen a strategy where the main rule is an execution model in connection with major design-build contracts procured by BVP. It has been implemented based on a model from the Netherlands where BVP has been used on various projects (from infrastructure to IT) for more than 10 years. The Netherlands in turn got the idea from the USA.
The industry organisations RIF (the Norwegian Consulting Engineers' Association) and EBA (the Norwegian Contractors Association) have welcomed the BVP method. The background is a desire to get away from the unilateral focus on price as the evaluation criterion in public procurement. BVP is also a method that focuses more on innovation and makes it possible to show the supplier's skills to a greater degree than in conventional contracting methods.
The Norwegian Agency for Public Management and eGovernment (DIFI) aims to innovate the Norwegian public sector and is responsible for e.g. public procurement (https://www.difi.no). DIFI recommends testing BVP.
So far, the Norwegian Public Roads Administration has not chosen to use BVP. The reason for this is that the Norwegian Public Roads Administration believes that BVP does not adequately apply the employer's skills, it does not consider some of the uncertainties in major road construction projects and it does not ensure that the best supplier for the project is chosen.

Description of BVP

Best Value Procurement (BVP) is a procurement method for finding a supplier, who, via measurable values, has documented that he is able to add something positive to the project.
The BVP comprises the following four phases:

1. Preparation phase
2. Evaluation phase
3. Clarification phase
4. Execution phase

Preparation phase

The documents for the competitive procedure are prepared during the preparation phase. It also includes staff training, setting of project goals, making a time schedule, picking evaluation criteria, fixing a maximum price for the project, prequalification (if relevant), training of suppliers and own organisation in the BVP method and inviting tenders.
The phase ends when the tenderers submit their tenders.

Evaluation phase
The supplier's tender must consist of six pages:

- Performance statement (2 pages)
- Risk assessment (2 pages)
- Added value (2 pages)

During the evaluation phase, the tenders are held up against the evaluation criteria. These criteria vary, but they generally consist of the following five criteria:

- Performance statement (weighs approximately 25%)
- Risk assessment (weighs approximately 15%)
- Added value (weighs approximately 10%)
- Skills and experience of key staff (weighs approximately 25%)
- Price lower than maximum price (weighs approximately 25%)

As part of the competition basis, the awarding entity will state the overall objectives of the project. These are objectives in addition to being able to deliver the described function. Usually, four to six objectives will be stated. Under performance statement, the tenderer must describe what he will do to meet these objectives and why the specific measures have been proposed. The tenderer must state the reasons for this by means of dominant information. Dominant information means unambiguous and documentable information. (An example of dominant information is reference to previous projects where the tenderer in 9 out of 10 cases have successfully used the specified measure).
As part of the risk assessment, the tenderer must state what he perceives as the key risks to the awarding entity in the project. The tenderer must state the measures he will take to prevent these risks and to limit any damage if the risks still occur. The tenderer must also explain why he has proposed the specific measures. The measures must be priced, but do not form part of the evaluation of price.
Added value constitutes proposals from the tenderer that are not part of the functional requirements but contribute to the awarding entity better meeting the objectives. Here, the use value must be greater than the costs, and the added value must be reasoned.
The three criteria (performance statement, risk assessment and added value) are evaluated by the awarding entity. Evaluation is made anonymously. This means that the tender should not include company name, logo or other information that may identify the tenderer, including references to named projects.
Skills and experience of key staff are evaluated by means of interviews. The interviews are recorded and transcribed. Usually, three persons from each of the tenderers are interviewed. Each interview will take up to one hour.
The price will not be disclosed to the evaluation team. The price is checked by a commercial manager (or similar) who will check that the price is lower than the stated maximum price. If the price is above the maximum price, the tenderers will be rejected.
The evaluation team consists of approximately five people. They will be joined by an interviewer who will prepare the questions together with the evaluation team and conduct the interviews. The same team evaluates all the criteria, except price.
The tenderer who gets the best score from an overall evaluation will proceed to the clarification phase.

Clarification phase
In the clarification phase, the tenderer must present his plan for how he intends to carry out the project. It is not until this stage that the technical solution relied on by the tenderer will be revealed. (The requirements specification is function-based, not detailed.) The clarification phase is managed by the tenderer and lasts from two to six weeks. The duration is determined by the tenderer. During the phase, all risks must be included and placed with either the tenderer or the awarding entity. The clarification phase ends with a review of all documents to be included in the final contract. This phase involves no negotiations, only explanation of the tender.

Execution phase
The execution phase starts after the contract is signed. Here, the risk that was outlined in the clarification phase must be followed-up though weekly risk reports. This serves as a security measure for both the supplier and the awarding entity.

Summary
The difference between BVP and conventional competitive procedure is illustrated in the figure below:

Figure 3 Difference between BVP and conventional competitive procedures

(*Text in figure 3:*
Preparation
- *Preparation of functional requirements and overall objectives*
- *Prequalification*

Tender
- *Selected tenderers work on the tender*
- *Information meetings and clarification meetings*

Evaluation
- *Evaluation of tenders*
- *Interviews*
- *Comparison and selection*

Clarification phase
- *Selected contractor*
- *clarifies his tender with 'how'*
- *Final signing of agreement*

BVP
Conventional

Two pages
Two pages
Two pages

One contractor presents the plan

Stop)

Experience
The use of BVP is at an early stage. So far, the method has only been used in a limited number of projects and none of the projects are complete. This means there is currently no basis for making clear conclusions based on experience.

Example 4 The Swedish model 'Samverkan Hög'

The Swedish Transport Administration has applied a research report ordered by the Swedish Competition Authority, KV 2014:4

- **Professional customers have a great opportunity to influence the development of the industry by choosing procurement strategies that promote efficiency and innovation**
- A balance between cooperation and competition attuned to the specific situation
- **The more a project is characterised by complexity, customisation, uncertainty and time pressure, the more cooperation is required**

Against this background, the Swedish Transport Administration has prepared a cooperation model called Samverkan Hög.

This should be adapted to projects within the following categories

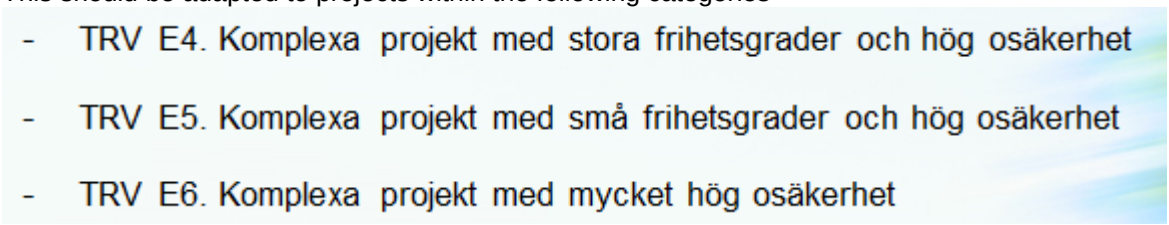

Figure 4 Samverkan Hög

(Text in figure 4:

- TRV E4. Complex projects with large degrees of freedom and high degree of uncertainty
- TRV E5. Complex projects with minor degrees of freedom and high degree of uncertainty
- TRV E6. Complex projects with very high degree of uncertainty)

Cooperation means that work is carried out in partnership between the awarding entity and suppliers to ensure optimum communication, an efficient procedure, proper quality, improvements and optimised fulfilment of objectives.

Under the procurement process, this cooperation should take place in a structured format that must characterise the procedure, procurement method and the parties' roles.

The parties hold full responsibility for the execution of their obligations in terms of scope, quality, etc.

For more information and details about 'Samverkan Hög', we refer to the presentation given by Göran Domås from the Swedish Transport Administration at our NVF meeting in Stockholm, appended to this document.

3. Specific examples of contracts

Example 5 The Sepänkylä bypass, D&B (Finland)

The main benefits from using D&B instead of e.g. DBB were clear:

- Complete change of substructure
  - Strict requirements of excavated soils hauling and dumping area
  - Resulted in savings in binder >12% of total construction value
- Faster construction time, earlier opening for traffic – society benefits

Example 6 The Tunnel Tampere, Finnish Alliance model

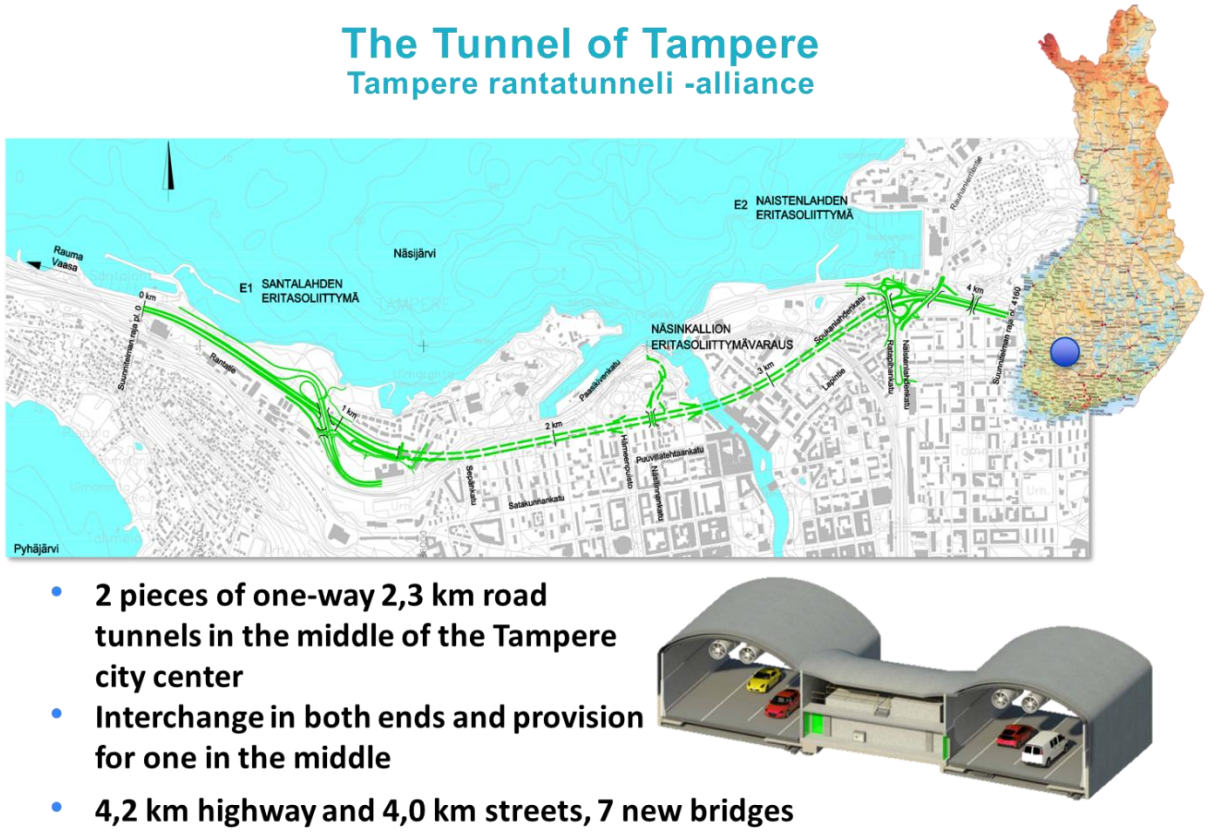

Figure 5 The Tunnel of Tampere

The aim of the project was to implement the planned traffic route undertaking in a manner that enabled its targets and impact to be achieved economically and efficiently, from the perspective of society as a whole. The project's owner is the City of Tampere, which will own the project routes during the construction phase. The City of Tampere has authorised the Finnish Transport Agency to take care of project management, the preparations for the contract, and monitoring. The project was implemented as an alliance contract. Once the contract has been completed, the Finnish Transport Agency uses a central government transfer to redeem the stretch to be transferred to its ownership.

Key factors of uncertainty in the project

- The administrative completion of city plans, the general plan and the road plan
- (appeals and their processing times)
- The processing schedule of water permits
- The impact of the publicity received by the project
- The City of Tampere's final decision on moving to the implementation phase
- Challenges related to the alliance model (ability to adopt the model and demonstrate whether value for money has been achieved)

Key technical challenges

- Risk management and agreeing on the division of risks regarding the restoration of the contaminated soil in Santalahti (the extent of the contamination is impossible to determine in a completely reliable manner)
- Traffic arrangements around the principal construction sites and interchange areas during work, particularly in Naistenlahti
- The management of the impact and scope of the final planning of line transfers as plans and implementation solutions are defined in more detail
- Rock quality
- Groundwater management at the tunnel heads, and the related trough structures
- Air quality management at the tunnel heads
- The tunnel's inception into use (the success of technical system trials and testing)

Compared to traditional forms of implementation (design-build contracts (DB)/integrated project delivery (IPD) contracts or project-management contracts), an alliance requires more resources from the owner. The tendering costs of service providers are correspondingly 20–40% smaller compared to traditional implementation methods. For tendering consortia, the tendering costs of design offices may nevertheless be significantly higher than in models such as DB/IPD or project-management contracts if each party in the tendering consortium is liable for its own costs.

Figure 6: Strategic Decisions to use Alliance

The overall result of the model was a success as the tunnel was finished earlier than planned and the direct construction cost ended up below the set target cost: the final target cost was 195,9 million euro and the costs are estimated to be 3,76 million euro below the target (the guarantee period is still ongoing). Also, the targets set for the whole project were reached (these were set during the development phase and measured throughout the project)

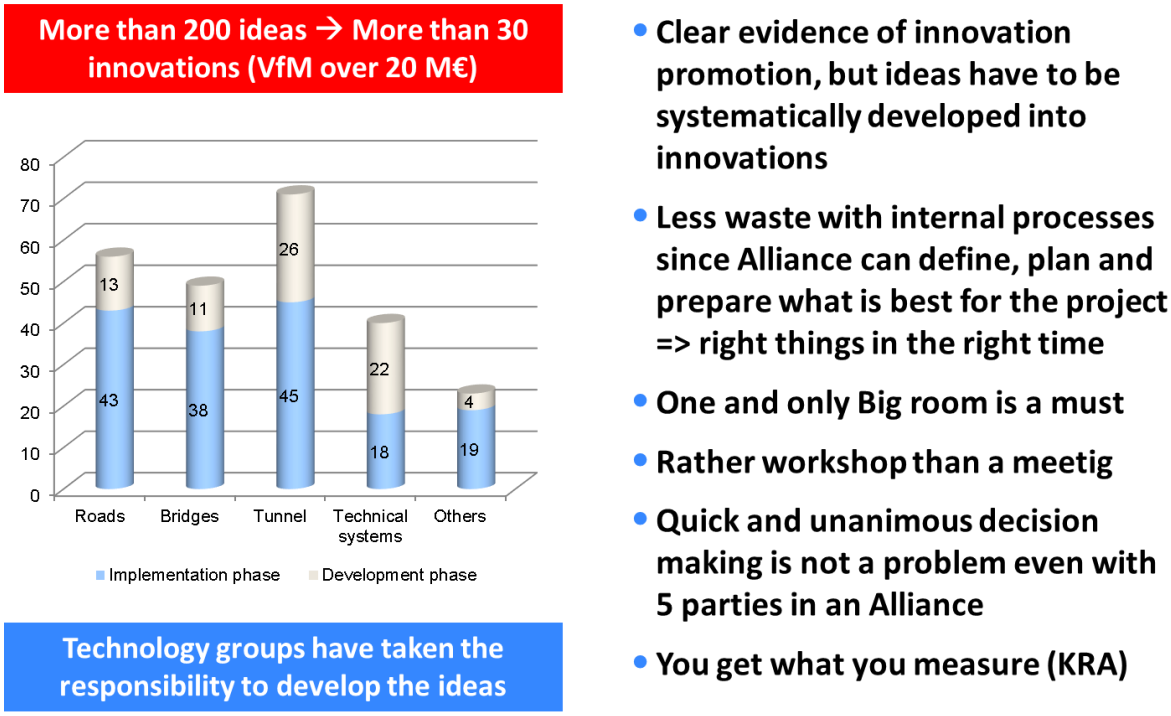

Figure 7: Lessons learned:

Example 7 Specific examples from the Faeroe Islands

We have considered three construction projects that were carried out recently. Two road facilities and a harbour facility.

The two road facilities experienced challenges in respect of time and project as well as many breached agreements during the construction period. The harbour facility experienced fewer challenges and observed the time schedule and budget overall.

If we focus solely on the start-up and form of contract, it is clear where the difference is. The harbour facility was a relatively good project and had a realistic time schedule and the finances were geared to the project. However, the biggest difference was a fixed-price agreement with the contractor. In this project, the risk related to quantities and project errors lay with the contractor. However, we find that in this case, the agreement offered the contractor good financial advantages, which he knew relatively early on in the process. This resulted in a smooth project that observed the budget and time schedule. The contractor was a major and competent contractor who was able to solve the task without problems.

However, the road facilities were not particularly good projects. They were both quite delayed and did not observe the budget. The project was difficult to manage and never gained the necessary momentum. The reason for this is a poor project and a budget that was not geared for the project. Both projects required many changes in the process, and one of the projects had a contractor who was not up for the task. The risk in both projects lay with the employer.

It is difficult to say whether this problem would have been solved with a design-build contracts. However, if we take a look at what actually worked, we can conclude that:

We need a solid project or a contractor who is up to the job – even if the project is not perfect.

The risk should lay with either the contractor if there are any financial advantages to the contractor, or it should be shared by the contractor and employer, if it is unclear whether it has any financial advantages.
Cooperation comes under hard pressure if there is no form of shared commitment. It might be an incentive or a sharing of the risk. Particularly if you have a contractor who does not seem to care about his reputation.
The project should also match the budget. Or the project should be adapted to the budget without causing financial trouble for any of the parties or any minor payments should be split equally between the parties.
Overall, these items more resemble those seen in a design-build contracts than in a general contract. Without saying that a pure design-build contracts is the solution, then any form of contract should provide solutions to the above issues.

4. Examples of the countries' transport plans and decision-making structures

Example 8 Norway's National Transport Plan (NTP)
Description of NTP
The National Transport Plan (NTP) is a white paper for the Norwegian Parliament that presents the government's transport policy. It forms the basis for the overall political assessments, efficient use of measures and interaction between the modes of transport. The National Transport Plan is considered by the transport and communications committee, which presents its recommendation to the Norwegian Parliament.
National Transport Plan presents a 12-year plan for transport in Norway. It deals with the activities of the Norwegian Public Roads Administration, the Norwegian National Rail Administration, the Norwegian Coastal Administration and Avinor. The plan is revised every four years prior to the general elections.
The white paper for the Norwegian Parliament on the National Transport Plan was prepared the first time for the period 2002-2011 and replaced a system where white papers containing sectoral plans for each administration were prepared. The plan period for the four preceding transport plans has been 10 years, but the plan period has now been extended to twelve years.

Investigation phase
Before a new National Transport Plan can be prepared, the transport administrations (the Norwegian Public Roads Administration, the Norwegian National Rail Administration, the Norwegian Coastal Administration) and Avinor (Formerly the Norwegian Civil Aviation Administration) must carry out a number of investigations. This first phase of the National Transport Plan is termed the investigation phase.
The Norwegian Ministry of Transport and Communications provide the guidelines for the analysis and strategy phase, and the transport administrations (the Norwegian Public Roads Administration, the Norwegian National Rail Administration, the Norwegian Coastal Administration) and Avinor will then be asked to carry out analyses as basis for the continued work with the transport plan.
The Norwegian Ministry of Transport and Communications finds it very important to show how resource consumption helps improve transport conditions. The socio-economic analysis in the National Transport Plan consists of calculated use value and costs and not priced consequences. When using socio-economic profitability for the prioritisation, these will be weighed against each other.

Planning phase
During the planning phase, the transport administrations and Avinor will prepare proposals for the planning part of the National Transport Plan based on guidelines issued by the Norwegian Ministry of Transport and Communications. As part of this work, the administrations and Avinor will send the

planning documents for consultation in the county municipalities and the major urban municipalities. The Norwegian Ministry of Transport and Communications will also conduct regional meetings at political level during the consultation period to obtain different views on the proposal. The planning document will provide an important basis for the Norwegian Ministry of Transport and Communications' work with the white paper for the Norwegian Parliament on the National Transport Plan.

Planning periods
The National Transport Plan runs for 12 years but is revised every four years. The investment programme in the National Transport Plan 2018-2029 is presented for 6 + 6 years and has the highest level of detail during the first part of the planning period.
National Transport Plan for 2015-2029 was presented on 5 April 2017 and considered by the Norwegian Parliament on 19 June 2017. The plan runs from 1 January 2018.

Examples from the planning part of the National Transport Plan
The following examples show how the planning part of the National Transport Plan (NTP) presents investment proposals.
The planning part of the NTP is divided into the following corridors:
1. Oslo – Svinesund/Kornsjø
2. Oslo – Ørje/Magnor
3. Oslo – Grenland – Kristiansand – Stavanger
4. Stavanger – Bergen – Ålesund – Trondheim
5. Oslo – Bergen/Haugesund, with a branch via Sogn to Florø
6. Oslo – Trondheim, with branches to Måløy, Ålesund and Kristiansund
7. Trondheim – Bodø, with branches to the Swedish border
8. Bodø – Narvik – Tromsø – Kirkenes, with branch to Lofoten and branches to the borders to Sweden, Finland and Russia

Example from the planning part of the National Transport Plan which shows an overall text for a corridor:
«In corridor 7 between Trondheim and Bodø, with branches to the Swedish border, several major projects and section-wise improvements on E6 in Nord-Trøndelag and Nordland are prioritised. On the railway, the section Trondheim – Steinkjer on the Nordland line and Meråker line from Hell to Storlien will be electrified and modernised. Improvement of sea lines in the corridor will also be prioritised. The government is proposing to provide funds to move the airports in Bodø and to build a new airport in Mo in Rana.»

Two examples from the planning part in the National Transport Plan that shows proposals for funding:
Example 1)

Tabell 13.6 Rammer til investering i korridor 2. Mill. kr

		2018–2023	2024–2029	2018–2029	Annen finansiering
Veg	Vedtatte/igangsatte prosjekter	443	0	443	0
	Nye store prosjekter	2 385	3 615	6 000	4 850
Bane	Vedtatte/igangsatte prosjekter	451	0	451	
	Nye store prosjekter	0	0	0	
Sum		3 279	3 615	6 894	4 850

Table 3 Norway's national transport plan, Framework for investment in corridor 2

(*Text in table 3:*
Framework for investment in corridor 2 NOK/m

Road
– adopted/initiated projects
New major projects

Railway
– adopted/initiated projects
New major projects

Total)

Example 2)

Tabell 13.1 Nye store prosjekter med oppstart i første seksårsperiode, fordelt på de ulike transportkorridorene. Mill. kr

Korridor	Prosjekt	Statlige midler 2018–2023	Statlige midler 2024–2029	Statlige midler 2018–2029	Annen finan-siering
3 Oslo – Grenland – Kristiansand – Stavanger	Veg:				
	– *E18 Lysaker – Strand*	2 250		2 250	6 850
	– *E18 Strand – Ramstadsletta – Slependen*	940	1 860	2 800	9 700
	– *E18/E39 Gartnerløkka – Kolsdalen*	250	950	1 200	1 800
	– *Rv 23 Oslofjordforbindelsen*	380	1 250	1 630	2 870
	Jernbane:				
	– *Drammen – Gulskogen/Kobbervik-dalen*	7 446	2 150	9 596	
	– *Nykirke – Barkåker*	4 070	2 818	6 888	
	– *Ytre IC Vestfoldbanen*	120	9 545	9 665	

Table 4: New major projects starting in the first six-year period distributed on the various transport corridors. NOK/m
(Text in table 4:

Table 13.1 New major projects starting in the first six-year period distributed on the various transport corridors. NOK/m

Corridor

Government funds, Other financing.)

Example from the planning part of the National Transport Plan which shows a text for a road project:
«Main road 282 Holmenbrua Project main road 282 Holmenbrua in Buskerud will replace the current bridge which is part of an important diversion for E18. The bridge is also important for getting to Drammen harbour. A new bridge will also improve the conditions for public transport as well as the pedestrian and bicycle traffic in the area. This prioritisation is conditional on support for partial toll financing of the project via the planned toll scheme for Buskerudbyen.»

Action programme
The action programmes are the execution plans for the National Transport Plan. When the National Transport Plan is complete, the transport administrations and Avinor will prepare their own action programmes for the first four years of the planning period. The action programmes form the basis for the annual proposals for the government budget.
The action programme for the Norwegian Public Roads Administration is the execution plan for the first four years of the NTP period. This constitutes a specification of both the major projects and the minor measures (programme areas), such as footpaths and bicycle paths, public-transport lanes, environmental roads, safety barriers and intersection improvements. The action plan also says something about how the Norwegian Public Roads Administration must work to handle the deteriorations, i.e. the backlog of maintenance on roads, bridges and tunnels.
The Norwegian Public Roads Administration's proposal for an action programme will be sent to the county municipalities and the major urban municipalities for their comments before being adopted. Large areas of the administration's organisation will be involved in the work on the action programme. The five regions will contribute significantly to the work with the action programme and prepare any measures to be implemented.
The final appropriations for road purposes will be provided via the annual government budgets.

Experience
NTP is not binding and the final prioritisation will be made (with the exception of Nye Veier's projects) via the annual budgets. This being the framework condition, the NTP is generally expected to contribute in the long run.

Example 9 Denmark's transport plans and decision processes
The political decision process when it comes to major infrastructure investments is based on an agreement on 'a green transport policy' for 2009 when a broad political agreement was made on the framework and principles for developing a green transport policy towards 2020.
The plan included a number of initiatives, primarily investments in new infrastructure projects in the order of DKK 100 billion towards 2020, including an overall allocation between road and railway projects. The framework planning thus differs significantly from the practice followed in e.g. Norway and Sweden. The agreement involved preparing strategic analyses for new major infrastructure

improvements (concept choice studies), feasibility studies and specific project decision bases, including environmental aspects (EIA).
The decision to carry out infrastructure projects is made politically by making political agreements about e.g. the financing. Subsequently, the political decisions are turned into actual construction acts, and the projects are implemented subject to the political agreements into the annual appropriation acts.
It has yet to be decided how the process will be after 2020.

Example 10 Sweden: National infrastructure plan 2018-2029

Before initiating the planning process for an infrastructure project, a long-term economic plan will be prepared of the overall transport system for roads, railways, shipping and aviation, i.e. the national transport plan.

The Swedish Transport Administration's job is to ensure that the plan is realised.

The plan includes e.g. information about how much money that can be spent, what is needed and what geographical areas are involved. The national plan is based on a traffic-area overlapping perspective. It may concern both new railways, roads or sea lanes as well as reconstructions, operation and maintenance, including traffic-safety or environmental measures. The government will make the final decision on the wording of the national plan based of the Swedish Transport Administration's proposal.

Initially, the basis of prioritisations was to assess the current infrastructure and to use it more efficiently. We also need to rebuild and build new structures to develop society and to develop new solutions together with others.

The Swedish Transport Administration prepares the proposal for a national plan for transport infrastructure based on government infrastructure bills and directives. We do so in cooperation with county planners and other stakeholders. The government finalises the national plan.

The work started in 2015 when the Swedish Transport Administration was commissioned by the government to provide the focused basis for transport infrastructure planning. The focused basis provided the foundation for the government bill (2016/17:21 Infrastructure for the future – innovative solutions for improved competitiveness and sustainable development) presented by the government in October 2016.

The current national plan covers the years 2014-2025.

On 31 August 2017, the Swedish Transport Administration presented the proposal for a national plan for the transport system in the period 2018-2029 to the government. The plan comprises proposals for measures to be taken in the state infrastructure on roads, railways, shipping and aviation.

Example 11 Decision processes in the Faroe Islands: Traffic/transport plans
In 2007, the Faeroese road authority, Landsverk, presented the first actual transport plan for the Faroe Islands, Samferðsluætlan 2008-2020.
Even though this was an overall plan, it turned into a prioritised transport and investment plan for new facilities.
A revised transport plan for the period 2012-2024 was presented in 2012.
The plan comprises:

- main roads, incl. bridges and tunnels
- traffic ports
- ferries for transport between the islands
- heliports
- the airport
- bus routes, incl. traffic junctions and facilities at bus stops

The decision process

Transport plans were never considered politically and therefore never used as a tool for the political prioritisation of facilities and operating investments.

Even though this was an overall plan, it turned into a prioritised transport and investment plan for new facilities.

In short, nothing is certain before a political majority is able to earmark funds for the individual projects.

The decision on how to tender a project mainly lies with management, which means that means that it will be possible to choose on a project-by-project basis to use design-build contracts.

Example 12 Decision processes in Finland

Finland does not currently have a national transport plan but a parliamentary working group, consisting of members from both government and opposition parties just recently recommended setting up a long term plan as in Norway and Sweden.

Conclusion

In our work, we have reached the conclusion that the use of design-build contracts in the Nordic countries is generally characterised by increased maturity. It is clear that practically all the Nordic employers have prepared strategies for a greater use of this form of contract and that the strategies are actually being implemented: Design-build contracts constitute a growing market.

We will therefore answer the question of the terms of reference about *why the Nordic counties are not better at exploiting the full potential of design-build contracts* by pointing out that this form of contract is relatively new, and that the industry has had to get familiar with it and gain some experience. We are actually relatively positive when it comes to the general use of this form of contract in the Nordic countries. The reason for this is that it is clear that this is not only a market in growth. It is also a market which is good at exchanging and collecting knowledge. The framework is in the process of being consolidated.

In our assessment, the reason why we are not doing better or have come further is that the industry had to mature. The industry had to gain experience, including learn that all parties stand to benefit greatly when the employer's execution models are structured and that those working on a design-build contracts project must have some very special skills. Several countries have wisely chosen to introduce this form of contract based on a market dialogue. We believe that this will generate some substantial advantages, since such a dialogue creates ownership among the players in the industry and helps institutionalise this form of contract in a way that may result in an increasing exploitation of the potential.

In continuation of the above, the *learning experience**,*** which we were asked to identify by the terms of reference, is particularly the experience made in the individual countries using market dialogue. There is still more to be gained, also when it comes to the continued development of this form of contract. For the same reason, we have planned a number of small examples of market dialogues where we, based on the experience gained by this group, will enter into a dialogue with the industry in the Nordic countries. Another key experience we have identified in our work relates to the importance of establishing structures in the employer's execution models. In this respect, several of the counties can learn from each other.

As directed by the terms of reference, we have also identified some *barriers that serve as obstacles* to the development of this form of contract. In this respect, we will particularly point out a number of conventional views on skills. It takes a different skill set to work in a design-build contracts project compared to a normal contract for separate works and that applies to employers, consultants and contractors alike. This is an area we recommend focusing on if the industry is to realise the full potential of this form of contract. As manager/employer, you need to appoint your team in a new and different manner, and you have to focus much more on cooperation and framework management. This is an area where some barriers must be eliminated. All technical specialist skills are still needed, but since the responsibility for the skills changes, all parties must apply a different and highly cooperative mindset. Personal skills will come into play in a new way.

When it comes to *promoting the value of design-build contracts*, we recommend focusing on the following three areas: Market dialogue, structured execution models and skills.

Finally, we want to make some conclusions in respect of *how to optimise the distribution of risk between the parties involved.* In design-build contracts, the contractor assumes a greater obligation and thus a greater risk. The condition for the transfer of risk from the employer to the contractor is that the transfer is not just a trade of risk but that it creates a process where the contractor is able to manage the risk in a way that makes the risk premium the contractor charges the employer lower than the cost the employer would have had by having the risk. A successful transfer places demands on the award process, early involvement, the degrees of freedom in the project as well as the assignment and skills allocation between the parties.

In conclusion, we would like to underline the importance of transfer of experience. This even applies to our own work in the working group. In the building and construction industry, we are good at initiating and starting new projects, executing them and handing them over to the customer. However, we are less good at following-up and making conclusions about what went well and what did not go as well during the journey. We tend to jump on to the next project as soon as we reach the end of a project. This is an area with vast potential for improvement that we must address if we want to begin working in a way where we keep improving. This also applies to this project. We have undertaken many good activities in our efforts to develop and optimise the design-build contract format. It would be desirable if we were better at reporting and sharing our experience.
In the following, we have therefore described how we envisage the dissemination of our experience.

Implementation

The format of setting up an ad hoc working group under the NVF is new.
The working group's own evaluation of the format and the discussions in the process clearly indicate that the format has been good and rewarding.
We have benefitted greatly from the knowledge exchange that took place among ourselves during our work to prepare this report. We want the experience we have gained to be communicated to the relevant stakeholders. We naturally hope that this report will show that.
However, the working group also agree that the dissemination of the experience with design-build contracts and what works well is not realised with the publication of this report. We have therefore prepared an implementation plan that illustrates how we at national as well as Nordic level intend to disseminate and develop the experience gained by the group.

When	What	Responsibility
Autumn 2018	Orientation in national NVF boards about the group's work.	National members of the ad hoc group will inform the national NVF boards
Autumn 2018	Discussion in relevant industry fora in the individual countries. Each country's members of the ad hoc group determine which specific topics to give particular focus (in Denmark, e.g., there is a wish to invite a participant from the Swedish Transport Administration to talk about 'Samverkan Hög' in a forum consisting of invited contractors .	Members of the ad hoc group from other countries are invited to participate if they have anything particular to offer in the context
Spring 2019	Nordic workshop	Design-build contracts ad hoc group
Summer 2020	Via Nordica session	Design-build contracts ad hoc group

Table 5 Implementation

The discussions of the working group about design-build contracts and the degree of maturity have led to some reflections as to what measures the individual countries could take to continue developing the work on design-build contracts. These reflections are naturally influenced by the difference in maturity in the market in relation to the use of design-build contracts. The above overview generally illustrates the proposed measures in the various countries.

The Nordic countries have planned a Nordic workshop in the spring of 2019. We have also started planning a session at Via Nordica in 2020, which will include some of the experience from the report and the Nordic workshop.

Denmark

In continuation of the discussions of the working group regarding design-build contracts, the Danish participants have identified the following areas in which focus should still be on development:

- Degrees of freedom
- Requirements and control
- Forms of cooperation
- Skills
- Operation & maintenance

Degrees of freedom
The level of the degrees of freedom must be increased. Not necessarily the number of degrees of freedom. There might even be elements that have been defined by the employer. However, whenever degrees of freedom are defined, the design-build contractor should in reality also have more areas which it can influence.
Focus is also on the weighting of price relative to other award criteria.

Requirements and control
The number of requirements in the tender documents must be reduced and the related controls must similarly be adaptable to the choices made by the design-build contractor.

Forms of cooperation
The use of alternative forms of cooperation should be addressed, e.g. early involvement and partnering may provide for an even better execution of design-build contracts.

Skills
In working with design-build contracts, it has become clear that the employees working on this type of project need other skills. This applies at both the employer and the design-build contractor.

Operation & maintenance
When the degrees of freedom in design-build contracts are increased as described above and functional requirements replace specific requirements, uncertainty may arise as to whether the choices being made will cause more expenses during the operating and maintenance period. That is why awarding models need to be applied to take into account any operating and maintenance matters.

Structured model for choice of contract

In 2018, the Danish Road Directorate will prepare an actual model for assessing the form of contract. This model will replace the mentioned approach where major contracts were generally design-build contracts.

A structured approach for choosing the form of contract for the individual project must be prepared. The choice must be based on complexity, potential degrees of freedoms, advisable time, etc. It should thus be assessed whether the project should be tendered as a contract for separate works, main contract or a design-build contracts.

The model must also include an assessment of what forms of cooperation that will be able to strengthen the use of the individual forms of contract as well as a reassessment of a model for award criteria in connection with most economically advantageous tenders.

Inspiration is taken from the Swedish model where projects are assessed based on criteria such as complexity and degrees of freedom, after which the type of procurement procedure and cooperative model will be chosen for the individual project.

The Faeroe Islands

Further development of design-build contracts

1. Prepare a model for selection criteria based on the discussions we have had in the group as well as the models and experience provided by the countries.
2. We want to look at the coming projects over the next 4-5 years to identify projects that could be used for 'tests'.
3. Investigate how we can increase the complexity to incorporate some 'latitude' for the contractor and employer. Possibly discover how early we should involve the contractor – and where it still makes sense financially for the contractor.
4. Prepare a 'dynamic' contract format that can be adapted to the individual project.
5. Hold an 'after-work meeting' with contractors and consultants to learn how the industry feels about this. And to prepare them for the selection criteria being considered.

Sweden

- Early dialogue with the market in several projects, i.a. to choose the right form of contract.
- More functional requirements for increased degrees of freedom
- More projects with 'Samverkan hög', even medium-sized and small projects
- Functional requirements in the sustainability area.
    - Socially
        - About people and everything that affects us
    - Environmentally
        - The climate, air quality and water quality on earth
    - Economically
        - Means to achieving social and environmental sustainability

The other activities we are working with to develop and optimise design-build contracts can be summarised as follows:

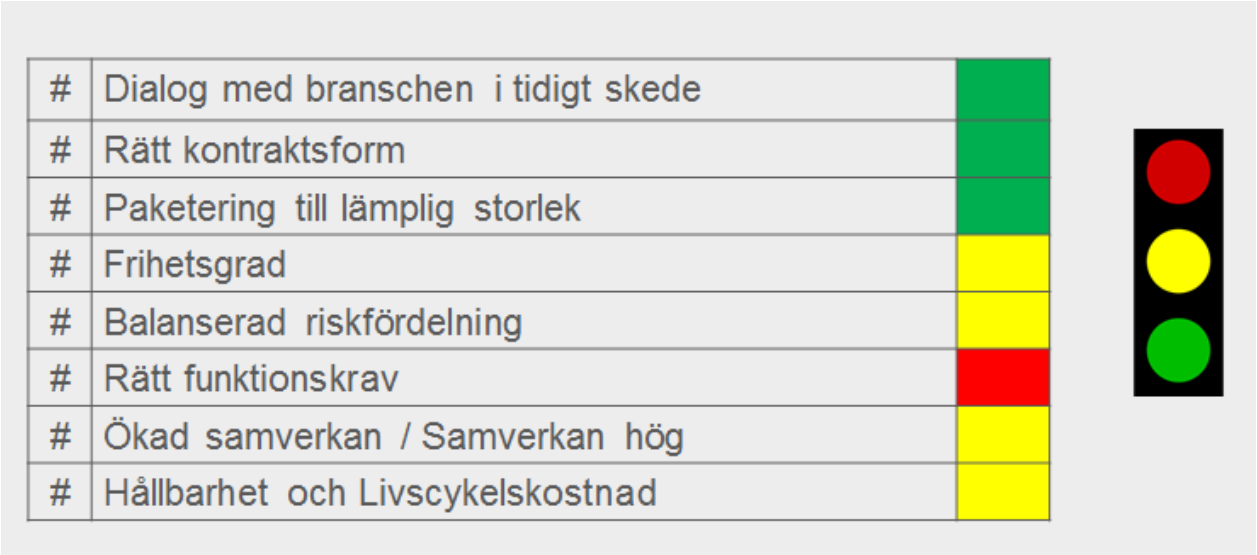

Figure 8 Activities to develop and optimise design-build contracts

(*Text in figure 8:*
- *Dialogue with the industry at an early stage*
- *Proper form of contract*
- *Bundle to a suitable size*
- *Degree of freedom*
- *Balanced risk distribution*
- *Proper functional requirements*
- *Increased cooperation / 'Samverkan hög'*
- *Sustainability and life-cycle costs)*

What remains to be developed is being able to define and determine the right functional requirements, which means that even the legal framework must be changed.

The project Adapted legal framework started in 2014 and is intended to adapt the current technical legal framework to provide better support of the Swedish Transport Administration's activities, primarily by clarifying the requirements.

We continue working on degrees of freedom and a balanced distribution of risk.

Sustainability and life-cycle costs are other areas that must be developed.

Figure 9 Trafikverket’s next steps

(Text in figure 9
The Swedish Transport Administration’s next step

- *Early dialogue with the market in several projects, e.g. to choose to bundle and the right form of contract.*
- *More functional requirements for increased degrees of freedom*
- *More projects with ‘Samverkan hög’, even medium-sized and small projects*
- *Functional requirements in the sustainability area.*

- *Socially*
  - *About people and everything that affects us*
  - *Justice, rights, welfare, well-being*

- *Environmentally*
  - *The climate, air quality and water quality on earth*

- *Economically*
  - *Means to achieving social and environmental sustainability*
  - *Cost-efficient solutions, innovative solutions)*

The above items describe the areas where the Swedish Transport Administration needs to work on strategies and procedures to continue to develop the construction industry to ensure a more sustainable society.

Sustainable development consists of three parts

- Social sustainability is about creating a long-term, stable and dynamic society that fulfils basic human needs

- Environmental sustainability is about preserving the productive capacity of the seas, the earth and eco-systems and to reduce the impact on nature and human health
- Economic sustainability is about economising with human and material resources in the long term

Norway

In future, the following three aspects will determine the value we get out of using design-build contracts in road construction in Norway

1. The extent to which the Norwegian Public Roads Administration will use design-build contracts
2. How well the Norwegian Public Roads Administration succeeds with design-build contracts
3. How well Nye Veier succeeds with design-build contracts

The Norwegian Public Roads Administration's new employer strategy plan indicates that the share of design-build contracts must increase to 30-40% of the annually appropriated investment funds before 2020. The regions are charged with ensuring this. The projections we have made indicate that the increased design-build contracts share will predominantly be in the biggest projects (greater than NOK 1 billion). Project execution has been delegated to the regions and the Norwegian Public Roads Administration therefore depends on the regions and individual projects to follow-up the strategy on 'considerably' increased use of design build in terms of projects below NOK 1 billion, which in number account for the majority of projects.

Moving away from construction contracts to design-build contracts entails a considerable change for a large organisation such as the Norwegian Public Roads Administration. The organisation must start doing things it has not done before and stop doing things as it used to. Overall, the organisation must stop doing more and start doing less The reason why we can say that is that a design-build contracts generally entails that the design-build contractor must carry out many of the tasks which the employer used to carry out under a construction contract. Increased use of design-build contracts also entails a shift of both capacity and skills from the employer side to the contractor side, and the employer side will need to build new skills. Making such a change in a large organisation can be demanding and requires proper, clear and binding planning and strategy execution. The regions in the Norwegian Public Roads Administration will get advice from the specialist departments of the Norwegian Road Directorate, but the project execution has been placed directly with the regions and there is currently no common development organisation with line responsibility (no 'development manager'). However, framework conditions outside the organisation also prevent the use of design-build contracts. The granting system and the quality assurance system (QA) contribute to detailed planning at a much earlier stage and regulation and acquisition of land are time-consuming and unpredictable. Overall, this is an obstacle to optimum use of early contractor involvement and use of design-build contracts.
At political level, we recommend that it is assessed whether any changes should be made in the granting system and the quality assurance system (QA) to avoid making the planning too detailed too early.
At the overall, organisational level at the Norwegian Public Roads Administration, we recommend considering the following:

- Construction projects over a certain size should be collected under a development manager at the Norwegian Public Roads Administration. This may provide a clearer employer in the largest projects and make it clear who is responsible for executing the strategy.
- Work on skills related to design-build contracts in all parts of the Norwegian Public Roads Administration's organisation. It is important that skills related to design-build contracts are available at both the government and county municipality road owners.

Reducing the conflict level has been one of the key (but not the only) reason for wanting to increase the use of design-build contracts in road construction in Norway. We share the opinion that design-build contracts can contribute to this, but we want to emphasise that this will hardly come about by itself. In order to realise the conflict-reducing potential of design-build contracts, the parties must approach the design-build contracts projects in the correct manner.
The employer will unilaterally decide the project execution model and determine the framework conditions for the execution. The level of success is decided by how the contractor side reacts in the market on these conditions as well as by how the customer's own and the contractor's project organisations act in practice in the individual project. Design-build contracts entail a considerable risk for the contractor if the employer continues to act as he has done in construction contracts. It also entails a substantial risk for the employer if the contractor continues to act as he has done in construction contracts.
At technical and project level, we offer the following recommendations:

- Review the current regime with road norms and guidelines (the Norwegian Public Roads Administration's handbooks) with a view to establishing a clearer distinction between functional/performance specifications and technical solutions (design rules).
- Try out models involving early contractor involvement; this applies to involvement both before and after a regulation plan has been adopted.
- Predictability and stability Contractor conferences and market contact for information about portfolio, plans and prioritisation
- Be clear about what should be different in a design-build contracts compared with a construction contract (strategic allocation of responsibilities and risk) and adapt the employer's organisation, capacity and skills in the project accordingly.

Finland

In respect of Finland, focus will mainly be on developing the Alliance model and extending its use.