Cost-benefit analysis of introducing FAIR data in Denmark

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Introduction

Preliminary analysis: Introduction of FAIR data in Denmark

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Main results

Net present value: € 0.3–0.5 billion

Benefit/cost ratio: 1.4

Internal rate of return: 7 %
Costs and benefits over time

€ billion

Year 1 Year 2 Year 3 Year 4 Year 5 Year 6 Year 7 Year 8 Year 9 Year 10
Year 11 Year 12 Year 13 Year 14 Year 15 Year 16 Year 17 Year 18 Year 19 Year 20
Year 21 Year 22 Year 23 Year 24 Year 25 Year 26 Year 27 Year 28 Year 29 Year 30
Year 31 Year 32 Year 33 Year 34 Year 35 Year 36 Year 37 Year 38 Year 39 Year 40

Benefits
Costs
The methodology

Scope and basic assumptions
- Using Danish data when available
- Using the most conservative estimates in the literature
- Only including effects for Denmark
- Basic assumptions based on Danish Ministry of Finance guidelines (2017)

Benefits
Source: Houghton & Gruen (2014)
- Less time spent on data work for researchers, including return on further research.
- New research produced as a result of FAIR data (not included in main scenario as a precautionary measure).

Costs
Source: Beagrie et al. (2010)
- Start-up costs, e.g. to build up metadata, workflow tools, policy, etc.
- Operating costs, purchase and operation of servers and data access.
Critical parameters

• How much time can researchers save when data are FAIR? *If the savings are smaller than 23%, the costs are greater than benefits in our main scenario*

• How much new research is created or to what extent is the quality of research improved? *Just 10% new research created will lead to benefits that are 70% higher than the costs (compared to 40% with no new research)*

• How much will it cost to implement FAIR? *Even if the costs are 40% higher than in our main scenario, the benefits will be larger than the costs*

• How much time will it take to implement FAIR? And what is the lifetime of the associated infrastructure? *New technological opportunities can make the implementation time shorter. The lifetime of the infrastructure will depend on how the principles are implemented*