Concept Symposium 2016
Governing the Front-End of Major Projects

Major projects - Cost creep from design to decision

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Cost increases in the pre-project phase of major investment projects are a phenomenon that is not uncommon. Comprehensive international studies show significant cost overruns in this phase of the projects, and deviations have not become any smaller over the last 70 years.

Documentation from the quality assurance process for four major investment projects for Statsbygg shows that the projects experienced an increase in expected costs of between 46 and 138 percent in the pre-project phase. Does this type of cost development constitute a problem? Is it possible for Statsbygg to curb this type of cost increases? Or are they a natural part of project development, for example due to changing framework conditions?

To answer this question, it is necessary to identify the causes for the cost increases. We developed a method inspired by the methodology used in accident investigation, and categorized the causes into three levels: direct causes, underlying causes and systemic/organizational causes. We carried out a detailed review of the course of events for each of the four projects and attempted to connect cost changes and their likely cause for each level.
Our main conclusion is that it should not come as a surprise that cost estimates increased in the interval between QA1 to QA2 for Campus Ås (relocation of the Norwegian School of Veterinary Science and the Institute of Veterinary Medicine from Adamstuen to Ås), the new National Museum, the rehabilitation of and some new premises for the Norwegian Institute of Public Health, and the National Archives including the Norwegian Health Archives. Systemic causes can explain underlying causes which in turn explain the direct cost drivers. Which causes are most important varies according to the individual projects.

There is one measure in particular we recommend in order to limit cost increases in the interval between QA1 and QA2: a more explicit cost target at an earlier stage in the process. In order to end up with a building that is functional and fulfills needs and requirements, it is also necessary to take into account that requirements and solutions can change during the planning period, by establishing a suitable regime to handle these potential changes. Our recommendations are in line with the new guidelines for purpose-built buildings adopted by the Norwegian government in the spring of this year.

MAJOR PROJECTS - COST CREEP FROM DESIGN TO DECISION

EVALUATION OF CAUSES FOR COST DEVELOPMENT IN THE PRE-PROJECT PHASE

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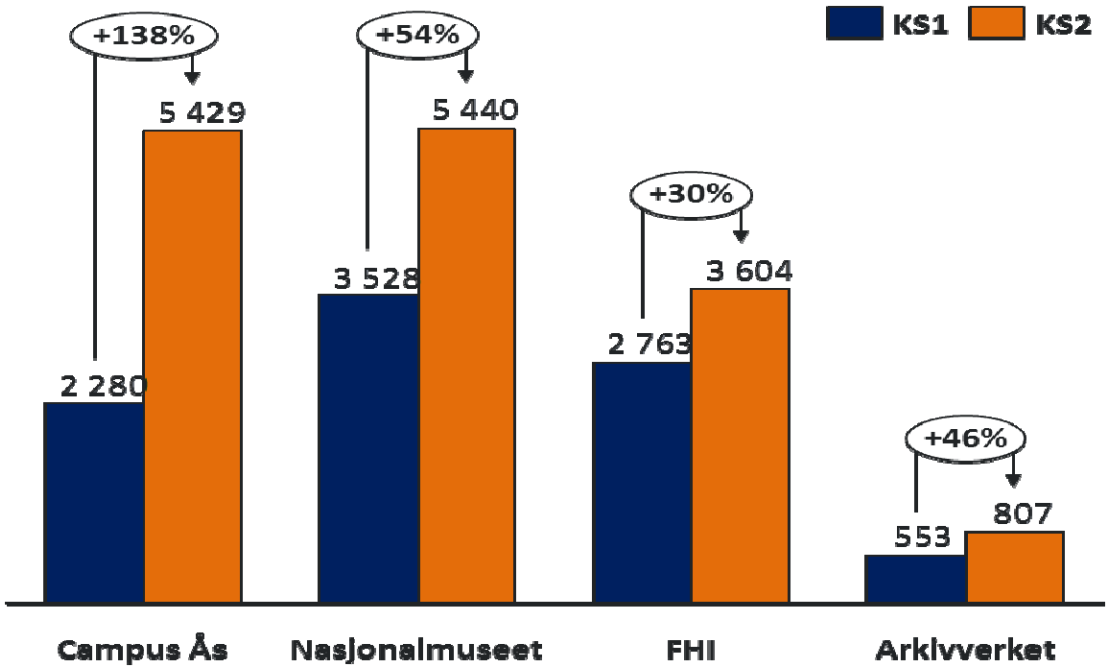
Why is this presentation worth listening to?

- We had the opportunity to look into cost development for four large projects at the same time
- We developed a framework that worked very well for getting to good conclusions and recommendations

The QA2 identified considerable cost increases from QA1 four major investment projects



Mill NOK
Incl. VAT
Excl. user equipment
Excl. land costs
2015 NOK

- Is it surprising if the cost estimates for major public investments increase considerably between QA1 and QA2?

The New National Museum, illustration by Statsbygg

- Cost development in the pre-project phase of major investment projects is not unusual
- Comprehensive international studies show significant cost overruns in this project phase
  - and no reduction in cost deviations over a period of 70 years

The Norwegian Institute of Public Health, illustration by Statsbygg

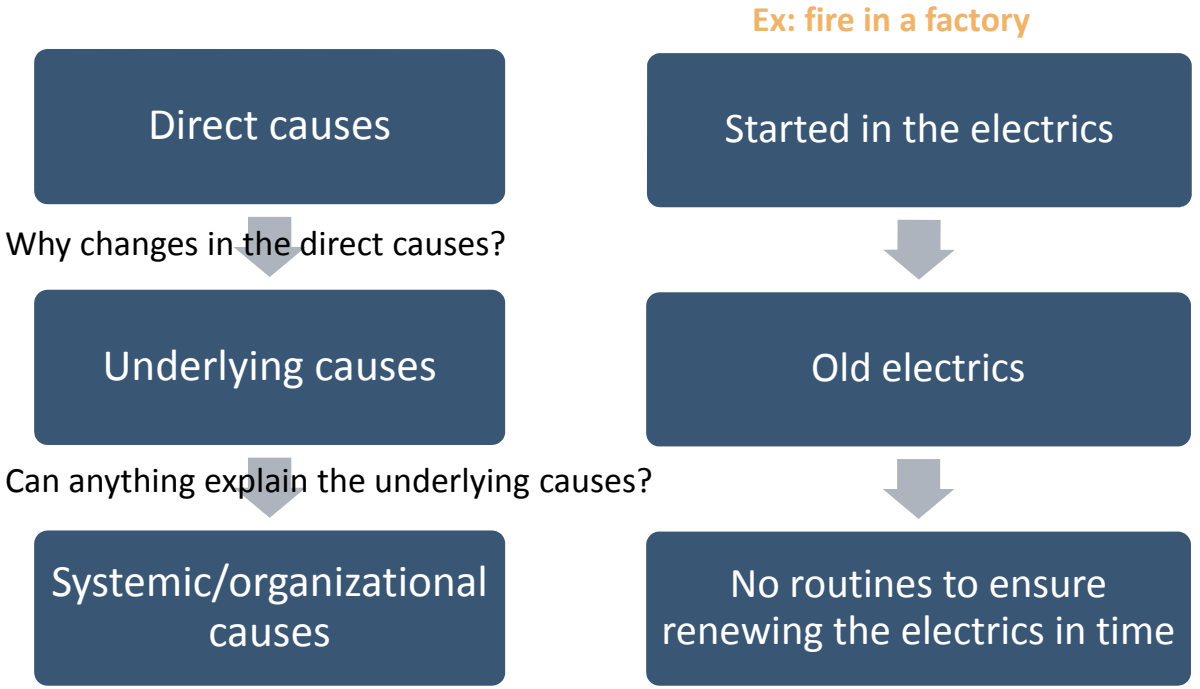
- Does this type of cost development constitute a problem?
- Is it possible for Statsbygg to curb this type of cost increases?
- Or are they a natural part of project development?

Campus Ås, illustration by Statsbygg

- To answer these questions, it is necessary to identify the causes for the cost increases
- Our method:
  1. Detailed review of events on the timeline for each project
  2. Development of our framework
  3. Connecting cost changes and causes

The National Archive, illustration by Statsbygg

We developed a framework inspired by accident investigation:



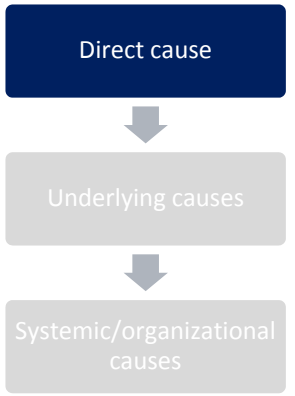
So, did this framework lead to relevant conclusions and good recommendations?

Main conclusion:

- You should NOT be surprised that cost estimates for the four projects increased from QA1 to QA2

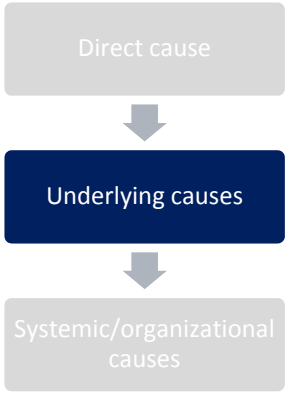
- Systemic causes can explain underlying causes that can explain the direct cost drivers
- It varies between the individual projects which causes are most important

All the direct causes we identified had substantial influence on cost development



Changes in gross area (GFA)	(increase by 30% for the **National Archives**)
Changes in the area composition	(% of expensive areas increases for **FHI** and **Campus Ås**)
Changes in the building standard	(important explanation for the **National Museum** – landmark building, and **FHI** – environmental standard)
Changes in localization	**(Campus Ås** – tear down 34 buildings to make room on campus – and rebuild 11.500m^2)
Increase in general building costs	(Also an important explanation for three of the projects due to a period of several years between the estimates)

All three underlying causes are important explanations for the direct causes



Too low cost estimates in KVU/QA1

National Museum (landmark building)
Campus Ås (need for laboratory, consequences for the animals at Ås)
FHI (operation during the building process)
National Archives (space requirements – solutions for shelving – very efficient)

Changes in needs and solutions that could not be foreseen in KVU/QA1

Campus Ås (new tasks, new regulation and political choices)
FHI (merging of institutes, request for high environmental standard)

Limited focus on keeping investment costs in line with KVU/QA1 estimates

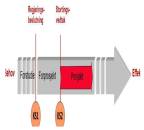
Contract letters: No cost targets, **Campus ÅS**: listen to users, **FHI**: high environmental standard, **National Museum**: international design competition with no upper cost limit

The four systemic causes we have identified seem to explain the underlying causes

Direct cause

Underlying causes

Systemic/organizational causes



The Norwegian government's QA-program

Interpretation of the model, purpose of the estimates and information available, no cost target

Statsbygg's project model

Entirely dependent on the guidelines in the contract letter to ensure good process management

Time

Changing needs and requirements

Organization and incentive structure

Missing link between the government model and the Statsbygg model

Recommendations

Our main recommendations

- a more explicit cost target at an earlier stage in the process
- a suitable regime to handle potential changes

⇒This is in line with the new guidelines for purpose-built buildings adopted by the Norwegian government in the spring of this year

Thank you!

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