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Outside view from a Scholar

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Purpose of the Presentation

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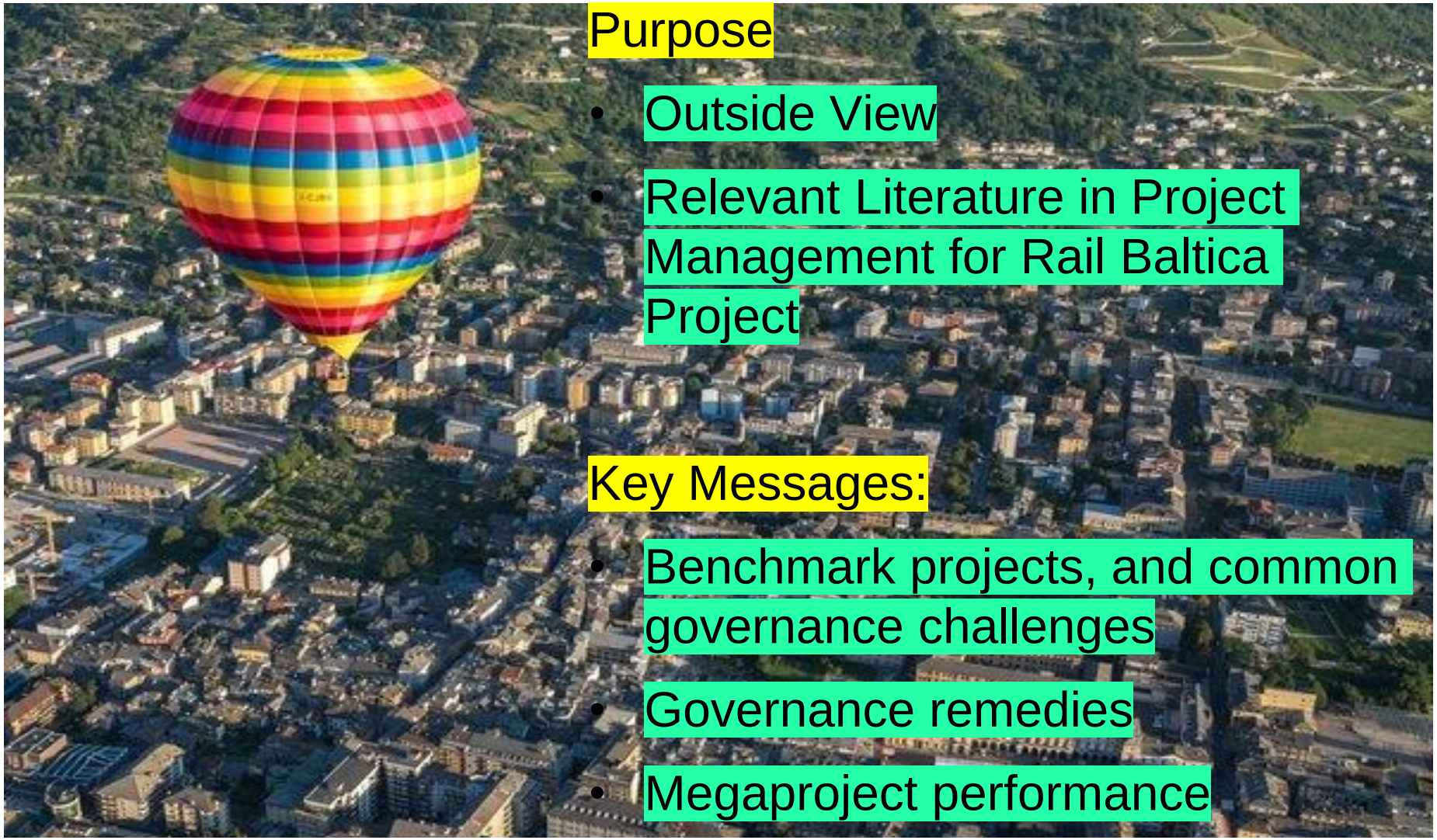

Purpose

- Outside View
- Relevant Literature in Project Management for Rail Baltica Project

Key Messages:

- Benchmark projects, and common governance challenges
- Governance remedies
- Megaproject performance

Benchmark 1
Mid stream Oil and Gas

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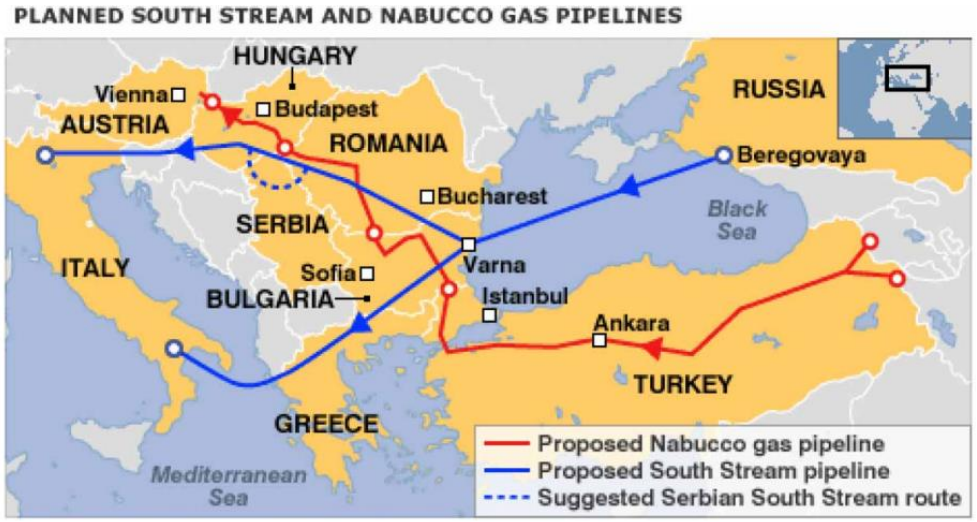
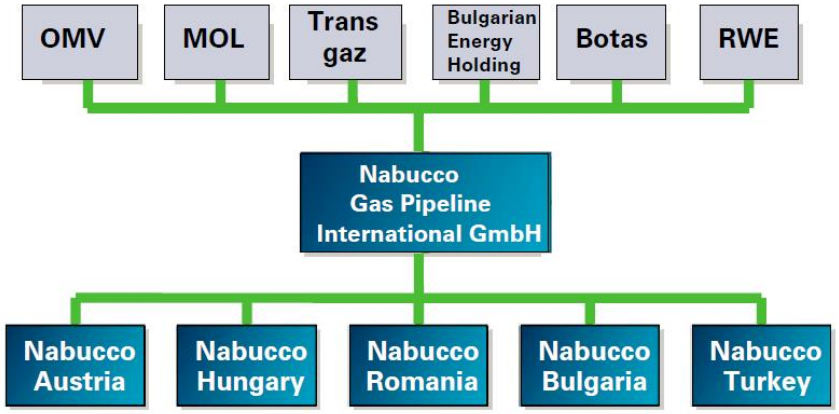


[1-2]

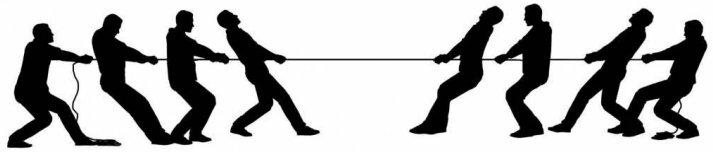


[3]

Pipeline Infrastructures provides a benchmark to the Rail Baltica Project

- Pipelines are large Engineering Projects
- Pipelines are cross boundary infrastructures
- Pipelines involves different national interests
- Pipelines employ governance structures similar to Rail Baltica

One critical problem of this structure was the scope change



Tensions

Project Interests **-Vs-** National interests
Public Objectives **-Vs-** Private Objectives
Foreign Policy **-Vs-** Industrial Policy

[1] R. Leal-Arcas, J. Alemany Rios, and C. Grasso, "The European Union and its energy security challenges: engagement through and with networks," *Contemporary Politics*, vol. 21, Jul. 2015.
[2] http://news.bbc.co.uk/1/hi/world/europe/7799396.stm
[3] http://www.iraniangas.ir/Portal/File/ShowFile.aspx?ID=787d9dec-025e-44dd-9f43-bd8fd3f18216

Benchmark 2
Project Finance Structure

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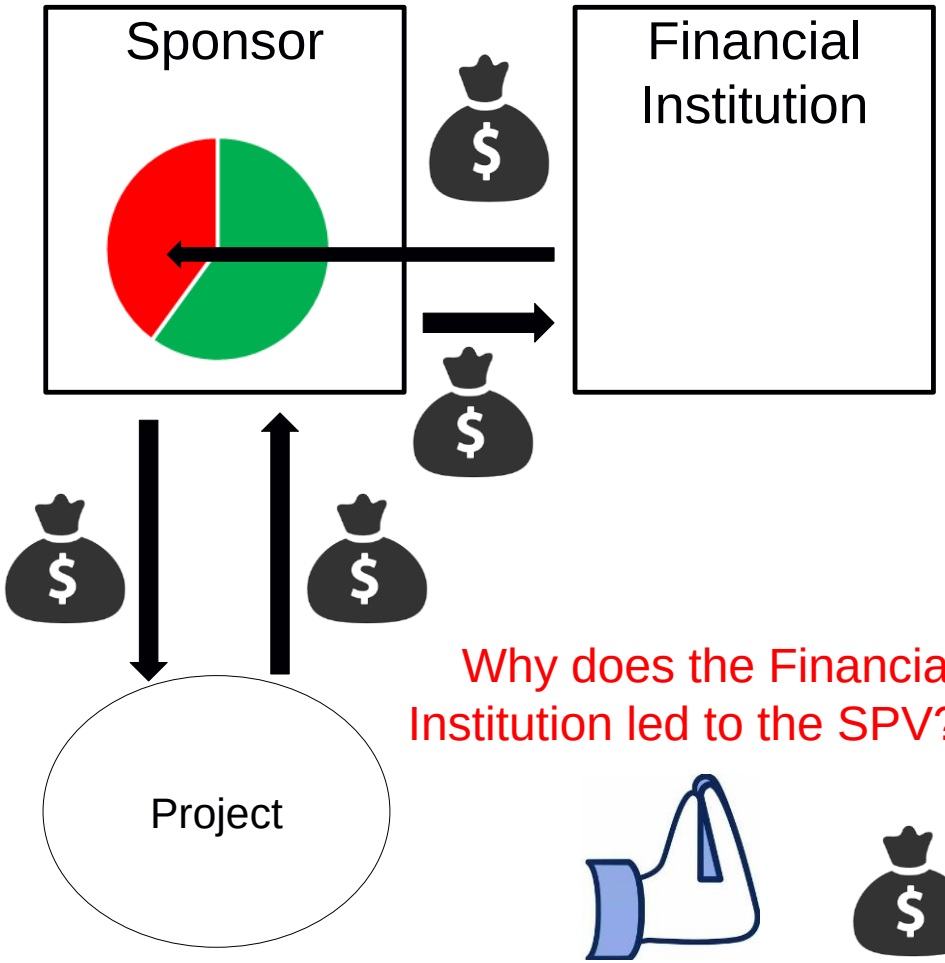
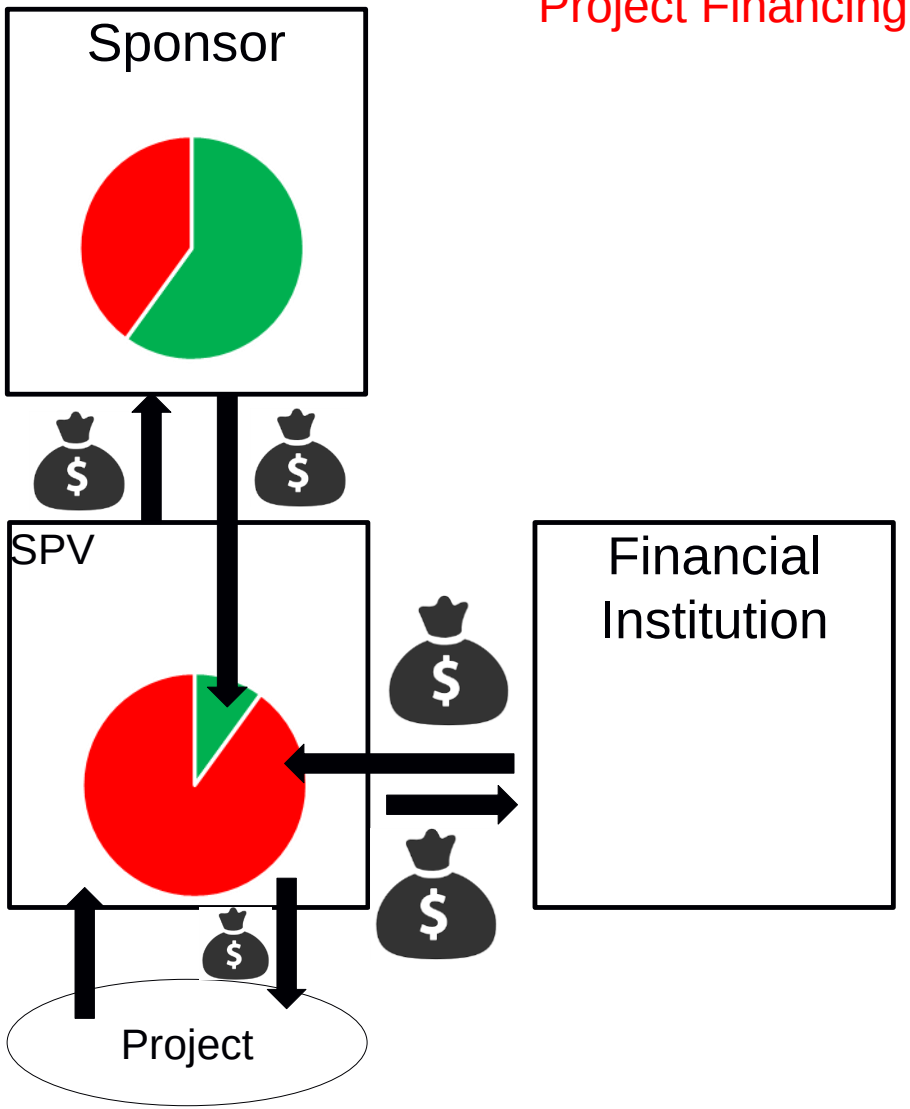
Corporate Financing



Why does the Financial Institution led to the SPV?

Project Financing



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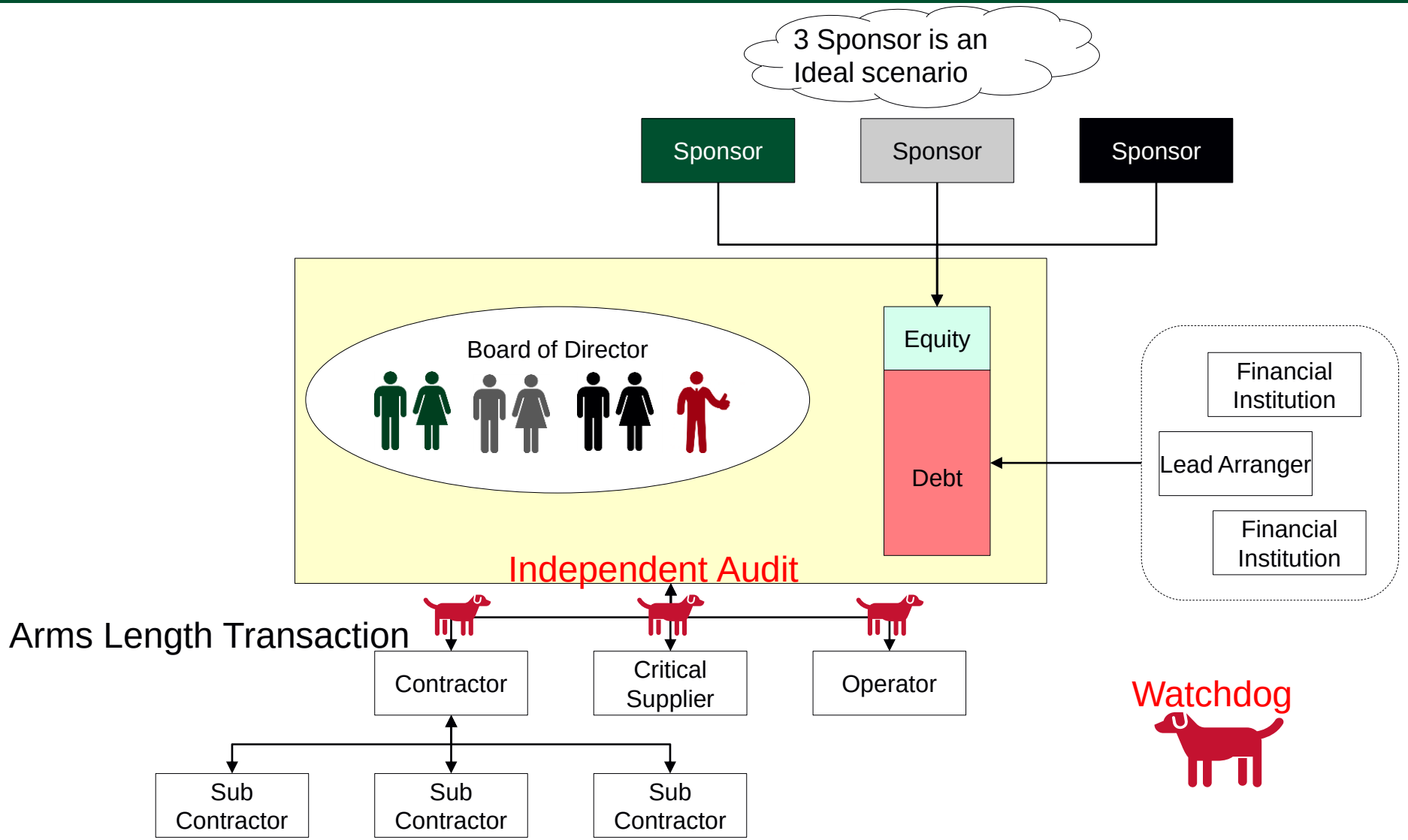
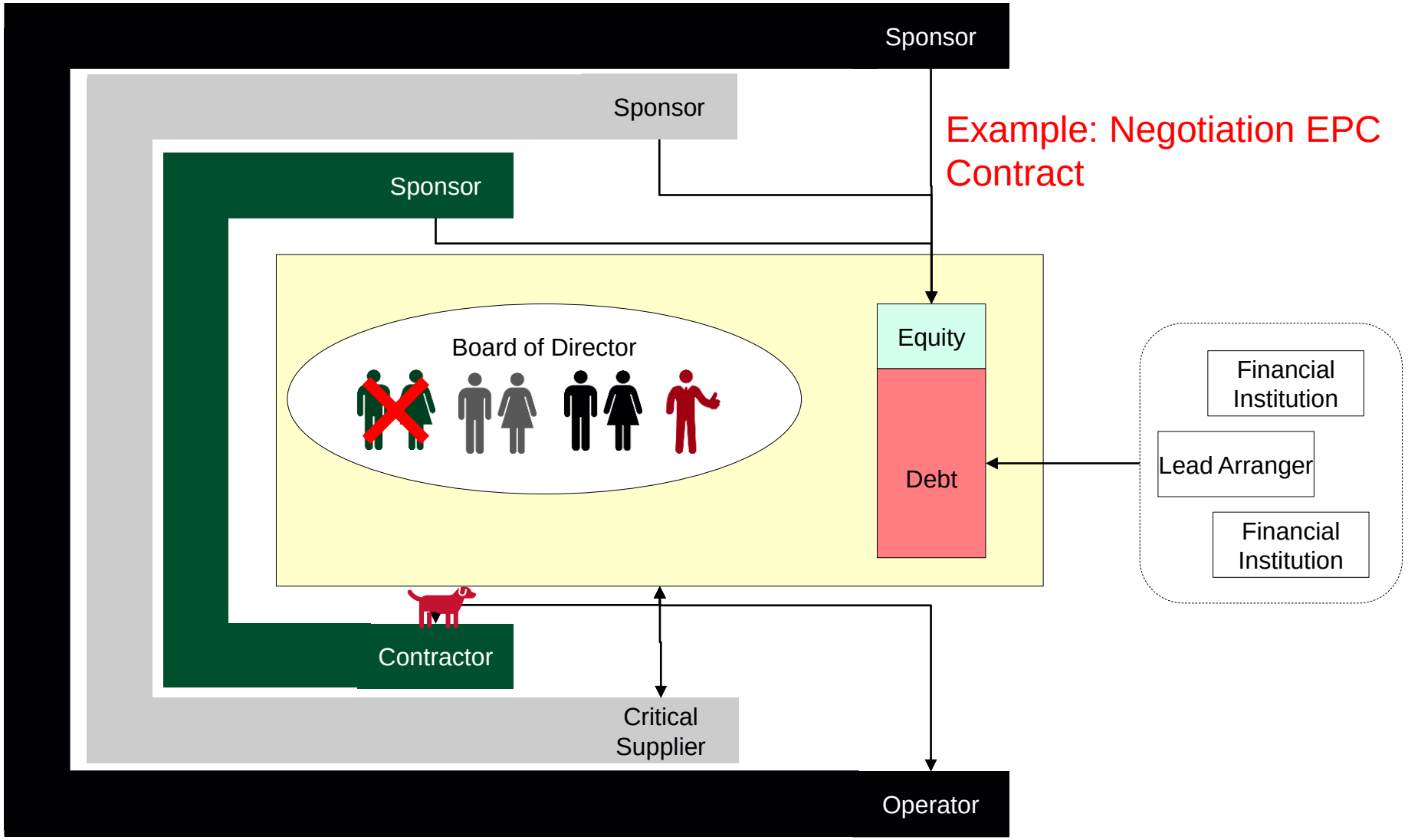
Remedy 1: Strict control of Lenders



Remedies for conflict of Interests



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The **MEGAPROJECT COST Action**

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Analysis of 50 European Megaprojects

Statistically, Megaprojects employing SPVs are more likely to be:

- Front End: delayed
- Construction phase: on time, on budget

www.mega-project.eu

Megaprojects Performance:
Transportation infrastructure

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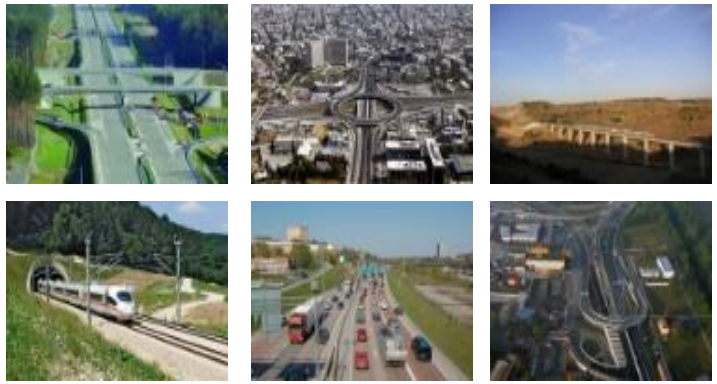
- Inaccuracy in cost forecasts in constant prices is on average 44.7% for rail, 33.8% for bridges and tunnels, and 20.4% for roads.
- For the 70-year period accuracy has not improved.
- Average inaccuracy for rail passenger forecasts is –51.4%, with 84% of all rail projects being wrong by more than ±20%.
- For roads, average inaccuracy in traffic forecasts is 9.5%, with half of all road forecasts being wrong by more than ±20%.
- For the 30-year period accuracy has not improved.



[1] Flyvbjerg, B., 2006. From Nobel Prize to project management: Getting risks right. *Project Management Journal*, 37, pp.5–15.

Megaprojects Performance: Large Dams

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Database encompasses 245 large dams, built between 1934 and 2007, on five continents, in 65 different countries

Considering their cost overrun

- 3 out of 4 large dams suffered a cost overrun.
- Actual costs were on average 96% higher than estimated costs; the median was 27% .
- Differences among regions are not significant.
- The typical forecasted benefit-to-cost ratio was 1.4. In other words, planners expected the net present benefits to exceed the net present costs by about 40%.
- Project type (e.g., hydropower, irrigation, or multipurpose dam) or wall type (earthfill, rockfill, concrete arch, etc.) does not influence cost overrun.
- Irrespective of the year or decade in which a dam is built there are no significant differences in forecasting errors. There is little learning from past mistakes.
- The rate of cost overrun outliers increases with increase in dam size measured either in installed hydropower generation or wall height.

[1] Ansar, A. et al., 2014. Should we build more large dams? The actual costs of hydropower megaproject development. *Energy Policy*, 69, pp.43–56.

Megaprojects Performance:
Large Dams

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Regarding schedule overrun

- 8 out of every 10 large dams suffered a schedule overrun.
- Actual implementation schedule was on average 44% (or 2.3 years) higher than the estimate with a median of 27% (or 1.7 years). Like cost overruns, the evidence is overwhelming that implementation schedules are systematically biased towards underestimation
- There is less variation in schedule overruns across regions than cost overruns.
- Large dams built everywhere take significantly longer than planners forecast.
- There is no evidence for schedule estimates to have improved over time.

[1] Ansar, A. et al., 2014. Should we build more large dams? The actual costs of hydropower megaproject development. *Energy Policy*, 69, pp.43–56.

Megaprojects Performance:
IPA database (318 projects)

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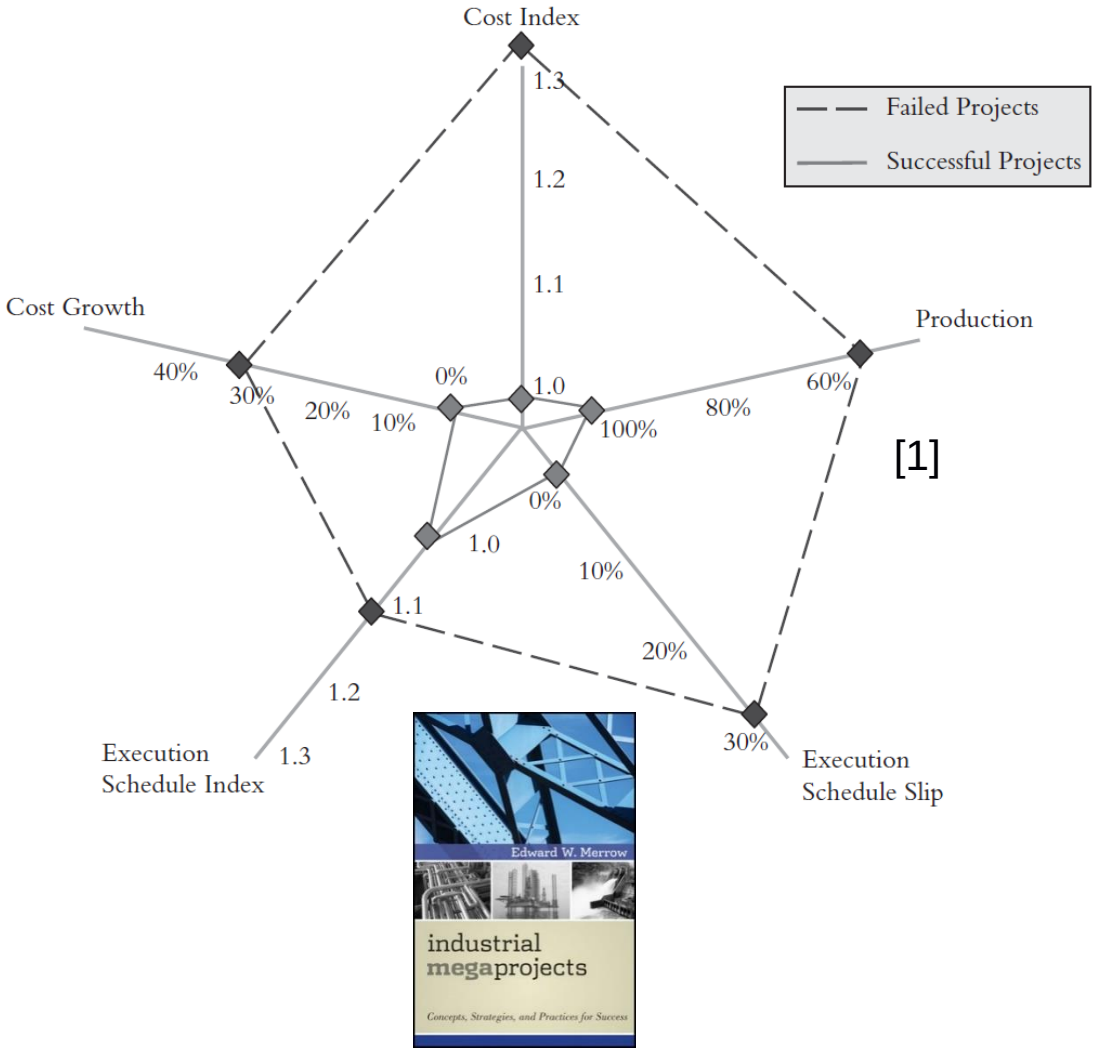

[1]

The 35% of the projects succeeded.

By contrast, the failures are truly miserable projects:

- 40% constant currency overrun
- very expensive in absolute terms.
- Delay by 28 %
- 15% slower than a competitive schedule.
- they averaged only 60% of planned production in the first year.

The oil and gas production sector fares the worst; 78% of megaprojects in this industrial sector are classified as failures.

[1] Merrow, E.W., 2011. *Industrial megaprojects: Concepts, strategies, and practices for success*, Wiley. com.

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Megaproject Performance

- Usually, Megaproject are late and overbudget
- In Megaprojects, the traditional project management performance criteria (Time, Cost, Quality) are secondary to other factors:
  - The **impact that megaproject has on context:** economy, society and environment. The infrastructure benefits (e.g. operations) might be far more important than the project management performance
  - **Symbolic Nature** of megaprojects

[1] Dalcher, Darren. "The nature of project management: A reflection on The Anatomy of Major Projects by Morris and Hough." *International Journal of Managing Projects in Business* 5.4 (2012): 643-660.

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Conclusions

Organisational Benchmark:

- Pipeline projects
- Project Finance infrastructure projects

Performance Benchmark

- Megaprojects

"*projects seem to fall naturally into exceptionally good projects and exceptionally poor projects, with only a very few in the middle*" [1]

[1] Merrow, E.W., 2011. *Industrial megaprojects: Concepts, strategies, and practices for success*, Wiley. com.


That's all Folks!

Transition period

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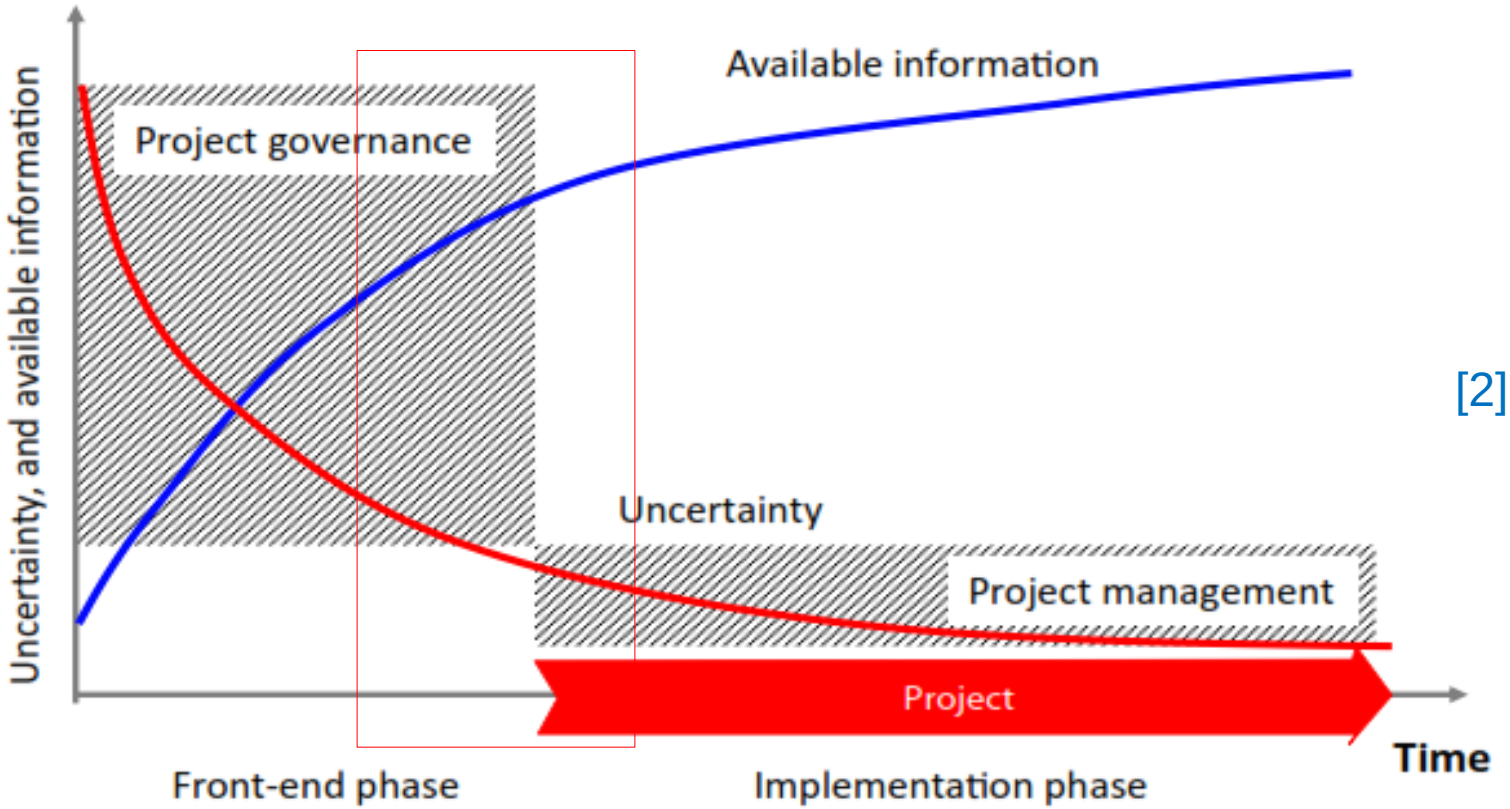

[2]

Delicate and Critical Transition for the project

[1] http://www.railbaltica.org/procurement/rail-baltica-general-procurement-plan/

[2] Samset, Knut; Volden, Gro Holst. Front-end definition of projects: Ten paradoxes and some reflections regarding project management and project governance. International Journal of Project Management, 2015

The “Megaprojects Cost Action” Selected Results

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		Over budget	Delay construction	Delay planning
The project has national public acceptability			---	
Environmental groups have been engaged ex+ante, not ex post		---		
The project has a strong regulation system		+++		+++
There is planned a long term stability in usage and value		-	--	
Financial Support from national government		--		
The majority of the national population trust the national authority				--
There was a formal litigation procedure during the contract between Client and EPC			++	
The megaproject is composed of more than 1 identical independent unit				++
a) The project is modular + dependent modules			--	
Offshore project			--	+
The project has an SPE/SPV		-	---	++

+++ Strongly Supportive, ++ Supportive, + Weakly Supportive, --- Strongly Opponent, -- Opponent, - Weakly Opponent.

www.mega-project.eu

Megaprojects

A megaproject is an extremely large-scale investment project costing hundreds millions of euro and having considerable impacts on communities, environment and shareholder's value.

There are several types of megaprojects, including:

- Civil infrastructural projects:
  - Rail and rapid transit projects
  - Bridge and tunnel projects
  - …
- Oil and gas projects, e.g. refineries, long pipelines, or large LNG regasification plants.
- Power plants:
  - Nuclear power
  - Large wind firms (e.g. Great Gabbard in UK),
  - Large solar plants (e.g. Andasol in Spain).
- Airport projects
- Aerospace projects
- …

What do we mean by “project success”? Thames Barrier Example

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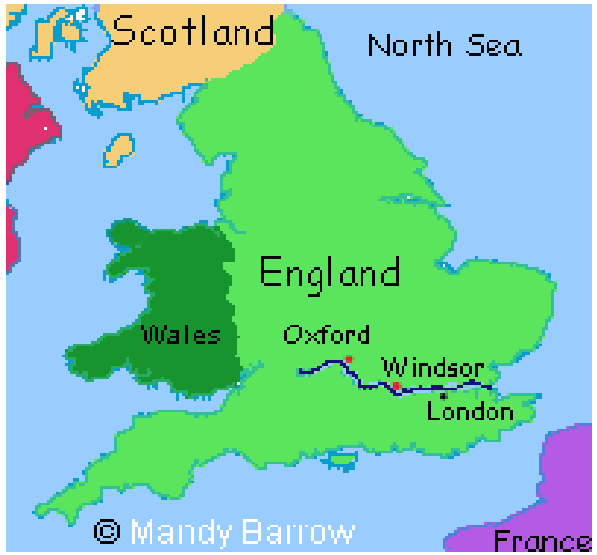

What do we mean by “project success”? Thames Barrier Example

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London flood of 1928

- 14 people were drowned in London and thousands were made homeless

Thames Valley flood of 1947

- the peak flow was 61.7 billion litres of water per day and the damage cost a total of £12 million to repair

Canvey Island flood of 1953

- 58 people died, and led to the temporary evacuation of the 13,000 residents

Dalcher, Darren. "The nature of project management: A reflection on The Anatomy of Major Projects by Morris and Hough." *International Journal of Managing Projects in Business* 5.4 (2012): 643-660.

What do we mean by “project success”? Thames Barrier Example

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Scope

mitigate the impact of storm surges in the Thames estuary

protect the low lying areas adjacent to the Thames

address the steady rise in water levels.

Cost

priced at £110.7 million in October 1973

ultimately delivered at a cost of £440 million.

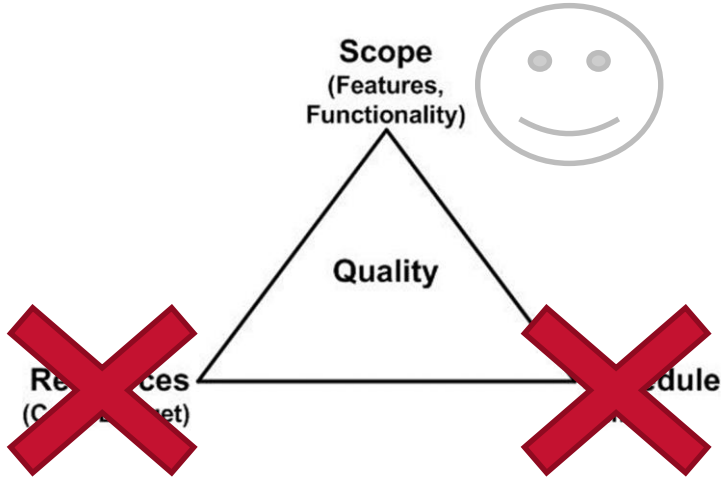
£1.6 **billion in today money**

Schedule

The initial plan called for four years of work,

construction actually took almost twice as long.

Luckily no floods occurred during that period.



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What do we mean by “project success”? Thames Barrier Example

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The barrier currently protects 125sq km (48sq miles) of London, including an estimated 1.25 million people, £200 billion worth of property and infrastructure, a large proportion of the London tube network and many historic buildings, power supplies, hospitals and schools.

Thames Barrier has paid for itself many times over in the 31 years it has been operating

	Es. Depuration plant, China	**Es. Thames barriers and dams, UK**
Project Management success:	Not connected to the sewage system	Saved London from flooding
Project success:	Delivered in time, under budget, and potentially operative	Delivered over budget, and in the double the forecasted time
	Project management success	Project success