SMART SPP

innovation through sustainable procurement

Working with the market to procure sustainable solutions

A case study from the Municipality of Cascais

www.smart-spp.eu

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Introduction to the case study

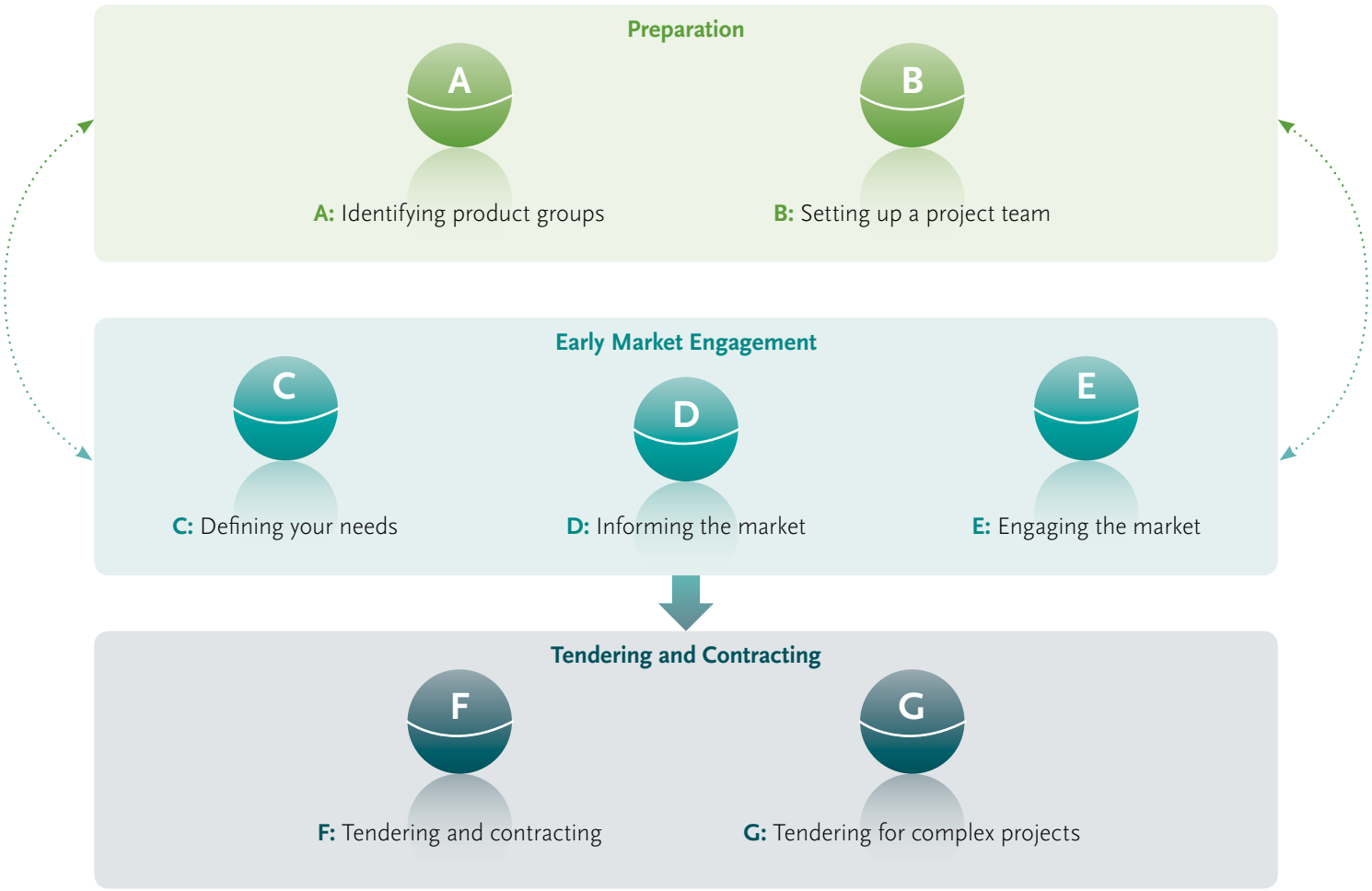
In this case study the Municipality of Cascais (Portugal) shares its experiences, conclusions and lessons learned.

These SMART SPP public authority partners have used a particular procurement approach (see figure 1) which focuses on engaging the market effectively before tendering (early market engagement). This includes the assessment of the life-cycle costs and related CO_2 emissions of innovative products such as Light Emitting Diodes (LEDs) indoor and street lighting, energy efficient vending machines and electric mobility. This has been done before, during and/or after tendering.

The SMART SPP guidance includes a guide to procuring innovation, describing different ways to engage with the market, and a tool to calculate the life-cycle costs and CO_2 emissions of products. It can be downloaded at: www.smart-spp.eu/guidance.

Figure 1

Activities to guide authorities through a flexible approach to drive innovation through sustainable procurement



Municipality of Cascais

1. Summary

The Municipal Council of Cascais, the Cascais Energy Agency and the National Laboratory for Energy and Geology (LNEG) have put the SMART SPP methodology into practice in purchasing energy-efficient public lighting, focusing on techniques to involve the market prior to the call for tenders (in the pre-procurement phase).

This approach allowed market-tailored technical specifications to be developed, which avoided complicated tendering procedures and therefore saved time and resources.

2. Background

Cascais Municipality is located in the district of Lisbon, on the eastern estuary of the river Tagus. It consists of six parishes (Cascais, Estoril, Parede, Carcavelos, São Domingos de Rana and Alcabideche), with around 190,000 inhabitants. Since 2007, the authority has had a municipal energy agency – *Cascais Energia* – and has signed the Covenant of Mayors. Within this framework, various initiatives and projects are taking place with the aim of boosting energy efficiency and the use of renewable energy, while reducing CO_2 emissions within the municipality, which includes the SMART SPP project.

3. Experiences with the SMART SPP approach to driving sustainable innovation

3.1 Activity A – identifing appropriate product groups

Meetings were held with technicians from departments of the Cascais Municipal Council and Cascais energy Agency, in order to identify the innovative products of greatest interest, taking into account that they would be the subject of a public procurement contract during the three year project. Energy efficient outdoor public lighting emerged as a priority product as the Municipality planned to replace around 40 lamps with high-pressure sodium vapour (HPS) technology in the area around the Pedra do Sal Environmental Centre. This space, which raises awareness on the subject of energy efficiency and renewable energy concepts, already had a pilot LED technology system in place.

3.2 Activity B – setting up a project team

With the aim of ensuring the availability of the various technical skills needed to develop the procurement process, a multidisciplinary team was set up comprising the Cascais Energy Agency, Cascais Urban Services Company, the Electricity and Public Lighting Division, Procurement Division, Transport and Mechanics Division and the Coastal Management Division, as well as the LNEG.

The role of the LNEG was to guide and provide technical assistance to Cascais Municipality in applying the methodology developed in the SMART SPP project

to promote innovation and energy efficiency through purchasing, particularly in phases involving the market and those developing the purchasing criteria.

This team held regular meetings from October 2009 to July 2011, enabling knowledge to be actively exchanged, thus enriching the final outcome of the project.

3.3 Activity C – defining your needs

Defining the needs that the purchase must fulfil, performance requirements and possible solutions

Once the decision was made to purchase energy-efficient outdoor public lighting to replace around 40 lamps at the Pedra do Sal Environmental Centre, a market study was performed with the aim of:

1. Identifying existing technologies on the market and other technologies which were about to be introduced onto the market, their main features, advantages and disadvantages;
2. Identifying suppliers of these technologies.

LED technology appeared to be a promising, albeit emerging solution on the (outdoor) public lighting market.

Important issues to include in the purchasing process were also defined:

- It was decided to replace the HPS lamps, keeping the existing columns;
- A light control system was included in the call for tenders, so as to allow flux to be regulated and thus boost energy savings;
- Suppliers were asked to carry out a photometric study, taking into account existing conditions (the columns would not be replaced and therefore the distances between the lamps would already be defined) so as to present the best solution, both in terms of photometric performance and in terms of energy performance.

An initial version of the technical and energy efficiency criteria to be included in the tender procedure was established in this phase.

3.4 Activity D – informing the market

Supplier/buyers seminar

In order to bring together suppliers and buyers, an energy efficient lighting seminar was organised, focusing on LED technology for public lighting. In this seminar, the SMART SPP approach was presented and the aim was:

- To convey to potential suppliers information on purchasing intentions and the generic initial requirements
- Increase buyer knowledge on energy-efficient lighting and LED public lighting through the various suppliers presenting their products, followed by a moderated debate.

The suppliers also displayed their products.

3.5 Activity E – consulting the market

Informal meetings with suppliers and collecting data on the products

The Cascais Energy Agency invited eleven LED lamp suppliers to take part in informal and individual meetings with the aim of:

- Learning about the features of the products available on the market
- Informing suppliers about the features of the lamps to be purchased, reflected in the technical and energy-efficiency criteria defined in C;
- Receiving comments from suppliers on the technical and energy-efficiency criteria;
- Gathering technical and energy-efficiency data, and data on product life-cycle costs.

All suppliers identified in the market investigation process, in previous contracts with the Cascais Energy Agency and Cascais Municipal Council and on their own initiative were invited to take part, having access to the same information. The informal involvement process was carried out in a phase prior to the tender process.

Questionnaires were sent out to potential suppliers in order to prepare for the meetings. The aim of the questionnaire was to gather technical and energy-efficiency data, and data on product life-cycle costs, as well as to validate these criteria for the market.

During the meetings the suppliers raised questions on the criteria used as well as the proposed performance values, which allowed for a better understanding of the most important questions related to this type of technology. These debates undoubtedly helped establish criteria to be included in the specifications, and allowed the public authority to confirm that the market is able to offer suitable solutions.

3.6 Activity F – tendering and contracting

The market involvement phase allowed the abovementioned technical specifications to be improved. Research was also carried out into the criteria used in similar procurement processes around the world.

The criteria developed included energy-efficiency (luminous efficiency) issues, equipment durability (useful lifespan, mechanical resistance and corrosion), as well as issues relating to the photometric performance of the overall solution (colour temperature, light distribution, etc.), using the standard DIN EN 13201 – Road Lighting as a reference. Other issues to be considered in the assessment were the guarantee conditions and integrating the lamps into the site.

For future activities, the decision to extend the procurement process to other streets and sites of tourist interest within the municipality. Given the high purchase cost involved and the fact that this is emerging technology, a restricted call for expressions of interest is to be used. The award criterion will be that of the most economically advantageous bids, and the costs throughout the product life-cycle will be taken into consideration in assessing the bids.

3.7 Activity G – tender process for complex projects

A standard tendering approach was used in this case. Thanks to the early market engagement it was not necessary to use these tools, and this led to resources being saved since competitive dialogue and pre-commercial procurement are lengthy processes which take up a great deal of time and resources.

4. Life-cycle costing and CO_2 emissions

The data gathered in this case study was used to test the LCC-CO_2 tool. Three of the LED lamp solutions available on the market for lighting streets were compared, based on the data obtained in Activity C. Since this involves new technology not all of the data needed for this assessment is available, particularly in relation to use and end-of-life. This test allowed an understanding how the tools works, as well as how to identify their main limitations, and it was very useful in perfecting them.

5. Conclusions and lessons learnt

- Involving the market allowed the development of more rigorous criteria due to the suppliers' comments, as well as saving resources by avoiding more complex tender processes;
- This experience will allow the development of performance specifications applicable to lighting technology in general;
- Having a multidisciplinary team was fundamental in involving the market and in developing procurement criteria, leading to a deeper knowledge of the issues studied;
- Suppliers were made aware of the opportunities for innovation in the public procurement processes and of the need to communicate the performance of their products by means of environmental labelling;
- LED public lighting is still not used a great deal on the site, meaning there has not yet been enough experience to gather data in relation to life-cycle costs;
- SMART SPP methodology for innovation in public procurements could be replicated in other procurement processes;
- The pilot installation demonstrated that energy saving of around 30% could be achieved by simply replacing conventional lighting with LED.

6. Outlook

This experience meant it was possible to verify in practice that there are advantages in the early involvement of suppliers in a phase prior to the call for tenders, as it enhances the way technical and environmental features are refined.

7. Contact

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Annex

Main performance specifications for purchasing LED public lighting.

Requirement	*Specification*
Luminous efficiency (light source + electronic and electrical components + optics)	*≥ 80 lumen/W*
Overall useful lifespan (MTTF)	*≥ 65 000 hours*
Luminous flux depreciation at the end of the useful life of the lamp (L70)	*Max. 30 %*
Protection index	*≥ IP66*
Mechanical resistance of equipment	*≥ IK08*
Total harmony distortion (THD)	*≤ 20 %*
Power factor	*> 90 %*
Colour temperature	*Max. 4500 K*
Luminance	*min. 10 lux*
Access to components (in case of fault)	*Easy access to components and these can be replaced without difficulty.*
Luminous flux regulation capacity of lamp group	*Depending on luminosity available and programming*
Control and monitoring system	*Possibility of future expansion*

SMART SPP – innovation through sustainable procurement

Running from September 2008 until August 2011 "SMART SPP – innovation through sustainable procurement" is a three year project which promotes the introduction of new, innovative low carbon emission technologies and integrated solutions onto the European market. This is being done through encouraging early market engagement between public authority procurers and suppliers and developers of new innovative products and services in the pre-procurement phase of public tendering.

SMART SPP is an initiative of the Procura+ Campaign, run by ICLEI – Local Governments for Sustainability and designed to help support public authorities across Europe in implementing Sustainable Procurement and help promote their achievements.

For more information visit *www.procuraplus.org*

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