

**BRIEFING** NOTE

# Moving Towards Performance-Based Specifications in Public Procurement

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## Summary

There are environmental benefits associated with the procurement of services instead of, or in addition to, discrete products. Under the right conditions, transitioning to a more service-intensive purchasing model can reduce natural resource consumption in the production, use and disposal phases of product life cycles. Generally, financial savings can be realized too—even in the short term. In order for public procurers who purchase goods, services, buildings and infrastructure on a significant scale to take advantage of these potential savings and benefits, *performance-based specifications* are invaluable tools.

Performance-based specifications allow public authorities to specify their needs in general terms by describing what general functions they require (e.g. lighting, mobility, information management) rather than specifying the minute details of the inputs and process required to get there. The private sector can then innovate and generate savings in resource use and in operating costs. Generally speaking, suppliers are better suited than public procurers to know what options are available in the market, or to innovate and commercialize towards new products and services in order to meet a required performance level. Performance-based specifications are thus a tool with which, under the right conditions, public procurers can stimulate markets to deliver innovative and environmentally sound solutions.

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## Replacing or Substituting Products with Services

The notion of purchasing services instead of products is not new. Indeed, the use of public libraries, bike-share programs or even public transit represents the availing of a service or a function, as opposed to buying a discrete product. There is use without ownership and expenditure without future commitment. This arrangement suits the users, who use only exactly as much of the service as desired and pay accordingly, and the providers, since a network of products can efficiently satisfy many consumer needs simultaneously and pay-per-use options can increase the overall customer base.

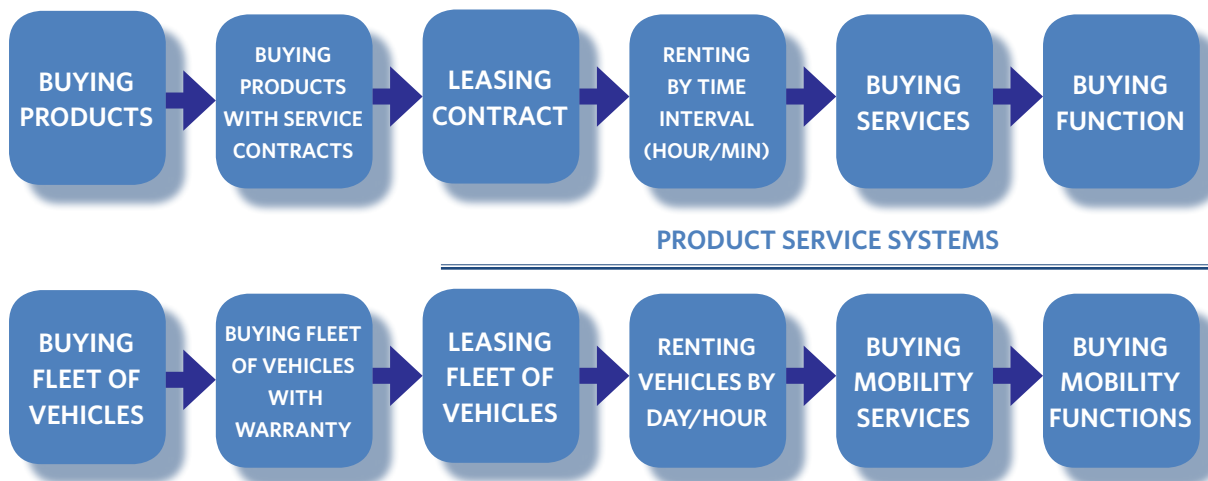
Examples have also long-since existed in which the user buys a product that is supplemented by services: phones and computers come with IT support services, vehicles come with warranties and furniture can be delivered and assembled. In these instances, users benefit from the optimal functionality of their product, and service providers have an opportunity to set themselves apart and create a competitive advantage.

**The environmental benefits associated with the procurement of services or functions instead of products are also noteworthy and provide the impetus for much of the current interest in this domain.** We know that linear, business-as-usual patterns of production, consumption and disposal are unsustainable in a world of finite and vulnerable resources. Our collective demand for products that last only a few weeks, months or years cannot be sustained forever. Furthermore, the incessant burning of fossil fuels in the production, transport, use phase, maintenance and decommissioning of these various “cradle-to-grave” products is contributing to climate change, threatening the prospect of a healthy environment for future generations.

In light of these challenges and others, the move towards buying functions over (or addition to) products could offer improved resource efficiency. The term “product service systems” (PSS) broadly encompasses the mixing of products and services, in which the service component is intensified (Sustainable Public Procurement Initiative, 2013). The mechanisms for the environmental benefits associated with PSS are threefold:

- 1) Suppliers that pool their products to satisfy more customer needs with fewer units may reduce their environmental impacts in the production phase.
- 2) As suppliers are paid according to customer usage, they may be incentivized to offer products with higher efficiency in order to reduce operating costs.
- 3) As customers' costs become variable instead of fixed (paying per use instead of for ownership), they may be incentivized to decrease their usage of a product and therefore reduce the environmental impact during the use phase.

There is a range of possible product-service mixes, as depicted in Figure 1. PSS can broadly be said to encompass the last four blocks.



**FIGURE 1: THE PRODUCT-SERVICE SPECTRUM, WITH THE EXAMPLE OF PROCURING FLEETS<sup>1</sup>**

Other related approaches include the concepts of the “leasing society,” “functional sales” or “cradle-to-cradle” purchasing. These terms cover a range of different product-service mixes and require nuanced policy drivers and business models (see Box 1 for more details). A fundamental commonality, however, is that the *ownership* of products increasingly stays with the producers/sellers, while the buyer avails of a service or function. Such models encourage “closed loops” around production and consumption cycles and, as such, hold potential to lead to significant resource efficiencies and circularity in production and reuse.

<sup>1</sup> The distinction between the procurement of services and functions requires further analysis not undertaken here. Generally speaking, the procurement of functionality leaves even more autonomy to the private sector to optimize on delivery costs and efficiencies and is thus located at the farthest end of the spectrum.

#### **BOX 1: CONCEPTS AND PRODUCTION MODELS RELATED TO PRODUCT SERVICE SYSTEMS**

**Leasing Society** – A vision for society characterized by a new relationship between producers and customers based on: (1) new and more service-oriented business models and (2) new ways to define product ownership and responsibility (European Parliament, 2012).

**Circular Economy** – An alternative to a traditional linear economy (make, use, dispose) in which we keep resources in use for as long as possible, extract the maximum value from them while they are in use, then recover and regenerate products and materials at the end of each service life (WRAP UK, 2013a).

**Functional Sales** – A system in which, instead of paying for ownership, the user/customer pays for function. The provider remains the owner of the product, installation or system; takes care of operation and maintenance; and takes it back when the contract with the user ends (Sustainable Public Procurement Initiative, 2013).

**Cradle to Cradle** – A framework that seeks to create production techniques that are not just efficient but are essentially waste free. In cradle-to-cradle production, all material inputs and outputs are seen either as technical or biological nutrients. Technical nutrients can be recycled or reused with no loss of quality, and biological nutrients can be composted or consumed. By contrast, cradle-to-grave refers to a company taking responsibility for the disposal of goods it has produced, but not necessarily putting products' constituent components back into service (Dictionary of Sustainable Management, 2013).

## **Public Procurement of Function Over Products**

Governments generate a particularly large market demand. According to the Organisation for Economic Co-operation and Development (OECD) (2013), states spend between 13 per cent and 20 per cent of their annual gross domestic product on the procurement of goods, services and works.<sup>2</sup> Seen through the lens of sustainable development, the public sector is thus well positioned to create transformative change in markets. By using their purchasing power to increase the demand for PSS that reduce material and energy consumption, public procurement can be leveraged as an instrument for sustainable development and for supporting the green economy (Wooders, 2011).

Importantly, this endeavour would not be philanthropic or necessarily ecologically motivated. Indeed, governments could be the first large buying groups to notice the potential cost savings of resource efficiency via service contracts, as many already are. Through energy service companies (ESCOs), for example, energy efficiency investments pay off dramatically from a cost-savings perspective, often within several years (Ellis, 2010). In the United States, upgrading the energy performance of government buildings through ESCOs has resulted in substantial energy and cost savings for the facilities (Runyon, 2012). In these arrangements, the energy company reduces their clients' energy costs by retrofitting or upgrading buildings or other infrastructure for energy efficiency. Usually the company capitalizes the upfront expenditures and is remunerated through shared future cost savings with the client. ESCOs in South Africa have generated similarly positive results—for instance through Eskom's Integrated Demand Management Schemes (Eskom, 2013).

WRAP UK (2013b) posits that 30 per cent of the worldwide demand for resources in 2030 could be met through available resource improvements—a savings worth up to US\$3.7 trillion each year. As governments begin, or continue, to engage in resource-efficient procurement, the benefits will be both environmental and economic.

<sup>2</sup> This figure represents OECD countries; it is more in non- OECD countries.

#### **BOX 2: THE HIDDEN COSTS OF PRODUCTS**

In the case of chemical manufacturing services, a PSS provider not only sells chemicals, but takes over specific handling and management tasks for the client. This saves the client human resources, management time and maybe even space—so-called hidden costs—that can cost many times more than the chemicals themselves.

In a recent case study from Serbia, a bottling company used a chemical leasing contract for the design, installation, application and maintenance of a new lubricant for the conveyor belts. Over one year they saved €6,000 in water and chemical consumption, in addition to indirect savings, such as for personnel requirements (European Commission, 2013).

Moreover, since the financial crisis, there is continuous pressure on the public purse to deliver value-for-money for taxpayers through the acquisition of goods, services and infrastructure. This pressure further compels the consideration of strategic public procurement options in order to improve efficiency in the longer term. Though only one piece of a much larger puzzle, PSS procurement has a role to play in transitioning governments away from purchasing products based on the lowest cost at time of purchase into long-term, integrated strategic purchasing, which focuses on value-for-money across the life cycle (International Institute for Sustainable Development, 2013).

Public procurers, however, have a multi-disciplinary job description that requires them to execute the procurement function across a broad range of product and service categories. As such, it is unlikely for procurers themselves to have expertise and knowledge about the next generation of solutions. Nor are they likely to know the extent of potential resource and cost savings in procuring functions over products, and how to encourage this through the tender document. Part of the appeal of PSS arrangements is placing the onus of innovation on the suppliers, as they know better what the market can supply to procurers' broadly defined needs.

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## *The Need for Performance-Based Specifications*

The challenge for public procurers in purchasing PSS is to know how to evaluate bids when they are writing the technical specifications and award criteria. As procurement procedures in all countries are governed by strict rules on equal treatment (and rightly so), developing the objective criteria with which to capture environmental and economic benefits of services is essential.

**The shift towards performance-based specifications is thus the next logical step in the evolution of more sustainable public procurement.** Performance-based specifications provide details of required results or functions (e.g., strength of concrete, luminosity of light, efficiency of fuel use) instead of prescribing the exact processes required to get there (e.g. mixture proportions, number of bulbs, type of fuel). Free from the limitations of process requirements, the private sector is then able to innovate and design products, services and construction methods that can lead to more efficient and “cleaner” offerings.

Performance-based specifications can be used across the procurement spectrum—from pure product sales all the way to full-service contracts (see Figure 1). They are particularly relevant in functional procurement or PSS, however, as they are the primary tool procurers use to assess bids in the absence of discrete products being exchanged.

The use of performance-based specifications in public tenders can transfer the risk of design and innovation to the party best fit to handle it: the private sector. The alternative, which is the norm in most places, is for the procuring authority to provide prescriptive specifications that include clauses for the means and methods of construction, assembly, etc. Understandably, procurers seek to ensure a certain degree of quality in the goods, services and infrastructure they buy through employing detailed technical specifications. But prescriptive specifications risk resulting in lower-quality and higher-cost products and services in the end. Specifying instead a desired performance and relying on the expertise of the private sector to deliver it can result in an optimized product/service/product-service mix.

*Performance-based specifications are instructions that outline the functional requirements for a product or service. These instructions should be clear, achievable, measurable and enforceable (Lobo, Lemay & Obla, n.d.).*

Some other considerations on the use of performance-based specifications are as follows:

- Service-based contracts require a new supplier-buyer relationship and new thinking on meeting customer needs. This takes time, effort, trust and expert judgement.
- Market consultation processes should be closely linked with the transition towards performance-based specifications.
- Functional procurement is not only about criteria but also about the professionalization of procurement processes; guidance and training are required.
- Procurers, contractors and producers must be educated on the benefits and proper use of performance specifications, and nurture a facilitating environment within the organization.
- Testing methods and the acceptance criteria that will be used to verify and enforce the performance requirements should be clearly specified (may even be required for pre-qualification).

The public sector has a vital role to play in de-risking the shift to sustainable markets. Public authorities are ultimately responsible for formally facilitating PSS (or “circular procurement,” “functional sales” or another chosen approach) through the writing of tenders and contracts. Their toolkit must be enhanced to leverage the power of the public purse towards sustainable development objectives. Many successful approaches to sustainable public procurement already involve the use of specifications that incorporate performance, materials, design or production processes and methods of the goods or services being tendered. Performance-based specifications will continue to be an essential tool for procuring authorities to be able to control the environmental and social impacts of the contracts they award.

**BOX 2: PERFORMANCE-BASED SPECIFICATIONS FOR CONCRETE**

“Led by the National Ready Mixed Concrete Association (NRMCA), the ready mixed concrete industry has established the P2P Initiative to promote a shift from traditional prescriptive specifications to performance specifications for concrete. P2P is an acronym for Prescription to Performance specifications.

P2P shifts the emphasis from prescribing the ingredients and their proportions in a concrete mixture to an emphasis on the performance properties of the combined materials. The details of a concrete mixture for the most part have little meaning to a contractor, design engineer or owner of a building or roadway. Concrete producers, on the other hand, have to maintain an expertise that allows them to optimize the mix for predictable performance, both in its plastic and hardened state. They have to know their ingredient materials and should be competent in mixture proportioning to compete and deliver a long-lasting product in a competitive environment.”

*Source: National Ready Mixed Concrete Association (2013)*



## *Functional Procurement Can Result in Resource Efficiency, But Won't Necessarily*

As discussed, resource-efficiency gains are possible under PSS, but only under certain conditions. Service contracts and performance-based contracting by no means guarantee a “greener” outcome. Firstly, certain product categories may be more suitable than others for the procurement of a function over the product itself. Secondly, complementary business models must accompany this shift in order to ensure the aforementioned resource efficiencies. These two concerns will be discussed in this final section.

In terms of leasing products, Agrawal, Ferguson, Toktay and Thomas (2012) make an important distinction based on types of product according to environmental impacts across the life cycle. For products that have a high impact in the use phase—such as photocopiers, printers, washers and dryers—leasing can be environmentally beneficial. On the other hand, for products whose largest environmental impacts occur in the production and disposal phases (e.g., carpets and laptops), leasing is profitable but environmentally worse than the alternative of product sales because firms that recover and dispose of these products will undermine the ecological “savings” aspect of the leasing model.<sup>3</sup>

Similarly with product service systems, Agrawal and Bellos (2013) argue that the purported environmental benefits are actually not well understood, and that a firm does not necessarily offer products with higher efficiency under PSS. They analyze the operational characteristics of business models that employ PSS and observe (Agrawal & Bellos, 2013):

- Pooling PSS results in higher-efficiency products than sales, but the “pooling” component of PSS is key to reducing environmental impacts. Firms that provide services *without* pooling may increase the adoption of a particular PSS and the total production impact without offering lower-efficiency products, and ultimately have worse environmental performance.
- The so-called “rebound effect” does not occur with PSS: whereas in product sales, a more efficient product will result in more usage, in PSS, a more efficient product will lead to lower customer usage, therefore impact in the use phase is reduced.

These lessons highlight the need to account for suppliers’ product design strategies when evaluating the environmental performance of a business model. Whether or not they are “greener” depends on the operational characteristics of the business model. Unless firms align their product design with a business model (i.e., car sharing with smart electric cars that are more efficient than conventional cars), product service systems—even with pooling—may be environmentally inferior to sales (Agrawal & Bellos, 2013). While these observations require further study, it is important for early adopters of PSS to take heed of the emerging lessons.

Of course any discussion of environmental benefits in such broad terms must be further qualified. The life-cycle impacts of a product and/or service will of course differ depending on which environmental indicator is of greatest concern. While much discussion surrounds carbon dioxide emissions, product impacts could also be measured in terms of such factors as water use and pollution, resource intensity or the discharge of hazardous substances.

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<sup>3</sup> Much of the literature on PSS to date has looked at public policy without considering firm behaviour, and vice versa.

## *Conclusions*

Public procurement authorities, while traditionally seen as a mere administrative and control units, can be transformed into agents of change through the informed and strategic use of performance-based specifications. Under the right conditions, buying services and functions instead of individual products can result in natural resource efficiencies and cost savings for governments. However, PSS must be accompanied by insights into the types of products being leased and into the business models required to ensure environmental benefits.

That being said, public procurers can and should be trained to use performance-based specifications in order to trigger market innovation and satisfy public needs in a sustainable manner. The use of performance-based specifications also represents an important step towards total cost of ownership and whole-life value in procurement—that is to say, the inclusion of the direct and indirect costs embodied in a product or system in the financial balance sheet. Additionally, as suppliers seek to satisfy performance requirements while minimizing their costs, there is a strong incentive to ensure products are long lasting; require minimal maintenance; and can be repaired, reused, recycled or treated at end-of-life with relative ease. Therefore, performance-based specifications also play a role in scaling-up the green economy.

Again, these concepts are not new, but newly important.



## References

Agrawal, V. & Bellos, I. (2012, September 12). *The potential of servicizing as a green business model*. Retrieved from <http://dx.doi.org/10.2139/ssrn.2325218>

Agrawal, V., Ferguson, M., Toktay L., & Thomas, V. (2012, March). Is leasing greener than selling? *Management Science*, 58(3), 1-11.

Dictionary of Sustainable Management. (2013). Retrieved from <http://www.sustainabilitydictionary.com/>

Ellis, J. (2010). *Energy service companies (ESCOs) in developing countries*. Retrieved from [http://www.iisd.org/pdf/2009/bali\\_2\\_copenhagen\\_escos.pdf](http://www.iisd.org/pdf/2009/bali_2_copenhagen_escos.pdf)

Eskom (2013). Integrated Demand Management. Retrieved from <http://www.eskom.co.za/sites/idm/Pages/Home.aspx>

European Commission. (2013). Supplier and end user collaboration could reduce chemicals' environmental impacts. *Science for Environment Policy News Alert* 352. Retrieved from <http://ec.europa.eu/environment/integration/research/newsalert/pdf/352na4.pdf>

European Parliament (2012). Leasing Society. *Directorate-General for Internal Policies, Policy Department A: Economic and Social Policy*. Retrieved from [http://www.europarl.europa.eu/meetdocs/2009\\_2014/documents/itre/dv/130513\\_study\\_leasing\\_society\\_/130513\\_study\\_leasing\\_society\\_en.pdf](http://www.europarl.europa.eu/meetdocs/2009_2014/documents/itre/dv/130513_study_leasing_society_/130513_study_leasing_society_en.pdf)

International Institute for Sustainable Development. (2013). Procurement and public private partnerships: Strategic government spending for sustainable development. Retrieved from <http://www.iisd.org/procurement/>

Lobo, C., Lemay, L., & Obla, K. (n.d.). *Performance-based specifications for concrete*. National Ready Made Concrete Association. Retrieved from <http://www.nrmca.org/research/performance-based%20specifications%20for%20concrete%20paper%20for%20ae%20conference.pdf>

National Ready Mixed Concrete Association (2013). P2P Initiative. Retrieved from [http://www.nrmca.org/research\\_engineering/p2p/default.htm](http://www.nrmca.org/research_engineering/p2p/default.htm)

Organisation for Economic Co-operation and Development. (2013). Fighting corruption in the public sector: Leading practitioners on public procurement. Retrieved from <http://www.oecd.org/gov/ethics/meetingofleadingpractitionersonpublicprocurement.htm>

Runyon, J. (2012). Saving money, gaining energy independence: ESPCs with the U.S. government. Retrieved from <http://www.renewableenergyworld.com/rea/news/article/2012/05/saving-money-gaining-energy-independence-energy-saving-performance-contracts-with-the-u-s-government>

Sustainable Public Procurement Initiative. (2013). Sustainable Public Procurement Initiative. Retrieved from <http://spinitiative.org>

WRAP UK (2013a). WRAP and the circular economy. Retrieved from <http://www.wrap.org.uk/content/wrap-and-circular-economy>

WRAP UK (2013b). WRAP's contribution to economic growth. Retrieved from <http://www.wrap.org.uk/content/economic-and-environmental-benefits>

Wooders, P. (2011). Enabling conditions: Supporting the transition towards a global green economy. In United Nations Environment Programme, *Towards a green economy: Pathways to sustainable development and poverty eradication*. Retrieved from [http://www.unep.org/greeneconomy/Portals/88/documents/ger/14.0\\_EnablingConditions.pdf](http://www.unep.org/greeneconomy/Portals/88/documents/ger/14.0_EnablingConditions.pdf)

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