

EXPERT GROUP REPORT

**Public Procurement  
for Research and  
Innovation**

Developing procurement  
practices favourable  
to R&D and innovation

**September 2005**

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# Public Procurement for Research and Innovation

Expert Group Report

Developing procurement practices favourable to R&D and innovation

September 2005

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# Summary

Europe can drive forward research and innovation by harnessing its large expenditure on civil public procurement. By providing lead markets for new technologies, public authorities can give firms the incentive to invest in research in the knowledge that an informed customer is waiting for the resulting competitive innovations. At the same time, this opens up opportunities to improve the quality and productivity of public services through the deployment of innovative goods and services.

This report explores options for good practice and policy in 'procurement for innovation' - that is the purchase of goods and services that do not yet exist, or need to be improved and hence require research and innovation to meet the specified user needs. It is aimed at helping policy-makers understand the potential benefits and at helping procurement professionals to change their practices so as to achieve those benefits.

The gains from procurement for innovation can be realised within the new European directives for public procurement. Opportunities exist within:

- The negotiated procedures and competitive dialogues, which can be used optionally to structure the procurement process in certain situations and to facilitate the critical element of dialogue between customer and supplier;
- Technical dialogues in the preparation phase before tenders are sought;
- The equal footing now given to technical specifications made in terms of functional or performance-based requirements, and to references made to standards;
- Options to submit variants;
- Conditions that allow transfer of intellectual property to the supplier.

Procurement for innovation can take place at national, regional or supranational levels of government. Demand can be fragmented across or even within purchasing authorities. This fragmentation is perceived by industry as a major weakness of European markets. Coordination and 'bundling' of demand can be used to create markets of a critical size to incentivise innovation. On the other hand, 'unbundling' may sometimes be necessary to create opportunities for innovative SMEs to obtain manageable contracts.

Good practice in procurement for innovation is emerging in several Member States, demonstrating the benefits of systematic approaches. Key to the spread of successful approaches is the development of a cohort of trained professionals able to meet the criteria for 'intelligent customers'. These purchasers should be familiar with trends in technologies, markets and supplier capabilities, be able to specify functional and quality requirements, and subsequently to assess tenders in terms of whole-life costs. A substantial effort in training and networking of experience is needed.

Early engagement of suppliers is an important element in procurement for innovation. Through foresight exercises and other collective activities, a common vision can be shared between the demand and supply sides. It is important that SMEs, with their less extensive networks, should be included so that their innovative capabilities can be applied.

In assessing tenders with innovative content, the use of Most Economically Advantageous Tender (MEAT) criteria allows combinations of whole-life costs and quality to be assessed, increasing the chance of selecting an innovative outcome. Risk aversion is a particular problem in the public sector, especially when benefits go beyond the electoral horizon. However, risk can be effectively managed and mitigated, with partnership an important potential solution.

The contractual regime can also be optimised to encourage innovation. Rights should normally be assigned to the firm that developed the intellectual property so that it can exploit it further in other markets. This in turn should lower the price for the initial purchaser who no longer has to carry the exclusive cost of development. Contractual issues inhibiting innovation are unlimited liability clauses and inappropriate contract durations.

As an innovative policy approach in itself, the development of procurement for research and innovation requires rigorous evaluation at all levels so that lessons may quickly be taken on board in practice.

A major opportunity exists for European governments to advance the Lisbon agenda for competitiveness and at the same time to engage with the pressing need for improved public services and productivity. However, achieving these goals through procurement for innovation requires changes in the mindset and in the detail of practice in the procurement process. We have set out below our detailed recommendations for achieving these aims - these have been reiterated in the relevant sections of this report. We recommend that:

### Recommendation 1

By the year 2010, the European Commission should consider conducting a review, with Member States, of the extent to which the new public procurement legislation flowing from EC Directives 2004/17/EC and 2004/18/EC is enabling R&D and innovation.

### Recommendation 2

Member States should make use of the new possibilities under the directives and implement the new procedures into national law. At the same time, Member States should make the necessary clarifications to promote a successful use of the new instruments.

### Recommendation 3

In transposing new directives into national law, Member States should ensure that procurement personnel receive training in the application of the new legislation.

### Recommendation 4

To date, there is no a standard form for technical dialogues. Therefore, we recommend that the European Commission introduces and publishes a new standard form, to give contracting authorities the opportunity to improve preparations for a formal procedure within the context of the Directives 2004/17/EC or 2004/18/EC.

### Recommendation 5

Member States should conduct a review of current procurement practice against the best practice described in this report and develop appropriate action plans to improve practice.

### Recommendation 6

Member States, as part of their efforts to benchmark progress towards the 3% R&D investment target, should seek to develop indices of innovation in public supply markets.

### Recommendation 7

Member States should review whether existing central civil policy developments likely to lead to major procurements are communicated effectively to procurement officials at all relevant levels of government.



### Recommendation 8

Member States should develop mechanisms to handle unsolicited innovative proposals from firms, inventors or universities.

### Recommendation 9

Member States should consider the bundling or unbundling of procurement projects with innovation considerations in mind.

### Recommendation 10

Member States should engage with major suppliers to explore ways of improving the visibility of subcontracting opportunities in their supply chains to open up opportunities for small innovative suppliers.

### Recommendation 11

Member States should develop mechanisms to enable increased awareness of new technology solutions coming onto the market, including the use of foresight and involving EU-level co-operation where possible and beneficial. Those considering the implementation of foresight findings should be aware of the opportunities offered by procurement for innovation.

### Recommendation 12

Member States should review their capability to communicate long-range procurement needs to potential suppliers and develop recommendations using the same or similar mechanisms as in Recommendation 10.

### Recommendation 13

The Commission should examine the need for, and feasibility of, an Information Service for procuring authorities on new or emerging technologies, solutions and state-of-the-art performance levels, while respecting the principle of non discrimination in public procurement, in consultation with Member States.

### Recommendation 14

All Member States should develop and implement proposals for training procurement personnel in the skills and knowledge needed for procurement for innovation.

### Recommendation 15

The Commission should design and offer to stakeholders a cycle of seminars for procurement officials in Member States on procurement practice, to stimulate R&D and innovation within the new EU legislative framework, concentrated on the best practice areas indicated in this report. This would be in conjunction with the transposition of the EU Directives into national law.

### Recommendation 16

The Commission should report on the feasibility of creating a Union-wide curriculum and developing a 'Diploma of Strategic Supply' (or similar) to include modules on procurement for innovation, which are recognised in all Member States and supported by a pan-European curriculum and learning network.

### Recommendation 17

Member States should develop national portals to allow buyers from across the public sector to advertise tender opportunities below the Official Journal of the European Union (OJEU) notification threshold, thereby allowing suppliers to register for specific alerts when opportunities of potential interest are available.

### Recommendation 18

Member States should develop a streamlined prequalification questionnaire for use by small businesses for procurement calls below the OJEU threshold.

### Recommendation 19

Member States should provide legislation that ensures that tenders stipulate that innovative variants to specifications will be accepted unless there are specific reasons against them.

### Recommendation 20

Member States should explicitly address public-private partnerships in transposing the procurement directives into national legislation.

### Recommendation 21

European Commission should examine the possibility of providing additional guidance on how partnering can be encompassed within the scope of the procurement directives.

### Recommendation 22

The European Commission should survey the use of IPR clauses in public contracts, and the impact on public and commercial exploitation of intellectual property developed in these contracts.

### Recommendation 23

Member States should examine provisions within standard form contracts and provide guidance to procurement personnel on the strategic use of appropriate alternatives.

### Recommendation 24

Policy and practice for procurement for research and innovation should be carefully evaluated and the results of that evaluation fed back into improved approaches. It is important that the evaluation considers the full range of costs and benefits.

### Recommendation 25

The European Commission should establish a mechanism to ensure that the recommendations in this report receive an explicit response and, where accepted, that there should be a follow-up mechanism to ensure their effective implementation.

# Introduction

## 1.1 PROCUREMENT, RESEARCH AND INNOVATION

Public procurement has emerged as a potentially powerful instrument to drive research and innovation by providing 'lead markets' for new technologies. Firms are given the incentive to spend money on research in the knowledge that an informed customer is waiting for the resulting innovations and thus the risk of investing in R&D is reduced. Competition is shifted from a sole focus on price to the provision of solutions which offer the greatest advantage to users over the whole life use of the purchase. Crucially, at the same time this opens up opportunities to improve the quality and productivity of public services offered to the citizens of Europe through the deployment of innovative goods and services. Technologies launched in this way may then move on to further deployment in private sector markets. Other policy objectives such as sustainability may also be achieved by procurement of innovative solutions.

This report explores options for good policy and practice, within the current European Union legal framework, for using public procurement to raise R&D intensity in industry and thus stimulate the development of research and innovation-intensive products and services. This approach is referred to hereinafter as 'procurement for innovation'. A series of measures are recommended to improve the capabilities and processes needed to underpin effective procurement for innovation.

It is important to be clear from the outset what is meant by procurement for innovation. By 'innovation' we refer to the transformation of an idea into a marketable product or service, a new or improved manufacturing or distribution process, or a new public service. Innovation often, but not always, draws upon advanced technology. It is distinguished from technological development and from invention by the inclusion in the definition of the introduction of the product, process or service to the market or society. Hence this report is NOT about:

- 1) Procurement of research and development services through grants or contracts
- 2) Innovation in the practice and procedures of procurement, except insofar as such process improvements assist in the acquisition of more innovative goods and services
- 3) The diffusion of novel but 'off-the-shelf' products.

Public procurement can be defined as the acquisition, whether under formal contract or not, of works, supplies and services by public bodies at whatever level (local, regional, national, European) and by utilities. Procurement for innovation means the purchase of goods or services that do not yet exist or require new features, and hence require research and innovation to realise the requirement. It follows automatically that such goods or services should be specified by their functionality and not in a prescriptive manner that prevents innovation. Practices discussed here include not only public procurement in the traditional style but also other models such as public-private partnerships. Achieving the highly desirable objective of entering a cycle of innovation and progress in publicly purchased goods and services is both a major challenge and a vital opportunity for Europe.

This report is aimed at two key audiences:

- **Policy-makers**, in the innovation sphere, in public finance and for the large range of public sector activities in which procurement plays a significant role, and
- **Procurement professionals** and others involved in specifying requirements, communicating with suppliers, tendering, assessing and awarding contracts and managing the ensuing activities.

For the first group, our aim is to call attention to the need for measures to realise the potential of this instrument and, for the second, to point to practical guidance which can mobilise a shift from standard practice to a situation where research and innovation are regular and effective features of the process.

## 1.2 POLICY CONTEXT AND RATIONALE

In terms of policy, the potential for procurement for innovation has received growing emphasis recently. This is to be strongly welcomed as a policy of this magnitude cannot be successfully implemented without political commitment from the highest levels down. Representing 16.3% of European GDP, public procurement is both a key source of demand for firms in sectors such as construction, health care, environment, security and transport, and a major area in which governments are striving to improve effectiveness. At a European level, following the work of an earlier expert group<sup>1</sup>, procurement for innovation was incorporated as an element of the Research Investment Action Plan<sup>2</sup>. This seeks to promote the implementation of measures to support the objective set by the European Council in March 2002 of raising European R&D expenditure to 3% of GDP by 2010, with the additional objective of increasing private funding of R&D from 55% to two-thirds of total R&D expenditure. The Action Plan is proceeding, both through Commission actions and through the Open Method of Coordination, operating via CREST<sup>3</sup>. There is a specific action to support the development and diffusion of information, for example on best available technologies for public buyers, and also an initiative to set procurement in the broader context of 'policy mixes' to exploit its synergies with other research and innovation policies, for example technology platforms.

In November 2004, the Kok Report on the Lisbon Strategy recognised that procurement could be used to provide pioneer markets for new research and innovation-intensive products. The March 2005 European Council endorsed the mid-term review of the Lisbon Strategy and the proposal to make jobs and growth its central focus, and explicitly called for Member States to refocus public procurement on innovative products and services. The Commission's proposal for a Competitiveness and Innovation Programme (CIP) is suggesting European networks for public procurement practices that are conducive to innovation, and is launching public procurement projects which foster innovation on technical specifications elaborated in co-operation with Member States. However, at present these measures are foreseen as being confined to a pilot in Information and Communication Technologies<sup>4</sup>. It is important that the Commission should capture lessons from this experience and transfer them into other technical domains.

Procurement for innovation is also on national agendas. In the United Kingdom, the Government's Innovation Report of 2003 proposed a series of measures aimed at increasing the research and innovation impact of public procurement. Consequent actions, described in more detail in Chapter 3, include the production by the Office of Government Commerce of a guide on 'capturing innovation'. The National Health Service is a leading example of efforts to change practice. Also in 2003, the Irish Science and Technology Policy Agency, Forfás, carried out a scoping study on Public Procurement for Increased Innovation. The Spanish foundation, Cotec, produced a report on 'Public Procurement and Technology'. In the Netherlands, an internal group of experts from the government is defining the potential of state procurement for innovation policy, and in Germany the 'Impulse Group Innovation Factor State' is working on the possibilities of promoting innovation dynamics from the market place by adjusting procurement practice in general, as well as through strategic procurement measures in selected technology areas.

<sup>1</sup> Georghiou et al, Raising EU R&D Intensity: Improving the Effectiveness of Public Support Mechanisms for Private Sector Research and Development: Direct Measures 2003, EUR 20716

<sup>2</sup> Commission of the European Communities, Research Investment Action Plan, 2003

<sup>3</sup> Committee for Scientific and Technological Research, composed of official representatives of Member States and other European countries associated to the Framework Programme.

<sup>4</sup> Commission of the European Communities, Proposal for Competitiveness and Innovation Programme, Article 26g and Article 35.

Further reasons for singling out public procurement in this way are:

- The public sector can lower the risk for the developing firms and subsequent customers by acting as a **launching customer** for innovative technologies and solutions.
- The introduction of innovation-orientated technological requirements in tendering procedures can stimulate the use of new but not yet commercialised technologies. This in turn can foster investment in R&D to improve these technologies or develop new ones, creating a **dynamic knock-on effect** through the EU economy.

### 1.3 RECONCILING PROCUREMENT FOR INNOVATION AND COMPETITION

A key message is that procurement for innovation can be successfully promoted without compromising the gains made in achieving the Single Market and by liberalising public contracts in Europe through the Treaty principles of equal treatment, non-discrimination and transparency. The new procurement directives are discussed in detail in the next chapter. Here we note that competition is a dynamic rather than a static situation and therefore that procurement for innovation needs to reflect different perspectives, both in terms of the scope of the selection criteria for contracts and in terms of managing the supplier base. Regulation requires selection criteria to be linked to the 'subject matter of the public contract in question'. This prevents extension of criteria to the benefits of systemic innovation for the economy as a whole. Hence, support for innovation needs to be reconciled with the specific requirements of the procurement in question. This report will focus upon how to manage the inherent tension between promotion of innovation and competition within these provisions.

Managing the supplier base requires a careful look at the relative position of firms in the sector. Winning a contract can give a supplier a competitive advantage in terms of writing off an R&D investment at an early stage but this could lead to future exclusion of other innovative firms with different solutions. Economic theory<sup>5</sup> suggests that the overall relationship between the intensity of competition and innovation is non-linear and operates differently in two contrasting situations:

- Where firms are similar and competing neck-and-neck, increasing competition provides an incentive for the leader to 'escape from the pack' through innovation and for the follower to catch up and attempt to overtake by the same means;
- Where one firm is already in a dominant position, more competition reduces innovation through a 'Schumpeterian effect', where the laggard's reward for catching up is reduced. However, the monopoly rent of the leader increases innovation in that firm.

In Chapter 4 of this report, we discuss the possibility of splitting an award and sourcing from more than one firm so as to prevent a 'run-away' leader emerging, especially in areas where the potential for learning by doing is high.

### 1.4 STRUCTURE OF THIS REPORT

In preparing this report we wanted to send a strong signal to policy and procurement personnel that actions at every stage of the procurement process can act to encourage or deter innovation. We indicate both firm recommendations for action and good practice guidelines to be followed by those seeking to promote and implement innovative approaches. Following an initial examination of the issues, our report structure follows the procurement life cycle set out in Figure 1.

A short chapter briefly presents the relevant aspects of the procurement directives. This is followed by a scene-setting discussion of the likely impact of some current procurement practices on procurement for innovation. There then follow four chapters devoted to successive key stages in the procurement life cycle.

<sup>5</sup> Aghion, P., Bloom, N., Griffith, R., Howitt, P. and Bludell, R., Competition and Innovation: an Inverted U Relationship, National Bureau of Economic Research Paper W9269, October 2002.

FIG. 1 Procurement Life cycle



# The Legal Framework for Procurement in Relation to Innovation

## 2.1 INTRODUCTION

The EU public procurement legal framework consists of coordination rules enabling Member States to establish, within the limits of this legislation, a procurement practice that fits their national needs. As the focus of this legislation is more on the procedure of buying (fair play) than on what is bought this, in practice, creates significant freedom for contracting authorities to set requirements that stimulate investment by private companies tendering for contracts.

It should be borne in mind that the public procurement directives are not intended to transform national law into an airtight uniform model, but allow Member States significant freedom to draw up their legal framework according to the specific national situation. However, public procurement procedures in Member States should be established and run in an equal manner to enable enterprises to be familiar with the rules of the game, regardless of the Member State in which they tender.

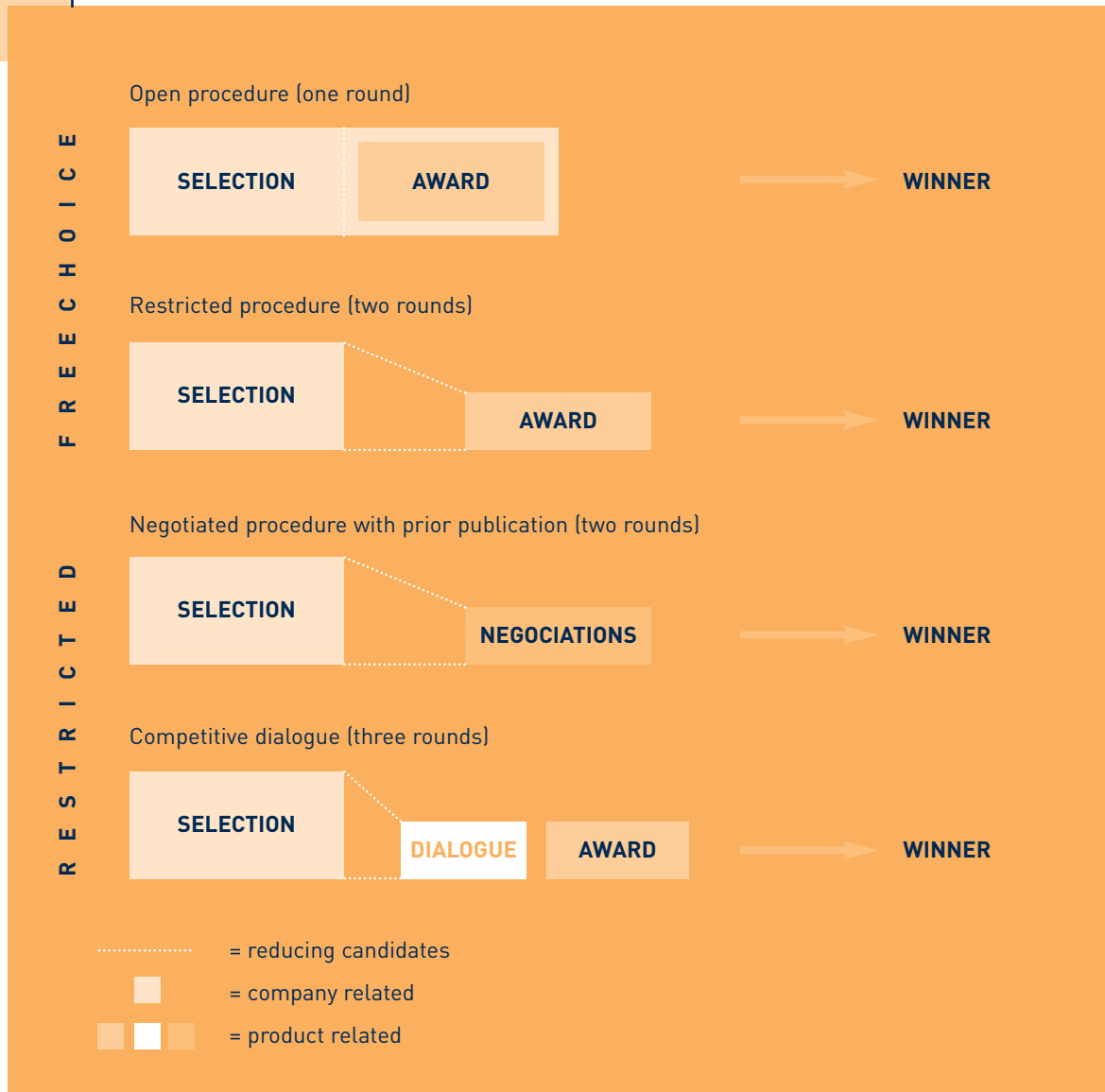
This chapter will be focused on the possibilities that exist under the current EU procurement legal framework, but will also take into account the recently adopted new procurement directives (as they have enabled important improvements). This clarification of the legal background will make it easier to identify fruitful possibilities for the uptake of innovation orientated public procurement. In subsequent chapters, the issues raised will be revisited in terms of policy implications and practical application.

## 2.2 PUBLIC PROCUREMENT: SIGNIFICANCE TO THE SINGLE MARKET

In the Treaty, provisions exist for the opening up of the internal market within the EU, meaning an open market without trade barriers. More detailed rules were created to ensure that markets would become accessible to contractors over the whole of the EU. These rules were created in the early seventies, building on the internal market provisions in the EC Treaty. Common to these directives were the founding principles on which they were built: the principle of non-discrimination (also referred to as the principle of equal treatment) and the transparency principle.

These principles are not abstract, but practical norms applied in practice. Besides their main objective of opening up markets, they serve other interests as well, reducing possibilities for favouritism, nepotism or corruption. The principles are elaborated into procedures which the authorities apply when tendering contracts. The most frequent are indicated in the overview below.

**FIG. 2** Schematic overview procurement procedures



As indicated in the overview contracting authorities can choose freely between the restricted and the open procedure. The other procedures (of which the competitive dialogue is an optional procedure that the Member States may choose to implement) are special procedures and are restricted to the conditions for application set in the directives<sup>6</sup>. In certain cases the use of negotiated procedures can be of relevance to innovation, e.g. in the case where no satisfactory (regular and admissible) tenders have been received or in exceptional cases, when the nature of the works, supplies or services or the risks thereto do not permit prior overall pricing.

<sup>6</sup> Some differences exist for the utilities sector. Here the buyer may choose freely between open, restricted and negotiated procedures. There is therefore no provision for competitive dialogue.



## 2.3 POSSIBILITIES UNDER THE LEGAL FRAMEWORK

In this paragraph some examples and recommendations will be put forward that exist under the public procurement legal framework, although many other possibilities exist. These are put forward to demonstrate the possibilities of employing a policy to challenge private companies to be innovative.

### 2.3.1 Looking forward: foresight, market analysis and technical dialogue

#### TECHNICAL DIALOGUE

The technical dialogue, acknowledged in the legal system through a reference in the recitals, is a very effective instrument that can be used by the contracting authority. It gives the contracting authority the opportunity to prepare the tender procedure properly and to focus on the various possibilities which the market will be able to provide to satisfy its needs. This flexibility is crucial in practice as contracting authorities often lack in-house expertise, particularly where knowledge of new or innovative technologies or processes is concerned, for example. A technical dialogue gives the contracting authority knowledge and know-how from the market, limiting the need for external consultants.

In cases in which the contracting authority decides to hire external consultants, there is always the risk of the specification or schedule being tailored to a particular party, thereby ultimately restricting or, in the worst scenario, even precluding competition. As has been underlined by EC jurisprudence, the contracting authority has a heavy responsibility to prevent preferential treatment for particular suppliers/service-providers.

The technical dialogue should not be confused with the competitive dialogue. In contrast to the competitive dialogue, the technical dialogue is not a new procedure, but is a foresight technique and can be used prior to a procurement process.

#### MARKET SURVEY

The main characteristic of a market survey is that the contracting authority makes an inventory of the opportunities available in the market before deciding upon technical solutions that fit its needs. These opportunities might, for example, regard both technological solutions and the market players that can supply them. Generally, a market survey will be preceded by the drawing up of a so-called needs inventory. Using the needs inventory and the market survey, it is then possible to prepare an overview of (technical) requirements which, of course, is geared towards the specific needs of the contract.

#### PRINCIPAL DIFFERENCES BETWEEN THE TECHNICAL DIALOGUE AND THE MARKET SURVEY

Although a market survey may also include interaction with market parties, the main difference of the market analysis compared to the technical dialogue is that a market survey does not focus on a specific solution or concrete specifications (i.e. the contracting authority already making a specific choice), but rather on the range of possibilities and opportunities market players can offer. However, the object of the technical dialogue is to arrive at such a choice regarding the specifications or an overview of requirements.

Also, an important legal consequence flows from the difference between a market survey and the technical dialogue. Pursuant to the judgment of the Court of Justice of 11 January 2005 (case C-26/03) (Stadt Halle), a distinction is made between decisions by contracting authorities, which may be reviewed under the Remedies Directive [89/665] and those which cannot be reviewed. According to the Court of Justice, decisions which cannot be reviewed are confined to operations that merely constitute a purely preliminary market survey or, for example, are of a purely preparatory nature. We take the view that it can be argued that, unlike the market survey, the technical dialogue is a decision which can be reviewed.

A concrete example of the employment of the processes as described above is the situation in which a contracting authority issues a market survey in case it wants to know what the market can offer regarding open source and/or proprietary software for internet portals. If, for example, the choice has been made for open source software, a technical dialogue could be launched in order to help specify the exact requirements regarding open source software for internet portals.

### 2.3.2 Technical specifications

Technical specifications roughly serve two purposes: the first is for the contracting authority to describe the intended contract to the bidders and the second, to enable the contracting authority to perform an evaluation of offers based on these technical requirements.

The manner in which the technical specifications are drawn up determine the variety and quality of the offers. The offers received will answer to the requirements laid down by the authority. Therefore, if the authority does not allow freedom for the contractors to supply innovative solutions, then it is sure that the market will not be keen to supply these. Therefore, it is crucial for contracting authorities not to define these specifications too tightly, but to leave open means by which companies can prove they have achieved desired results.

One way of doing this is to make use of performance-based or functional requirements. Under the current directives, but especially under the new directives, possibilities exist to define the contract in terms of outcomes/output specifications.

*A very practical example would be to indicate in the specifications that the functional requirement for all offices in a building is to be at 20 degrees during office hours, instead of formulating extensive technical specifications for an oil or gas heating installation. This way companies can also make use of incoming sunlight, natural ventilation or other ways of heating and cooling buildings, which have the same effect but are cheaper and/or more environmentally friendly.*

### 2.3.3 Selection criteria

Selection criteria exist to test the bidder's technical or economical/financial capacity and capability to perform the contract. This means that if a contract is defined in terms of innovative quality or the need for investment into research, it is possible to assess whether this bidder has the capacity to do so.

The legal framework provides the contracting authorities not only with the possibility to evaluate past experience, for example by asking for the principal (innovative) contracts performed over recent years, but also to evaluate the capacity and capability of a bidder to perform the contract.

*For example, a contracting authority could look at the percentage the company invests in research and development, or in the specific skills needed for this contract with the technical bodies that will support this contract. The criteria could also apply to the people performing the contract, such as the education level of the workforce or the level of expertise of the technicians.*

### 2.3.4 Award criteria

The award criteria determine the final ranking of the tenderers' offers. Under the legal framework, one or two ways exist in which innovation or investment in research can be taken into account in this stage:

The first method is to set a criterion for the innovative quality of the bid. This means the level according to which the company has succeeded to produce an innovative offer.

*For example, when a ministry is launching a tender specifically for the development programmes for the promotion of innovative technologies, it could be considered admissible if the offers for the organisation of these programmes were rated on their innovative character as well.*

The second method is more indirect, but could be more convincing. The innovative character of an offer will allow a better value for money than conventional bids. This means that if an innovative solution is, for example, cheaper, allows shorter delivery periods, enables greater security of supply, this can be weighed in either the criterion of 'lowest price' (price/costs only) or most economically advantageous offer (price and/or others as indicated above).

*Sometimes innovative offers can look more expensive or less advantageous in the short term, but will be better offers in the long term. Taking these long-term effects into account is possible within the legal framework through, for example, long-term cost calculations or life-cycle cost approaches. Costs and benefits do not have to be limited to only the moment of purchase. This issue is explored further in Section 5.2.*

### 2.3.5 Confidentiality

Within the context of public procurement procedures under the directives, it is indicated in this legislation that, as a general rule, contracting authorities are not allowed to disclose information to third parties from economic operators which has been designated by them as confidential. Such information includes, in particular, technical or trade secrets.

### 2.3.6 Contract performance clauses

As will be demonstrated in more detail in chapter 6, it is vital for a contracting authority to stimulate innovation with the company winning the bid at the stage of the execution of a contract.

The contracting authority should also address the issue of intellectual property rights and confidentiality in a balanced way. A simple transfer to the contracting authority of all intellectual property rights developed under the contract could seriously harm the policy goal to stimulate innovation. The same applies to the use of too restricted confidentiality clauses.

## 2.4 RECENT CHANGES TO PROMOTE INNOVATIONS

In 2004, the Council and the European Parliament, on the initiative of the Commission, adopted new consolidated public procurement directives. These directives were adopted in the light of a necessary revision of the directive in order to make these more modern, flexible, and clear. In this process, explicit changes were made to the legal framework to stimulate innovation through public procurement. In the overview below, some of the most important changes have been indicated.

### 2.4.1 Competitive dialogue

As an exception to the rule that an open or restricted procedure has to be used by contracting authorities, the legal framework provides the opportunity to use a new procedure in some restricted cases, the so-called competitive dialogue. It is understood that the use of the competitive dialogue is an option in case the use of foresight techniques has not been completed successfully, in the sense that the contracting authorities find it (still) objectively impossible to define the means of satisfying their needs or of assessing what the market can offer in the way of technical solutions and/or financial/legal solutions.

The competitive dialogue provides for a three-step approach:

- The setting up of requirements by the public authority and prequalification of bidders, based on their technical expertise and the way they intend to satisfy the customer's needs;
- A dialogue with at least three shortlisted potential tenderers aimed at setting up the solution. The public authority can pay tenderers for the dialogue;
- The final tendering is limited to at least three participants, with the possibility of clarification but without further negotiations, and is based on the requirements issued at the start of the tendering procedure.

According to the text of the regulatory framework, its use is envisaged in cases such as the implementation of important integrated transport infrastructure projects, large computer networks or projects involving complex and structured financing, the financial and legal make-up of which cannot be defined in advance. Some public-private partnerships and private finance initiative projects could be considered appropriate as well.

The procedure is not designed for the encouragement of innovation as such but could, nonetheless, be used as a vehicle for implementing some of the issues elaborated in the subsequent chapters of this report, notably the creation of a better understanding between bidder and customer, reduction of risk through improved knowledge, and allowing whole life costs to be clearly elaborated and used as a basis for award. At the same time, other key concerns need to be managed too, including protection of intellectual property and the need for requirements to be based upon needs rather than solutions.

#### **2.4.2 Framework agreements**

The legal framework provides the contracting authority with the opportunity to use so-called framework agreements. Relevant to innovation, these agreements enhance the use of multiple sourcing techniques and the use of functional specifications. Framework agreements are more flexible purchasing techniques and allow contracting authorities to adopt their needs to technological developments without restarting a new tendering procedure, and thus may have a positive impact on the fostering of innovative solutions.

#### **2.4.3 Technical specification**

The changes on technical specification in the new procurement directives have been the most important changes for innovation and research orientated procurement. As the technical specifications have an important impact on the offers, changing the rules on these will have a considerable effect on practice as well.

In comparison with the directives adopted in March 2004, the new directives have opened the door to functional and performance-based requirements. Unlike in the current system where the use of these requirements needed to be explained and justified, the new directives have put them on the same level as references to standards. This means that contracting authorities under the new directives can choose freely whether they wish to describe their contract in a performance-based manner or through reference to standards, or even through a combination of the two (for example, one part performance-based and the other through standards).

Improvements have been made, not only in the setting of requirements but also in terms of the rules of evidence by which companies can prove their compliance. The new directives have also opened up the freedom to provide equivalent evidence, which means it will be easier for companies to prove that they are compliant with the requirement, but without using the indicated standard means of evidence. In future, this new provision will help innovative companies to get easier access to public contracts.

#### 2.4.4 From directives to practice: using the possibilities

It is not yet possible to determine the potential beneficial impact of the new directives. However, it is clear to us that changes other than those in legislative arrangements will be needed to encourage procurement for innovation.

The implications of these issues are explored in subsequent chapters of this report. A cross-cutting concern is that uncertainty around these options may discourage contracting authorities and/or the best suppliers from engaging fully with these opportunities. Hence we recommend below that Member States ensure that procurement personnel receive adequate training in their application. Furthermore, the issue of whether these regulations are sufficient to promote innovation and research remains an open one which should be reviewed when a body of experience with their application has emerged.

##### BOX 2.1. Good practice guidelines

To avoid discriminatory behaviour, it is suggested that contracting authorities publish their intentions to start a technical dialogue. This also gives the market the opportunity to offer the best ideas, especially on the field of innovative products, services and/or works.

Build awareness of how contracts can be set up, including appropriate provisions for options on confidentiality, intellectual property rights (IPR) and options on licensing to manufacture or build.

##### BOX 2.2. Recommendations

###### Recommendation 1:

By the year 2010, the European Commission should consider conducting a review, with Member States, of the extent to which the new public procurement legislation flowing from EC Directives 2004/17/EC and 2004/18/EC is enabling R&D and innovation.

###### Recommendation 2:

Member States should make use of the new possibilities under the directives and implement the new procedures into national law. At the same time, Member States should make the necessary clarifications to promote a successful use of the new instruments.

###### Recommendation 3:

In transposing new directives into national law, Member States should ensure that procurement personnel receive training in the application of the new legislation.

###### Recommendation 4:

To date, there is not a standard form for technical dialogues. We therefore recommend that the European Commission introduce and publish a new standard form, to give contracting authorities the opportunity to improve preparations for a formal procedure within the context of the Directives 2004/17/EC or 2004/18/EC.



# Current and Future Public Procurement Practice

The potential of public procurement as a stimulant and catalyst for innovation has long been recognised. In the 1970s, empirical studies compared public R&D subsidies with state procurement contracts without direct R&D payments. They came to the conclusion that over longer periods of time, state procurement triggered off greater innovation impulses than R&D subsidies in many areas<sup>7</sup>. The quantitative and qualitative effects of state demand led Geroski to conclude that procurement policy "is a far more efficient instrument to use in stimulating innovation than any of a wide range of frequently used R&D subsidies"<sup>8</sup>. Dalpé et al. go further, citing results that indicate that the state exerts strong demand, particularly in those technology areas that are distinguished by high innovation dynamics<sup>9</sup>. In these research-intensive fields, the state is often more demanding than the private actors who also contribute to demand. The 1990s saw the first systematic approaches to utilise state procurement in some countries, and the promotion of private procurement to create new markets and diffuse innovations (for a selection of cases, see Edquist et al.<sup>10</sup>). However, with the exception of Sweden and the US, these policies were generally not systematically designed and were not fed by an innovation-orientated procurement strategy.

## 3.1 PROCUREMENT AND MULTI-LEVEL GOVERNANCE

Procurement operates at many levels within Europe. Hence, regional and local government may also be drivers of procurement for innovation. Actions may also be possible at supra-national level. A study for the European Commission in 1997<sup>11</sup> estimated the size of public procurement as a whole for the (then) 15 Member States in 1994 based on the System of National Accounts Data complemented with demand-side survey results. It excludes compensation to employees. A range of ECU 704 to 737 billion was given for total public procurement (counting both government and public services/utilities) and ECU 547 billion for government alone (8.7% of GDP). For the EU-15 as a whole this estimate was broken down as per Figure 3.

This shows sub-central government being responsible for almost two-thirds as much activity as central government in aggregate. However, the distribution is quite varied between countries, ranging from those with strongly federal or devolved systems such as Germany, where central government counts for only 28% of local spending, through to centralised systems such as the UK, where the central government proportion is almost three times larger. A regional administration in a large country may be procuring goods and services on a somewhat larger scale than a small country in aggregate. It should also be noted that fragmentation can exist *within* purchasing authorities. Below, we recommend improvements to the way in which policy developments likely to lead to major procurements are communicated to procurement officials at all levels of government.

<sup>7</sup> Rothwell, R., Zegveld, W., *Industrial Innovation and Public Policy. Preparing for the 1980s and the 1990s.* Pinter, London, 2004.

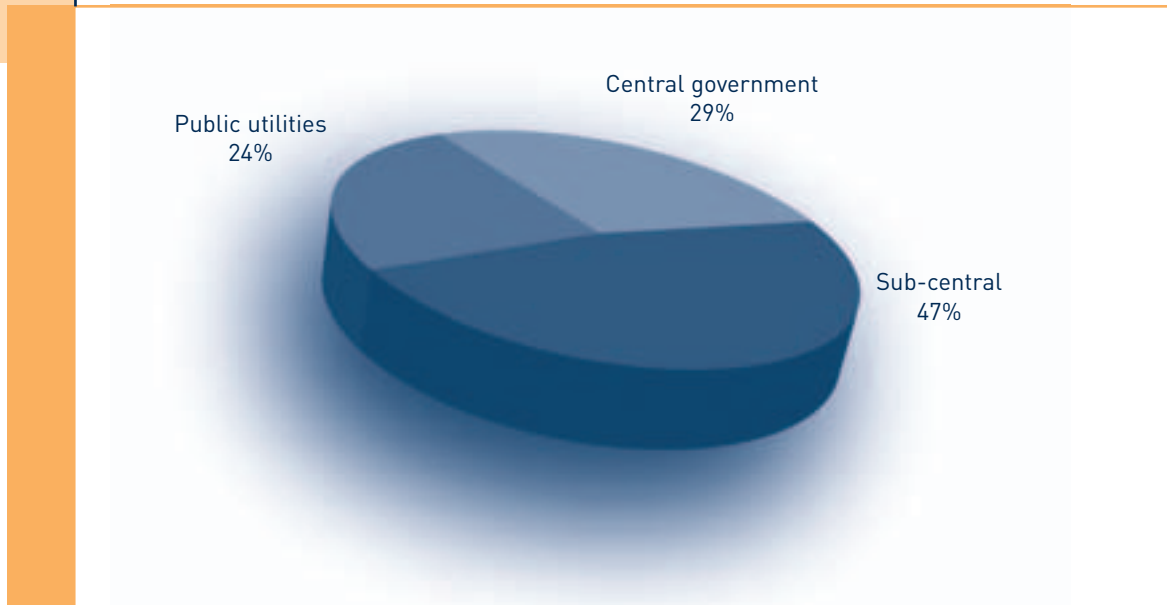
<sup>8</sup> Geroski, P.A., Procurement policy as a tool of industrial policy. *International Review of Applied Economics*, 4 (2), 182-198, 1990.

<sup>9</sup> Dalpe, R., DeBresson, C. and Hu Xiaoping. The Public Sector as First User of Innovations, *Research Policy*, vol. 21, issue 3, pages 251-263, 1992.

<sup>10</sup> Edquist, C., Hommen, L. and Tsipouri, L. (eds): *Public Technology Procurement and Innovation.* Kluwer Academic, 2000.

<sup>11</sup> European Commission. *The Single Market Review, Sub-series III: Dismantling of Barriers, Volume 2: Public Procurement, EC, 1997.*

FIG. 3

**Procurement by level of government**

Particular issues for sub-central government include:

- **Degree of control over purchasing** - even where spending is attributed regionally, it may be centrally decided or coordinated;
- **Aggregating or harmonising demand across multiple authorities** to create sufficient scale to incentivise innovation;
- **Retaining benefits in the region** - in general the smaller the geographical area the less the chance that innovative activities will take place within the boundaries of the purchasing administration;
- **Different mix of goods and services** - it is likely that regional authorities will purchase different mixes from central government and hence have different sectoral impacts; for example, they are more commonly the purchasers of buses.

Moving to the supra-national level of governance, the rationale for discussing the issue of innovative procurement at European level must include a link to the concept of European 'home markets' for innovative goods and services (a situation already operating for some major items in defence procurement). Industry frequently cites the fragmented nature of European markets as a reason for not investing in R&D in Europe. The converse of fragmentation is aggregation and there is an inherent attraction in the idea of government agencies across Europe pooling their requirements in order to offer a market opportunity large enough to warrant major investment in innovation by suppliers. There are the fundamental issues of whether the same solutions and standards would meet all needs but even if that condition were satisfied some challenges remain.

One difficulty arises from different institutional settings for purchasing a given solution. Consider the case of hospitals (healthcare is often seen as a major opportunity for innovative procurement). Decentralisation is a common trend but is manifested in many ways, for example with multiple levels of government (national/regional/local) involved, quasi-independent government firms, non-governmental organisations (including charities) all being involved in different parts of Europe. National coordination and strategy-setting procedures also vary. In these circumstances, the transaction costs of identifying common needs, determining who has purchasing authority and translating these into contracts may be very high, at least in initial iterations.



## 3.2 GOOD PRACTICE EXAMPLES

Several countries have established good practice in procurement and in the infrastructure to promote it. At a more general level, we may cite cases of agencies that are not exclusively motivated by innovation considerations but have the potential to transform public procurement markets towards a more innovation-friendly direction through encouraging exchange of best practice. Examples include National Procurement Ltd in Denmark, owned by the national and municipal government, which provides services such as coordinated purchasing. BeschA is the dedicated procurement agency of the German Ministry for Interior and procures goods and services on behalf of the ministry and 26 other organisations across Federal Government. Consip, the Italian Public Procurement Agency, operates exclusively for the state and the public administrations (central, local, health and university). It manages a programme for rationalisation of public spending for goods and services, through the use of information technology and innovative purchasing methods such as the e-Marketplace, e-shops, on-line auctions.

Also based in Italy, but serving the whole EU, is the EU Public Procurement Learning Lab<sup>12</sup>. The EUPPLL is a permanent network of over 30 institutions across Europe in which each participant actively cooperates bringing its own experience, strengths and specific public procurement competences. The initiative was launched in November 2003. It meets every quarter and, besides sharing information and best public procurement practices among involved institutions, triggers a continuous and spontaneous knowledge-sharing process.

Also in the category of networks are the European Union Advisory Committee on Public Procurement - a policy-orientated network with representatives from national coordination bodies on public procurement working with DG Market and the Public Procurement Network (PNN) which aims to strengthen the application of procurement rules through a mutual exchange of experience and benchmarking. Its members come from EU Member States, EEA members, Switzerland and accession and candidate countries.

An example of national support from the Netherlands is shown in the box below:

### BOX 3.1. **The PIA** (*Professioneel Inkopen en Aanbesteden - Professional Purchasing and Tendering*) **action plan (The Netherlands)**

In 2001, the Netherlands established a five-year initiative intended to improve compliance with EU Directives, increase the 'market presence' of public procurement, capture and share procurement experience and improve co-operation where feasible.

The plan obliges each ministry to designate high-level responsible parties, analyse its own purchasing activities, reconsider the organisation and outsourcing of groups of related procurements, examine the skill and ICT requirements of procurement, coordinate where appropriate with other ministries and report to the legislature on an annual basis.

The action plan is managed by a small core of people on secondment from ministries, who report to a client group of five senior civil servants and liaise with central purchasing officers in the ministries. This organisation, funded by the Ministry of Economic Affairs, acts as a facilitator and coordinator, and a central point of knowledge to enable collaboration. In addition, the Dutch Purchasing Council (NIC) is a private company providing purchasing, project management and facility management services on a fee basis to public and private sector clients. Less than 4% of central and local government procurement is placed with NIC.

Specific PIA foci have been electronic sharing of information and e-procurement. In addition, the action plan has developed a range of tools, including joint procurement guidance, overview of contracts, a model for fitting procurement functions to specific requirements, a model for defining skill requirements and specific guidance for local authority procurement.

<sup>12</sup> [http://www.consip.it/sc/uff\\_studi\\_ini\\_eu\\_ing.htm](http://www.consip.it/sc/uff_studi_ini_eu_ing.htm)

The United Kingdom's Office of Government Commerce (OGC) supports procurement by central government agencies and other public bodies. The OGC's mission is to work with the public sector as a catalyst to achieve efficiency, value for money in commercial activities and improved success in the delivery of programmes and projects. It does this by supporting three significant activities in public sector organisations: improving efficiency, programme and project management, and procurement. A range of advisory, training and networking activities include a successful delivery toolkit which itself includes the concept of gateway reviews. These involve a review of an acquisition programme or procurement project carried out at key decision points by a team of experienced people, independent of the project team.

To promote procurement for innovation, OGC has produced advice in the form of a booklet entitled 'Capturing Innovation'<sup>13</sup>. The graphic shown in Figure 4 summarises the key elements. A three-pronged strategy involves making customers more challenging, opening channels for new ideas and developing rewards that influence desirable behaviours.

A specific dimension of procurement for innovation is concerned with products, goods and services that promote sustainability. Eco-innovative procurement in areas such as energy efficiency can be driven by two policy objectives. A good practice case study from Sweden is shown in the box below.

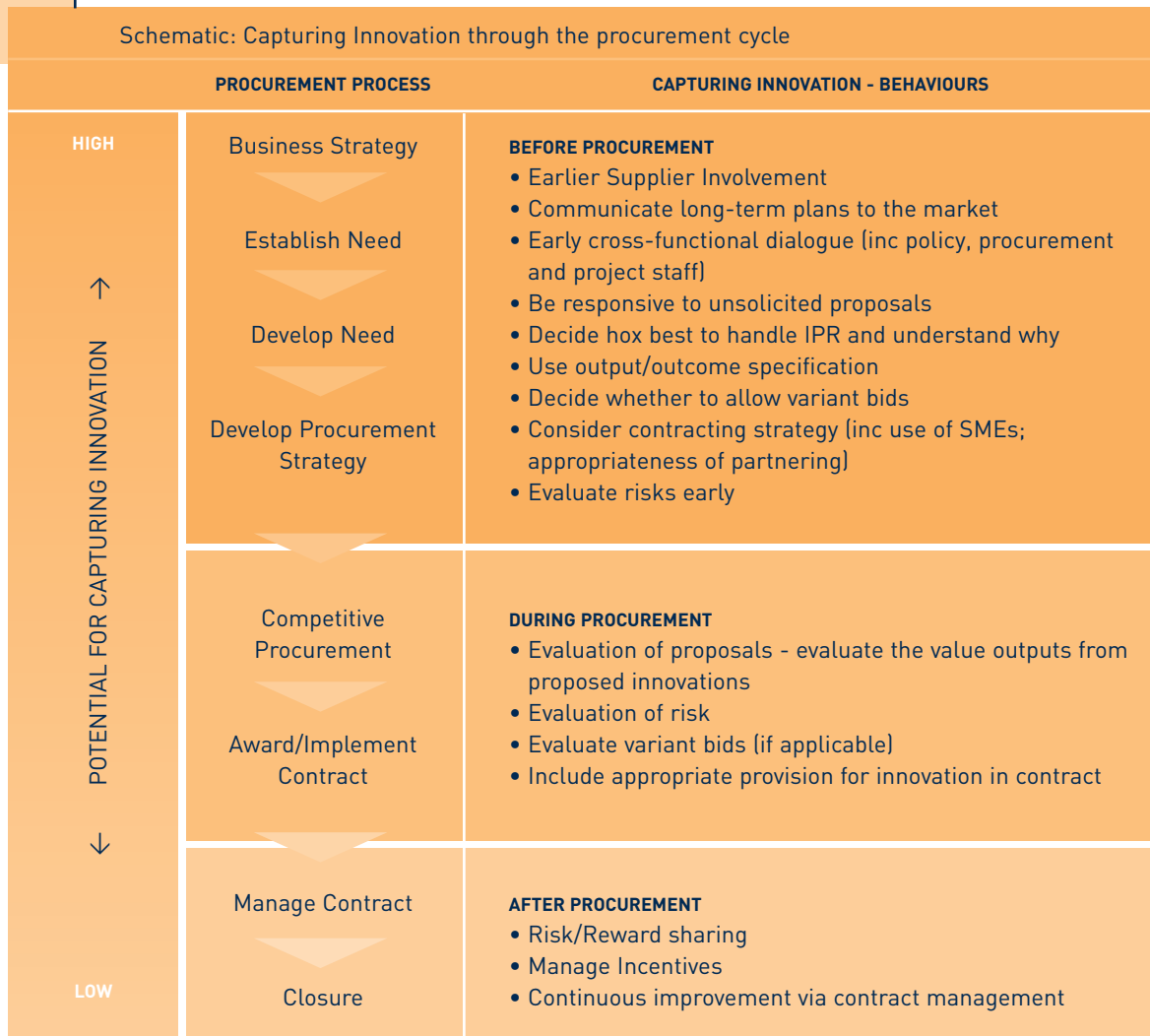
### BOX 3.2. Eco-Innovative Procurement (Sweden)

NUTEK<sup>a</sup> is a Swedish agency which aims to promote innovative products for specific public and technology objectives by conducting procurement exercises on behalf of end-users. For example, NUTEK conducted a contest for firms to submit bids to supply refrigerators, which used fewer chlorofluorocarbons as coolants and consumed less energy than the best available technology. The prize, an order for at least 500 items, was won by Electrolux within a relatively short time. Examples of improvements in energy efficiency stimulated by NUTEK procurements included high-frequency lighting ballast (20%), heat pumps (30%), refrigerators (33%), windows (44%) and communal washer/dryers (50%)<sup>14</sup>.

Other Member States would benefit from instituting similar approaches.

<sup>13</sup> [http://www.ogc.gov.uk/embedded\\_object.asp?docid=1001717](http://www.ogc.gov.uk/embedded_object.asp?docid=1001717)

<sup>14</sup> Further details at <http://www.nutek.se/> and Westling, H.: Buyer Co-operation for more efficient solutions, DA/DSM DistribuTECH Europe 97 conference, Amsterdam, 1997.

**FIG. 4** OGC approach to procurement for innovation

**BOX 3.3. Recommendations**
**Recommendation 5:**

Member States to conduct a review of current procurement practice against the best practice described in this report and to develop appropriate action plans to improve practice.

**Recommendation 6:**

Member States, as part of their efforts to benchmark progress towards the 3% R&D investment target, should seek to develop indices of innovation in public supply markets.

**Recommendation 7:**

Member States to review whether existing central civil policy developments likely to lead to major procurements are communicated effectively to procurement officials at all relevant levels of government



# Gearing up for Procurement

Successful procurement for innovation involves both short- and long-term preparation. Long-term preparations are aimed at building both supply and demand side capabilities. Short-term preparations are aimed at setting the scope and operation of the procurement exercise. Being able to anticipate and clearly describe needs, and to think through the likely consequences of possible solutions, are particularly important for the procurement for innovation. These extend the 'intelligent customer' function - a combination of knowledge (human capital), organisational arrangements and job structuring that facilitates the performance of procurement tasks. Procurement is a highly skilled profession that requires well-trained people. Both the public and private sectors need people who can manage the supply of strategic goods to their companies and administrations. The core message of this chapter focuses on people: the knowledge, skills and capabilities they need to implement procurement for innovation and how to ensure that these are acquired by the target groups.

## 4.1. THE INTELLIGENT CUSTOMER

The skill of purchasing lies in achieving an optimum combination of quality and price. When dealing with off-the-shelf goods, such skills may be accumulated through general experience. However, when goods and services are based on the newest innovative technology, which may not even be available elsewhere, then technological knowledge is necessary to specify them, to complete the purchase, and to follow through and learn from the consequences of the purchase. Such smart or intelligent customers require several key characteristics throughout the procurement cycle:

- **To identify real needs and opportunities** they must be aware of trends in the technology and markets across what could possibly be a wide range of sectors. They must have knowledge of advanced solutions implemented elsewhere and of the capabilities of suppliers to take the work forward. They will probably need a network of external knowledge sources to supplement their own expertise. This could be in universities or in specialised consultancies, including public laboratories.
- **To specifying functional, cost and quality requirements** they need access to external networks. In addition, it is important to be able to sustain a dialogue with potential suppliers, and with this achieve a balance between rigour in definition of requirements and sufficient flexibility not to exclude innovative solutions.
- **To assess tenders**, specific knowledge of how to carry out techno-economic assessments of the area in question (or how to source them) is needed. The ability to predict whole-life costs is particularly important. The technical capability for continuing dialogue with tenderers to seek clarification is necessary.
- Upon award, **design and management of the contract** encompasses every aspect related to the purchase, including conformance tests, supply, documentation, associated training, after-sales service, intellectual property rights, etc. Skills are needed in the negotiation and writing of contracts, which embody the necessary flexibility to allow the feedback needed in R&D activities and innovative activities.
- Finally, in order to **accept the purchased goods, works or services and verify contract performance**, the intelligent customer needs access to equipment and people qualified to perform functional, technological and environmental tests.

All of the above needs to be accomplished in a timely and economic manner. We may also add a broader capability to the list - **managing risk and uncertainty**. While both are concerned with that which cannot be known, here we distinguish between them by labelling as risk, probabilities that can be calculated and as uncertainty, things which are completely unknown and hence unquantifiable. We deal in detail with risk management in a later chapter. With respect to procurement for innovation, uncertainty is the right term to describe the absence of sufficient information based on prior experience. Uncertainty can also be seen as providing incentives to develop options. It may be driven by limitations in the accuracy and precision of data, lack of knowledge of future technology and market developments, buying model uncertainty, and perceptions by individuals of the value of different impacts with economic, environmental or social drivers.

Core to having an intelligent customer capability is the ability of procurement officials to apply and drive forward appropriate procurement practices in a professional way. Currently, public procurement training provision is very uneven across Member States. While some Member States have well developed training programmes, others have little or no training provision and rely on gifted amateurs, often with no previous experience of procurement, let alone procurement for innovation and the ability to handle procurement exercises. This undoubtedly increases the risk of failed public procurement exercises and is likely to drive procurement officials towards the purchase of familiar goods and services in ways likely to both limit competition and reduce ability to address public service challenges. Lack of training is also likely to reduce compliance with Single Market principles. At the end of this chapter we set out a series of good practice guidelines and recommendations which point the way to developing and incentivising a cohort of people who can fulfil the function of intelligent customers. In the following chapters we return several times to this theme.

## 4.2 ...AND THE INTELLIGENT SUPPLIER

The anticipation of procurement for innovation can be undertaken separately by the demand and supply sides or jointly between them. A very strong message from supply businesses is that the lack of information given to them on future procurement needs prevents them from gearing up effectively to supply. This not only affects their willingness to invest in R&D, but also in their investment in staff recruitment and development. At the same time, this lack of information makes it less likely that potential suppliers will successfully match new developments to potential procurement needs and alert governments to new solutions to knotty problems. This final point is compounded by the lack of clear channels for bringing good ideas and new developments to government. Some Member States have made specific provision for unsolicited proposals initiated by a supplier<sup>15</sup>. Though these must eventually be realised through a call under the terms of directives, there is considerable merit in providing both encouragement and a channel for processing such ideas.

SMEs may be particularly handicapped in this respect. They are likely to have less extensive networks and less experience of dealing with the public sector and its procedures. If the dynamism of their innovative capabilities is to be harnessed it is particularly important that these firms are actively courted and developed as potential suppliers. Such firms secure a several-times-greater share of procurement contracts in the USA than they do in Europe. This is a consequence of both supply and demand deficiencies. These need to be addressed simultaneously.

Risk management is a consideration in relation to suppliers. From the point of view of sourcing and supply-chain management, both a general and more detailed assessment of relevant supplier markets and specific considerations in relation to the particular procurement are necessary. Issues include technical risks, availability risks, including the capacity of potential suppliers, and risks related to the financial strength of suppliers. We visit this issue in more detail in Section 5.3.

<sup>15</sup> Specific regulations applying to such public procurement processes include Italy's Merloni law of 18 November 1998, Spain's 1955 regulation on local authority services and the 23 May 2003 law on works concessions (13/2003).

### 4.3 FORESIGHT AND TECHNOLOGY STRATEGY

The emphasis we have placed upon detecting needs at an early stage and of communicating these to suppliers brings to the fore the idea of using foresight to create a common vision as a framework in which purchaser and supplier can agree on the likely trajectories of innovation. Subsequently, these can be used as a basis for functional specifications that stimulate innovation and require R&D to achieve them.

A commonly used definition of foresight is:

“Foresight is a systematic, participatory, future intelligence gathering and medium- to long-term vision building process aimed at present-day decisions and mobilising joint actions.”<sup>16</sup>

An analysis of the emergence of national technology foresight in the 1990s noted:

“...as firms become increasingly dependent on complementary or external sources of technology, formulation of strategy, previously an internal activity, must at least in part now be carried out in the public arena. By collaborating in their thoughts about the future, organisations may be better placed to anticipate the actions of their customers, suppliers and others, such as regulators, who are likely to influence the environment in which they will operate. This argument is particularly strong for innovation in complex public/private systems such as vehicle route information technologies, where coordinated action over a period of years is needed to put the system in place.”<sup>17</sup>

The notion of a common or shared vision resonates with the concept of a public Technology Platform (TP), which has found renewed favour in recent technology policy discussions as an instrument for addressing issues of coordination and focus. As understood in the public context (rather than in the context of a single firm's technology strategy), the term TP has been defined as:

“...a mechanism to bring together all interested stakeholders to develop a long-term vision to address a specific challenge, create a coherent, dynamic strategy to achieve that vision and steer the implementation of an action plan to deliver agreed programmes of activities and optimise the benefits for all parties.”<sup>18</sup>

While not all Technology Platforms will involve procurement, the roles of public authorities as consumers and as regulators of technology are recognised as one element of the stakeholder participation that is envisaged.

A final comment on the role of foresight in setting the scene for an innovative procurement strategy is to stress the importance of wide participation. Public goods and services, in particular, often have a significant social dimension and foresight can be used to anticipate citizens' concerns and requirements.

### 4.4 AGGREGATION OF DEMAND

The larger the potential demand for an innovative product, the larger the incentive for the firm to invest in its development. Centralised procurement of large bundled contracts for innovative products or services may therefore ensure a sufficiently large and certain demand to justify larger investment in R&D<sup>19</sup>. This is particularly true when the technology exhibits increasing returns to scale in R&D. Public sector demand is often highly fragmented, for example between different local authorities or hospitals. Through coordination the incentive to innovate could be greatly increased. Also the possibility of affording greater procurement and market expertise is much higher for the aggregated purchase.

<sup>16</sup> FOREN Foresight for Regional Development Network, A Practical Guide to Regional Foresight, IPTS, PREST, CM International and Sviluppo Italia, European Commission 2001.

<sup>17</sup> Georghiou L, The UK Technology Foresight Programme, Futures Vol.28, No.4, pp359-377, 1996

<sup>18</sup> Europa Research: [http://europa.eu.int/comm/research/energy/nn/nn\\_rt/nn\\_rt\\_hlg/article\\_1262\\_en.htm](http://europa.eu.int/comm/research/energy/nn/nn_rt/nn_rt_hlg/article_1262_en.htm)

<sup>19</sup> Vives, X., Innovation and Competitive Pressure, CEPR Discussion Papers no.4369, 2004.

On the other hand, the larger the bundled contract, the more difficult it is for SMEs to participate and win. When innovation comes mainly through start-ups and SMEs, large bundles may provide an advantage for large mature incumbents and reduce market entry and overall innovation, and even induce the exit from the market of unsuccessful bidders. This will inevitably reduce the variety of technologies available and hence suppress a vital dimension of competition. Venture capitalists often finance several start-ups on similar topics to maintain a high level of technological variety and hence improve the chance of selecting the best outcome.

A possible solution may be to award the auction to more than one firm (co-sourcing). The advantage is that this maintains technological competition and increases the chance of an innovative SME being one of the chosen suppliers. On the other hand, overall costs increase and the market incentive for both firms is reduced. Taking the process further, in some instances demand is better unbundled to facilitate participation by SMEs, but in this case we would strongly advocate **coordinated unbundling**, whereby the larger market is preserved at the system level but where component technologies are separately sourced.

Large tenders are often used to obtain significant savings deriving from economies of scale. However, SMEs are often ill equipped to participate in large tenders. As the procurer is often not sure as to whether economies of scale are present or not, if they turn out to be non-existent, SMEs are damaged by the choice of the procurer to specify large tenders. The use of multiple lots is an important instrument to allow participation of SMEs that do not have the capacity to bid in large tenders. However, fractionalisation into lots reduces the opportunity for large firms to benefit from internally known economies of scales and thereby bid more aggressively, thus reducing procurement costs for public administrations. Combinatorial tenders are an increasingly used instrument by public administrations (e.g. Consip, BBG) to solve this trade-off. They consist of large tenders fractionalised into several lots, where each firm is allowed to bid on one, several and/or all the lots simultaneously. If economies of scale are indeed available, large firms will be able to produce an offer for all available lots at a convenient price for the procurer. If economies of scale are absent, small and medium firms will be able to bid successfully providing best value for money.

A related practical measure is that major suppliers can be encouraged to increase the availability and visibility of **subcontracting** opportunities in their supply chains. This would then open up opportunities for small innovative suppliers.

Governments can address the problem of 'network externalities', which is where the value of a product depends on how many others possess and use it. For example, a software office suite increases in value when others use compatible technologies and potential staff is familiar with it. If there are too few users, a 'technological lock-in' may exist. A public purchase can create the initial critical mass. For example, the Brazilian Government's choice of the Linux operating system encouraged many other users in that country to make the same choice, and thus stimulate private demand. On the other hand, the government may not have the capability to properly coordinate the demand or choose the most efficient technologies. In non-obvious cases, the choice should be left to the market.



**BOX 4.1. Good practice guidelines**

- Develop a cohort of public procurement officials at all levels who not only understand what is habitually done, but understand the full scope of what the legislative framework will permit and have experience of different procurement processes.
- Understanding or having access to market experts is vital.
- Share case study examples of innovative procurement processes/public procurement processes which have captured innovation across government frameworks. Build networks of people who have been through it.
- Build awareness of new technologies and ideas that are in development and being applied in the private sector - a close relationship with the supply base can help in this.
- Communicate long-range needs to existing and potential suppliers - make it easy for businesses to find out about known demand needs over the coming years
- Ensure strong communication between procurement personnel and policy/delivery personnel. Ensure early communication of policy needs to procurement personnel.
- For organisational preparation carry out a gateway review of proposed procurement strategy by independent assessors for all contracts over a set threshold.

**BOX 4.2. Recommendations****Recommendation 8:**

Member States should develop mechanisms to handle unsolicited innovative proposals from firms, inventors or universities.

**Recommendation 9 :**

Member States should consider the bundling or unbundling of procurement projects with innovation considerations in mind.

**Recommendation 10 :**

Member States should engage with major suppliers to explore ways of improving the visibility of subcontracting opportunities in their supply chains to open up opportunities for small innovative suppliers.

**Recommendation 11 :**

Member States should develop mechanisms to enable increased awareness of new technology solutions coming onto the market, including the use of foresight where possible. Those considering the implementation of foresight findings should be aware of the opportunities offered by procurement for innovation.

**Recommendation 12 :**

Member States should review their capability to communicate long-range procurement needs to potential suppliers and develop recommendations using the same or similar mechanisms as in recommendation 10

**Recommendation 13 :**

The Commission should consider the need for a feasibility of a Public Procurement Information Service on best available technologies and solutions.

**Recommendation 14 :**

All Member States should develop and implement proposals for training procurement personnel in the skills and knowledge needed for innovation.

**Recommendation 15 :**

The Commission should design and offer to stakeholders a cycle of seminars for procurement officials in Member States on procurement practice to stimulate R&D and innovation within the new EU legislative framework, concentrated on the best practice areas indicated in this report. This would be in conjunction with the transposition of the EU Directives into national law.

**Recommendation 16 :**

Commission services should report on the feasibility of creating a Union-wide curriculum and developing a Diploma of Strategic Supply (or similar) to include modules on procurement for innovation which are recognised in all Member States and supported by a pan-European curriculum and learning network.

# Tendering, assessing and awarding contracts

During the gearing up process described in the previous chapter, various preconditions for a tender process should have been established. These ongoing activities should include development and update of strategies for purchase of 'families' of goods or services based on market knowledge, previous experience, etc.; in effect, testing concept viability through early soundings outside the procurement process. In some cases this can be done explicitly with cooperation from the supply sector. The aim of this is to give clients a greater understanding of the achievability of their ideas and to allow high-risk proposals to be modified, abandoned or at least properly managed before any substantial investment is committed.<sup>20</sup> Human resources and efficient transaction processes should also be in place.

Against this background, the conditions for specific procurement may be considered. In this chapter we consider first the identification of requirements to specify the need, and second the formulation of a strategy for this specific procurement. Implementation of the strategy involves prequalification and selection of candidates (if there is not an open procedure), the invitation to tender, receiving bids, bid evaluation and contract award. Execution is addressed in Section 6.

## 5.1 SPECIFYING THE NEED

The relevance of innovation and R&D should already have been considered as a part of the broad strategy developed in the gearing up process. In a specific case, an assessment of how the supply market can meet identified needs should show whether innovation and R&D are necessary, or whether they are desirable as possible additional benefits. A phase of research and data collection by the purchasing authority should involve, among other things, building up technological information, identifying opportunities to leverage requirements, defining the existing and potential supply base and exploring opportunities for innovation and R&D. The aim is the greatest added value and an optimal handling of related risk. Goal setting should follow and, if innovation and R&D are intended, the goals and resulting performance measures should encompass these activities.

The Directives described in Chapter 2 frame the strategy, notably in respect of the choice between open and restricted procedures, competitive dialogue and negotiated procedures. As emphasised there, a key change in the new regulations is the facility to formulate technical specifications on, and equal footing in, terms of functional or performance-based requirements or by means of reference to standards. This creates an important vehicle for the promotion of innovation. Submitted tenders must be able to reflect a diversity of technical solutions. Where assessment is based on the most economically advantageous tender, contracting authorities may also authorise tenderers to submit variants that meet stated minimum requirements. Again this change can be seen as favouring innovation and should be emphasised.

<sup>20</sup> Intellect - a UK Trade Association in the IT sector is inviting public sector clients to take market soundings to test the practicability of their ideas at the earliest possible stage. [http://www.ogc.gov.uk/embedded\\_object.asp?docid=1001496](http://www.ogc.gov.uk/embedded_object.asp?docid=1001496)

## 5.2 STRUCTURING THE TENDERING PROCESS FOR INNOVATION

The search for innovative solutions through a tendering process places far greater demands upon the purchaser than a conventional assessment of cost, quality and capacity. Both specification and selection require careful attention to be paid to the ability to deal with complex and not easily comparable information, and to the need to control the cost, both to the contracting authority and to the bidders. The box below summarises the main steps involved in the introduction of innovation in the tendering process.

### BOX 5.1. Eight steps to embed innovation in the tendering process

1. Study whether innovation is desired or feasible, and the way it will be made visible: through alternative solutions, embedded in the process or a product of the subject of the tender proposal.
2. Allow the legal and financial department to include the viability of assessing innovation issues in the framework of the tender proposal.
3. Before publishing the tender proposal, fix the qualifications required to participate in the competitive tender and the invitation procedure.
4. In the tender documents, fix the benchmark values needed to assess whether a proposed alternative solution complies with the requirement to be innovative.
5. Develop selection criteria which draw innovation into the tender appraisal.
6. Express how the shared liability issues, warranties, implementation risk and payments will be handled in the following contract.
7. Train the tender evaluators to assess complete compliance with tender documents and work conditions, and to introduce marks or points to innovative issues in a fair and competitive way.
8. Communicate results to all bidders, but keep in mind the importance of protecting the intellectual property, represented by the proposed innovations, in order to allow bidders to develop them fully or use them in future proposals.

An important dimension lies in ensuring that potential innovative suppliers get to hear of the call. There is a strong perception that an inner circle of previous contractors are likely to be re-contacted and to hear of forthcoming opportunities. SMEs, without the resources to maintain contact networks, are in particular danger of being excluded from this type of knowledge. Below, we recommend measures to increase the range of potential suppliers through use of national portals. Streamlined pre-qualification is another measure that can aid SMEs where procurements are below the OJEU threshold.

In the assessment itself, procurement for innovation will almost certainly involve the use of Most Economically Advantageous Tender (MEAT) criteria rather than lowest price. This means that the selected tender offers the greatest overall value-for-money, including whole life financial and non-financial costs, effectively the optimum combination of whole-life costs and quality (see box below).

**BOX 5.2. Award criteria****Award criteria (as set out in Article 53)**

Price  
 Quality  
 Technical merit  
 Aesthetic and functional characteristics  
 Environmental characteristics  
 Running costs  
 Cost-effectiveness  
 After-sales service  
 Technical assistance  
 Delivery date  
 Delivery period  
 Period of completion

Other criteria that are not specifically set out in article 53, but that are frequently used by contracting authorities, are criteria such as partnering/team working, innovation, organisational culture and risk management.

Always bearing in mind that Article 53 of Directive 2004/18/EC states that the criteria must be mentioned in the contract notice, be weighted as to their relative importance, and respect the issues of relevance to the subject and consistency with the Treaty principles, it is still feasible to use the whole-life costs concept to stimulate innovation (see box below). Even costs that are indirect to the product/service being provided may be factored in, providing there is direct benefit to the contracting authority. For example, less energy-efficient IT equipment could generate more heat, put pressure on air-conditioning and therefore increase energy costs. These additional costs can be included as indirect whole-life costs because they are directly incurred through the purchase of the product.

**BOX 5.3. Categories of whole-life costs**

ACQUISITION COSTS	OPERATING COSTS	DISPOSAL COSTS
<ul style="list-style-type: none"> <li>• Initial purchase price</li> <li>• Installation costs</li> <li>• Transport costs</li> <li>• Commissioning costs</li> </ul>	<ul style="list-style-type: none"> <li>• Energy/water consumption</li> <li>• Annual licence fees</li> <li>• Maintenance costs</li> <li>• Staff costs</li> <li>• Training costs</li> <li>• Insurance premiums</li> <li>• Environmental taxes</li> <li>• Updating costs to avoid obsolescence</li> </ul>	<ul style="list-style-type: none"> <li>• Site clean up</li> <li>• Refuse collection costs</li> <li>• Recycling costs</li> </ul>

Implementing the criteria in the contract award process can also have an impact upon the level of innovation. Good practice includes consideration of financial and non-financial criteria in separate strands, tying the mix and weighting of criteria to the business case, and accepting that the final judgement will involve balancing out the business risk.

An overall conclusion is that the award stage on its own cannot deliver innovation. However, if innovation considerations have been introduced earlier in the process, suitable award criteria using MEAT can contribute to delivering an innovative outcome.

### 5.3 DEALING WITH RISK

Public sector personnel often seek to avoid risk to minimise the danger of public service delivery failures and adverse criticism in the press. However, effective risk management strategies can enable the deployment of innovative solutions to boost public service performance.

Dealing with risk in a public sector environment introduces additional considerations which pull in both directions in terms of how risk averse a contracting authority might be. On the one hand, government (by virtue of its legal, constitutional and fiscal position) can generally take on a broader range of risks (especially 'catastrophic' risks) than private actors can (through financial support, direct provision or regulation). On the other hand, it is averse to risks that impose clear short-term costs for uncertain long-term benefits because of the horizons of public accountability. Hence, most public bodies account for their expenditure on an annual basis but, for politicians, the imminent horizon is the next election. This may create an aversion to uncertain longer-term benefits if the costs are likely to be incurred before the next point of accountability. Furthermore the separation between capital and current public expenditure means that increased capital costs are manifested as better value in current spending, thus decreasing the visibility of the connection. Public-private partnerships can be useful in breaking down this traditional barrier.

Moving on to the specific considerations of risk in connection with assessment, an important starting point is the recognition that some attempts at innovation will inevitably fail. Nonetheless, steps may be taken to ensure that risks are recognised and their likelihood estimated so that steps are taken to mitigate them. Key aspects of a risk management plan are:

- **Risk identification** - determining which risks are likely to affect the project over its life cycle and documenting their characteristics.
- **Risk analysis** - evaluating risks and risk interactions to assess the range of possible outcomes so that they may be prioritised and the need for responses identified.
- **Risk mitigation and contingency planning** - assigning responsibility for risk actions, developing mitigation (where feasible) and/or contingency plans, developing measurements and developing action plans to respond to the risks.
- **Risk allocation** - determining which party is best placed to bear and mitigate risks, and assigning responsibility accordingly.

In the procurement phase, risks should be managed and tracked as outlined above and, once a proposal is selected, the new risks associated with development and implementation should be assessed in the same way. Practical measures to reduce risk involve a process known as 'logic of convergence' whereby a sequence of activities are engaged involving moving through initial tests, scaled models, 'breadboarding' and prototypes. Flexibility and dialogue with the supplier are necessary conditions, along with a high degree of expertise in the buyer. An example was the development of the TGV (high-speed train) where the French railway company, SNCF, worked in this way with Alstom. An important general feature is to ensure that lessons learned are fed back so that failure and success factors become known and disseminated.

Failure, if it comes, may be total (for example the incapacity of a supplier to deliver), partial (maybe the product or service falls below expectations), or simply involve late delivery. All may be occasional consequences of innovation. In some cases, supplying firms are unable to sustain the risk of innovation. This is particularly true for SMEs. In this situation, sharing risk between buyer and supplier may be needed. In the less constrained environment of the defence sector, Smart Procurement has been put forward as a solution to problems which included placing more risk on suppliers than they were able to bear. Partnership is an important component of the solution.

## 5.4 DEALING WITH ABNORMALLY LOW OFFERS

Also in the domain of risk management, offers for innovative projects can be more heterogeneous, hence a competitive offer is more likely to be considered an 'abnormally low offer' and be eliminated. Not to award contracts to the lowest priced offer might screen out the more innovative (and risk-taking) firms. Furthermore, unsatisfactory scoring rules are still extensively used by procurers. For example, some rules imply awarding contracts to offers which are not the best ones but are closer to the average. This is very weak as it eliminates all competition, since each participant targets its offer to be closer to the expected average. This is the opposite of what an auction is constructed for - to discriminate between efficient and inefficient suppliers. A better alternative is that the procurement agency first calculates the average offer level, then excludes all bids above the average and selects the offer closest to the average of the remaining ones.

### BOX 5.4. Good practice guidelines

- Specifications that focus on inputs will limit innovation - outcome-based functional specifications focus on the end result to be achieved and give suppliers more licence to determine how best to deliver.
- Inappropriate evaluation criteria may provide a barrier to innovative ideas. Ideally evaluation criteria should consider whole life costs. Moreover, a recommended approach to value-for-money evaluation is to differentiate the financial and non-financial criteria for consideration in different strands.
- Build awareness of how 'concept viability' tests can help public procurers to take early market soundings and gauge the practicability of their ideas outside the procurement process.
- Early assessment of the risks associated with a tender should be an integral part of tender evaluation. Tender documentation should encourage bidders to include an analysis of the risks and show how these can be mitigated.
- Risks need to be sensibly apportioned and joint benefits should be pursued. Sharing of cost-savings identified by suppliers could incentivise innovation.

### BOX 5.5. Recommendations

#### Recommendation 17:

Member States should develop national portals to allow buyers from across the public sector to advertise tender opportunities below the OJEU threshold, thereby allowing suppliers to register for specific alerts when opportunities of potential interest are available.

#### Recommendation 18:

Member States should develop a streamlined prequalification questionnaire for use by small businesses for procurement calls below the OJEU threshold.

#### Recommendation 19:

Member States should provide legislation that ensures that tenders stipulate that innovative variants to specifications will be accepted unless there are specific reasons against them.

#### Recommendation 20:

Member States should explicitly address partnerships in transposing the procurement directives into national legislation.

#### Recommendation 21:

European Commission should examine the possibility of providing additional guidance on how partnering can be encompassed within the scope of the procurement directives.





# Contracting for innovation

Once a successful bid has been identified, purchasing authorities must secure it with a suitable contract, itself part of the tender documentation. In this chapter we consider the challenges of maintaining the buyer's wishes and demands for procurement for innovation in the contract. The value of a procurement contract is composed not only of the value to the buyer of the offering, but also the terms and conditions under which they are being provided. Clear and precise conditions concerning the contractual performance will help to share risks fairly between the contracting authority and the supplier.

In our situation, where the supplier has to develop new products or services, standard terms and conditions rarely provide the most efficient solution. The regime, which currently binds most public procurement offices, can regularly oblige the procuring agency to take on levels of value that either do not reach or go beyond its needs. This can have a negative impact on the innovative climate in Europe. In some cases, the terms and conditions are fixed in such a way that the comparison of the actual value that is being offered by the different bids becomes impossible, creating a negative impact on competition as a whole. The most obvious examples of pitfalls for innovative procurement are discussed in the following sections.

## 6.1 TREATMENT OF INTELLECTUAL PROPERTY RIGHTS

Despite the different types of intellectual property available, and the difference in value associated with different types of intellectual property ownership and licensing conditions, some standard terms and conditions mandated by the government do not contain any provisions covering intellectual property ownership or licensing conditions. As a result, different offers contain different intellectual property rights provisions, making them impossible to compare.

Other mandated terms and conditions require the purchasing agency to take on full IPR ownership, whether the purchasing body actually needs this ownership or whether licensing would suffice. A traditional viewpoint is that since the contracting authority is paying for the development and is bearing the development risk, the contracting authority should own the respective intellectual property rights. From this perspective, the supplier should transfer all the relevant IPR to the contracting authority.

By forcing the purchasing body to take on intellectual property ownership even when (as is most often the case) the need of the buyer is as end-user only, the government is forcing the end-user to pay the price of exclusive development. The cost to the supplier is of not even being able to re-assign people involved in the contracts to related projects because of the risk of inadvertently breaking intellectual property rights. The disadvantage of this approach is that the supplier is no longer (legally) allowed to re-use the developed products/services to other (potential) customers. This traditional viewpoint is not compliant with the needs of an innovative Europe. Suppliers should be able to broaden their commercial possibilities within the EU, without being hindered by a historic viewpoint. Thus expensive customisation can be kept at a minimum or provided at reasonable cost if the supplier can consider it to be an investment in intellectual property, which could be re-applied later as a building block for other projects.

While there are occasions where IPR ownership by the purchaser can be necessary, closer analysis will likely reveal that this should be the exception rather than the rule.

Key points of good practice for innovation in respect of IPR concern both background (pre-existing proprietary know-how and technologies) and foreground (property rights on new goods and developed technologies). These are:

#### **BACKGROUND**

- Require selected firm to declare own rights to background, necessary for the development of the new goods and to declare the licences from third parties that may be necessary.
- Grant the public authorities (and, under certain circumstances, other selected suppliers) rights to use and modify the background brought to the project.
- Collaborate in getting extension of licences from third parties to the public authorities (and under certain circumstances other selected suppliers).

#### **FOREGROUND**

- Normally award intellectual property rights to new goods and technologies to the firm that developed them so that it may exploit these in the market.
- In return, expect a lower price to reflect the fact that development expenditures can be written off against higher expected returns.
- Ensure that the purchaser (and, in certain circumstances, its other suppliers) has rights to use and modify the new goods and developed technologies under the most favourable conditions, and that these should be updated to equal the most favourable granted to other customers in the future.
- For rights to modify software, access to the source code should be ensured.

## **6.2 LIABILITY PROVISIONS**

Some nationally or locally mandated governmental terms and conditions still require unlimited liability from the supplier, for both direct and indirect damages resulting from the execution of the contract. However, this liability has a cost and thus an indirect impact on the level of innovation within the procurement. The most obvious (and important) cost is the mere coverage of an absolute amount of risk. Liability insurance contracts could give a fairly good estimate of its value for direct liability; very few insurance companies would likely be willing to cover unlimited indirect liability. An additional problem for the purchasing body, however, is that the value of unlimited liability is not comparable between different bidders. Unlimited liability will not be of great value to the procuring agency if the bidder is small and incorporated as a limited liability firm. The value of unlimited liability from an unlimited partnership or a larger limited company will already be of far greater value. It is therefore impossible for the procuring agency to make an adequate comparison of the different bids, as the actual value will vary considerably depending on the status, size and risk profile of the bidder.

Unlimited liability clauses in the context of R&D may reduce competition between bidders as certain, otherwise acceptable, bidders will automatically exclude themselves ex-ante, either because they consider the cost of the risk would make their bid price prohibitive or because they are not willing to risk their livelihood on a government contract. The unlimited liability clauses therefore have the perverse effect of reducing the competition they are meant to enhance, and thereby limiting the possibilities for enhancing innovation.

## 6.3 DURATION OF CONTRACT

Most complex service contracts, in particular those that involve in-depth transformation of government processes, require contracts that extend beyond the traditional yearly budgeting cycles most common in public administrations. The externalisation of certain services will require contracts that can last four to six years (renewable for another two) in order to ensure the completion of the transformation and the full generation of related benefits. The duration of the contract will thus have a decisive influence on the participation of potential bidders to the tendering procedures.

The EU directives do not regulate the duration of the contract. In principle it would be possible to conclude contracts on an indefinite term as well. Contracts with an indefinite term may be terminated upon contract notice without giving any reasons. Contracts with a definite term may only be terminated before the end of the term on the reasons stipulated in the contract. In cases where a supplier has to undertake a certain investment in innovation or RTD that is directly related to the matter of the contract, it might be advisable to limit the possible reasons for cancellation for a certain period and/or provide for appropriate compensation provisions, in order to permit the supplier to make some return on their investment.

In the context of R&D, any decision as to the terms of the contract will have to bear in mind the investment of the future supplier. The larger the investment for a particular contract, the longer the contractual term should be in order to have a return on investment. Longer contract terms may be favourable to R&D and, of course, competition issues have to be taken into consideration at the same time. As noted in Section 4.3, public-private partnerships can be used to create a longer time frame with less constraint from public investment practice.

### BOX 6.1. Good practice guidelines

- Ownership of intellectual property should not be assigned to the buyer automatically. IPR best practice guidance should indicate that the default position is to allocate it to the supplier, with due protection for the buyer's interests.
- Contract managers can challenge suppliers to be innovative (value engineering clause). Techniques include the use of continuous improvement drivers and supplier suggestion schemes. Provision needs to be built into the contract from day one for innovation over the life of the contract.
- Key personnel, responsible for the development of an innovative idea within the contract, should be named and only replaced by their equivalents.
- Payment structures within a contract need to reflect the expenditure patterns of smaller businesses which is to be prompt and reflect investment and other expenditures.
- Prime contractors can play a key role in encouraging innovation from sub-contractors and downstream suppliers including SMEs. Contract provisions should facilitate rather than hinder this with appropriate feed-through to contract risk assessment.
- Risk and reward sharing. In addition to the sensible apportioning of risk, buyers are encouraged to think how the rewards of a contract, for example cost-savings delivered, can be used to encourage useful innovation.
- Joint funding of investment and the award of longer-term/shorter-term contracts may help to motivate innovation.
- Continuous integration of policy and contract officials with the contract delivery team and clear decision-making lines (senior responsible owner) are both needed.

**BOX 6.2. Recommendations****Recommendation 22:**

European Commission should survey the use of IPR clauses in public contracts and the impact on public and commercial exploitation of intellectual property developed in these contracts.

**Recommendation 23:**

Member States should examine provisions within standard form contracts and provide guidance to procurement personnel on the strategic use of appropriate alternatives.

# Monitoring and Evaluating Progress

As an innovative approach to policy, procurement for innovation is very much at an experimental stage, and the implementation of many of our recommendations will require close monitoring and a reflexive approach which allows modification in the light of experience. We have already recommended the adoption of a framework for ongoing review and evaluation of procurement projects as part of the practice of any procurement body. Decisions made and results achieved should be tracked throughout the procurement process rather than in terms of the narrow perspective of delivered cost. In this final chapter we explore learning in two dimensions further, first considering briefly how markets learn and secondly, how a more formal evaluation structure may be applied in this policy domain.

## 7.1 DIFFUSION AND LEARNING

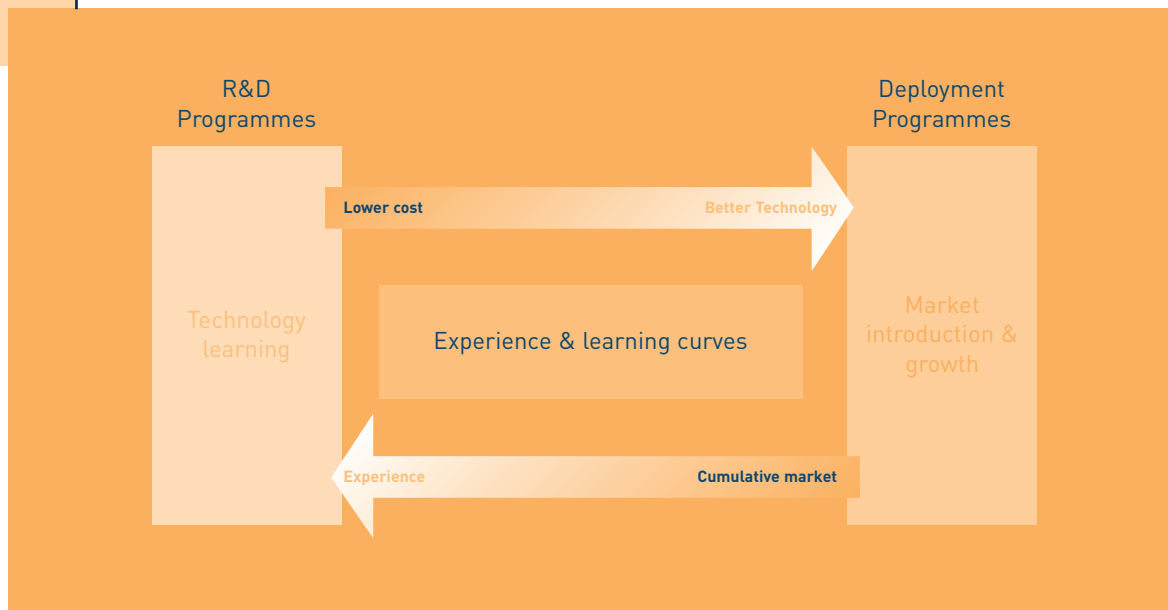
Market learning is treated here as an element of monitoring because it helps us to understand the complex process of market penetration of innovative products. Traditional separation of innovation and diffusion can obscure the many feedback loops which lead to the successful evolution of a technology.

The traditional S-curve model for the diffusion of a new technology is well known. This segments buyers into early adopters, majority groups and laggards according to when they buy an innovation, and also indicates the ultimate level of penetration (saturation) for a market. Procurement for innovation could be seen as an effort to alter this curve in favour of earlier adoption, faster acceptance and higher saturation. The concept of a learning curve posits that the rate of cost-reduction by volume growth (learning rate) is normally about 15-20% for each doubling of the accumulated volume of a technology<sup>21</sup>. This is a factor that has been deliberately exploited in several procurement cases where the new technology is considered to be desirable for wider reasons, for example the large-scale market introduction of photovoltaics, causing these technologies to be pushed towards affordability. Early purchases of this kind may be thought of as 'learning investments' with an eventual private and social return.

<sup>21</sup> IEA/OECD. Experience Curves for Energy Technology Policy. Paris, 2000.

Reduction of cost in a 'learning by using' and 'learning by doing' process requires both formal training and hands-on experience. Government programmes are often used in starting and keeping this process, see the figure below.

**FIG. 5** R&D and deployment programmes spin a virtuous circle (C-O Wene)<sup>22</sup>



## 7.2 POLICY EVALUATION

Policy evaluation is a systematic, analytical activity to assess the appropriateness of a policy in a given context, its effectiveness against objectives and the efficiency of its implementation. The overall goal of policy evaluation is to assist policy-makers in improving on-going and future activities. As for other innovation policies, it is essential to evaluate measures to increase R&D and innovation through procurement, and hence to promote policy learning.

An important first step is to be clear about what type of measure is being evaluated. Each evaluation needs to start with a clear understanding of the type of policy action and the level at which it is applied, its policy objectives, the targets of the policy and the scope for innovation and R&D to be triggered by the procurement activity. The objectives are the determining variable for each evaluation. For each of these objectives, indicators and data sources have to be defined that measure the degree of goal attainment, and appropriate methods have to be designed that result in reliable and valid data for these indicators. Depending on the level of the policy, programme or measure, the target may be both those responsible for procurement (to change behaviour, rationales, etc.) and the supplying markets (to deliver more advanced goods and services and thus to engage in more innovative activities).

<sup>22</sup> Creating Markets for Energy Technologies, OECD/IEA, 2003.

The list of objectives in the following table can structure the design of each evaluation<sup>23</sup>:

TABLE 7.1.

OBJECTIVES	INDICATORS	METHODS/DATA SOURCES
<i>Behaviour of actors:</i> change practices and rationales of procurers and suppliers	Changed decision behaviour, knowledge and attitudes (acceptance of risk, life-cycle assessments, functionalities over concrete products, early dialogue, new interaction structures and practices, etc.)	<ul style="list-style-type: none"> <li>• case studies</li> <li>• interviews</li> <li>• surveys</li> <li>• peer review</li> </ul>
<i>Technology:</i> radical innovations, diffusion of innovations	Micro data, input indicators such as R&D budgets, R&D employees, output indicators such as number of patents, number of prototypes, share of innovative products in sales	<ul style="list-style-type: none"> <li>• patent database surveys</li> <li>• control group approach</li> <li>• longitudinal surveys</li> </ul>
<i>Markets:</i> shaping markets (strengthening suppliers of innovative products/services, spill over to value chain suppliers)	Micro and macro data, sales data, changes in market shares of targeted supplier groups, diffusion rates, value chain structures	<ul style="list-style-type: none"> <li>• analysis of market statistics</li> <li>• sectoral case studies</li> <li>• benchmarking</li> </ul>
<i>Administration performance:</i> more effective and efficient service of public administrations (taking advantage of innovative products and services)	Quantified benefits (savings - direct, related areas, effectiveness measures), if appropriate intra and inter-organisational structures	<ul style="list-style-type: none"> <li>• Cost-benefit analysis<sup>24</sup> (taking into account net present values on the basis of life-cycle), user surveys (e.g. patients in improved health care systems)</li> <li>• interviews</li> <li>• peer review</li> </ul>
<i>Sectoral policy aims:</i> e.g. waste reduction, increased public construction, increased public infrastructure, advanced healthcare services, increased security services, etc.	Highly dependent on policy area, e.g. performance indicators such as level of energy savings, level of satisfaction in relevant 'user' or target groups	All methods to be applied in order to assess effects of sectoral policies (inter-temporal comparisons, benchmarking, statistical analyses, surveys, etc.)

The relative importance of these objectives varies with the type and level of the procurement measure or policy to evaluate. Thus, there is no single, grand design to evaluate procurement measures to enhance R&D and innovation.

It is understood that the availability of data required also varies and the design of evaluation schemes has to take into account this availability, along with the costs attached to the gathering of that data. Moreover, especially with procurement measures that target large markets and complex market structures, we have to be very careful with the attribution of effects to that policy. Context analysis and multi-causal considerations are indispensable in any case. Therefore qualitative assessments will always play a major role and complement all kinds of quantitative data gathering and processing. This is why the methods depicted above are mostly mixtures of quantitative and qualitative approaches.

<sup>23</sup> Partly drawing from and extending Neij, L., Evaluation of Swedish market transformation programmes; paper for the Conference of the European Council for an Energy Efficient Economy, m/s. 1999.

<sup>24</sup> For a general introduction to cost benefit analysis in RTD evaluation see Polt, W. and Woitech, B., Cost Benefit Analysis in IPTS (ed): RTD Evaluation Toolbox - Assessing the Socio-economic Impact of RTD Policies <http://epub.jrc.es/evaluationtoolbox/start.swf>, 2002.

In an ideal policy world, the evaluation would prepare, accompany and assess the policy measure and provide feedback loops for a constant improvement of a policy. The involvement of stakeholders is critical. Evaluation can provide a forum in which procurement officials and the supplier community can debate the effectiveness of measures to promote innovation.

Recent thinking in evaluation focuses less on immediate impacts and more upon sustained and persistent effects on behaviour<sup>25</sup>. This 'behavioural additionality' perspective assumes that the most important effects of innovation policy measures are those which are internalised in the routines of the target population and replicated in their future behaviour. This fits the aims of procurement for innovation very well.

### 7.3 FINAL WORDS

Our final words in this report are also on the theme of follow-up and evaluation but in the context of our own work. This report has shown that a major opportunity exists for Europe to advance its highest priority policy goals, and achieve the twin objectives of an R&D-driven innovative and competitive economy on the one hand and first class public services for its citizens on the other. However, to realise this opportunity requires both high-level political commitment and detailed changes of practice within the procurement community and those who work with them. The recommendations we have made provide important steps on the pathway for this agenda for change. Realistically they will not happen simply because a report has set them out. An active strategy for implementation is needed, driven jointly and separately by the Commission and Member States and this strategy needs to be monitored and updated as it proceeds.

#### BOX 7.1. Recommendations

**Recommendation 24:**

Policy and practice for procurement for innovation should be carefully evaluated and the results of that evaluation fed back into improved approaches. It is important that the evaluation considers the full range of costs and benefits.

**Recommendation 25:**

The European Commission should establish a mechanism to ensure that the recommendations in this report receive an explicit response and, where accepted, that there should be a follow-up mechanism to ensure their effective implementation.

<sup>25</sup> Georghiou, L., Evaluation of Behavioural Additionality. Concept Paper in Making the Difference. The Evaluation of 'Behavioural Additionality' of R&D Subsidies, IWT-STUDIES 48, June, pp. 7-20, 2004.



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## Public Procurement for Research and Innovation

This report explores good practice and policy recommendations aimed at promoting the public procurement of new and improved goods and services which require research and innovation to meet the specified user needs - referred to as 'procurement for innovation' for simplicity.

By acting as launching customers for innovative technologies and solutions, public authorities foster investment in research and innovation. This can have a dynamic 'knock-on effect' on the economy as innovations spill over into other markets. However, this potential is currently not being sufficiently exploited in the EU.

This report sets out for policy-makers the potential benefits and scope of procurement for innovation, as well as what needs to be done to help public procurement professionals change their practices to achieve those benefits. Staying clearly within the confines of the new European Directives for public procurement, it makes several detailed recommendations, such as calling for:

- The full exploitation of technical dialogues in the preparation phase before calls for tenders are launched;
- Exploitation of the emphasis given to technical specifications made in terms of functional or performance-based requirements rather than specific solutions; and/or
- Contractual conditions which allow for the transfer of intellectual property to the supplier.

The report also acknowledges that emerging good practice in some Member States in procurement for innovation demonstrates the benefits of this approach. Key to its success is the development of a cohort of trained professionals to fulfil the role of 'intelligent customers'. Such public procurement officials should be familiar with relevant technology trends, markets and supplier capabilities, be able to specify functional and quality requirements, and subsequently assess tenders in terms of whole-life costs. A substantial effort in training and networking of experience is needed.

This report comes shortly after the European Commission's Communication "More Research and Innovation" [COM (2005)488] which has already set out some actions in this area.