Early Underestimation of Costs - its Strategic Effects

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Underestimation of costs up-front

Its Strategic Effects

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How much does it cost?

- Costs matter!
- The investment cost is usually the parameter which attracts the most attention throughout both the front-end phase and the implementation phase of projects
- It is suitable for making the responsible actors accountable, to gauge progress and performance, and to assess economic viability over time
- Cost overruns can be detrimental to:
  - Financial viability
  - Social viability
  - Long term relevance

Yet, cost overruns may be totally irrelevant for assessing the viability of projects…

- Let me give you two examples

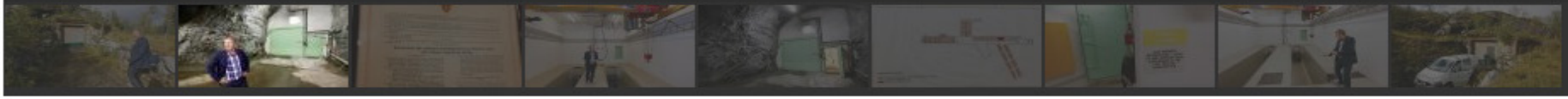
The Oslo University Hospital

- Opened in 2000, two years behind schedule
- Cost overrun of ≈ 25 %
- Critical newspaper articles, public hearings – “a scandal”
- Yet, the cost overrun was only equivalent to a few months of operating expenditure and only a fraction of lifetime benefits
- A highly successful project despite considerable cost overrun

The Malangen torpedo battery

- A huge naval facility able to accommodate 150 military personnel
- Opened on time and without cost overrun in 2001
- Closed by Parliament one week later
- Never been used since
- Successful operationally, but a tactical and strategic failure

FOTO: Morten Uglum



Kommunen kjøpte torpedobatteri – nå vil de levere det tilbake

Ordfører Geir-Inge Sivertsen (H) i Lenvik i Troms er blitt eier av et 5200 kvm stort, helt ubrukt torpedobatteri. Han fikk det usedvanlig billig. Likevel prøver han å levere det tilbake til Forsvarsbygg.

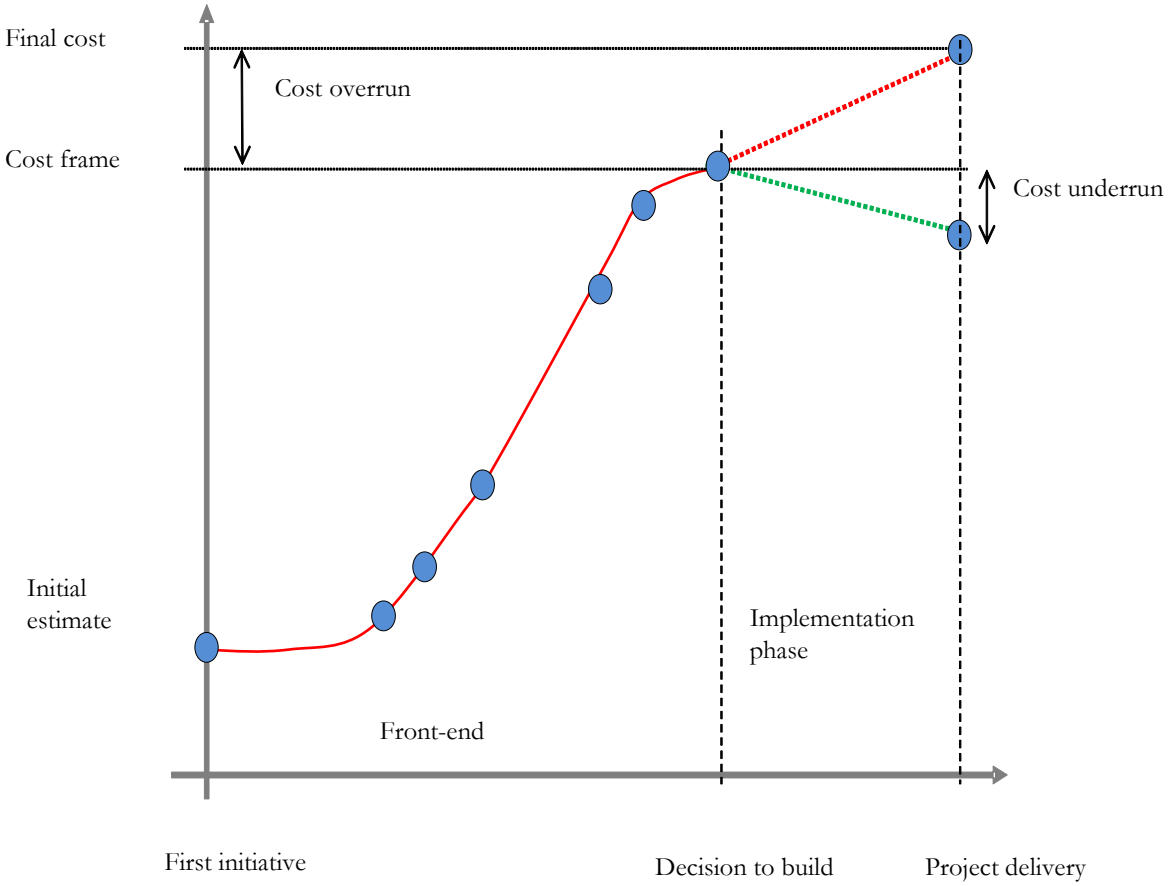
Doing the right project more important than doing the project right

- The Oslo University Hospital – a good project managed poorly
- The Malangen torpedo battery – a bad project managed well

That doesn’t mean that cost overruns are unimportant or uninteresting

But….

The main increase in costs have often occurred before the formal decision to build



Why is this important?

Cost estimates in the front-end of projects matter more

- Project concepts (business case) are identified and evaluated in the front-end
- At the time of decision to build, the project may have created so much momentum that decision makers will approve the project even if the presented budget is three times that of the first estimate
- Underestimation of costs in the front-end may thus be the prime reason why many poor projects are chosen

A case study of 12 projects

- To explain why costs increase dramatically in some projects
- From the first project initiative through the decision to build to final cost

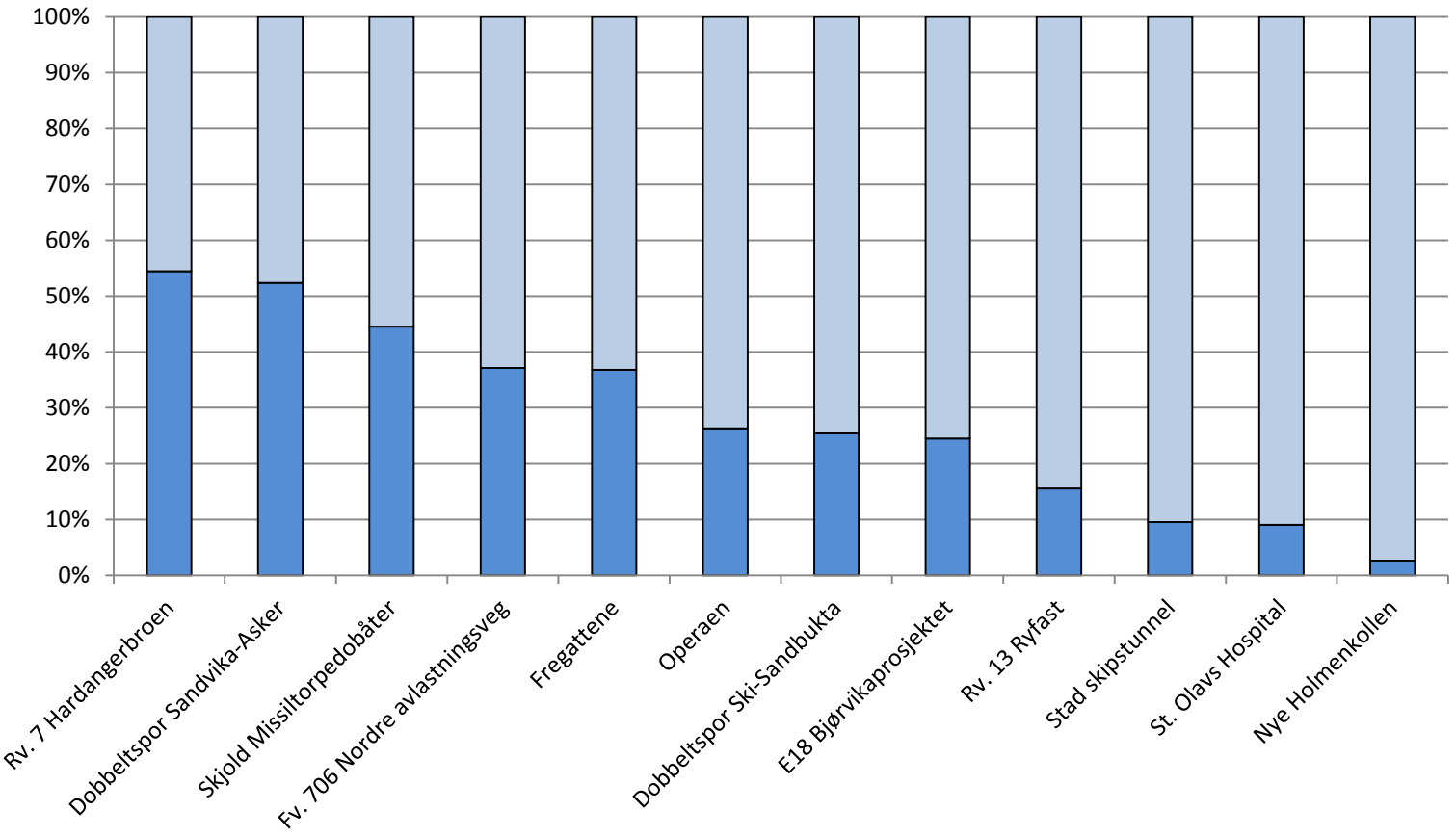
The projects in the study

Project name	Project type	Front-end phase (years)	Implementation phase (years)
Stad skipstunnel	Naval facility (tunnel)	>30	-
Rv. 13 Ryfast	Sub-sea tunnel	14	2→
Operaen	Opera	13	6
St. Olavs Hospital	Hospital	11	6
E18 Bjørvikaprosjektet	Motorway / immersed tunnel	11	8
Dobbeltspor Sandvika-Asker	Double track railroad	9	7
Skjold Missiltorpedobåter	Torpedo boats	8	9
Fregattene	Frigates	8	13
Fv. 706 Nordre avlastningsveg	Motorway / immersed tunnel	7	6
Dobbeltspor Ski-Sandbukta	Double track railroad	4	6
Nye Holmenkollen	Sports facility	3	4
Rv. 7 Hardangerbroen	Bridge	3	5
Average		*11,5*	*7*

Large increases in estimates during the front-end

Project name	Size (mill. NOK)	Change in the front-end		Change in the implementation phase	
		NOK	Percent	NOK	Percent
Nye Holmenkollen	1 896	614	1291 %	1 239	186 %
Stad skipstunnel	2 100	1 905	876 %	-	-
Rv. 13 Ryfast	5 605	4 733	543 %	-	-
St. Olavs Hospital	13 700	4 744	383 %	7 716	129 %
Operaen	4 748	2 807	224 %	689	17 %
E18 Bjørvikaprosjektet	7 154	3 612	206 %	1 790	33 %
Dobbeltspor Ski-Sandbukta	2 405	1 012	167 %	786	49 %
Skjold Missiltorpedobåter	5 105	3 290	145 %	-458	-8 %
Dobbeltspor Sandvika-Asker	4 048	2 899	137 %	-972	-19 %
Fregattene	24 700	9 409	104 %	6 201	34 %
Fv. 706 Nordre avlastningsveg	1 667	638	103 %	412	33 %
Rv. 7 Hardangerbroen	2 570	983	70 %	191	8 %

The first estimate is often just a fraction of the final costs



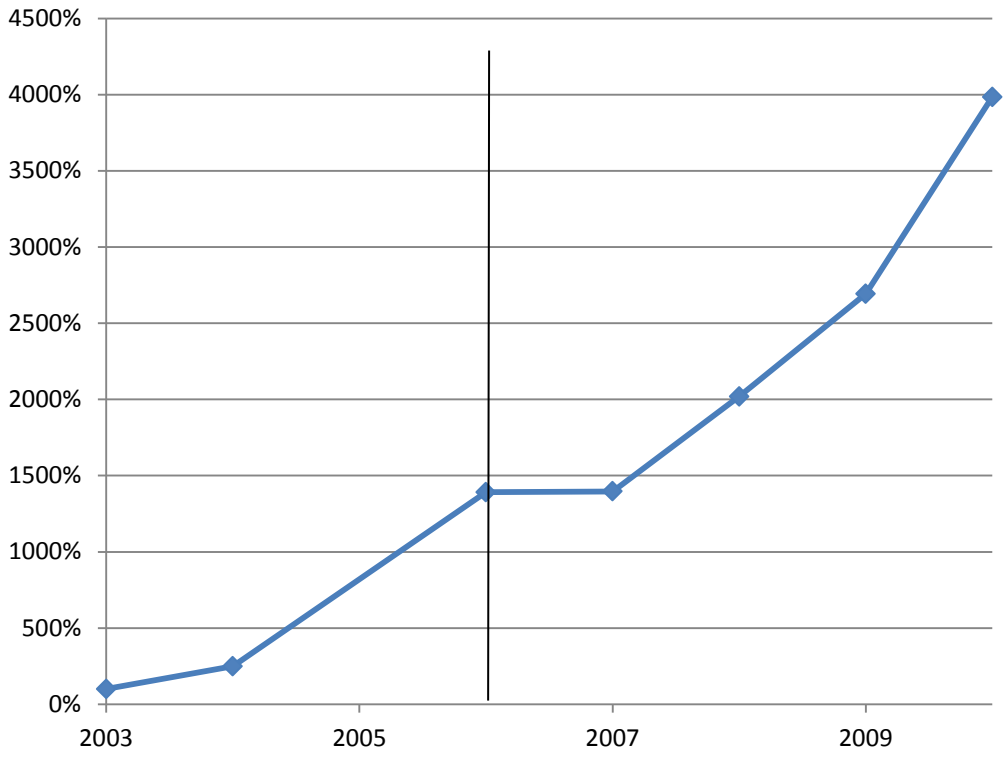
Some examples

- Holmenkollen
- Stad skipstunnel
- Ryfast

The new Holmenkollen arena

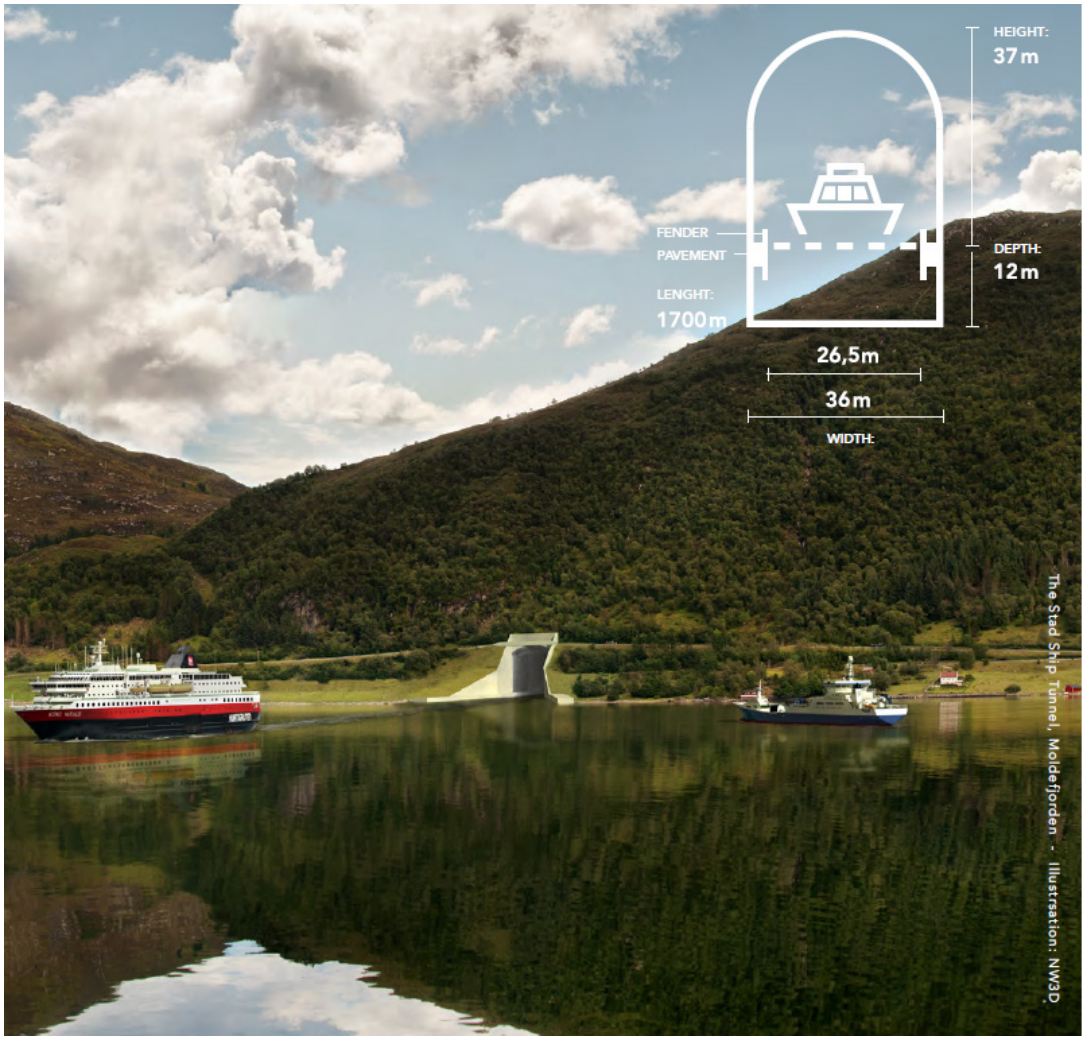
- Norway's most visited tourist attraction and one of the world's most famous sporting arenas
- National arena for ski jumping, cross country skiing and biathlon
- In 2003 the city of Oslo decided to upgrade the arena and to apply for the FIS Nordic World Ski Championships in 2011

The first estimate was extremely underestimated



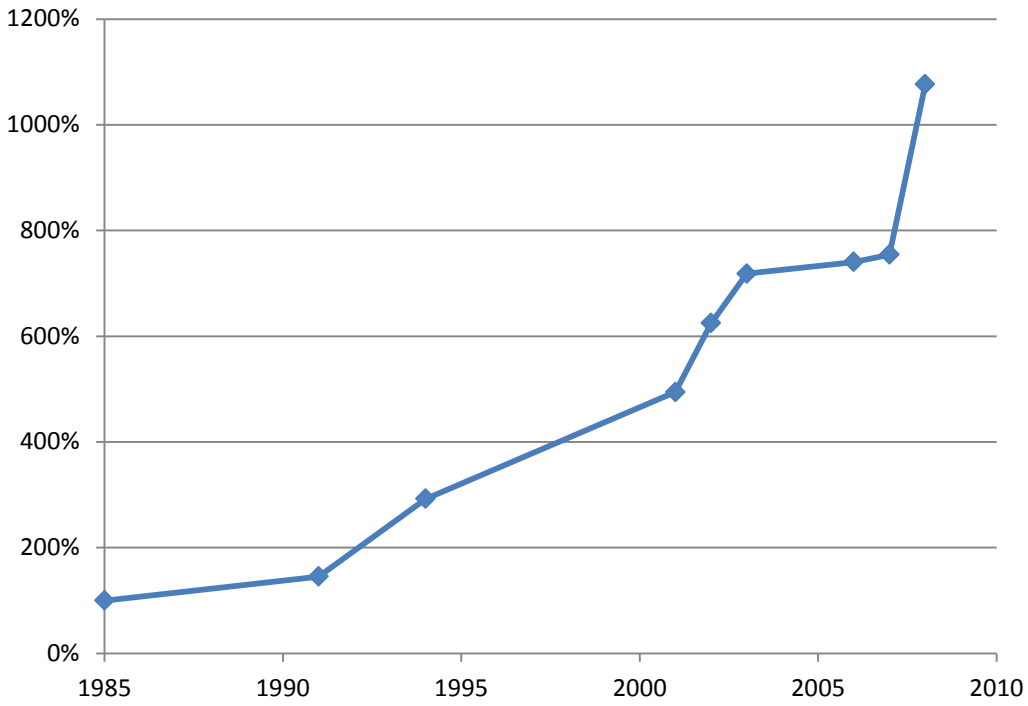
- Reconstruction, not upgrading
- Time pressure
- Short front-end / insufficient planning
- No external QA
- Poor skills, insufficient resources, inadequate organisation
- Overoptimism – the first estimate was provided by the Association for the Promotion of Skiing

The Stad Ship Tunnel



- First proposed in 1985 – still no decision to build
- Over 10 appraisals with a welter of arguments for and against the tunnel
- VfM low, but with alleged "wider economic benefits"

The size and cost of the tunnel keeps on increasing

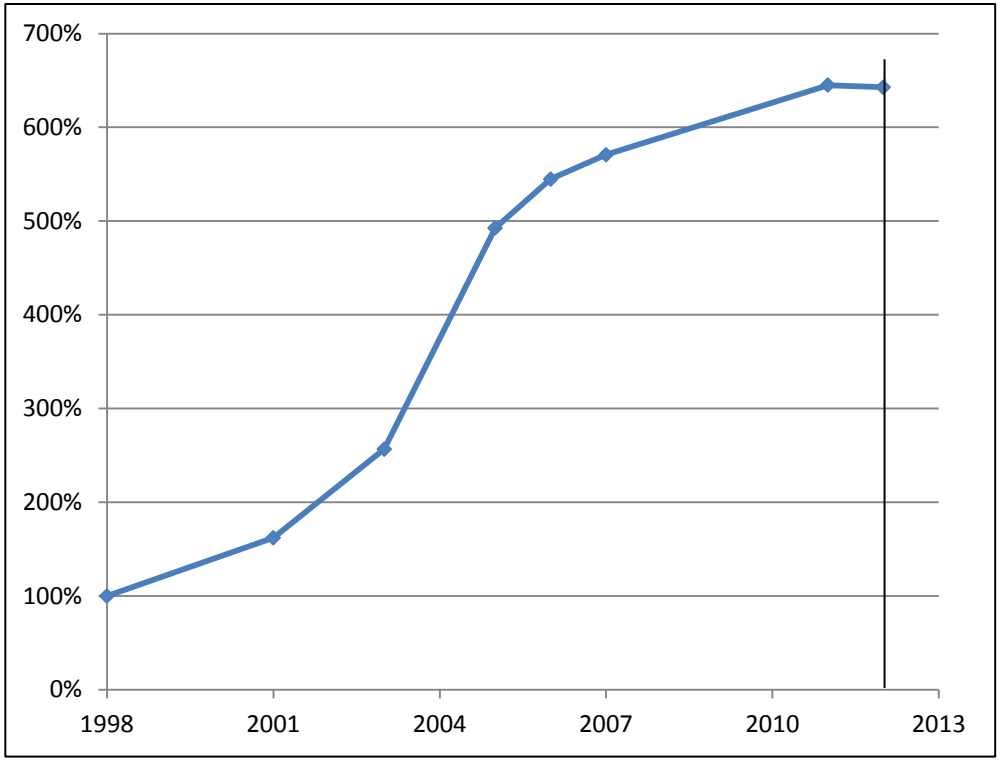


- From fishing vessels to large passenger ships. With larger dimensions – it is easier to find arguments why the tunnel is needed
- Perverse incentives – to be paid for by the government

The Ryfast tunnel

- The World's longest sub-sea road-tunnel
- First proposed in 1998 by the Stavanger Rotary club
- Accepted soon after as the preferred straight-crossing alternative
- > 20 kms of tunnels

Over-optimism, underestimation of risks, scope creep, etc. etc.



- The first estimate was based on average costs for other tunnels
- The size increased from single lane to dual lane
- Access roads in the city, bypass to handle the increased traffic from the tunnel

The main causes

		Hardangerbroen	Nordre avlastningsveg	Dobbeltspor Sandvika-Sandvika-Asker	Skjold Missiltorpedobåter	Fregattene	Dobbeltspor Ski-Moss	E18 Bjørvika	Ryfast	Operaen	Nye Holmenkollen	Stad skipstunnel	St. Olavs Hospital	Number
Cognitive	Underestimation of risks	X		X		X	X	X	X	X	X		X	9
Cognitive	Overestimation of benefits	X	X		X	X				X	X	X	X	8
Technical	Inadequate methodologies	X				X	X				X		X	5
Political	Strategic split-up					X			X	X			X	4
Technical	Lack of skills					X	X				X		X	4
Political	Strategic scope creep								X	X		X	X	4
Technical	Lack of information					X			X		X		X	4
Political	Strategic underestimation												X	1

“It’s Difficult to Make Predictions, Especially About the Future”

- Megaprojects ≠ ordinary projects
- Risk higher than expected
- We end up with something else (and bigger!) than we originally planned for
- Local authorities and interest groups use projects to pursue own objectives
- “Everything is cheap when someone else is paying”

Potential solutions

- Increased transparency
  - Is there a problem?
- Increased accountability
  - Who is responsible?
- Increased contingency reserves in the early stages of project development
  - What can go wrong and what are the consequences?
- A critical review of project finance
  - Who is paying for the project and who gets the benefits?
- QA at an earlier stage

Thank you!

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