

Challenge-driven innovation policy and public procurement of innovation: implementing functional and outcome-based procurement

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Background: innovation policy

- Demands for innovation policy to address societal challenges
 - E.g., transformative (Schot & Steinmueller, 2018) and mission-oriented (Mazzucato, 2018) innovation policies
- Public procurement of innovation (PPI) holds promise by articulating societal demands to direct challenge-driven transformation
 - (Uyarra et al., 2020; Edquist & Zabala-Iturriagagoitia, 2012; Wesseling & Edquist, 2018)
- However, it is not clear how broadly-defined sustainability goals can be integrated in PPI.

Two interesting ways of integrating challenges in public procurement

*“The technical specifications drawn up by public purchasers need to allow public procurement to be open to competition as well as to achieve objectives of **sustainability**. ... Drawing up the technical specifications in terms of **functional and performance [outcome-based] requirements** generally allows that objective to be achieved in the best way possible. Functional and performance-related requirements are also appropriate means to favour **innovation** in public procurement and should be used as widely as possible.”*
(2014/24/EU, par. 74).

	Functional procurement	Outcome-based procurement
Definition	"When a public agency buys products that perform functions that provide solutions to problems" (Edquist & Zabala-Iturrigagoitia, 2020)	"Buying outcomes", "instead of the detailed specifications of the object of procurement, the need of procurement is translated into outcomes" (Koivisto, 2018)
Compensation	Compensating based on winning the tender (evaluated by the proposed solutions' ability to address a societal challenge)	Compensating for realized and measured outcomes.
Applicability	Boundary conditions not widely reported. Requires highly developed competences on the part of the procuring organization	Outcome-based procurement cannot be used if outcomes are difficult to measure, or they cannot be linked with supplier's actions (from agency theory lit. e.g., Eisenhardt, 1989).
Relevance	Focus on goals, impacts, and solving problems instead of specific solutions. Potential in describing societal challenges as problems to-be-solved.	
	Innovation-friendliness (Uyarra & Flanagan, 2010): innovative solutions are not excluded or disadvantaged compared to mainstream solutions.	
Related literature	Czarnitzki et al., 2020; Edquist & Zabala-Iturrigagoitia, 2020; van der Velde et al. 2008	Martin, 2002; Selviaridis & Wynstra, 2015; Sumo et al., 2016

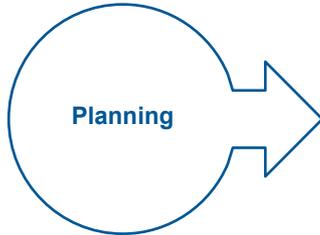
Empirical study

- A multiple case study of 11 challenge-driven PPI projects
 - Both **functional** and **outcome-based** procurements
 - **Environmental** challenges
 - Carbon neutrality (low-emission public transportation, construction, energy efficiency improvements, Helsinki Energy Challenge)
 - Circular economy (recyclable hospital workwear, construction)
 - **Social** challenges
 - Elderly care (home care service integrator, municipal residential care)
 - Social exclusion (social impact bond for preventative services)
 - Citizens' wellbeing (Tesoma Wellbeing Centre, Tampere)
- Primary data: documents and interviews



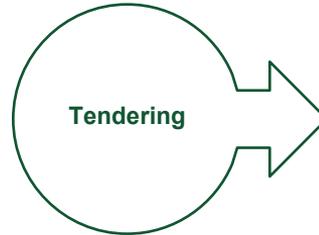
Cases

1. Home care service integrator “Kotitori”, the city of Tampere (2015)
2. Children’s Welfare SIB, the cities of Helsinki and and Lohja (2018)
3. Tesoma Wellbeing Centre, the city of Tampere, (2016)
4. Helsinki Energy Challenge, the city of Helsinki (2020)
5. Procurement of soil construction and infrastructure, the city of Porvoo (2020)
6. Low emission public transportation service, the Helsinki Regional Transport Authority (HSL, 2018)
7. Plan and construction of residential apartment buildings, the city of Helsinki (2020)
8. Emission-free construction site, the city of Helsinki (2020)
9. Energy efficiency investments ESCO, the city of Vantaa (2011 and 2017)
10. Healthcare workwear procurement for Sakupe Ltd.'s healthcare customers (e.g. hospital districts, 2020)
11. Municipal residential care, the city of Oulu (2013)



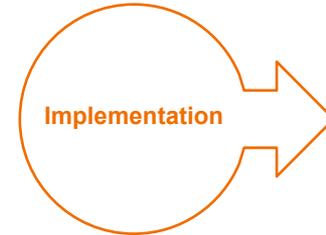
Understanding a societal challenge

- Identifying a societal challenge
- Integrating new policy goals in procurements by **redirecting** contracts towards more ambitious environmental impact or social welfare goals.
- **Extensive research** into understanding the challenges and their local instances and negotiating their framings as concrete problems: research projects, consultants, market dialogue, stakeholder workshops.
- **Public support:** Often supported by publicly funded development projects



Operationalizing the societal challenge

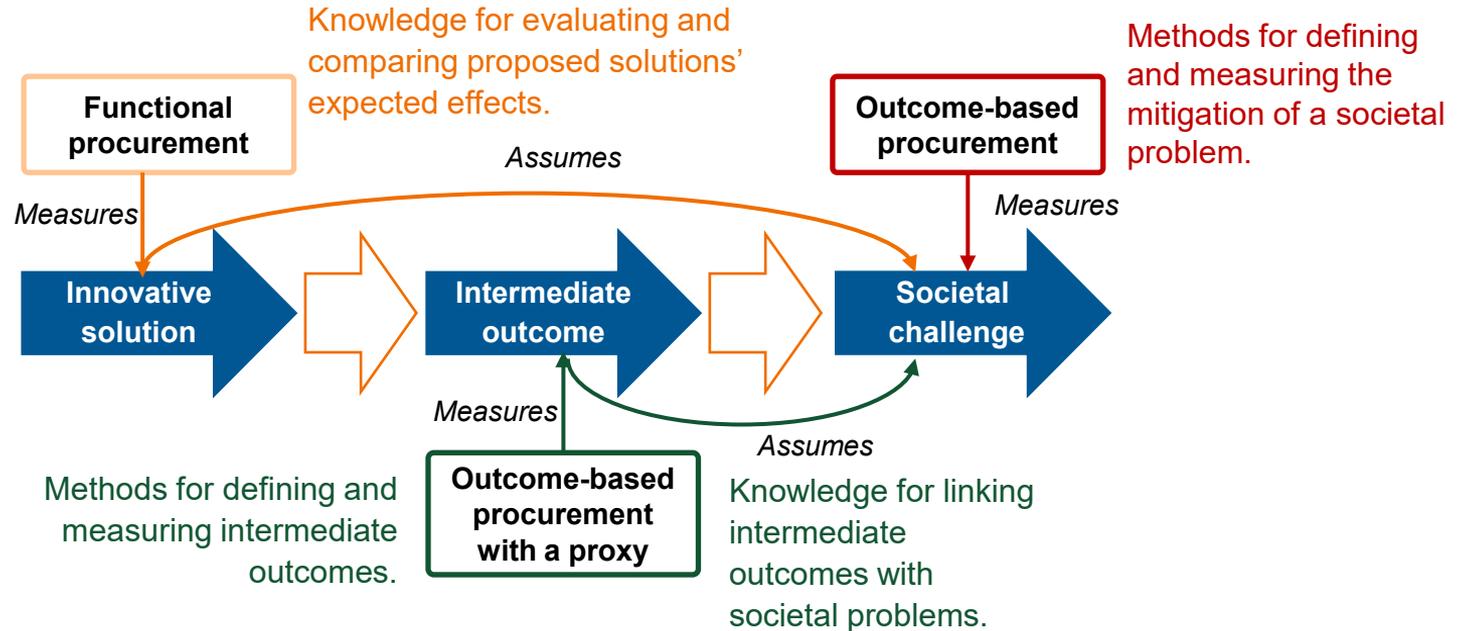
- **Specifying concrete targets**, e.g., *emissions reduction targets* for public transportation, or *improvement and retention of autonomy in daily activities for the elderly*
- **Developing indicators** for comparing proposals and measuring solutions' effectiveness.
- Challenges were integrated in several ways: description of the contents of the procurement, award criteria, exclusion criteria, compensation principles.
- Social challenges were more difficult to operationalize due to their complex nature.



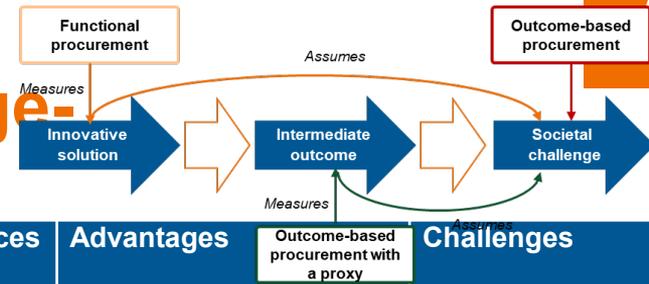
Validating the impacts

- Collecting and analysing **data on outcomes**
- Applying the provided solutions and integrating them in public service provision
- Supporting the supplier's efforts
 - Providing information
 - Complementary actions

Causal connections between procured solutions and societal challenges



Overview of different challenge-driven procurement types



Challenge-driven procurement type	Required knowledge base	Examples of knowledge sources	Advantages	Challenges
Functional procurement	- Knowledge for evaluating and comparing proposed solutions' expected effects.	- Technological research and standards - Carbon footprint calculators - Results from pilots and R&D projects	- Works well with established technologies - No need to invest in outcome measurement	- May rule out radical innovations whose impacts are difficult to evaluate
Outcome-based procurement	- Methods for defining and measuring the mitigation of a societal problem.	- International Performance Measurement and Verification Protocol for energy efficiency - Barthel Index for Activities of Daily Living	- Public organisation pays (only) for actual results.	- Measurement difficulties - Companies may perceive the procurement risky if external factors can influence the outcomes
Outcome-based procurement with a proxy	- Methods for defining and measuring intermediate outcomes. - Knowledge for linking intermediate outcomes with societal problems.	- Data on the use of public social and health care services (outcome measurement) - Research on the root causes of societal problems (establishing causality)	- Easy to measure - Increases focus on medium-to-long-term societal problems	- Intermediate outcomes may be detached from societal challenges

Some key takeaways

- In challenge-driven PPI, generic societal challenges are defined in more precise terms and transformed into ‘calculative devices’ (Callon & Muniensa, 2005; Flanagan et al., 2022) that guide firms’ innovation.
- → This is a highly knowledge-intensive activity
- Functional procurement works when the working mechanisms of potential solutions are well understood and comparable (e.g., carbon-neutral technologies)
- For challenges with more complex potential solutions (e.g., social and health care services), outcome-based procurement is more attractive.
 - However, outcome measurement can be difficult, and ambitious outcome-based arrangements may be perceived risky by firms.
- → Policy support for establishing required knowledge bases may support achieving sustainability-related goals via PPI