

PERFORMANCE-BASED SPECIFICATIONS:

Exploring when they work and why

Laura Turley, Mariana Hug Silva, Scarlett Benson and Carlos Dominguez

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Performance-Based Specifications: Exploring when they work and why

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TABLE of CONTENTS

| | |
|---|----------|
| Executive Summary | 1 |
| Section I: Understanding Performance-Based Specifications For Public Procurement | 3 |
| What Are Performance-Based Specifications? | 3 |
| When Are PBSs Used in Public Procurement?..... | 3 |
| In the Procurement of Products..... | 3 |
| In the Procurement of Services..... | 4 |
| In Design Competitions..... | 4 |
| In the Procurement of Infrastructure and in Public-Private Partnerships | 4 |
| In Performance-Based Contracts | 5 |
| How Do Procurers Develop Effective PBSs? | 6 |
| Benefits | 7 |
| Use of PBSs Can Foster Innovation | 7 |
| PBSs Force a Good Needs Analysis | 8 |
| PBSs Can Find the “Best” Option on the Market..... | 8 |
| PBSs Can Support SPP Efforts | 8 |
| PBSs Can Positively Change Ownership Patterns and Encourage Closed Loops..... | 9 |
| Limitations | 10 |
| PBSs Do Not Necessarily Ensure Any Degree of Environmentally or Socially Beneficial Performance | 10 |
| PBS Represents Only One Small Piece of the Innovation Puzzle | 10 |
| PBSs Shift the Public Sector’s Work to the Evaluation Stage | 11 |
| PBSs Can Stifle Competition Where It Matters..... | 11 |
| PBSs Require Intensive Monitoring and Evaluation..... | 11 |
| Who is Using PBSs Successfully? | 12 |
| Other Barriers to the Effective Use of PBSs in Public Procurement | 14 |
| Budgetary Mismatch for Leasing or Pay-Per-Use Models | 14 |
| Risk Aversion and Fear of Personal Liability for Mistakes | 14 |
| Lack of Baseline Data | 14 |
| Broader Policy Recommendations to Support the Effective Use of PBSs | 14 |
| Develop Tender Evaluation Tools and Methodologies | 14 |
| Create Incentives for Performance | 15 |
| Consider Pricing for Conservation | 15 |
| Investigate Multi-Annual Budget Frameworks | 15 |
| Uphold Intellectual Property Rights | 15 |
| Make Space for Small and Medium-Sized Enterprises | 16 |
| Provide Regulatory and Logistical Support for the Circular Economy | 16 |

| | |
|--|-----------|
| Section II: Including PBSs in the Public Procurement Cycle | 17 |
| Further Explanation of PBS in the Public Procurement Cycle | 19 |
| 1) Identify need and assess risks | 19 |
| 2) Develop the selection criteria for candidates | 19 |
| 3) Define the technical specifications and invite bids | 19 |
| 4) Evaluate bids from suppliers | 20 |
| 5) Award the contract..... | 20 |
| 6) Define contract performance clause..... | 20 |
| 7) Monitor and Evaluate the Supplier | 21 |
| Section III: Case Studies of PBSs in Public Procurement..... | 22 |
| Case Study #1: The New Karolinska Solna University Hospital: Innovative Design and Clinical Output-Based Specifications | 23 |
| Case Study #2: Georgia Regents Medical Centre & Philips Healthcare: Procurement for Advanced Patient Care | 25 |
| Case Study #3 ProRail: The Dutch Circular Economy Procurement Pilot..... | 27 |
| Case Study #4: FIRED-uP: Procurement for Innovation and Environmental Sustainability..... | 30 |
| Case Study #5: Energy Performance Contracting: Finland’s City of Vantaa Drives Emission Reduction Targets | 33 |
| Case Study #6: The Libra Project: Challenges for Use of PBSs in IT Procurement | 36 |
| Section IV: Making Full Use of Financial Accounting Frameworks to Make PBSs Happen..... | 39 |
| Current Challenges under IFRS Accounting Rules | 40 |
| Solutions: Revised Lease Accounting and Green Depreciation | 43 |
| Addressing Other Issues Related to PBS Contracts | 44 |
| Reference List..... | 46 |

EXECUTIVE SUMMARY

Objectives

There is extensive research and attention on innovation and sustainable public procurement (SPP) in the European Union at present, with the 2014 revision of the *Procurement Directives*, the Innovation Union strategy and other European Union policy initiatives. This report seeks to contribute to this discussion through the investigation of the use of performance-based specifications (PBSs) in public procurement in the European Union and the United States. The report outlines the benefits and limitations of the use of PBSs, even in the most “progressive” public procurement environments, such as the Netherlands, particularly around their ability to support sustainable development goals and deliver environmental benefits for a procuring authority, such as energy and resource efficiency.

Additionally, this report aims to identify the sectors in which the enabling conditions for the successful use of PBSs in public procurement are in place and to understand what policies and regulations are needed to promote the use of PBSs in public tenders and public procurement framework agreements.

While PBSs are just one of many procurement tools, it is our hope that more information on PBSs encourages public procurers to continue experimenting and taking risks in their procurement processes, with the aim of delivering value for money across the life cycle when they buy goods, services and infrastructure.

Background to the Report

This report builds on a briefing note entitled *Moving Towards Performance-Based Specifications in Public Procurement* that was published in December 2013. The briefing note made the case for the use of PBSs in public procurement, particularly where governments are interested in transitioning to more service-intensive procurement models such as through leasing arrangements, pay-per use or performance-based contracts. Whereas the briefing note was generally enthusiastic about the use of PBSs in public procurement, this report takes a more balanced approach by investigating the benefits and limitations to their use.

The primary research for this report was carried out predominantly in the Netherlands, where the authors perceived that “best practice” in the use of innovative procurement techniques, such as the use of PBSs, was occurring. As such, the report does not in any way reflect a global overview or even a pan-European analysis of the use of PBSs in public procurement.

Findings

Performance-based specifications describe a desired performance level or performance target, but, importantly, do not make specific demands on how that level of performance or target is reached—that is to say, instead of prescribing the need in terms of inputs, it is described in terms of outputs. As such, PBSs enable public procurers to specify a desired performance level or target to be achieved when they purchase goods, services and infrastructure. This is a useful tool for integrating environmental and social considerations into tenders and encouraging private sector innovation.

However, the use of PBSs can ultimately be burdensome for the public authority, as monitoring and verifying performance delivery once a tender has been awarded requires long-term commitment and management. As such, they simply shift the work of the procuring authority from the specifications/bid-writing stage into the evaluation and monitoring stage.

Report Structure

Section I: Understanding PBSs for Public Procurement

Section I of this report defines PBSs and looks at when they can be used in public procurement, how procurers can develop effective PBSs and in which sectors they have been successfully utilized. It presents a balanced view of the benefits and limitations of their use, barriers to their efficacy and the broader policy recommendations to support them.

Ultimately, we see that PBSs provide suppliers with flexibility to propose solutions and be innovative; however, their use must be targeted to deliver environmental and social benefits. PBSs do not themselves provide a “silver bullet” for implementing sustainable public procurement. Nonetheless, governments can help to develop an enabling environment for the optimal use of PBSs, including the development of tender-evaluation tools and methodologies (explored in Section II of this report), the provision of regulatory and logistical support for the circular economy and the introduction of multi-annual budget frameworks (such as in the Netherlands, where expenditure ceilings are set on a 4-year basis, in line with electoral cycles, providing procurers with flexibility to think holistically about their needs).

A number of other benefits and limitations to the use of PBSs are explored in Section I of this report. These are summarized in Table ES1 below.

TABLE ES1: BENEFITS AND LIMITATIONS OF PBSs

| BENEFITS | LIMITATIONS |
|---|---|
| <ul style="list-style-type: none"> • The use of PBSs can foster innovation. • PBSs force the procuring authority to conduct needs analyses. • It can find the “best” option in the market. • It can support SPP efforts. • PBSs can positively change ownership patterns and encourage closed loops. | <ul style="list-style-type: none"> • PBSs do not necessarily ensure any degree of environmentally or socially beneficial performance—this must be targeted. • PBS represents only one small piece of the innovation puzzle. • They shift the public sector’s work to the evaluation stage. |

Section II: Including PBSs in the Public Procurement Cycle

Section II of this report outlines several possible entry points for using PBSs in the public procurement cycle, depending on needs, risk aversion and levels of ambition. It focuses on how performance can be measured, compared and contrasted in a bid evaluation and award through use of weighting methodologies and questionnaires to help public procurers make objective and fair assessments of the bid. Often, a good place to get started using new procurement practices is in the award criteria, where suppliers can be given additional points for verifiable claims on performance projections, while being fairly weighted against cost and other factors.

Section III: Case Studies of PBSs in Public Procurement

Section III presents six case studies through which current practice on the use of PBSs in public procurement is explored. The analysis of these six case studies reveals enabling conditions for the successful use of PBSs and highlights the common challenges in successfully drafting output specifications and in the ongoing management and performance monitoring of the contract.

By understanding the challenges and enabling conditions for each case study, we present recommendations for successful performance-based contracting in public procurement to achieve innovation, sustainability, value for money and appropriate risk transfer to the private sector.

Section IV: Making Full Use of Financial Accounting Frameworks to Make PBS Happen

Section IV of this report looks at the space provided in financial accounting standards to actualise PBS. This discussion also makes the case for green accounting and green depreciation. These new accounting approaches are essential to realise economies of scale in the use of performance- based contracting in the years ahead..

SECTION I:

UNDERSTANDING PERFORMANCE-BASED SPECIFICATIONS FOR PUBLIC PROCUREMENT

WHAT Are Performance-Based Specifications?

When a public organization decides it needs to buy something, one of the first steps is to develop a specification that describes to the marketplace what they are looking for. A *specification* in a tender generally answers the question: What do I want to buy?

Performance-based specifications (PBSs) in particular describe a desired performance level or performance target to be achieved, but do not make specific demands on how that level/target is reached. Instead of prescribing the need in terms of inputs, it is described in terms of *outputs*. PBSs are often described in contrast to technical specifications, which are formulated based on the detailed characteristics of goods, services or infrastructure being purchased, or describe exactly how a contractor must perform a service or develop a product.

For example, a technical specification for a heating system might require that the supplier provide an oil furnace made of heavy-gauge steel with fiberglass insulation, return air flow located on the top of the unit and so on. Alternatively, to address the same need a PBS might simply require a solution for keeping a particular building at an ambient 24 to 26°Celsius at all times.

In practice, however, technical specifications and PBSs are often used in parallel. It would be common to find PBSs alongside technical specifications in a tender, and they are certainly not mutually exclusive. To illustrate with the same example as above, it is perfectly possible that the technical specifications for the heating system would also include performance requirements, such as requiring a certain level of fuel efficiency.



WHEN Are PBSs Used in Public Procurement?

In the Procurement of Products

In a conventional tender for the purchase of products, say for electronics, there can be minimum performance requirements written into the tender documents—for instance, requesting certain energy-efficiency levels. Either it could be a mandatory requirement, or the supplier could be awarded extra points in the tender-evaluation stage for guaranteeing performance above the minimum specified performance. In this example, suppliers would be required to submit certificates, test reports, technical dossiers or eco-labels to provide evidence for these claims. An example of this would be conformity with the Energy Star label performance requirements in the public procurement of electronics in the European Union and the United States.

The European Union Green Public Procurement (GPP) criteria for office information technology (IT) equipment were last updated in 2012. They incorporate the requirement to at least meet the Energy Star standards for energy performance. While the EU GPP criteria are confined to desktop, laptop and monitors/keyboards, similar general standards could be considered when specifying and procuring other items of IT equipment.



In the Procurement of Services

PBSs are particularly relevant in the procurement of services, as they are the primary tool for assessing bids that are not simply for the purchase of discrete products. For example, in the procurement of a catering service, a PBS can be written to ensure that water-use efficiency is operationalized and improved upon throughout the life of the contract. The contract might also require a minimum percentage of organic food available on the menu or that a percentage of food waste be composted to avoid landfill. Once the tender is awarded, the procuring authority will need to monitor and evaluate the performance of the service provider in light of the targets set in the tender evaluation stage.

There is growing interest in the use of product-service systems (a mix of products and services are procured) where the service component is intensified—for example, repair services or end-of-life services are added to straight product procurement. One expression of a product-service system could be a leasing contract, in which the buyer pays for the use of a product or service instead of buying the physical components of the deal. For example, a local police force might lease a fleet of vehicles, with vehicle maintenance included as part of the contract, rather than purchasing the vehicles. In all of these examples, PBSs are useful tools for the pre- and post-tender phases, to articulate needs in terms of functions and performance.



Case study #3 in Section III of this report examines a product-service system as part of the Dutch Circular Economy procurement pilot.

In Design Competitions

Typically in a design competition a pre-selected shortlist of designers is asked to develop an initial design concept based on the defined project requirements, which is then evaluated by a jury of experts. Design competitions should be launched on the basis of a clear project brief, which includes performance targets. Similarly, the evaluation of designs should also be based heavily on the comparison of meeting (or exceeding) performance targets. See case study #1 in Section III for an example of PBSs used in the design competition for a new hospital in Stockholm. Interestingly, in this case study, the winning design provided the foundation for the highly qualitative specification and acted as a benchmark against which the competing bids for the construction, management and financing of the hospital were compared. In this respect, the winning design was itself an important part of the PBSs used in the procurement process.



In the Procurement of Infrastructure and in Public-Private Partnerships

Infrastructure is often procured in a two-step process: (1) the design is developed, either by in-house architects or through a tendering process like a design competition, and then (2) a construction firm is contracted through a competitive tendering process to construct according to the design (SCI-Network, 2012). In such scenarios, PBSs can be a helpful tool to translate the final design into the specifications for the construction tender. However, when the tendering for design and construction are separate in this way, the procuring authority must ensure that the design plans are followed through into the construction phase. This can be done using quantitative PBSs—for example, by specifying a maximum acceptable energy demand per year.

Where the tender includes both design and construction—or design, building and operation or maintenance—this generally implies that the public authority is interested in engaging in a longer-term, risk-sharing contract with the private sector, or some form of a public-private partnership (PPP). In these integrated contracts, the procuring authority is essentially purchasing a service, and again, PBSs are valuable for articulating needs and defining required performance levels. This arrangement associates payment mechanisms with meeting performance criteria that are designed for the specific needs of the service.

In the example of the procurement of a road using a Design, Build, Finance, Maintain model on a 20-year PPP contract, the procurer is essentially purchasing the integrated performance of the product-parts: overall performance being: a) the availability of the road throughout the year and b) the ease of mobility due to traffic, surface quality, safety features, etc. There is a gradual movement in infrastructure procurement to the concessionaire taking on such construction, service and mobility risks.

In PPPs, it is thus equally important for the procuring authority to define strong performance targets and to include these in the procurement process as a part of the selection process, build them into the terms of the agreement and monitor them effectively.

In Performance-Based Contracts

Performance contracting is a particular procurement and service delivery method for projects in which there are guarantees made for specific performance levels. Governments have, for a long time, procured services such as hospitals, police, fire rescue, ambulances, road maintenance and others using performance-based contracts. The aim of these contracts, like the PPP contracts described above, is to ensure that government objectives can be met by setting and achieving targets that deliver improved performance.

Some examples of performance-based contracts are related to the PPP model described above; other models are presented in Box 1 below. In Energy Performance Contracts (EPCs) and Water Service Contracts (WASCOS), for example, the supplier guarantees that the installation of new equipment or systems will ensure cost savings (through improved energy-/water-use efficiency), and their payment is delivered through the savings generated. If the performance results are not realized, the contractor is accountable and absorbs a financial loss. For an example of an EPO in practice, see case study #6 in Section III.

| BOX 1: EXAMPLES OF PERFORMANCE-BASED CONTRACTS | | |
|--|-------------------------------|-------------------------------|
| Pay Per Lux | Energy Service Contracts | Water Service Contracts |
| Design Build | Design Build Operate | Design Build Operate Transfer |
| Chemical Management Systems | Chemical Leasing Contracts | Resource Management Contracts |
| Energy Performance Contracts | Shared Savings Agreements | Circular Propositions |
| Buy and Sell Back to Supplier | Buy and Sell to a Third Party | Functional Sales |

HOW Do Procurers Develop Effective PBSs?

PBSs can be used at various stages of the procurement cycle—starting from the initial needs analysis, all the way to the operational contract conditions. This is explored in more detail in Section II of this report.

In order for public procurers to develop a successful PBS that will be ambitious and clearly articulate their needs, it is valuable for the procuring entity to use market consultations, competitive dialogues, technology “updates,” industry fairs and other forums to promote innovative thinking and practice, and ensure that procurers are aware of what the market has to offer.

In the European Union, several strategies are available to public procurers, as outlined in Table 1 below.

TABLE 1: METHODS FOR THE PROCUREMENT OF INNOVATION AND RELEVANCE FOR PBSs

| METHOD | WHAT ARE THEY? | CONNECTION TO PBS | LIMITATIONS |
|---|---|---|--|
| Preliminary Market Consultations | Public pre-tender discussions to gather information from the market with a view to later procurement, and to inform potential suppliers of the procuring authority’s needs. Engaging with planners, architects and contractors during this planning stage can help an authority identify what should be achievable by the market and with what short- and long-term cost implications. | After issuing a prior information notice, authority can use this to share their needs then hear from technical specialists and engineers on the advances in technology or processes, delivery methods, their applications to date and their strengths/weaknesses. They can then carefully record the information and use it to inform a PBS. Site visits, surveys and questionnaires might be arranged in this stage to compare different options. These dialogues can instil confidence in procurers that there is interest and capacity in the market. | Companies may not want to share everything at a public market consultation; they have an interest in “keeping their cards close” in order to protect their ideas from potential competitors and to surprise and impress the procurers in their response to a tender. |
| Competitive Dialogues | Discussions that occur with selected suppliers during the procurement process (i.e., post-tender launch) to award a contract for supplies, services or works. These dialogues are useful if suppliers are responding to a broadly defined, output-based tender as they enable suppliers to explain their proposed solution. | Like the market consultation, the competitive dialogue offers a venue for procurers and suppliers to discuss the most efficient delivery of products, services or works. However in this case, the tender is launched already and discussions with suppliers are bilateral. Often for large complex projects, defining performance targets can be a challenge, so PBSs for the contract management stage could be developed in collaboration during these discussions. | As these discussions occur after the launch of the public tender, it might be too late for the effective use of PBSs. Once the needs analysis is done and the specifications written up, there is not much scope for changing or influencing the tender in a fair way. PBS could be co-developed for the contract management stage, but arguably that has less impact than the use of PBSs earlier in the procurement process. |
| Trade Fairs/ Industry Days/ Technology Updates | Forums at which new technologies and processes are presented. These could be either at public events or private venues. | When there is a general lack of knowledge on what is available in the market, these forums can provide procurers with confidence that the market will be able to respond to open, output-based tenders that employ PBSs. They can help ensure that procurers are no longer asking for old, outdated technologies and methods. | Attending these events requires time and perhaps financial resources (i.e., travel and registration) for public procurers and policy-makers, which might not always be available in preparation for a routine procurement. |

Source: adapted from Semple (2014)

Any market engagement, whether it is before or after the launch of the tender, must be undertaken with utmost regard for the principles of transparency, non-discrimination, mutual recognition and fair competition with no undue advantages given to any particular supplier or group of suppliers. Market consultations and competitive dialogues must not distort any later competition. The competitive phases of procurement must be carried out separately. Private companies should not, for instance, have any direct contribution to writing the final specifications for tenders—performance-based or otherwise.

Benefits

Use of PBSs Can Foster Innovation

The more that public procurers define their needs in terms of required outputs—using PBSs— the more the private sector is given the space to draw on their expertise in products and markets, and to innovate. When the private sector is not restricted to pre-determined products, production methods and detailed processes, they are able to form consortiums, and to invest, innovate and be creative in their processes.

PBSs provide a way for governments to share the risks of innovation with the private sector. The large volumes procured by governments can act as a de-facto demand guarantee to help businesses to invest, innovate and deliver sustainable goods, services and infrastructure. PBSs can also be useful in pre-commercial procurement (PCP) and first commercial procurement (FCI), where the public sector drives the inception stage of new technologies or processes (PCP), or brings cutting-edge innovation to the market for the first time (FCI) through its procurement.

Another way of looking at it is that performance-based contracts mean that the technical risk is likely to remain with the supplier because they are guaranteeing a certain level of performance without strictly defined input parameters, and therefore, the supplier will have the choice to use tried-and-tested technologies or processes, or to innovate and scale-up something new that has not been rolled out on the market yet at significant scale. If the supplier chooses the latter approach, one way they can cover the risk of technical innovation is to include a clause in the final contract, giving them the flexibility to change (i.e., replace) the technology used should the new “risky” method or product they employ not be effective.

PBSs can provide suppliers with the space to design new products and redesign services to meet a particular requirement or to scale-up an existing solution.

Innovation means the implementation of a new or significantly improved good, service or process, including but not limited to production, building or construction processes, a new marketing method, or a new organizational method in business practices, with the purpose of helping to solve societal challenges.

Source: Semple (2014)

Of particular interest in the realm of sustainable development is when innovation results in reduced material and resource use, or the uptake of modular design, or the recycling and upcycling of products, or support for new green business models and leasing or service models. The use of PBSs for SPP is discussed below.

PBSs Force a Good Needs Analysis

One of the major benefits of developing a PBS is that it requires the buyer to undertake a thorough analysis of their needs or to identify the root problem that needs to be addressed. It is possible that simply experimenting with the use of PBSs will generate new and perhaps unconventional conversations within the procuring entity’s department. The prospect of writing a PBS-based tender may force the buyers to ask themselves what they really need—for example, do they actually need 100 computers or do they need an information management system for 70 to 100 users?

The effective use of PBSs is all about clearly understanding one’s needs or identifying the problem to be addressed, and then communicating it to the market in an open and clear manner.

PBSs Can Find the “Best” Option on the Market

When procurers rely on detailed technical specifications in the procurement of goods, services and infrastructure, they maintain a high degree of certainty about what is being purchased. This can be desirable, particularly with taxpayer money on the line. However, the prescriptive technical requirements outlined by the public sector procurers may not represent the “best” the market has to offer. Working with functional or performance-based specifications reduces the risk of neglecting alternatives.

PBSs Can Support SPP Efforts

SPP is becoming an increasingly popular topic with governments around the world as they realize its multiple benefits.¹ In the SPP dialogues taking place in Europe and internationally, PBSs are a practical tool for implementing and achieving SPP. For example, a government may like to focus its SPP efforts on waste reduction, and a PBS can be developed to specify that the supplier must meet targets to reduce their packaging by 30 per cent over the life of the contract, and that the supplier offers an extended service and repair warranty on their goods. Other examples can be seen in Table 2.

Performance indicators can allow the contracting authority to measure the environmental performance of an operator. If the performance targets can be as specific as possible (for example, specifying specific water quality measures), this will help the contracting authority to be objective and fair in their assessment. For this reason, it can be helpful to have environmental authorities closely involved in the process of contract preparation in order to ensure that environmental objectives are adequately reflected in the contract.

TABLE 2: PERFORMANCE TARGETS FOR ENVIRONMENTAL MATTERS

| CONTRACTING AREA | SAMPLE PERFORMANCE METRICS |
|----------------------------------|---|
| Vehicles/ Fleets | Fuel efficiency; maintenance events; actual emissions |
| Waste collection | Recycling rates; missed collections; route optimization |
| Cleaning | Use of cleaning products and water; packaging waste |
| Building design and construction | Energy performance; use of renewable energy sources |

Source: adapted from Environmental Protection Agency (2014)

¹ For more information on SPP, see: www.iisd.org/procurement

PBSs Can Positively Change Ownership Patterns and Encourage Closed Loops

The use of PBSs in procurement can be a tool that supports the concept of the “circular economy”—a vision for the economy in which resources are kept in use for as long as possible, then recovered and regenerated at the end of each service life.²

In order for the circular economy to gain momentum, buyers need to make certain commitments, such as extracting the maximum value from a product during its use life and returning it to the producer (or a third party) at the end of its functional life so that it may be recovered and reused. In public procurement, these commitments can be expressed through performance-based specifications on, for example, intensity of use during operation and end-of-life treatment. This may also require that the ownership of products and materials remains with the supplier/seller, provided on a leasing basis, and that they remain responsible for the maintenance and disposal of the products involved at the end-of-use life.

Environmental benefits can derive from this arrangement because when producers are responsible for the upkeep and end-of-life treatment of their products, they have a stronger incentive to make them more efficient, longer lasting and easier to reuse and recycle.

From the supplier side, there is a need to realize and operationalize resource-efficient business models, such as those outlined in Box 2 below, in order to make sure products are used optimally and are able to be returned and “upcycled.” Such business models also require public support, such as the infrastructure for pooling, sorting and transporting waste.

BOX 2: RESOURCE-EFFICIENT/CIRCULAR BUSINESS MODELS³

ASSET MANAGEMENT: *a structured approach to decisions on redeployment, refurbishment and repair, aiming to minimize new purchases where commercially sensible*

BUY-BACK FOR RESALE: *introducing opportunities for consumers to trade their old used electronics and/or clothes, enabling resale into other consumer markets*

HIRE OR LEASING: *using someone else’s assets rather than purchasing your own*

EXTENDED PRODUCT LIFE: *systematic design guarantees and provision of trusted repair services*

PROVIDING PRODUCTS AS SERVICES: *providing a service based upon delivering the performance outputs of a product*

Source: Rebus (n.d.)

See case study #3 in Section III, for an analysis of the challenges with the circular business model as part of the Dutch Circular Economy pilot program.

² For more information about a circular economy, see: <http://www.wrap.org.uk/>

³ For more information on resource-efficient business models, see <http://www.rebus.eu.com/>

Limitations

PBSs Do Not Necessarily Ensure Any Degree of Environmentally or Socially Beneficial Performance

Unless performance is directly correlated to environmental performance (for example, specifying reduced packaging, increased resource-use efficiency or decreased pollutant concentrations), there is no necessary net environmental gain from the use of PBSs in public tenders. If one can imagine the same example of a heating unit: a performance requirement could be for the heater to be able to attain an ambient 26°Celsius throughout the building in under 5 minutes. This type of performance requirement might discourage the use of more eco-friendly geothermal methods, for instance, which might take longer to heat a given space than an oil furnace. Similarly, a performance requirement on the speedy of delivery of goods could discourage the bundling of products, which could otherwise reduce transport emissions and packaging waste.

Even when PBSs are used to request a certain environmental performance level during the operational or use-phase of the contract, there is rarely a requirement around environmental performance during the *production* phases. Indeed there are many products whose production is more resource-intensive than their use as a finished product—computers, for example.

There are tools to mitigate this issue, however they require quite sophisticated evaluation tools based on a life-cycle analysis. It is possible for a procuring authority to evaluate and award tenders based on supplier “performance” in a life-cycle analysis, accounting for situations in which life-cycle impacts occur mostly during production phases. This is done in the Netherlands, for instance, with the CO₂ performance ladder.⁴ With this tool, a bidder can show the measures they will undertake to limit CO₂ emissions within the company, in their projects and all along the supply chain—the higher their ambition level to reduce emissions (improve performance), the greater the deduction of their submission price. What is also interesting about the CO₂ performance ladder is that it is not prescriptive; for example, it requires no particular low-emission production methods, but rather, it creates greater scope for creativity and the renewal of company processes and products.⁵

However, it must be noted that from a strictly environmental perspective, in some cases technical specifications may deliver just as good, or better, environmental results than PBSs—particularly when the procuring authority has not yet developed tools and capacities to evaluate and award tenders based on life-cycle analysis or environmental performance. Understanding the opportunities, and the available evaluation, monitoring, and verification methods, may lead to technical specifications being the optimal environmental choice over performance-driven or functional descriptions, or indeed by a combination of approaches.

PBS Represents Only One Small Piece of the Innovation Puzzle

Approaches to the public procurement of innovation (PPI) have been evolving in the European Union and other industrialized countries. In particular the 2014 EU Procurement Directives have provided greater clarity and space for procurement practices that foster innovation. In PCP, governments purchase research and development services or solutions for products and technologies that are not yet commercially available. With FCP, governments purchase newly developed products, services and solutions, where prototypes have been tested, but have not yet been commercialized. Other practices such as market consultations and competitive dialogues (described in the section above) have received attention in the new directives, ultimately providing a range of strategies to public entities wishing to realize the benefits of innovation through their procurement.

⁴ <http://www.skao.nl/index.php?ID=45>

⁵ For more information on the CO₂ performance ladder visit <http://skao.nl/index.php?ID=45>

Whereas these represent new *processes* or *procedures* available to procurers, PBSs represent a *tool* that can be used across all or any of them. But a question remains as to the relative impact of PBSs in delivering eco-innovation in light of these many available PPI approaches.

Beyond this discussion is a larger, enduring question of whether the public or private sector drives innovation. Throughout research for this report, some stakeholders have insisted the private sector drives innovation and that the role of public procurement is in the scaling-up and rolling-out of new technology. On the other hand, it has been argued recently by Mazzucato (2014) that the role of the public sector in driving innovation is hugely downplayed. She argues that the public sector is in fact risk-taking and entrepreneurial, and that public money has ultimately driven many recent innovations—including the iPhone and clean technologies.

While the public-private debate will not be elaborated upon here, the point is that PBSs represent one tool among many in the complex and growing innovation “ecosystems” popping up around the world, so their merits should not be over exaggerated.

PBSs Shift the Public Sector’s Work to the Evaluation Stage

On the one hand, writing a performance-based specification to be included in a tender can be much easier for the procuring authority than preparing a detailed technical specification. Indeed, the very goal of using less prescriptive, output-based specifications is to leave the technical expertise up to the technical experts. However, this does not mean that the use of PBSs can result in lower transaction costs for the procuring authority overall. In fact, the use of PBSs might just shift the work of the public sector away from the specifications/bid-writing stage into the evaluation and monitoring stage. The challenge of monitoring performance-based contracts is developed below.

PBSs Can Stifle Competition Where It Matters

A major disadvantage in shifting the work of public procurers to the evaluation, monitoring and contract management stage (as opposed to during the writing of the tender) is that it is too late for competition at this point—the supplier has already been awarded the contract. Any changes that occur that diverge from agreed performance levels will likely incur additional costs for the public sector. In this way, it can foreseeably become more difficult to accommodate the fundamentals of public procurement such as accountably and fair competition. The final case study in Section III, the Libra project, is an example of public procurement gone wrong and emphasizes the importance of maintaining accountability and fair competition.

PBSs Require Intensive Monitoring and Evaluation

In the use of PBSs, there is a strong requirement for adequate monitoring and enforcement, as the supplier has committed to an agreed level of performance on paper (generally supported by proof of past performance or other guarantees) that subsequently must be realized during the lifetime of the contract. Furthermore, specifications based on outputs or functionality descriptions are more prone to relative and subjective judgements and therefore may be harder to police and resolve conflicts (Knight et al., 2007).

First, it is imperative that performance specifications clearly specify the outcomes and requirements needed from the earliest stages of the procurement cycle. To be effective, PBSs must be explicitly stated in tender documents with assigned weighting and priorities and then translated into clear and agreed performance improvement targets.

Second, ensuring that performance targets are met during the life of the contract requires an appropriate monitoring system. Periodic reviews should be established by the contracting authority to assess performance against the benchmarks and targets. In most cases, it will be helpful to engage a third party organization to conduct performance assessments, either on a regularized or spontaneous basis. While in some sectors international protocols exist to

measure performance,⁶ in others it will be the responsibility of the procuring authority to clearly establish the metrics against which performance will be monitored.

WHO is Using PBSs Successfully?

In some sectors the use of performance-based specifications in public procurement contracts is long standing and common. In infrastructure construction, in particular, it is quite natural to think in terms of functions, not products—for example, to identify the need for a bridge connecting two sides of a city (functional) rather than to think in terms of the concrete and steel required to meet that need (technical). Design-Build, Design-Build-Operate, Systems Engineering—and more generally, PPPS—all imply longer contract periods and are often based on performance requirements.

The following is a preliminary assessment of sectors in which PBSs have so far been used:

Successful



Unsuccessful



Emerging



ROADS



PBS in public procurement tends to be successful in the procurement of roads. In a Design-Build-Finance-Maintain contract for a road, for instance, the procuring authority is buying an integrated *performance* rather than discreet products or pieces of infrastructure.

Instead ofBuying....Product = highway 2 x 5 lanes

....Buying....Performance = obstacle-free highway with flow speed that averages 100 km/hour

Rijkswaterstaat in the Netherlands successfully uses this model in road procurement, for instance. Performance is defined as availability (lanes that are obstacle free) and mobility (flow speed that averages 100 km/hour). The contractors' payment is based on their performance levels across these two areas, as per the specific targets outlined in their contract. The arrangement works well in the road sector in other countries too. The drive for efficiency in these long-term contracts, in which payment is based at least in part on performance, is internalized by the contractor.

INFORMATION TECHNOLOGY:



As is demonstrated in case study #6 in this report, the IT sector faces particular challenges in using PBSs. In this sector, it is very difficult to specify performance levels, in part because technology is advancing so rapidly, procurers have limited capacity to keep up with it and web-based technologies operate as a series of standards and not via the performance of any particular centralized hardware.

In the IT sector, PBSs commonly lead to the automation of existing systems/processes (for example, client registration systems), instead of considering opportunities to redesign and restructure entire systems to be made more efficient.

⁶ A good example is the International Performance Measurement and Verification Protocol, which is used to monitor Energy Service Companies' performances.

LIGHTING



There have been some successful examples of performance-based, output-oriented contracts in the lighting sector. The performance of light can be specified using a combination of luminaire efficiency (amount of light per watt of electricity used) and lumen depreciation (rate at which the light diminishes over their operating life), and the use of such PBSs can be major supports for scaling up efficient technologies such as light-emitting diode (LED).

Instead of ...Buying...Product = 100 x 1 metre light bars for office building

...Buying...Performance = light

Although an example of private, not public, procurement, it is worth mentioning here a ground-breaking agreement between Philips Lighting and Rau Architects in which a new payment-per-lumen model was developed, using lumen depreciation as a performance specification (“Pay-per-lux”).* In this case the client simply wanted to buy light for his work spaces—instead of lamps, cables and controls. The procurement process was an open-book, co-development process, with a shared vision and shared acknowledgement of doing something new. Other features of the agreement included: the inclusion of maintenance in the Pay-per-lux model; the modularity of the lighting installations to facilitate ease of repairs and disassembly and the fact that Philips ultimately retained ownership of the assets (lighting installations in this case).

Many cities around the world are currently exploring lighting as a service contract, including Buenos Aires, Shanghai, Singapore, London and the Benelux region. An array of PBSs would be used in large city-wide lighting contracts—such as to specify luminaire efficiency and appreciation, repair and replacement services—to facilitate technology updates and others.

An important consideration for procurers interested in energy-efficient lighting is payback time; in the case of LEDs, it can take 7 years or more to realize the economic benefits of investing in the technology. Furthermore, if energy is included in contracts, then it is likely provided too cheap and there will be no significant incentive to save energy. If energy is a variable, however, then the case for the procuring authority to look at LED gets stronger.

* For more information on Pay-per-lux, see: <http://www.lighting.philips.com/main/projects/rau.wpd>

HEALTHCARE



There are interesting uses of PBSs taking place in the health sector, as can be found in case studies #1 and #2 of this report. Moreover, this is an important sector to watch, as many emerging countries experiencing rapid population growth will need to spend more and more share of GDP on healthcare in the coming decades.

In terms of hospital equipment, there is an increasing interest in leasing over buying. Many of the machines used could cost €40,000-50,000 each to buy, and often hospitals can save money engaging in a pay-per-use model or monthly leasing contract. Magnetic resonance imaging (MRI) scanners, for instance, have been leased as a service contract for some time, but now the trend is moving to other products and equipment. In such situations, a PBS is a useful tool for procurers to articulate their needs (for example, a certain number of tests per month) and to ensure the high-quality performance of the equipment (for example, resolution, speed, quality, etc).

More ambitious than equipment, there is also a movement in the sector to award contracts to contractors offering improved “clinical” outcomes for patients. This can be seen in case study #1 in Section III. While the authors were not able to obtain precise examples of what such PBSs might consist of, it is possible that patient return rate for the same ailment could be an option. The monitoring and verification of such an approach would be, at best, daunting and, at worst, impossible, as accounting for exogenous environmental variables connected to patient health would pose a myriad of concerns. Nonetheless, there is a movement, as shown in the two case studies mentioned above, towards defining performance metrics for “healthy patients” or “complete healthcare solutions” to be met by private contractors. As such it remains to be seen if such PBSs in patient care will take off, or if they will remain an impressive marketing strategy.

Other Barriers to the Effective Use of PBSs in Public Procurement

Budgetary Mismatch for Leasing or Pay-Per-Use Models

Public procurement agencies have a fixed budget for each fiscal period. In cases where PBSs might lead to a leasing or pay-per-use model, as opposed to straight procurement, there are few countries that have provisions to carry over any unspent budget to the next fiscal period. Leasing, pay per use, and payment for performance deals will be structured in a way that requires small monthly payments over a much longer time period than provided in the fiscal framework. Generally, public procurers will have an incentive to spend the entire allocated budget for public goods and services per year.

Risk Aversion and Fear of Personal Liability for Mistakes

While plenty of procurers might have the knowledge and resources to use PBSs in their procurement procedures (though often they will not), there is also the persistent challenge of risk aversion and fear of failure or individual blame should a public tender fail to attract viable responses from the market that deliver value for money. Where procurers are held personally liable for their actions, and there is a conservative culture surrounding the procurement function, policy-makers and procurers are less likely to take risks and try new innovative procurement methods, such as experimenting with PBSs.

Lack of Baseline Data

Data and metrics for defining and monitoring performance are key to the success of PBSs in delivering resource and energy efficiency. When a procuring authority integrates a PBS into a tender, it is important that they have established baselines on current performance levels and make projections on future performance based on empirical research (perhaps learned through a market consultation process). The tender evaluation and award stage is similarly dependent on the provision of reliable performance data, particularly for calculating a life-cycle analysis and comparing bids. Finally, accurate baselines also enable the “business case” for more performance-based contracting, because it is on these estimates that the future costs and savings can be calculated and the bankability of a project can be estimated.

Broader Policy Recommendations to Support the Effective Use of PBSs

The jury is still out. While the use of PBSs in public procurement can deliver innovation, as well as environmental and social benefits, there is no guarantee. Moreover, the use of PBSs can also be complex and demanding for procuring authorities, requiring new techniques for comparing and evaluating bids, and also requiring rigorous monitoring and evaluation once the contract is in place. So while PBSs do not themselves provide a “silver bullet” for implementing SPP, there are things governments can do to at least encourage an enabling environment for the optimal use of PBSs.

Develop Tender Evaluation Tools and Methodologies

As has been shown throughout this report so far, in order for performance to be measured, compared and contrasted in a bid evaluation and award, there is a need for tools, weighting methodologies and questionnaires that will help public procurers make objective and fair assessments of the bids. Section II of this report presents some possible approaches. Importantly, human resource development on the vision for and use of such tools is equally important.

Create Incentives for Performance

Ideally, clear incentives and disincentives on contract performance outputs can be put in place by the procuring entity to reward superior performance and penalize underperformance. Some examples of such bonus and penalty systems are provided in Table 3.

TABLE 3: INCENTIVES AND DISINCENTIVES TO ENCOURAGE PERFORMANCE

| EXAMPLES OF INCENTIVES USED FOR PERFORMANCE-BASED CONTRACTS | EXAMPLES OF DISINCENTIVES USED IN PERFORMANCE-BASED CONTRACTS |
|--|--|
| <ul style="list-style-type: none"> • Incorporate gain-share clauses into the contract through which savings on initial cost estimates are shared between the procurer and supplier/ contractor • Guarantee suppliers that they will be featured publicly for their efforts to meet high performance standards and also entered for awards • In operational/service contracts, allow a clause for “technology refresh” whereby the company is allowed to upgrade the technology used during the life of the contract when new solutions emerge that could save either party financial or materials resources. • Establish an “innovation pot,” which allows savings to be shared between owner and operator | <ul style="list-style-type: none"> • Introduce financial penalties for non-performance— for example, when performance does not comply with the levels specified in the contract, the procuring authority would reduce, at a predetermined rate, the payments made to the contractor. • Use liquidated damage clauses: a predetermined estimate of loss by the buyer and payable by the supplier in the event of failure to meet the agreements |

Consider Pricing for Conservation

The business case for the use of PBSs is strongly correlated to pricing structures that encourage energy, water and resource use efficiency. If a government has transparent and progressive tariff policies governing energy use and water use, for example, public procurers will be encouraged to obtain energy- and water-use efficiency through their public tenders. On the other hand, if a government heavily subsidizes energy and water, making the cost of energy so low that it erases the business case for the use of energy performance contracts, PBSs have less potential to drive eco-efficiency and innovation.

Investigate Multi-Annual Budget Frameworks

The procurement of sustainable goods, services and infrastructure generally implies long-term investments, where lower operating costs (OPEX) are achieved by investing in higher upfront capital costs (CAPEX). While sustainable goods, services and infrastructure deliver higher value for money over the whole asset life cycle, this tends to be delivered in a longer period than the time horizon of annual public budgets, as mentioned above. This mismatch hinders the public procurement of more sustainable goods and services, and the use of PBSs to deliver them, and remains a persistent need in almost all countries.

In the Netherlands, budgetary policy is such that expenditure ceilings are set on a 4-year basis, instead of annually, and are in line with electoral cycles. This arrangement has proven very important for infrastructure planning, because longer time horizons give procurers some space to think holistically and creatively about their needs, with the flexibility to spend their budgets across a 4-year time span.

Uphold Intellectual Property Rights

The optimal use of PBSs benefits from dialogues such as market consultations or market soundings to inform buyers on the extent of innovation happening in any given sector or product category. Where the private sector is not certain

about their intellectual property rights, they will be particularly reluctant to disclose advances in public venues. This is detrimental to the conversations that can lead to the effective use of PBSs. More broadly, when governments set good intellectual property laws, this sets in motion the “innovation ecosystem,” and the extent to which innovation can thrive within a given jurisdiction.

Make Space for Small and Medium-Sized Enterprises

When designing an “innovation ecosystem,” it is important for governments to envision the future role of small and medium-sized enterprises (SMEs) in the economy. If innovation is to favour larger, more long-term service agreements, with the help of PBSs, then there is a risk that SMEs will not have the capacity and scope to respond to public tenders. One way of addressing this issue is to cut large, complex tenders into “lots” so that SMEs have a chance of responding to the part of the contract in which they have expertise and experience. Another strategy is to support SME growth in the so-called “knowledge economy,” so that their services as consultants in a particular domain (architects, economists, designers, geologists etc.) is recognized, and this expertise (whether it be regional, technical or both) can be subcontracted by contractors who have secured large public projects.

Provide Regulatory and Logistical Support for the Circular Economy

On the regulatory front, governments have a role to play in supporting business models that seek to retrieve assets after their use-life with a particular owner/renter, and then repair/refurbish/recycle the asset and sell it to the market again. Examples were provided in Box 2 above. This could take the form of tax breaks, particularly on labour, which is required to retrieve, disassemble and reproduce products in the circular economy. At present, the end-of-life value of a depreciated public asset is close to zero, and the cost of the labour force required to “close loops” is relatively much more expensive. Depreciation schemes that support these ambitious business models need to be considered.

In addition, if governments were to provide public logistics infrastructure, such as depots and warehouses where assets could be dismantled, sorted and reassembled/recycled, this would save costs for the private sector and provide them with higher margins. This type of thinking will build the business case for a circular economy.

Section I Summary

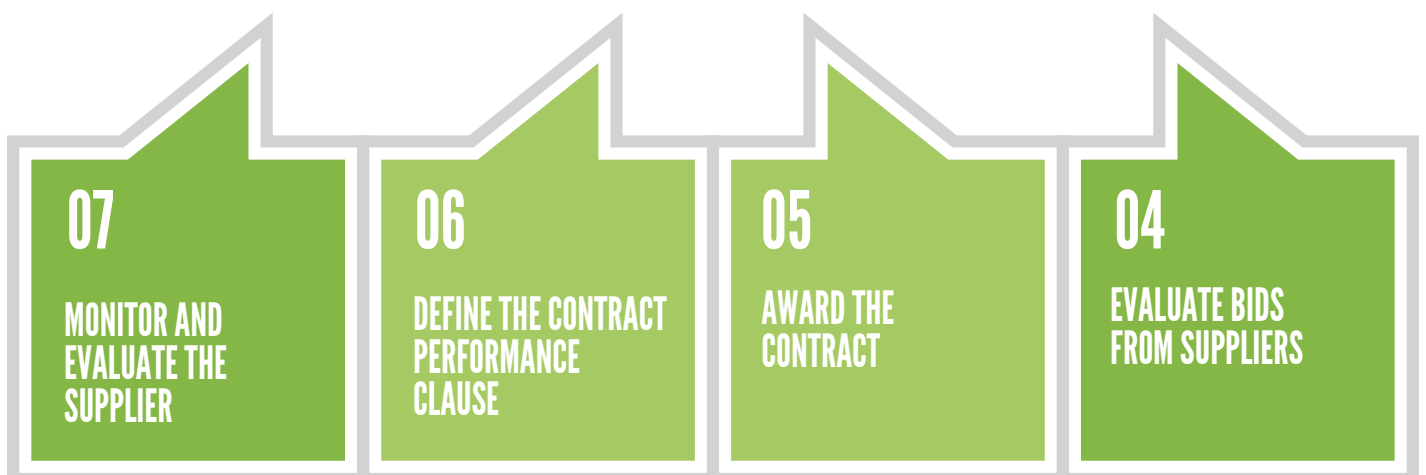
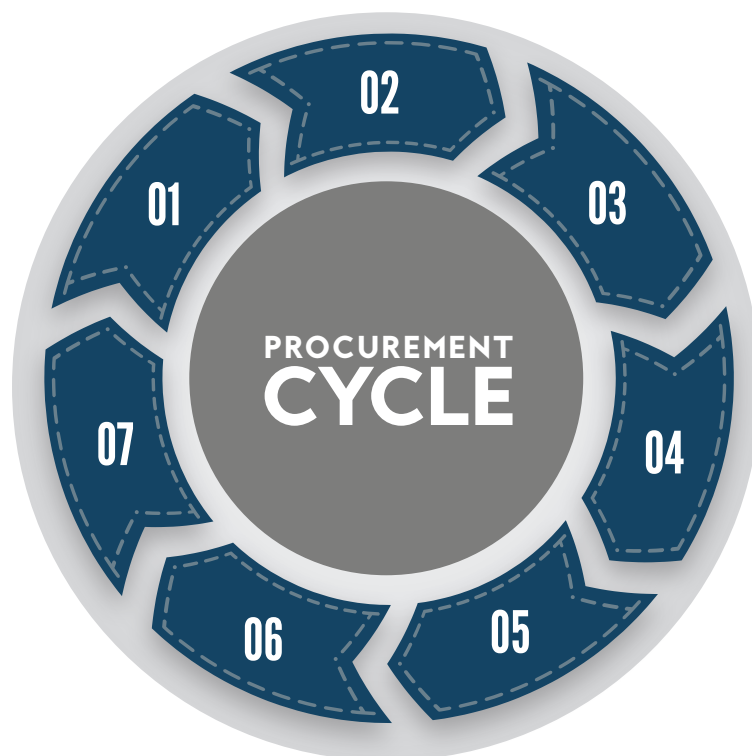
This section has presented a balanced assessment of PBSs as a public procurement tool for providing suppliers with the flexibility to propose solutions and to innovate. In order to support SPP efforts, PBSs can be useful in avoiding overly prescriptive technical specifications that stifle innovation and lead to the procurement of inefficient and outdated technologies and processes. Whether a tender specification is defined in terms of improved performance or in terms of the technical requirements must depend on the specific product and situation. However, giving too strict a guideline about the actual design may result in omitting viable solutions.

However, PBSs are not a panacea, as has also been shown in this section, and their use must be targeted to deliver environmental and social benefits—that will not happen on its own. Several policy considerations have been put forward to encourage the optimal use of PBSs through the lens of sustainable development.

As will be seen in Section II, there are several possible entry points for using PBSs in public procurement, depending on needs, risk-aversion and levels of ambition. Often a good place to get started using new procurement practices is in the award criteria, where suppliers can be given additional points for verifiable claims on performance projections, while being fairly weighted against cost and other factors.

SECTION II:

INCLUDING PBSs IN THE PUBLIC PROCUREMENT CYCLE



01

IDENTIFY NEED AND ASSESS RISKS

Openings for the use of PBSs: Define what the needs are in terms of required performance; analyze the types of contracts available that might be suitable

- Straight public procurement contract
- Leasing contract

02

DEVELOP SELECTION CRITERIA FOR CANDIDATES

Openings for the use of PBSs: The pre-qualification of suppliers provides an opportunity to evaluate the technical capacity of bidders, including the considerations of past performance.

- How have bidders committed to energy reductions in past projects?
- How have the bidders made reductions in their packaging?

03

DEFINE TECHNICAL SPECIFICATIONS AND INVITE BIDS

Openings for the use of PBSs:

- Leave the specifications “open”: output-based specifications

04

EVALUATE BIDS FROM SUPPLIERS

Openings for the use of PBSs:

- Conduct due diligence of the feasibility of each bid
- Develop a functional questionnaire to evaluate bidders on the same basis

05

AWARD THE CONTRACT

Openings for the use of PBSs:

- Establish the most suitable weighting approach and evaluation methodology

06

DEFINE THE CONTRACT PERFORMANCE CLAUSE

Openings for the use of PBSs:

- Set up special conditions related to the management and/or performance of the contract (if performance indicators were not defined before, they could be included in this step)

07

MONITOR AND EVALUATE THE SUPPLIER

Openings for the use of PBSs:

- Set up incentives to encourage superior performance
- Set up disciplinary measures for supplier under performance

Further Explanation of PBS in the Public Procurement Cycle

1) Identify need and assess risks

Explanation:

It is fundamental to focus on understanding the real need or problem instead of defining what the solution looks like. For instance, a Swiss government agency needs its staff to be transported around the city of Basel during office hours for various reasons (meetings, monitoring, etc.). Whereas, traditionally, a technical specification might be written up for a new fleet of 40 new vehicles for staff to use during the day, the city should instead reflect on what they really need, i.e. "Mobility for staff from 9:00am to 5:00pm inside the city limits."

In this situation, a solution provider might propose an electric-car-sharing system with recharge stations located at convenient locations throughout the city for staff use. In the end, this is a mobility solution instead of the traditional procurement of 40 vehicles.

2) Develop the selection criteria for candidates

Explanation:

Imagine that a city seeks to improve the quality of water delivery from the local utilities, perhaps following a minor water-quality incident in a downtown neighbourhood. The procurement team have decided that a performance contract will be most suitable, which will clearly define time-bound quality targets against which the performance of the operator will be measured. It would be reasonable to assume in this example that in the pre-selection/pre-qualification of bidders, there would be a requirement for bidders to demonstrate previous experience in meeting water quality targets over a given time frame. This is also an opportunity to look at the overall environmental performance of the organization. Bidders can demonstrate their accomplishments through certification or other verified documentation.

3) Define the technical specifications and invite bids

Explanation:

As already established in Step 1, identifying the real need or problem is fundamental to the successful development of PBSs. For example, a government office building identifies an overheating problem and needs indoor air conditioning. Instead of using a traditional straight public procurement technical specification for specific air condition equipment (e.g., fan speed, air flow direction, type of air filter, etc.), an open, output-based performance specification could be written in the following way:

"Maintain ambient inside temperature between 18–22°C during winter and 25–27°C during summer."

The bidder will then choose any method they see fit for achieving these requirements without having to follow very specific technicalities. This process can foster innovation, resource efficiency and cost efficiency.

4) Evaluate bids from suppliers

Explanation:

Since the PBS has been written in an “open” way, every bidder might have a different approach to deliver a solution—this can make the fair and objective evaluation of bids tricky. In the evaluation stage, it is important that the procuring authority conduct a thorough due diligence analysis that will reflect the feasibility of the new ideas or technologies to be implemented in the market.

Furthermore, if all bidders take a different approach in identifying solutions, evaluating the different bids with a life-cost analysis will be challenging since no real comparison can be achieved. To overcome this problem, the development of a sustainable functional questionnaire, like the one developed by the Ministry of Infrastructure and Environment in the Netherlands, could be of great use for public procurers.⁷ A questionnaire related to the sustainability award criteria with a request for explanation and evidence allows the supplier to remain concise and clear, but also provides some freedom to come up with different solutions. A sustainable functional questionnaire is customized and may therefore vary in terms of questions about how the offer can contribute to reducing environmental impact.

5) Award the contract

Explanation:

Since every bidder will present a different solution for the tender, it is important to establish the criteria and weighting that will help to make the final decision fair and the process transparent.

For example, when announcing tenders, the federal Japanese procurement agency has successfully required bidders to prepare an Environmental Value Assurance Specifications Report that details environmental considerations regarding the assurance of environmental value. It then weights each criterion: 60 points for a company's carbon dioxide emission coefficient, 20 points for the purchase of green electricity certificates and 20 points for several other environmental qualifications. The maximum score is 100. This Environmental Value Assurance Specifications Report helps the public procurers decide between the bidders that have already shown the best life-cycle analysis.

Denmark has gone one step further and requires that technical specifications be linked to their award criteria with their DUBOCALC software. Life-cycle costs are rated out of 55 possible points, energy efficiency is rated out of 25 and light quality is rated out of 20. The contract is awarded to the “most economically advantageous tender” that also considers environmental criteria.

6) Define contract performance clause

Explanation:

The contract performance clauses are not award criteria, but are special conditions relating to the management and/or performance of a contract. Contract performance clauses may include environmental considerations that must be indicated in the contract notice or procurement documents and must be linked to the subject matter of the contract.

For example, a contract performance clause can also include the contracting authority and contractor agreeing targets, known as a Key Performance Indicators (KPIs). An example of a KPI could be to reduce energy use by 10 per cent within two years.

⁷ See the Netherlands' questionnaire here: http://ec.europa.eu/environment/gpp/pdf/GPP_Good_Practices_Brochure.pdf

7) Monitor and Evaluate the Supplier

Explanation:

When the contract is awarded, it is important to have an established monitoring process that will ensure the targets and agreed level of performance is achieved. It is fundamental to establish clear disciplinary measures that will assure that bidders do not overstate their ability within their bids just to win the tender and then underperform.

For example, Denmark's award criteria process is scored in the following way: life-cycle costs are scored out of 55 possible points, energy efficiency out of 25 and light quality out of 20. For the successful bidder, these commitments become binding in the contract.

When the contract is awarded, the offered level of carbon dioxide emissions and energy efficiency must be achieved in the execution of the contract. If the actual quality does not comply with the offer, a sanction that is one and a half times the calculated price of the quality value will be imposed. For instance, if the contractor was awarded a conceptual €5 million reduction on its quoted price for its proposed environmental efforts as part of the bid assessment, and it failed to achieve the stated reductions, the sanction would mean that the contracting authority would pay the contractor €7.5 million less than the submitted quote price.

On the other hand, to encourage the attainment of common objectives, environmental performance incentives can be integrated into implementation and reporting plans. One example of an incentive mechanism is the French exemplary state fund (fonds "État exemplaire"). The mechanism consists of a virtual fund of approximately €100 million created by setting aside, or "freezing" 1 per cent of each ministry's allocated annual procurement budget. Each ministerial department has to report on its achievements against the commonly set targets to recover the "frozen" budget. Each year, a regulation is published detailing each indicator, the compliance target, the calculation methodology for each indicator and the required documentation to prove compliance. In France, the incentives remain at the ministry levels but this could be translated to suppliers to increase the level of performance commitment.

SECTION III:

CASE STUDIES OF PBSs IN PUBLIC PROCUREMENT

Overview

The case studies presented here allow us to explore current practice on the use of PBSs in public procurement. The examination of six of case studies from a variety of sectors and countries demonstrates how a shift toward PBSs can drive the innovation and commercialization of more energy and resource-efficient goods and services. Through the identification of challenges faced in successfully drafting output-based specifications, and in the ongoing contract management, including dispute resolution, we provide recommendations for successful performance-based contracting in public procurement to achieve innovation, sustainability, value for money and appropriate risk transfer to the private sector.

The study is based on desk-based research and a number of semi-structured interviews with key stakeholders, in both the private and public sectors, involved in each of the projects.

CASE STUDY #1

The New Karolinska Solna University Hospital: Innovative Design and Clinical Output-Based Specifications

Key Messages

- Stockholm County Council held a design competition in the early phase of the procurement process to inspire innovative, visionary and modern design. The winning design, “Forum Karolinska,” provided highly qualitative specification as a foundation for the realization of a new university hospital in Stockholm, New Karolinska Solna (NKS).
- The procuring authority worked with doctors, nurses, academics and consultants to develop clinical output-based specifications for the design, construction, financing and operation of this hospital.
- Sustainability is an important ambition of NKS, with one of the six Project Objectives stating that: “The project shall on all levels apply a sustainability perspective.” These Project Objectives form an important part of the PBSs within the Invitation to Tender (ITT).

Background

The Stockholm County Council is responsible for the provision of healthcare (including emergency care, primary care and dental care) to its 1.9 million inhabitants across 26 municipalities.

NKS is a state-of-the-art hospital currently under construction in the Solna Municipality of Stockholm County. NKS is being built as part of Sweden’s wider plan for the development of a new cohesive care system that places greater focus on patients’ needs through faster provision of care, increased patient safety with single rooms for all inpatients, and highly specialized and advanced care. The overall ambition is that the NKS shall be absolutely world-class in all important aspects, including functionality, architectural form, life-cycle cost and sustainability (Stockholm County Council, 2008). This focus has lent itself to the use of PBSs because they enable procurers to focus on ambitious outputs rather than detailed inputs.

The completed hospital will use renewable energy sources and will be one of the first university hospital buildings in the world to receive the Green Building Council’s LEED Gold environmental certification (Skanska, 2014; Stockholm County Council, 2013b).

The Procurement Model

The development, construction, financing and service management of the hospital was procured as part of a PPP. Construction is due to be completed in 2018. It will be the first hospital designed and executed as a PPP in Scandinavia, and one of the largest hospital PPPs in the world, with room for around 630 single rooms for inpatients (Stockholm County Council, 2013a).

How PBSs Were Used in the Procurement Process

In the tender documents, Stockholm County Council formulated functional requirements on the basis of the six Project Objectives rather than on the basis of prescriptive solutions, with the intention that this would foster innovation in the bids and would allow the bidders to take advantage of synergies between design, production and operation (Stockholm County Council, n.d. b).

The ITT describes the procurement strategy and process as “time efficient and target-oriented... which with regards to the Facility’s design is focused on the overall picture rather than the design of individual details, insofar these do not have a vital impact on the fulfilment of the six Project Objectives.”⁸

Design Competition

In 2005, Stockholm County Council held an open design competition to inspire innovative, visionary and modern design to form the basis of the creation of the new hospital. The specification for the design competition was performance-based, requiring outputs such as the “integration between healthcare-research-education,” “attractive and human environments for patients and staff” and “environmental sustainability at all levels.”⁹

The use of PBSs allowed the architects to develop creative solutions. The winning design, “Forum Karolinska,” provided the foundation for the highly qualitative specification and acted as a benchmark against which the competing bids for the construction, management and financing of the hospital were compared (Stockholm County Council, n.d. a.). In this respect, “Forum Karolinska” itself was an important part of the PBSs used in the procurement process.

Clinical Output-Based Specification

The clinical output-based specification was developed by the Stockholm County Council with the support of leading physicians, nurses and academics from Karolinska University Hospital, the Karolinska Institutet and from external consultants PwC and EC Harris consultants.

Award Criteria

PBSs were a fundamental part of the award criteria for NKS, in that the award criteria were worded as qualitative statements, as shown in Table 4. Moreover, as part of the evaluation stage, each bid was assessed on the extent to which each these statements were fulfilled.

TABLE 4: AWARD CRITERIA FOR NKS

| PROJECT OBJECTIVE | USE OF PBS - STATEMENTS UPON WHICH BIDS WERE ASSESSED |
|--|--|
| Integration between healthcare, research and education | “The overall design of the Facility supports cooperation and interchange between healthcare, research and education, in consideration of the benefit of physical connections and a well-developed infrastructure.” |
| Attractive and human environments | “The Facility’s exterior environment is attractive and safe and stimulates creativity. The Facility, with respect to the vegetation, provides a wide range of easily accessible places for brief meetings/pauses.” |
| Sustainability perspective | “The Facility is designed in such a manner to ensure that provided and used energy is minimised and that chosen materials and systems minimise future management works.” |

Lessons on PBSs from the Case Study:

- Design competitions can be used to inspire innovation to form the basis of the specification.
- Infrastructure projects such as hospitals are increasingly being procured through PPPs, but due to their complex nature and high operational requirements, they require special attention in the development of robust performance specifications at the early procurement stage.
- Drafting PBSs for hospital PPP projects can be challenging due to the complexity and changing needs brought about by evolving health policy, technology and medical advancement.

⁸ Description quoted from the unofficial translation of the original ITT.

⁹ Description quoted from the unofficial translation of the original ITT.

CASE STUDY #2

Georgia Regents Medical Centre & Philips Healthcare: Procurement for Advanced Patient Care

Key Messages

- Philip's alliance with Georgia Regents Medical Center (GRMC) in the United States is part of Philips Healthcare's Circular Economy Program, through which it seeks to implement circular initiatives with a particular focus on performance-based business models.
- Philips and GRMC will work together throughout the 15-year contract term to cost-effectively design and deploy innovative patient care strategies; distinct work groups staffed by GRMC and Philips personnel will focus on technology, services, consulting and innovation.
- In addition to consulting services, the agreement includes access to a range of Philips' technologies, including imaging systems, patient monitoring and clinical informatics solutions, as well as lighting and consumer products, including the associated operational performance planning and maintenance services.
- Philips recognizes that system efficiency and circularity will be achieved by the provision of products with standardized parts and components to allow for greater modularity and more efficient repair, refurbishment and reuse.

Background

GRMC in the United States has recently (in 2013) teamed up with the private sector to enable a more patient-centred approach to healthcare through the use of a managed service business model using PBS. The alliance is a first-of-its-kind delivery model in the United States.

Through this alliance, GRMC seeks to address the current and future clinical, operational and equipment needs of the hospital's multiple sites, including its combined 632-bed medical centre, cancer centre, and children's hospital, which serve the medical needs of between 4 and 6 million people across Georgia and South Carolina (Philips, 2013).

Unlike the previous Swedish case study of the NKS University Hospital, this PPP encompasses a comprehensive range of consulting services; advanced and innovative medical technologies (across a range of Philips' technologies including imaging systems, patient monitoring and clinical informatics solutions, as well as lighting and consumer products); and the associated operational performance, planning and maintenance services of these technologies. This will affect all care areas and enhance medical research and clinical technology research and development initiatives. In addition, Philips will provide GRMC with rapid access to new equipment as well as educational resources.

The Procurement Model

This contract is worth USD\$300 million, with pre-determined monthly operational costs over a 15-year term. It is the largest agreement of this kind for Philips Healthcare and is part of the company's Circular Economy Program, in which it seeks to implement circular initiatives with a particular focus on performance-based business models.

The director of the Circular Economy Program for Philips Healthcare, Nestor Coronado Palma, describes the GRMC alliance as an innovative business model: "It's not just selling something and having a one-year guarantee, or a 10-year service contract. It's a comprehensive arrangement to fulfil the needs of these hospitals with the appropriate technologies and services across 15 years" (King, 2014). Through this work, Philips is attempting to redesign and

rebrand its products through a circular economy approach that focuses on customer access rather than ownership, and business models for services and solutions rather than one-off transactions.

The agreement does not preclude GRMC from obtaining technologies from other companies; Philips cannot provide every device or service needed, but it is expected that Philips will provide about 75 per cent of the medical technology at GRMC.

The ex-CEO of GRMC, David Hefner, estimated that this alliance will save an estimated USD\$10 million over the life of the agreement: “We have certain technologies, services, devices, monitoring and imaging that we are going to need over the next 15 years from somebody. We are going to trade off a form of exclusivity to reduce a lot of our costs. For our \$300 million, we figure we are getting more than \$400 million in value” (Mosquera, 2013).

How PBSs Were Used in the Procurement Process

In this synergistic relationship, both parties are responsible for finding new and unique ways to advance the quality of patient care. Distinct work groups staffed by GRMC and Philips personnel will focus on technology, services, consulting and innovation.

From Philips’ perspective, the procurement should be about selling modular design, circular design and system efficiency. System efficiency and circularity can be achieved by designing products with standardized parts and components to allow for greater modularity and more efficient repair, refurbishment and reuse. For Philips, the aim is to create system platforms between products or technologies, such as x-ray, CT, MR, nuclear medicine and ultrasound; for example, the tables on which patients lie could be standardized across several of the imaging technologies and even across brands. Modularity also allows Philips to configure, or reconfigure, equipment to fit customer requirements.

Lessons on PBSs from the Case Study

From GRMC’s Perspective

Hospitals often face challenges when trying to effectively plan for better patient care because huge amounts of time is spent negotiating through complex procurement, maintenance and service guidelines, with different departments having differing and often conflicting clinical and financial priorities. GRMC felt that the right healthcare delivery model, based on PBSs, would minimize these issues, allowing solutions to be developed holistically to make systems more cost and resource efficient.

From Philips’ Perspective

Nestor Coronado Palma at Philips describes the challenge for their industry in developing these sorts of business models and partnerships based on required customer outcomes; he explains that most hospitals are accustomed to thinking they must own the asset to save money in the long term. Instead, he suggests, hospitals need to shift to an approach where the best solution depends on the performance and outcome at a system level, as in the case of GRMC (King, 2014).

Finally, another big challenge with the use of PBSs in the healthcare sector centres on the complexity around legal conditions; for example, if a hospital stops paying the a private sector partner for the leasing of a device or service, it is very difficult to enforce payment: it would be difficult for the supplier to simply remove the machine because that would put peoples’ lives at risk. These sorts of subtleties need to be considered and built into dispute resolution clauses within the contracts.

CASE STUDY #3

ProRail: The Dutch Circular Economy Procurement Pilot

Key messages

- Circular leasing can be more expensive than traditional ownership procurement as contingency costs for risk management often are built into the contract.
- Preconceived and prescriptive design can limit opportunity for use of open and qualitative PBSs for circular procurement, and therefore it is important that the procurers and the designers work closely together from the outset.
- The greatest challenge lies in the readiness of the market in overcoming the numerous logistical challenges associated with new and unfamiliar business models.

Background

ProRail, a Dutch organization responsible for the maintenance and extensions of the national railway network infrastructure, has recently put out a PBS tender for furniture and carpet tiles as part of a circular economy pilot project. The focus in this example is not so much on the procurement through PBS, but rather, the procurement of products that supports the development of a circular economy. The ProRail pilot project is currently in the award phase with the three suppliers having submitted their bids (personal communication, T. Padding, Dutch Ministry of Economic Affairs, July 17, 2014).

This was a pilot study as part of the REBus project, which is led by WRAP and is funded by LIFE+, the European Union's financial instrument supporting environmental conservation and climate action projects throughout the European Union. REBus aims to demonstrate how businesses and their supply chains can implement innovative and resource-efficient business models. It focuses on four key markets: electrical and electronic products/IT, textiles, office interior design (including furniture, floor tiles and lighting) and construction products (Prummel, n.d). The Dutch government has also undertaken circular procurement pilots in IT, hardware and textiles, but the ProRail furniture and floor tile case study has been the most successful.

The Procurement Model

One of the goals of the project is to examine what differences exist between circular and traditional offers in terms of resource efficiency and costs. Therefore, the procuring authority asked tenderers to provide quotes for both furniture and floor tiles delivered through a circular business model, and also through the traditional ownership model to allow them to compare the total life cost of the two models. The tenderer was also free to suggest an appropriate payment model—for example, payment in a lump sum or annual or monthly instalments.

How PBSs Were Used in the Procurement Process

Market Consultation

As part of the open market consultation in 2013, ProRail invited a group of companies to demonstrate what they could do in terms of the circular procurement of furniture. At this stage, it was more of a superficial showcase of what these companies offered and there was no opportunity to interrogate them further. It was apparent that a

challenge with this sort of market consultation is that tenderers “hold their cards close” and are often unwilling to provide all the details on their offering in front of their competitors. Despite this, a market consultation is a good first step to understanding the level of innovation in the marketplace and to support the development of the PBS.

Dialogue Rounds

There were 3 dialogue rounds over a period of four months, which focused on the draft specifications and provided interesting insights into how the specifications were perceived by the private sector and what would be realistic. With every dialogue round, the specifications got more SMART (Specific, Measurable, Attainable, Realistic and Tangible).

The specification clearly explained the principles behind the circular economy and ProRail’s intentions with this pilot project: The circular economy is an economic system designed to maximize the re-use of products and raw materials. This is to avoid the destruction of value in the overall system to the fullest extent possible, both economically and ecologically. The transition to a circular economy is a system innovation, and the process is still in its infancy. Through this request, ProRail wishes to gain experience in purchasing products that are in keeping with the principles of the circular economy.

Award Criteria

The specification also laid out the criteria with regards to relevant circularity and costs aspects. The circularity aspect of the award criteria was divided into the sub-aspects of “sustainability” and “user value.” The tenderer was requested to provide a plan of action that covers the aspects that fall under these sub-aspects.

The sustainability award criteria focused on the following requirements, and for each, outlined a qualitative description upon which the bidders were assessed:

1. Possibilities for reuse of product
2. Possibilities for extending the life of the product
3. Possibilities for reuse (recycling) of materials or parts
4. Raw materials footprint
5. CO₂ footprint
6. Closing of the loop

Tenders were then assessed according to the total cost of ownership for the envisaged period of use, including all costs for using the product throughout the period, with the proviso that the required level of quality is maintained. This allowed the procurers to understand the differences between circular and traditional procurement in terms of resource efficiency and costs.

Lessons on PBS from the Case Study

Cost

The circular leasing options within the bids turned out to be more expensive than the ownership model. This can be problematic, because the furniture supplier usually only gets small monthly payments, but still has to provide furniture from month one, leading to potential cash-flow issues. Therefore the servicing model often requires third-party financing, creating additional risk, and as a result the supplier has to build in contingency costs for risk management.

Evaluation Criteria

All of the suppliers admitted that it was difficult for them to know what materials were used throughout their supply chains, and even if a supplier that did claim that no critical raw materials are used in its supply chain, there were no evaluation criteria for the procuring authority to investigate this further (personal communication, T. Padding, Dutch Ministry of Economic Affairs, July 17, 2014).

Circular Thinking Has To Be Embedded From the Start

There is a conflict between the reality of circular thinking and interior design, fashion and brand guidelines. In this case study, the procurers wanted the specification to be very open and descriptive, defining the output of a positive working environment. However, the interior designer had already drawn up the office plans, and therefore it was not possible to have such a flexible brief (personal communication, T. Padding, Dutch Ministry of Economic Affairs, July 17, 2014).

Infancy of Circular Business Solutions

Another issue in this case study was that ProRail wanted to know what would happen to the furniture beyond the contract, once it had been used and gone back to the supplier. The suppliers were able to give information about what they would do with it next—for example, they might sell the furniture to a school in a developing country—but they would not have any information beyond this point. This shows the infancy of “circular” business solutions and the difficulty of managing supply chains (Van Geet, 2014).

Market Readiness

The greatest challenge, however, was around market readiness; the circular economy concept is completely new to most companies, and there were therefore a lot of confusion and logistical challenges around this innovative business model. As a result, trust and an atmosphere of learning are very important when engaging in these sorts of innovative procurement projects (personal communication, T. Padding, Dutch Ministry of Economic Affairs, July 17, 2014).

CASE STUDY #4

FIREd-uP: Procurement for Innovation and Environmental Sustainability

Key Messages

- Procurement of innovative products and services is complex and high levels of flexibility need to be built into the process and contract design.
- To ensure that standards of environmental performance are maintained, the supplier needs to assume responsibility for upgrades, replacement and equipment/vehicle testing. It is important to appropriately allocate costs for this.
- Contracts should include environmental KPIs and incentives linked to defined levels of environmental performance or requiring continuous improvement.

Background

The London Fire Brigade (LFB) and the City and Fire Brigade of Ghent (Ghent) in Belgium are currently running a three-year project, FIREd-uP, which seeks to target innovation in the environmental performance and efficiency of their frontline fleet. As part of the project, the partners have developed performance-based specifications for the innovative technologies they are purchasing. This project is co-financed under the Competitiveness and Innovation Programme of the European Union and commenced in June 2012. Following extensive background research and market consultation activities, the partners published the ITT in the first half of 2014 and tenders are currently under evaluation (personal communication, A. Semple, September 10, 2014).

LFB is the largest firefighting organization in the world, providing services across Greater London to a population of 8.2 million. It attends approximately 140,000 emergencies every year including 14,000 serious fires, and has a fleet consisting of over 3,500 vehicles consuming approximately 1.5 million litres of diesel per year. Ghent Fire Department currently employs 533 staff, and is responsible for a fleet of about 75 vehicles and fire rescue units. The City of Ghent assists in the management of these vehicles as part of a larger fleet of 1000 vehicles (Van de Putte et al, 2012).

Diesel represents a relatively large contribution to the environmental footprint of fire truck fleets, particularly as they spend a lot of time idling in urban areas and vehicle engines are also used to support the pumping of water and foam to extinguish fires. Other environmental concerns include upstream and end-of-life emissions, air pollution through particulate matter, and use of energy, water and raw materials. LFB and Ghent recognize that more efficient use of these resources and a switch to more sustainable technology will reduce costs and life-cycle impacts while contributing to the resilience of their operations (London Fire Brigade & the City of Ghent, FM Services & Logistics, 2013).

The Procurement Model

The FIREd-uP project procurement models are mixed supply/service contracts and aim to encourage innovative and sustainable approaches to procurement (personal communication, A. Semple, September 10, 2014). This project seeks to drive investment in better quality and more efficient vehicles with low fuel and tax costs, by collecting comprehensive data about the use of vehicles and equipment. LFB is seeking to procure a telematics system that will

collect and analyze information about the way vehicles and auxiliary systems such as pumps and blue lights are used, as well as an equipment tagging system that will assist in the efficient management of the 200+ items of equipment carried on each vehicle.

LFB's procurement is divided into separate lots to ensure that smaller companies are not excluded from the possibility to tender. Lot 1 covers the supply of telematics hardware and software and Lot 2 covers the supply of a vehicle-based equipment tagging system (London Fire Brigade & the City of Ghent, FM Services & Logistics, 2014). The procurement takes the form of a competitive dialogue to set up a framework agreement that can then be used by fire and rescue services across Europe.

How PBSs Were Used in the Procurement Process

LFB and Ghent completed extensive background research and market consultation activities that supported the development of the ITT and provided an understanding of the capacity and innovation in the market (London Fire Brigade, n.d). PBSs were used in LFB's ITT through the detailed description of the functionality and outcomes needed, without prescribing how this functionality should be achieved.

An example of the use of PBS is included in Box 3 below.

BOX 3: FUNCTIONALITY

The System is expected to provide secure access to accurate and relevant data regarding the parameters outlined below. The methods by which this information is gathered, stored, transmitted and compiled into reports are matters to be addressed by bidders in their Tenders. The headings below represent the Authority's minimum requirements. Bidders are free to propose additional functionality for the System, and such proposals will be evaluated under the Award Criteria.

Lessons on PBS from the Case Study

One of the objectives of the FIRED-uP project was to share knowledge with other fire and emergency services, public sector procurers, suppliers and other stakeholders. As part of this, LFB and Ghent are providing advice on procurement for innovation and environmental sustainability based on their experience throughout the procurement process.

TABLE 5: KEY LESSONS ON PROCUREMENT FOR INNOVATION AND PROCUREMENT FOR ENVIRONMENTAL SUSTAINABILITY THROUGH USE OF PBSs

| PROCUREMENT FOR INNOVATION THROUGH PBSs | PROCUREMENT FOR ENVIRONMENTAL SUSTAINABILITY THROUGH PBSs |
|---|---|
| Legal advice should be taken on the financial and risk implications of contract terms, and authorities should avoid using standard terms if these do not fully reflect the potential issues arising within an innovative contract. | Where service providers are incentivized for going beyond the required level of service, there is higher potential for environmental benefits because the incentives are internalized for the supplier. |
| It is best to separate the research and development/ prototyping/ piloting/commercial deployment phases, either by using pre-commercial procurement (PCP) prior to procurement or by awarding a phased contract or framework that allows for piloting of new technology prior to full commitment. | Contracts should include environmental KPIs and incentives linked to defined levels of environmental performance or requiring continuous improvement. The practical ability to measure KPI performance should be considered prior to agreeing to them. |
| Framework agreements allow for more flexible purchasing and can also be used by multiple authorities, thus increasing the potential value and attractiveness of the contracting opportunity for suppliers. | To ensure that standards of environmental performance are maintained, clear responsibility needs to be allocated for upgrades, replacement and equipment/vehicle testing. It is important to appropriately allocate costs for this. |
| Contracts should include robust review, penalty/incentive and termination clauses, as well as priced options for additional requirements. For innovation procurement, it is important to consider how intellectual property rights will be dealt with. | If a service provider assumes responsibility for the maintenance and operating costs of vehicles/equipment, they may be incentivized to invest in better quality, more efficient vehicles with lower associated fuel and tax costs, and lower environmental impact. |
| Procurement of innovative products and services is complex and high levels of flexibility need to be built into the process and contract design. There is a risk that innovative solutions will not survive in a restrictive procurement process. | If the supplier is taking responsibility for the end of life of equipment, the contract must reflect how the procurer wishes equipment to be decommissioned, recycled or reused. |

CASE STUDY #5

Energy Performance Contracting: Finland's City of Vantaa Drives Emission Reduction Targets

Key Messages

- Energy Service Companies (ESCOs) provide guarantees of energy savings with no upfront cost to the procuring authority because the third party investment is paid off by accumulated financial savings. This is known as Energy Performance Contracting (EPC), and it allows energy performance improvement projects to be implemented without delay.
- It is important to define performance targets and the award criteria at the start of the procurement process—they take a significant amount of time and cannot be changed during the tendering process.
- Procuring authorities need further skills and training to be able to procure EPCs and to manage the contract ongoing.

Background

The Finnish City of Vantaa used a the ESCO model to invest EUR€1.5 million into energy-efficiency improvements in 14 municipal buildings across the city. The objective of the project was to achieve energy savings that would support the City of Vantaa's emission reduction targets and would be delivered in the most efficient and economically sound way possible. It is estimated that this investment will unlock energy savings of up to 30,000 megawatt hours (MWh) (20–30 per cent of current energy consumption) over the 8 year contract up to 2023. This level of energy savings equates to annual financial savings of over €200,000 (The Finnish Competence Center for Sustainable Public Procurement, 2014).

This model is widespread in the United States; however, the market in Europe is less developed despite efforts to promote the concept through legislative and financial mechanisms within the European Union (Marino, Bertoldi, Rezessy, & Boza-Kiss, 2010).

The Procurement Model

EPC is a tool for improving energy efficiency of buildings or processes through third-party investment (an ESCO). In order to secure the financing, the ESCO usually gives a guarantee of savings as a result of the investment, and the investment is paid off by the accumulated savings. Importantly for the City of Vantaa, this meant that energy-saving measures could be implemented, and energy savings realized, immediately.

The ESCO provider assumes the responsibility for the energy savings to be achieved and then the savings will be measured and verified (M&V), and if the guaranteed energy savings are not achieved, the ESCO provider will compensate its client. In this way, the ESCO provider carries the performance and financial risk. In the City of Vantaa's final tender notice, the required savings guarantee was 100 per cent.

An ESCO project usually consists of the following phases:

1. Preliminary phase - the project is defined and the preliminary energy savings calculations are made. The terms of the project are then agreed and the contracts signed.
2. Design phase - detailed calculations are made and the project plan for the implementation phase is developed.
3. Implementation phase - the installation and construction work is completed and the user training is delivered.
4. Follow-up and service phase - the energy savings are measured and verified (M&V) (Green Net Finland, 2008).

In this case study, the City of Vantaa started the process through discussions with different stakeholders on their experiences of ESCO procurement. It then conducted a feasibility study to assess the operability of using the ESCO model for improving the energy performance of the 14 buildings, taking into account the building quality. The initial ITT was then developed and there were four negotiation rounds with each tenderer to discuss the proposed targets, the procurement principles, the contract model, the final ITT and the award criteria (The Finnish Competence Center for Sustainable Public Procurement, 2014).

Four companies responded to the initial procurement notice and partook in the negotiation rounds, and Schneider Electric was the winning bidder.

How PBSs Were Used in this Case Study

To promote innovative solutions from the bidders, the tender notice provided detailed initial information about the energy audits for three buildings enclosed with the notice, on this basis the bidding companies were asked to suggest energy-saving measures and appropriate energy-saving calculation models.

Performance (i.e., energy savings) will be measured on an annual basis and any profits as a result of savings that exceed the targets will be shared between the ESCO provider and the City of Vantaa. M&V enables the energy savings delivered by the investment to be isolated and fairly evaluated. A number of protocols for good practice for M&V exist, such as the International Performance Measurement and Verification Protocol, which defines common terminology and the key steps in implementing a robust M&V process.

The comparison criteria were strongly focused on the energy-savings targets set for the project. As a result, the supplier has the freedom to select energy-saving measures but ensures that the level of savings required by the City of Vantaa would be achieved.

TABLE 6: THE FINAL AWARD CRITERIA FOR THE PROCUREMENT

| SAVINGS | WEIGHTING |
|---|-----------|
| Euros saved per MWh per annum | 20% |
| Savings per annum (MWh) | 20% |
| Savings per annum (tons of CO ₂ e) | 30% |
| Remaining savings in 2023 (MWh) | 30% |

Source: The Finnish Competence Center for Sustainable Public Procurement (2014)

Key Lessons on PBS from the Case Study

The Finnish Competence Center for Sustainable Public Procurement (2014) published a report entitled *ESCO Procurement by the City of Vantaa: Curiosity and Persistency*, which outlines the key lessons in the use of the ESCO model for public sector organizations seeking to drive energy efficiency. These lessons include:

- The City of Vantaa sought legal consultation to advise the optimal procurement process and to ensure compliance to public procurement law in Finland; this is highly recommended.
- Developing the performance targets, the award criteria took a significant amount of thought and time; these aspects are very important and cannot be changed during the tendering process so they must be developed with care.
- It is advisable to develop the final invitation to tender after the negotiation process is complete.
- If the tender notice is too prescriptive, this will prevent the suppliers from coming up with innovative solutions.
- It is important to maintain an open dialogue with the tenderers and to foster an atmosphere of trust; this will reduce any misunderstandings and lead to a better output. It is also worth publishing the questions and answers to the initial invitation to tender online so that they are the same for everyone.
- Procuring authorities need further skills and training to be able to procure EPOs and to manage the contract ongoing. This project was presented to the City of Vantaa's building board three times before it was approved, potentially highlighting a lack of understanding around the ESCO model in public authorities.

CASE STUDY #6

The Libra Project: Challenges for Use of PBSs in IT Procurement

The final case study is an example of procurement gone wrong and highlights many challenges with the use of PBSs in the procurement of IT services, particularly under Private Finance Initiative (PFI) procurement models.

Key Messages

- The use of PBSs in the IT sector represents specific challenges.
- Innovative and unfamiliar procurement models, such as PBSs, can result in a lower number of bidders, which risks competitiveness and can put value for money at risk.
- Often the public sector lacks the commercial and professional expertise to handle contracts of this size and technicality.

Background

In 1998, the UK’s Lord Chancellor’s Department (the Department) signed a PFI contract with a private sector company, ICL, for the provision of a national IT infrastructure including desktop computers, printers, networks, full online support, and for the development of a national standardized IT strategy for the Magistrates’ Courts to replace the inadequate IT systems that prevented the electronic sharing of information between other courts and enforcement agencies. This upgrade became known as The Libra Project.

ICL’s original bid in 1998 was worth £146 million and after a series of failures, by 2011, the estimated costs of Libra had reached £447 million and were expected to rise further. The project took 16 years to complete and the ultimate failure of the system led to a possible loss of up to £1.9 billion in uncollected fines and penalties by the HM Courts Service (HMCS) (Morse, 2011).

Libra Timeline

| | |
|---------------|--|
| November 1996 | The Department decided to procure a PFI and received 19 expressions of interest in response to a tender notice for the provision of a national standardized IT strategy and supporting infrastructure. |
| May 1998 | Only one bidder, ICL, submitted a bid for £146 million. |
| December 1998 | ICL increased its bid to £184 million. They were awarded the contract, reflecting a failure on the part of the Department to maintain competitive tension during the procurement process. |
| October 1999 | ICL sought a renegotiation of the contract on establishing that its cash flow forecasts showed a £39 million deficit over the 10.5 years. |
| May 2000 | The Department agreed to sign a revised contract for £319 million over 14.5 years. |
| June 2001 | ICL assessed that the project was not deliverable and that it could not continue with the contract unless it was substantially re-negotiated. |
| February 2002 | It was established that, on grounds of value for money and affordability, ICL could not continue with the entire contract. As a result the Department signed a revised contract with ICL for £232 million over 8.5 years to supply only the infrastructure element of Libra. |
| November 2003 | The Department then signed a separate PFI contract with another company for the core software application and with Accenture to provide systems integration. |

The Procurement Model

The Libra Project was one of the U.K. government's first experiences with the PFI procurement model, where the private sector finances, builds and operates infrastructure and provides long-term facilities management through long-term concession agreements. These agreements transfer substantial risks to the private sector in return for payments over the concession life-cycle, which is usually at least 25 years. Payment is only made if services are delivered according to the required level of performance agreed in the contract.

How PBSs Were Used in the Procurement Process

PFI contracts often use PBSs, in that the public sector stipulates its requirements in terms of outputs, which it typically pays for on the basis of performance and availability.

The initial Statement of Business Requirement for Libra, issued in 1997, was a high-level specification for infrastructure and bespoke software using PBSs. The functional requirements within the Statement of Business Required were developed by a user board representing the many organizations involved in Magistrates' Courts functions. However in 2001, ICL told the Department that this initial Statement of Business Requirement was insufficiently detailed and that the Department's requirements were unclear. While ICL had the benefit of hindsight in this criticism, this emphasizes that there is a risk associated with PBSs if the procurer has not clearly understood their needs or the problem to be addressed, or if it has miscommunicated it to the market in any way.

PBSs were also used in the development of incentives and disincentives; ICL would receive a bonus payment of £1 million if the service was commissioned at the first Magistrates' Courts Committee ahead of the initial target date and would incur performance deductions for failing to meet targets. By 2002 ICL had incurred performance deductions of £59,500.

As part of the revised contract for ICL to continue to provide and service the infrastructure element of Libra (signed in 2002), each Magistrates' Courts Committee evaluated the Libra service on a quarterly basis, allowing them to state the level of performance delivered against a series of pre-defined categories. For example, for the office automation service, availability and reliability of service were measured. Payment was related to this performance.

Lessons on PBS from the Case Study

This case study is fairly old and European procurement markets have changed significantly since. It is now commonplace that public procurers conduct a market consultation or technology refresh to inform the development of the specification. The structures in place to manage PFIs have dramatically improved and the public procurement of innovation has moved significantly since this time. However, here are some of the key lessons we can derive from this incredibly costly and failed program:

- There is a need for the public sector to engage with the market to develop a package of expertise using several different sources and to instil confidence in procurers that there is interest and capacity in the market. In this case study, the Department failed to formally carry out a full market survey to establish how many companies would be interested in the project and to assess whether its proposals for the project were likely to be attractive to potential bidders. As a result, only one company submitted a bid for the original tender, compromising competitiveness.

- Innovative and unfamiliar procurement models, such as PBSs, often result in a lower number of bidders, which can result in a failure to maintain competitive tension, and can put value for money at risk.
- Often the public sector lacks the commercial and professional expertise to handle contracts of this size and technicality, and therefore risks are not managed appropriately. The contracting authority therefore needs to develop in-house skill or hire experienced IT contract managers.
- It is difficult to specify performance levels in the procurement of IT, partly because technology advances so rapidly and procurers have limited capacity to keep up with it, and also because web-based technologies operate as a series of standards and not via the performance of any particular centralized hardware.
- It is inadvisable to design new business processes before developing their enabling IT applications (as the process design will depend heavily on the content of the IT application). Conversely, the nature of the new business process must be understood in detail in order to specify the IT application. Therefore, a parallel, integrated, design of process and application is required.

SECTION IV:

MAKING FULL USE OF FINANCIAL ACCOUNTING FRAMEWORKS TO MAKE PBSs HAPPEN

Overview

1

Current Challenges under IFRS Accounting Rules

- Lease Accounting and the Facility-Ownership Risk
- Cash-Flow Difficulties Stemming from SLD in the Early Years of a Project
- Leasing and Depreciation Accounting Practices: A Hurdle for Financing

2

Solutions: Revised Lease Accounting and Green Depreciation

- The Proposed IAS 17 and a Proposal to Revise Lease Accounting
- Green Depreciation: Recognizing Higher Expenses to Increase Profits

3

Addressing Other Issues Related to PBS Contracts

- The Budget-Maturity Mismatch
- The Lack of Performance Monitoring and Related Payments

This section will discuss some of the most acute accounting and financial challenges stakeholders face in the use of PBSs in procurement contracts. Although the reader may note that these issues appear not only in PBS-based contracting but also under other public procurement approaches, our aim is to make a case for encouraging the use of PBSs in current procurement contracts by formulating applicable solutions that will eventually improve the financial situation of the parties involved.

As a first step, the discussion will centre on the pitfalls of using standard accounting practices in the regular reporting activities carried out by both parties in a PBS contract. This may be an opportunity to explore the negative impact in reported profit caused by lower asset depreciation and financial expenses under the current International Financial Reporting Standards (IFRS).

This section will also cover two major financial challenges that have been proven to affect the timely delivery of the agreed-upon performance-related payments in PBS contracting. The first case is made up of the contractual duties (represented by incorrectly specified performance levels, inefficient measurement practices and inaccurate appraisal of performance-related payments, among others) that public entities' teams are not performing when they engage in procurement activities. The second issue, as discussed in previous sections, is linked to the existing budget maturity mismatch between public agencies and contractors, which makes payments for ongoing performance achievements in a long-term framework difficult to achieve.

It is important to highlight that although accounting and financial issues in the context of PBSs completely differ in their causes, they have the same intended consequence of worsening the financial condition of the affected side. Their tangible outcome is therefore a higher uncertainty in upcoming cash flows, which may threaten the successful development of procurement contracts and dissuade private contractors from engaging in PBS contracts.

Current Challenges under IFRS Accounting Rules

Financial accounting is the periodic activity of preparing and reporting financial statements with the objective of providing an overview of the company's financial condition that may support stakeholder decisions. As complex as it seems, it constitutes an important event in the life of any organization, since it serves as the baseline for almost all managerial decisions and future success. Well-shaped financial statements provide insightful information that in turn allows for better decisions and increased turnover. A healthy financial condition creates more corporate resilience, represented by easier access to financing, higher investor confidence and more diverse market opportunities.

In a broader framework, IFRS have governed financial statement reporting. On one side, IFRS define how a company must recognize its income, expenses, depreciation, fiscal burden, profits and so on. On the other, the delivery method used in procurement contracts is crucial for accounting recognition, and it will define which side (suppliers or public authorities) must recognize the project assets throughout the project life.

In most PBS-based procurement contracts, the chosen delivery method always gives the supplier the right to own the assets during the development and operation phases of the project. Consequently, it is the supplier who must apply all the relevant reporting practices in asset recognition during the project lifespan. Good financial performance will ultimately depend on both the appropriate use of current accounting regulatory frameworks and the ability of the reporting entity to recognize non-accrued incomes and expenses. Unfortunately, practitioners often identify current leasing and depreciation practices as hurdles to incentivizing contractors' engagement in PBS contracts, in particular when methods like straight-line depreciation (SLD) and current accounting leases are being used.

In order to provide a clearer view on how asset recognition may affect suppliers' financial conditions, it is worth discussing which methodologies are currently used to recognize asset depreciation and financial expenses under current IFRS practices.

Lease Accounting and the Facility Ownership Risk

Under current accounting standards, a lessee (asset user) can record a leasing depending on the type of leasing it is undertaking: an operating lease or a capital (financial) lease. In the first case, the lessee is not required to record any asset or liability directly related to the rental agreement¹ in the balance sheet, and reporting will only be associated with rental payment expenses when incurred. Conversely, under capital lease accounting, the lessee must recognize both the asset and liability resulting from the capital lease agreement in addition to the rental payment expenses in the income statement. The recognized amounts generally add up to the present value of all the lease payments to be incurred in the future and will never exceed the asset's fair market value.

The crucial point in leasing accounting is to identify whether a lease operation will be recorded as an operating or a capital lease. For the operation to be considered a capital lease, it should meet at least one of the criteria specified by the Financial Accounting Standards Board (FASB) for capital leases. Presenting and explaining these requirements is clearly beyond the scope of this document, but in most cases the leasing will be capitalized if at the end of the lease term the lessee has the right to own the asset, conditional upon payment of a recovery value (FASB, 1976). In the context of PBS-based procurement, a high percentage of lease operations will be treated as capital leases, and consequently, the leased assets will have to be included under the contractor's statements.

¹ However, the reporting entity is required to include a note describing the lease obligation under the designated notes to financial statements.

Lease accounting is closely related to what some scholars call the facility ownership risk. Under current procurement practices, this type of exposure has usually been borne by contractors and refers to all the possible losses that may be incurred as a consequence of inadequate practices in fixed asset management and other external risks that may influence property value. Furthermore, it is a common practice for public agencies to use leasing contracts to relinquish their ownership rights over assets during construction and operating phases of the project and eventually claiming back their ownership at contract expiration (National Research Council, 2012).

Cash Flow Difficulties Stemming from SLD in the Early Years of a Project

This type of asset depreciation is the simplest and most commonly used method in procurement projects. It is particularly used in project delivery systems such as capital leases, design and build, design build and operate, or any other structure resulting in asset ownership by the contractor. Under SLD, recognized depreciation expenses are calculated based on the asset purchase/acquisition net price of any salvage value and divided by the depreciated asset's economic life. The final outcome is a flat depreciation expense recognized in the income statement and a uniform impact on the reporting entity's fiscal burden throughout the project life.

SLD guarantees continuous and smooth depreciation expenses throughout the project's life, yet it does not necessarily represent a supportive method for contractors' use under PBS-based procurement. This is because SLD recognizes a flat amount of depreciation expense regardless of the phase of the project, and this may exacerbate the contractor's situation in cases where the cash flow requirements are high. In most procurement projects, the cost and payment structure leaves the contractor in a difficult liquidity situation during the first months of the project, and if the contractor already applies SLD in its accounting practices, it may not be reaping the fiscal benefits of higher expense recognition.

On this subject, a report developed by the University of Reading regarding performance-based contracting in the construction sector presents itself as a suitable example. The authors build their conclusions on a simulation that perfectly depicts the cash-flow patterns observed by contractors who are engaged in infrastructure projects under PBSs (Hughes & Kabiri, 2013).

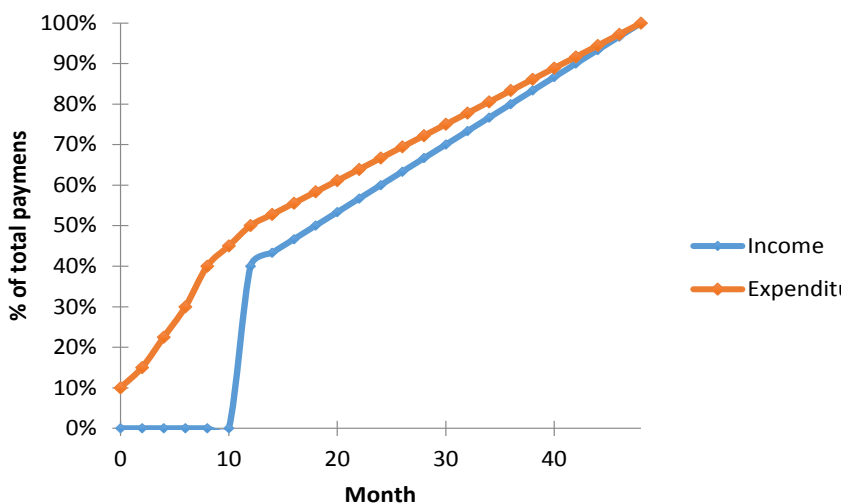


FIGURE I: A GRAPHIC DESCRIPTION OF THE CASH-FLOW PATTERNS FOR A CONSTRUCTION CONTRACTOR

Source: Based on estimates from Hughes and Kabiri, 2013.

The income and expenditure patterns correspond with those of a contractor involved in the building, financing and operating activities of an infrastructure project with a lifespan of 48 months (four years). In the contract, the contractor payments are split up into a one-off payment for capital expenses in the first 12 months and a series of future payments during the maintenance phase linked to performance achievements.

It is possible to observe the tight financial conditions experienced by the developer during the first year of the project. Assuming the infrastructure project will start operating after the twelfth month, the contractor will not start to break even until the second year of operations. These types of projects represent a sensitive scenario for small and medium developers, who may eventually file for bankruptcy if other estimated risks turn out to be higher than expected. The situation may result in uncompleted contracts, lawsuits and increased costs for the public entity.

Leasing and Depreciation Accounting Practices: A Hurdle for Financing

The type of lease operations, the extent to which they are conducted, and the chosen depreciation method are closely related topics in PBS-based contracting, and their coexistence may affect the financial condition of contractors. As discussed in the above example, performance-based contracting rarely involves the total payment for the product or service procured during the first months of the project, and because of this, the contractor must come with large upfront capital investments to generate a product or service that will meet long-term performance levels.

If a leasing project involves large capital assets, lengthy construction times and blended payment schedules, the payback period for the contractor to recover its total investment may become longer. Additionally, if during the construction phases the contractor recognizes flat amounts of depreciation expenses (although high given the large volumes of assets transferred), the situation may be deeply aggravated, as the contractor may face liquidity concerns² that could hamper access to financing. In some cases, an insolvency situation may affect the capacity of the contractor to deliver the construction/manufacturing of the product, whereas in others, insolvency may stop the contractor from receiving payments during the operation phase due to unperformed duties required to maintain sustained performance levels.

Table 7 summarizes some additional risks faced by the parties in PBS-based contracting. It is worth mentioning that owner agency risks are dependent on the contractor’s ability to run the project; this is a natural consequence of the risk-transfer benefit that PBS contracting gives to the owner agency.

TABLE 7 CHALLENGES FACED BY PUBLIC BODIES AND CONTRACTORS UNDER PBS-BASED PROCUREMENT

| OWNER AGENCY | CONTRACTOR |
|--|---|
| <ul style="list-style-type: none"> ▪ Contractor’s failure to meet the required expectations in terms of quality ▪ Contractor’s insolvency while the project is running | <ul style="list-style-type: none"> ▪ Unexpectedly severe weather conditions ▪ Unanticipated environmental problems ▪ Unanticipated legislative changes ▪ Unexpected demand growth ▪ Poor quality of manufacturing/service delivery/construction ▪ Owner agency’s inability to pay |

Source: Hughes and Kabiri, 2013.

² Common lending procedures usually make use of basic financial statement ratios such as debt ratio, liquidity ratio and profit ratio. The inclusion of highly valued assets may reduce some ratios but may impact others depending on the chosen depreciation method.

Solutions: Revised Lease Accounting and Green Depreciation

The Proposed IAS 17 and a Proposal to Revise Lease Accounting

New accounting standards for leases are currently being proposed in an initiative jointly led by FASB and the International Accounting Standards Board. The proposed regulatory frameworks will be included in the new IAS 17 standards and a subsequent accounting proposal for leasing operations. Under both approaches, the number of reported leasing operations will increase, as new classification criteria will be defined for lease operations that are not currently being included in the lessee's financial statements.

The proposal will still classify leases into two broader categories, A and B, but the conditions to define them will be based on the expectation of economic benefits from the underlying asset being received by the lessee during the contract term. In general terms, leases of equipment and vehicles will be type A leases, and leases of property (buildings, land, etc.) will be designated as type B leases (Ernst and Young, 2013).

Although the proposal is still under review, it will aim to classify many of the lease operations considered operating leases as type A. Under type A leases, the reporting entity will have more flexibility to report leasing expenses, and it may choose between using a regular straight-line recognition method for expenses and leasing amortization or it may be able to adjust the lease financial and depreciation expenses according to the pattern in which the lessee will receive the economic benefits from the asset during the lease operation.

The new set of accounting rules is expected to relieve the financial conditions for contractors in the early phases of a PBS-based project. The reported lease expenses, comprising interest and amortization expenses, will be higher in the early years and lower in the later years. This will be a direct result of a lower lease liability, decreasing as monthly payments are performed according to the payment schedule and serving as the base for the calculation of interest expenses (Ernst and Young, 2013).

Higher leasing expenses in the early years of a project will inevitably lead to lower taxable income for the developer. The revised lease accounting proposal will at least increase the chances for developers to access new financing, improving disposable income and creating more resilient conditions in case unexpected risks arise. The final outcome will be an increase in the chances to meet pre-specified PBSs and a benefit for both the owner agency and the contractor.

Green Depreciation: Recognizing Higher Expenses to Increase Profits

Green depreciation is certainly not an innovative mechanism to encourage the development of procurement projects with specified environmental standards. The concept has been actively discussed and implemented in Australia, where even estimates on government savings in the amount of resources intended to reduce GHG emissions have been provided (Centre for International Economics, 2007). Although green depreciation was initially proposed for green procurement, recent media has pointed out the potential of green depreciation as a tool to leverage the implementation of infrastructure projects. The concept is simple and applicable to contractors dealing with large fixed assets.

Green depreciation is a variant of an accelerated depreciation method in which greater accounting and tax savings may be reached in the project's earlier years as fixed assets are depreciated at a faster pace. When a company applies accelerated depreciation, it automatically increases its net income and decreases tax expenses according to the project cash flows (Larkin, 2014).

Governments may be incentivized to establish barriers for the implementation of green depreciation based on premature conclusions about potential fiscal revenue impact on public finances. However, when the concept is analyzed closer, it is possible to see that accelerated depreciation does not allow for greater tax savings; instead, it reallocates greater fiscal reductions in the earlier years and allows the government to reap higher fiscal charges in the long term thanks to a lower depreciation rate in the final economic years of the assets.

If environmental savings are included in the equation, the general outcome of incentivizing green depreciation methods will be positive, as green and PBS-based procurement projects will be boosted and savings in environmental allocations attained with lower country emissions.

As a further remark, one might conclude that the use of green accounting methods would benefit not only governments, but also procurement contractors. As previously seen with the proposed leasing accounting standards, green depreciation may leverage the financial position of contractors in the short term and it will generate more stable conditions for the inclusion of PBSs in procurement.

Addressing Other Issues Related to PBS Contracts

The Budget Maturity Mismatch

Several agencies and contractors in the United States claim budget maturity mismatch as one of the main reasons they do not implement PBS contracting (National Cooperative Highway Research Program, 2009). The root of the problem arises from the predetermined public monetary allocations for procurement contracting, specified on a yearly basis and according to government allowances. Because these amounts need to be approved each fiscal period, they do not match with the contracted schedules of procured goods, services or infrastructure, usually requiring payments in periods longer than three years. Therefore, despite the fact that contractors may be meeting all pre-specified performance levels, chances are high that they may face potential payment delays as a consequence of government red tape.

A suggested solution to this issue comes from a document developed by the US Department of Commerce entitled *The Seven Steps to Performance-Based Acquisition*.³ The approach depicts some of the basic steps that federal agencies' contracting teams should follow in order to ensure high-performing procurement projects. Under its four steps, the document suggests that public agencies ensure the funds necessary for the whole contract period in advance and as part of the pre-tender activities and project design.

Following some of the topics discussed on previous chapters, a high-performing and guaranteed solution is represented in the Philips Lighting Capital case ("Philips supplies LED streetlights," 2013).

³ For more information on this and other suggested practices on performance-based contracting, please refer to the website <http://www.acquisition.gov/sevensteps/home.html>

BOX 4: PHILIPS LIGHTING CAPITAL CASE

Philips Lighting Capital is a subsidiary of Philips, and its business niche is providing financing for energy efficiency projects with guaranteed returns. Philips Lighting Capital closes the gap between public/private parties willing to implement state-of-the-art lighting projects but struggling to find the proper funding from commercial banks. Philips acts as a guarantor for banks to receive debt repayment, guaranteeing the debt servicing in exchange for holding the project assets as collateral.

The model represents a win-win situation for all parties. Philips Lighting Capital charges a fee to the facility owner and gets part of the interest rate charged in the loan, the facility owner upgrades its infrastructure with state-of-the-art lighting energy technologies, commercial banks reduce credit risk on their loan with Philips acting as a guarantor, and Philips implements its equipment and gets paid from guaranteed energy savings.

The government of the city of Buenos Aires was a pioneer of this business model, implementing a public lighting project without significant upfront investments. In this particular case, Philips Lighting Capital approached the city authorities with actual estimates of energy consumption in public lighting and a proposed model based on LED streetlights to reduce energy consumption levels. The company then acted as an intermediary by bringing commercial bank loans to finance the project and generating a market opportunity for Philips. In turn, the city of Buenos Aires renewed its public lighting infrastructure and achieved an estimated energy consumption savings of 50 per cent ("Philips supplies LED streetlights," 2013).

The success of this energy efficiency project was rooted in clearly defined and achievable energy savings and the ability of Philips to implement the required activities to achieve target savings in a timely manner. It is not clear whether this project was classified as a PBS project, but it certainly serves as an example of how to tackle maturity mismatch by attracting private financing in procurement projects. Since commercial banking loans can be awarded on a long-term basis and equal the project length, the overall model has higher chances of prospering and benefiting all the parties involved.

The Lack of Performance Monitoring and Related Payments

Limitations on pre-specified and regular performance monitoring activities during the operation phases of a procurement project are a recurring issue in the use of PBSs. Since project payments in PBS contracting are directly related to well-defined specification processes and effective measurement activities conducted by owners, any mistakes presented in these realms will represent delayed or incomplete payments to contractors. This in turn will affect their financial position and threaten their long-term performance in procurement projects.

In fact, the Organisation for Economic Co-operation and Development (OECD) identified the lack of monitoring and performance functions as one of the lessons learned from public procurement reviews, and it presented an innovative solution implemented by the United States government: the federal e-procurement system. The platform acts as a common space for actors to propose, discuss and review their performance standards and specify roles in monitoring activities. In the scheme, the OECD acts as coordinator and peer reviewer, and after a recent assessment it concluded that e-procurement proved to be a powerful solution to increase data availability and support timely payments to bidders in the United States (OECD, 2012).

In a similar trend, contractors often face potential losses denominated as "interpretation risk" in contract specifications. Contractors usually must determine, based on the Statement of Requirements issued by the public body in the pre-awarding stage of a public tender, whether included specifications are either "design," in which the failure risk remains on the public side, or "performance," in which the responsibility for achieving the specified thresholds falls on the contractor. Furthermore, it is still common to see different lawsuits in procurement contracts where courts conclude the distinction between design and performance specifications is blurry, and finding the responsible party becomes a burdensome process (National Cooperative Highway Research Program, 2013).

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