Public Sector Innovation Index – A Diagnostic Tool for measuring innovative performance and capability in public sector organisations

Exploratory project commissioned by NESTA

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Table of contents

EXECUTIVE SUMMARY.................................................................................................................. 3

1 INTRODUCTION – DEVELOPING A PUBLIC SECTOR INNOVATION INDEX .......................................................... 6

2 WHAT IS PUBLIC SECTOR INNOVATION?................................................................. 8
   2.1 Why is public sector innovation important? ................................................. 8
   2.2 A model of public sector innovation........................................................... 10
   2.3 Tools to promote public sector innovation .............................................. 12
   2.4 The importance of measuring public sector innovation ......................... 12

3 PUBLIC SECTOR INNOVATION MEASUREMENT – A REVIEW OF RECENT STUDIES IN THE UK AND ELSEWHERE ......................................................... 14
   3.1 Studies in the UK on public sector innovation ......................................... 14
   3.2 Other studies on public sector innovation or measurement.................... 15

4 BUILDING BLOCKS – DATA SOURCES AND CLASSIFICATIONS................................. 17
   4.1 Classifying government ............................................................................. 17
   4.1.1 Central government ................................................................................ 18
   4.1.2 Local government .................................................................................. 18
   4.1.3 Measurability of the public sector .......................................................... 19
   4.2 Data ............................................................................................................. 20

5 MODELLING THE PUBLIC SECTOR INNOVATION INDEX ........................................... 21
   5.1 Modelling the Survey Tool ........................................................................ 22
   5.1.1 Inputs to innovation................................................................................. 22
   5.1.2 The process of innovation ..................................................................... 23
   5.1.3 Innovation outputs and performance ...................................................... 24
   5.1.4 Measures of public service outcomes and performance ..................... 25
   5.2 Modelling the Diagnostic Tool .................................................................. 25
   5.2.1 Benchmarking and analysis ................................................................. 27
   5.3 Capturing heterogeneity in public sector organisations – a proposal ........ 27
   5.3.1 Accounting for differences in level of government ............................... 27
   5.3.2 Accounting for differences in sector or function ................................... 28
   5.4 In-depth analysis of key topics .................................................................... 28

6 CONSTRUCTING AND IMPLEMENTING THE PSII – KEY STEPS .................... 29

7 CONCLUSION ......................................................................................................................... 32

REFERENCES.................................................................................................................................. 34

APPENDIX ..................................................................................................................................... 35
   Measuring Public Sector Innovation: Towards a common statistical approach .................................................................................. 35
   The Government Innovation Index (GII) ................................................................................. 36
Executive Summary

This exploratory project was commissioned by NESTA as part of its work on the Innovation Index. The purpose of these exploratory projects is to develop a high level overview of what the Public Sector Innovation Index should look like and how it could be constructed and carried out. This paper presents our proposal for the Public Sector Innovation Index (PSII).

In our design of this PSII, we have sought to fulfil three broad objectives. First, it should improve understanding of public sector innovation and provide needed measures for policymaking. Second, it should function as a tool to aid individual public sector organisations in their efforts to promote innovation. Third, the PSII should promote awareness of public sector innovation both in general and among individual public organisations. We thus propose the construction of an interactive tool where data is collected that can be used to produce metrics of public sector innovation and that can be utilised to analyse and benchmark innovation in individual organisations.

Public sector innovation is an important part of the solution to pressing economic and social problems such as an ageing population, environmental issues and rising costs of healthcare (Harris and Albury 2009). However, the public sector faces significant obstacles to successful innovation, including a culture of risk aversion and delivery pressures and administrative burdens (Mulgan and Albury 2003).

Public organisations themselves can for example strengthen inputs to innovation by investing in new projects to develop processes or services within the organisation. Organisations can also seek out new, external inputs to innovation, for example by involving their users in their innovative efforts.

Policymakers also have a number of tools with which to stimulate and support public sector innovation, such as:

- Programs to promote the implementation of new ICT applications for both internal processes and interaction with citizens and businesses, and including the development of new IT platforms.
- Outlining good practices for using procurement to promote innovation and designing procurement rules to better enable organizations use capitalize on this.
- Removing barriers and creating incentives for public sector organizations to build innovative capabilities and to develop and implement innovations.
- Encouraging public-private collaborations to provide solutions to key social and economic challenges.

Yet an effective deployment of the tools available to strengthen public sector innovation requires an informed understanding of current innovative performance, barriers to innovation, and of the factors that may influence innovation in the public sector.

Several studies have been carried out on innovation in the public sector in the UK, for example by the National Audit Office and the Audit Commission, who have looked at public innovation in the UK in both central and local government. Other relevant studies have been conducted outside the UK. This includes the Korean Government Innovation Index (GII) and work to establish a common international framework for public sector innovation measurement. Discussions on the measurement of public sector innovation generally relates
to broader discussions and studies on measuring public sector performances and productivity, which is an issue both in the UK and abroad.

**Modelling the PSII**

We propose an index that consists of a series of survey indicators, based directly on data collected from public sector organisations, and diagnostic indicators that build on collected data to construct overall or diagnostic indicators that focus on key aspects of public sector innovation. Furthermore, the index here focuses on innovation in individual organisations.

Our approach is novel in many respects, while at the same time building on examples of recent and ongoing work in this area. Measurement of public sector innovation is still in its infancy. Important studies have been conducted in the UK and elsewhere, but no common framework exists that would allow a broader comparison across studies. Work has been initiated in the Nordic countries and the OECD to develop an international framework that takes measures of business innovation as a point of departure. Our approach argues to follow and contribute to this work on the key concepts of public sector innovation. Though, the set of metrics can be extended to include areas of particular focus in the UK, to account for the specific structure of the UK public sector, and to draw on output measures that have been developed in selected UK public sectors.

In terms of our overall approach to develop an interactive tool for individual organisations, a precursor is the Korean Government Innovation Index (GII). The GII focuses in particular on organisational change. In contrast, the model here takes a broader view of the innovation process in public sector organisations, focusing also on issues such as procurement strategies, demand side factors, and mechanisms for knowledge sourcing, learning and implementation.

We propose the following seven diagnostic indicators:

- Innovation performance
- Implementation
- Openness
- Innovation culture
- Demand and user involvement
- Innovative procurement
- ICT and innovation

Results can then be benchmarked against other groups that have been specified for comparison.

**Paralleling international work**

International comparability for indicators used in the PSII is important, also for forming a common understanding of public sector innovation and key concepts. This work should thus be informed by international work on public sector innovation measurement, such as the Nordic project and OECD work.

**Target population**

The target population for the PSII should be broad, including all local authorities and central government. It is also important that the PSII is representative for the UK as a whole and thus includes organisations in England, Scotland, Wales and Northern Ireland. The PSII should also strive to include ‘front-line’ service institutions; ie. organisations that are mainly
responsible for providing services to the public. This latter group, however, is particularly challenging given the large number of organisations and substantial differences across functions. Hence, it may be advisable to target a select set of sectors for this group.

*Drawing on other data sources*

It is important to utilize existing data where possible. Our focus on innovation in individual organisations, however, complicates the use of other data sources. Our interest here is in how indicators based on other data – for example output measures – are related to innovation at the level of individual organisations. This requires additional work, but at the same time may be very useful in aiding our understanding of how the individual public sector organisation innovates. Due to the complexity of this task, we have again recommended a narrow focus on selected sectors, for example Health and Education.

*Classifying public sector organisations and differentiating the survey and diagnostic tool*

In terms of design of the survey and diagnostic tool, we propose a broad classification of organisations by level of government, dividing by level of government and whether the organisation is mainly involved with general administration or the delivery of services to the public:

- Central government (incl. Devolved Administrations)
- Local authorities
- Frontline services (where organisations that deliver services to the public may either be a part of central or local government).

In order to maintain comparability to the greatest degree possible, we propose that the PSII consists of a core set of questions/indicators that are common across all public sector organisations; ie. the framework above is utilised for all types of organisations, with only minor modifications to according to sector, level of government, etc.

It may also be very relevant to introduce a small set of questions (or a separate module) that focuses on aspects that are specific to individual sectors. These can concern effects of innovations, barriers, specific organisational issues or types of collaboration, and could either consist of a separate module or a small set of additional or modified questions throughout the survey. These sector specific indicators should be developed in dialogue with stakeholders from respective sectors.
1 Introduction – Developing a Public Sector Innovation Index

Public sector innovation has received growing attention in recent years. Driving forces behind this are emerging social and economic challenges that need to be addressed and calls for a higher level of public service to citizens and business.

This renewed focus on public sector innovation also reflects an emerging view of public sector organisations as important sources of new ideas, both for producing innovations within public service and in the interface with private businesses. The Innovation Imperative (Harris and Albury, 2009) and studies by the National Audit Office (NAO, 2009), the Audit Commission (2007) and many others provide a number of examples of innovative ideas implemented by public sector organisations. This emphasizes the innovative potential of the public sector, a potential nurtured by reducing barriers and creating conditions that better enable organisations to generate, implement and diffuse innovative ideas.

To do this, more knowledge on public sector innovations and better tools for measuring public sector innovation are needed. As the white paper Innovation Nation (DIUS, 2008) states: “We need a better understanding of how innovation takes place and its economic and social value, the barriers to innovation, and the actions that businesses, service providers and Government can take to overcome them.” Towards this, NESTA has been tasked to develop an Innovation Index to measure UK innovation. “The creation of an Index will enable NESTA to:

- Identify gaps in current measures
- Embed existing innovation measures in a broader portfolio of other indicators that better reflect innovation outcomes and activities across the UK’s economy and society.
- Improve our understanding of service sector, user-led and public sector innovation.
- Build on measures that innovative firms and their investors find useful.” (DIUS, 2008)

This report outlines a model for the Public Sector Innovation Index (PSII). In our design of this Index, we have sought to fulfil three broad objectives. First, it should improve understanding of public sector innovation and provide needed measures for policymaking. Second, it should function as a tool to aid individual public sector organisations in their efforts to promote innovation. This, in our view, is an important element for the PSII in order for it to indicate ways to improve ‘enabling conditions’ for individual organisations. Third, the PSII should promote awareness of public sector innovation both in general and among individual public organisations. A vital ingredient here is to form a common understanding of what public sector innovation is and how it is defined.

We thus propose the construction of an interactive tool where data is collected that can be used to produce metrics of public sector innovation and that can be utilised to analyse and benchmark innovation in individual organisations. Furthermore, the metrics produced by the Index should be informed by ongoing international work in order to enhance international comparability and to contribute towards a common understanding of public sector innovation.

Our approach is novel in many respects, while at the same time building on examples of recent and ongoing work in this area. Measurement of public sector innovation is still in its infancy. Important studies have been conducted in the UK and elsewhere, but no common framework exists that would allow a broader comparison across studies. Work has been
initiated in the Nordic countries and the OECD to develop an international framework that takes measures of business innovation as a point of departure. Our approach argues to follow and contribute to this work on the key concepts of public sector innovation. Though, the set of metrics can be extended to include areas of particular focus in the UK, to account for the specific structure of the UK public sector, and to draw on output measures that have been developed in selected UK public sectors.

In terms of our overall approach to develop an interactive tool for individual organisations, a precursor is the Korean Government Innovation Index (GII). The GII focuses in particular on organisational change. In contrast, the model here takes a broader view of the innovation process in public sector organisations, focusing also on issues such as procurement strategies, demand side factors, and mechanisms for knowledge sourcing, learning and implementation.

What should the Public Sector Innovation Index (PSII) measure? Ideally, we would like to fully capture the process of innovation in public sector organisations and their outcomes. For example, measuring the level of innovative performance, characterising the innovation culture and enabling conditions of organisations, how organisations learn and interact with other actors, the role procurement in innovation, the role of users, identify key barriers and establish links between innovation and economic and social value.

We can obtain valuable information on all these aspects. However, there are clear limits to how complete our measures of these can be. There are, for example, difficulties in measuring the different levels of innovative performance; linking innovation to economic and social value is hampered by the complexity and limits to measuring public sector output; and concepts such as innovation culture can only at best be partly measured. Throughout the report, effort will be made to give a realistic picture of both the value and rationale behind the measure proposed, and also their limits.

The remainder of the report is structured as follows. Chapter 2 discusses public sector innovation, its importance in addressing economic and social challenges, and the need for measures of public sector innovation. Chapter 3 provides a brief review of recent efforts in the UK and elsewhere to measure public sector innovation and other activities. Chapter 4 examines some preliminary issues concerning the classification of public sector organisations and some issues concerning use of existing data on public sector activities. Chapter 5 outlines our proposed model for the PSII, including suggestions for indicators, their rationale and limitations. Chapter 6 discusses key steps and time plan for the development and implementation of the PSII, and Chapter 7 concludes with a summary of main recommendations.
2 What is public sector innovation?

Innovation has traditionally been associated with inventions that are developed and commercialized by private companies. Increasingly, however, innovation is also associated with public organisations, in recognition of the fact that new ways of doing things in the public sector can lead to a higher quality in the public services delivered to businesses and citizens and/or to lower costs and heightened effectiveness in public organisations.

According to Mulgan and Albury (2003), successful innovation is the key to effective government and public services. They define public sector innovation as “the creation and implementation of new processes, products, services and methods of delivery which result in significant improvements in outcomes efficiency, effectiveness or quality.” Services or processes do not however have to be entirely novel to be innovative: they may instead represent substantial improvements upon existing offerings or ways of delivering services that significantly improve the quality or efficiency of public service.1

In addition, an organisation need not develop novel services or processes in order to be innovative; it can also adopt and implement innovations created outside the organisation. For example, a public sector organisation can adopt a process or mode of organisation developed by another public organisation or in the private or third sector. Thus the definition of an innovative public sector organisation ranges from a passive adopter of innovations to a proactive source of new ideas and inventions.

Public sector innovation is an important part of the solution to pressing economic and social problems such as an ageing population, environmental issues and rising costs of healthcare (Harris and Albury 2009). However, the public sector faces significant obstacles to successful innovation, including a culture of risk aversion and delivery pressures and administrative burdens (Mulgan and Albury 2003). Moreover, public sector innovation is relatively poorly understood and has not been the subject of systematic study or evaluation (see e.g. Koch et al. 2006; Clark et al. 2008).

In this rest of this chapter, we therefore discuss why public sector innovation is important and present a model of public sector innovation, before turning our attention to tools available to policymakers and to public organisations to measure and promote innovation in the public sector.

2.1 Why is public sector innovation important?

Innovation in the public sector shares many commonalities with private sector innovation. For instance the definition of public sector innovation presented in the previous section could also be used to define innovation in the private sector. Much less is known, however, about

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1 See also e.g. Koch and Hauknes (2005), Koch et al. (2006) or Mulgan 2007 for definitions and discussions of public sector innovation.
public sector innovation, than about innovations in businesses, particularly those in manufacturing and technology-based sectors. There are likely to be important differences in how private businesses and public organisations innovate. Furthermore, public sector organisations operate within framework conditions and budget constraints that differ significantly from those of private businesses.

Unlike in the private sector, where innovation is fundamentally driven by profit maximisation motives, public sector innovation is concerned with maximising societal welfare created through public investments. Value creation in the public sector is thus much broader in scope than for businesses (Kelly et al., 2003). This means that innovation plays an essential role in increasing the quality of public services (i.e. developing ways to better address societal problems or meet the needs of citizens and businesses) and raising the productivity of the public sector (i.e. increasing the effectiveness with which public monies are spent). An additional objective is creating trust and legitimacy of public sector institutions (Kelly et al., 2003).

The potential of public innovation in addressing key social and economic challenges in particular is often emphasised. For example, an ageing population and rising health care costs, in large part due to an increase in chronic and long-term illnesses, pose major challenges for the healthcare and nursing sectors and call for greater efficiency and new approaches to treatment and care. Public innovation can also play a role in mitigating persistent challenges such as social inequality, substance abuse, and crime. Other key challenges facing the public sector include environmental issues and also globalisation and increased competition from abroad, which among other things call for more education and better education. In addition, the current recession, characterised by increased joblessness and budget constraints on the public sector, only increases the pressure on the public sector and importance of innovation toward better and/or more effective public services. (Harris and Albury 2009)

Moreover, a number of trends particular to the public sector combine to generate an increased focus on innovation. These include a growing emphasis on accountability, performance-based management, and improving the efficiency of public procedures and services. They also include calls for cost reductions due to budget constraints, the increased use of public-private partnerships, and the widespread implementation of information and communication technology. Innovation efforts can moreover contribute to maintaining or strengthening trust in public institutions and services, by ensuring that they are effective and up-to-date. As such, transparency with regard to innovative activities and outputs can cater to increased demands for accountability and documented effects of the investment of public funds in public organisations.

Meanwhile, users of public services have access to an ever increasing range of information through the internet and the media. Their sophistication is on the increase, along with their expectations of individualised service and treatment increases and demands for greater accountability in the use of taxpayers’ funding.

Moreover, it is important to note that innovation in the public sector can act as a stimulus to business innovation through public procurement, provision of technological infrastructure, regulations, and other framework conditions.

To be able to understand and support public innovation, however, we need a more precise understanding of what it is and of the factors that influence innovative performance in public organisations. In the next section, we therefore turn our attention to a model of public sector innovation that will provide the basis for further discussion of measurement of public innovation in subsequent chapters.
2.2 A model of public sector innovation

This section presents a simple model of innovation in public sector organisations. The model, which is illustrated in the figure below, is intended as a basis for measurement of innovation in public sectors and organisations and is therefore focused on fundamental elements of innovation activities rather than on innovation processes as such.

The model has five main elements: inputs to innovation, innovation processes within the organisation, outputs of the innovation process, general outcomes of innovation, and external factors or framework conditions that affect innovation in public sector organisations. These five elements are described in the following.

**Figure 1: Model of public sector innovation**

**Inputs** to the innovation process in a public sector organisation include the organisation’s investments in research, development and innovation, such as knowledge purchases from consultants or salary and training expenditures for staff members working with innovation. Another important input is the actual staff of the organisation. Characteristics such as the educational background, experience and diversity of the employee base can shape the propensity of the organisation to innovation and the type of innovative activities that it undertakes. Moreover, innovation may stem from a variety of sources in an organisation, including its management but also its frontline staff, who perform key activities in the organisation on a daily basis, interacting with its users, collaborators, and other
organisations. Likewise, users, suppliers and collaborators can also represent important sources of innovation, because they have specialised knowledge and/or needs that can spur innovation. Finally, another key input to innovation in organisations is the availability of an effective technological infrastructure that can catalyse and facilitate innovative activities, for example by enabling information sharing within the organisation or online communication with users.

The second element in the model deals with the actual innovation process in public sector organisations; i.e. how organisations innovate. A crucial organisational factor in this regard is whether the organisation has formulated an explicit innovation strategy and objectives, and whether it engages in systematic efforts towards promoting and evaluating innovation efforts and creating appropriate incentives for innovation within the organisation.

The innovation process in a public sector organisation is also affected by its culture. Many parts of the public sector are characterised by zero tolerance for mistakes, low risk aversion, and other cultural traits that are generally perceived as barriers to innovation. Moreover, it is important to consider individual staff members’ perceptions of barriers and enablers to innovation in the organisation and in their daily work, as this will also affect the organisation’s innovative activities and output.

A final aspect is linkages and knowledge flows, both within and outside the organisation. How organisations seek external information, cooperate with others, and diffuse their own innovative ideas, are characteristics that shape the innovation process.

These innovation activities can result in a number of impacts within and outside the organisation. These can be distinguished between outputs (goods and services delivered or other activities by public sector organisations) and outcomes (broader end-outcomes of public service activities, where these outcomes will generally also be affected by a variety of other factors) (Van Dooren et al, 2006)

A main output is innovations themselves – actual implementation of changes to services or other parts of the organisation’s operations. Some organisations may be more prone to incremental improvements in their organisational processes while others seek to develop new types of services. Dunleavy et al. (2008) distinguish between two stages in public sector innovation: “invention-based” innovation, where organisations develop new processes to deliver services, and “diffusion-based” innovation, in which they re-adopt innovations for the provision of services that have already been developed in other areas.

Successful innovation is associated with some form of performance improvement, either in terms of higher quality in the organisation’s activities, increased efficiency, or both. In addition, innovation efforts can be associated with greater satisfaction among both employees and users. Finally, some innovation processes in public sector organisations may result in innovations that can be protected through intellectual property rights such as trademarks or copyrights.

Social outcomes (social cohesion, equality, reduced crime, poverty reduction, better educated population, improved health, etc.) are also important, as they represent central aims of public services. Moreover, successful innovation can carry other, intangible benefits, such as improving the image of the organisation and the services it delivers, thus strengthening its legitimacy and trust from users or other stakeholders.

Last but not least, the model considers a range of external factors or framework conditions that influence the innovative process and outcomes of an organisation. These include for example needs and demands from suppliers and especially users, the overall structure of
public sector organisations or incentive structures that the organisation operates under, and policy developments and priorities.

2.3 Tools to promote public sector innovation

In this section, we examine some of the ways in which policymakers and public organisations themselves can promote public innovation by affecting one or more elements of the model of public sector innovation.

Public organisations themselves can for example strengthen inputs to innovation by investing in new projects to develop processes or services within the organisation. They may also try to secure a diverse employee base characterised by complementary skills in order to support the building of organisational and personnel capabilities that could be leveraged in innovative efforts.

Organisations can also seek out new, external inputs to innovation, for example by involving their users in their innovative efforts. Moreover, they can establish ICT-based infrastructures that support information sharing and communication on innovative projects within the organisation or externally with users and other stakeholders.

Policymakers also have a number of tools with which to stimulate and support public sector innovation, such as:

- Programs to promote the implementation of new ICT applications for both internal processes and interaction with citizens and businesses, and including the development of new IT platforms.
- Outlining good practices for using procurement to promote innovation and designing procurement rules to better enable organizations use capitalize on this.
- Removing barriers and creating incentives for public sector organizations to build innovative capabilities and to develop and implement innovations.
- Encouraging public-private collaborations to provide solutions to key social and economic challenges.

2.4 The importance of measuring public sector innovation

Innovation is not in and of itself a goal for the public sector. Rather, it is a means to provide better value for taxpayers’ money. However, the public sector faces a number of significant obstacles to successful innovation. These include a culture of risk aversion, reluctance to close down failing programmes or organizations, over-reliance on high performers as sources of innovation, technologies available but constraining cultural or organizational arrangements, lack of rewards or incentives to innovate or adopt innovations, poor skills in active risk or change management, short-termism in budget and planning horizons, and delivery pressures and administrative burdens (Mulgan and Albury 2003).

These obstacles to public innovation imply that there is scope for improving the effectiveness and magnitude of public sector innovation. However, it is difficult to manage what you don’t see. Previous studies (see e.g. Koch et al. 2006; Clark et al. 2008) have established that there is a need for systematic documentation and assessment of public sector innovation, much of which is “hidden” – because we do not know where to look for it.
Yet an effective deployment of the tools available to strengthen public sector innovation, as discussed in the previous section, requires an informed understanding of current innovative performance, barriers to innovation, and of the factors that may influence innovation in the public sector.

Reliable assessment of the degree and effects of public sector innovation is necessary to provide a basis for informed policymaking and development as well as innovative efforts in individual organisations. It can also contribute to highlighting and bolstering individual public sectors’ and organizations’ efforts to induce successful innovation. The use of financial and non-financial measures to indicate innovation enables the description and understanding of public sector innovation activities and, as such, provides a means of communicating innovative performance in the public sector. It also enables the assessment of how well organizations are meeting expectations and goals of their innovative efforts, and thus how effectively public funds are spent on innovation. Moreover, measurement allows for comparison across organizations and sectors. Finally, measurement also opens up for attention-directing efforts, i.e. identifying focusing organizations’ or individual staff members’ attention and efforts on selected innovations challenges or opportunities. This allows policymakers and management in public sector innovations to promote and support particular areas of innovation.
3 Public sector innovation measurement – a review of recent studies in the UK and elsewhere

Several studies have been carried out on innovation in the public sector in the UK, for example by the National Audit Office and the Audit Commission, who have looked at public innovation in the UK in both central and local government. Discussions on the measurement of public sector innovation generally relates to broader discussions and studies on measuring public sector performances and productivity, which is an issue both in the UK and abroad. This chapter highlights central findings and approaches from different studies that will be of relevance in considering the construction of the NESTA PSII. First studies of relevance carried out in the UK will be presented and secondly broader international studies will be presented.

3.1 Studies in the UK on public sector innovation

The National Audit Office has studied innovation in central government and results have been published in the reports *Achieving innovation in central government organizations* (2006) and *Innovation across Central Government* (2009). Both reports are based on a survey of innovation in central government departments, executive agencies and non-departmental public bodies. The reports find that there was scope for government to take a more systematic approach to developing innovations by improving costs and productivity data, creating incentives for individual managers, finding new ways of seeking ideas from frontline staff and encouraging learning from others.

The 2006 report also identifies that only a few departments have strategies on innovation and a number make financial resources available for the development of innovation. NAO therefore recommended that central government leaders should move beyond supporting individual cases of innovation and instead promote innovation for continuous improvement. A good example of this is the Department of Health.

The Local Government White Paper: *Strong and Prosperous Communities* sets out new responsibilities for local authorities and presents a new performance framework, now called the Comprehensive Area Assessment (CAA), in which the Audit Commission has a central role to play. A single set of about 200 outcome based indicators covering all important national priorities like climate change, social exclusion and anti-social behaviour has been intended. The CAA is intended to be a new way of assessing local public services in England. It examines how well councils are working together with other public bodies to meet the needs of the people they serve.

The Audit Commission has also conducted a survey of innovation among Local Authorities in England (Audit Commission, 2007). The study covers attitudes to innovation, the role of organisational structure and staff, barriers and enabling conditions, and learning activities. It also highlights a number of specific examples of innovations in local government.

The UK Centre for the Measurement of Government Activities (UKCeMGA), under the ONS, was established to implement the recommendations of the Atkinson Review, an independent review of the future development of government output and productivity (Atkinson, 2005).
Both the Review and subsequent work by UKCeMGA reflect an increased governmental and public interest in measures of public sector performance.

Generally the report states that there should be enhanced focus on outputs and a broader coverage of indicators. In addition to a general framework and principles, the intention is to focus on practical solutions for measuring the key functional areas of health, education, public order and safety and social protection. This work has made considerable progress in developing aggregate measures of public sector output within these key sectors. Though, at the same time this work reveals the complexity of measuring economic and social outcomes of public services.

NESTA commissioned two studies in 2008 (Dunleavy et al., 2008; Clark et al., 2008) to review literature on public sector innovation and develop initial proposals for the Public Sector Innovation Index. Dunleavy et al. (2008) proposes a range of aggregate indicators across the dimensions of R&D activities, Consultancy and strategic alliances, Intangible assets, ICT infrastructure, Human resources, Institutional performance, E-Government, Origins of Innovations, Innovation outputs, impacts and scope. A cornerstone of the proposal in Clark et al. (2008) is to conduct an innovation survey along the lines of that done for the business sector, modified to capture the particularities of public sector innovation.

The Department of Health and NHS have initiated a project (Ayling et al., 2009) to measure and value innovation in the NHS. The project seeks to develop indicators of innovation at the three stages of the innovation process (ideas, growth, diffusion) and indicators of innovation culture. Data on these indicators will be collected from health institutions and benchmarked against targets for the generation and subsequent development of new ideas, and their adoption and dissemination.

3.2 Other studies on public sector innovation or measurement

An early attempt at measuring public sector innovation was undertaken by Statistics Canada in 2000 (Earl, 2002). The study, which was part of a Survey of Electronic Commerce and Technology 2000 inquired about the introduction of organisational and technological changes in both public sector organisations and private businesses. They found that very high shares of public sector organisations had implemented these changes, even among the smallest administrations.

A Nordic initiative (Measuring Public Innovation: Towards a Common Statistical Approach) has recently been launched aimed at measuring innovation in the public sector (see www.mepin.eu). The project seeks to develop a framework for the collection of internationally comparable data on public sector innovation (see the appendix for a more detailed description). The project is set to run over two years from November 2008 to November 2010. The general approach parallels that used in the Oslo Manual (Eurostat/OECD, 2005) and the Community Innovation Survey, though definitions of key concepts, choice of topics and survey methodology should all be revised to reflect the context of public sector institutions.

The main areas/indicators that are planned to be covered are:

- Types of innovations
- Innovative novelty
- The role of ICT in innovation
- (Qualitative) effects of innovations
- Innovation expenditures
• Cooperation and other forms of linkages with other actors
• Procurement practices and their role in innovation
• Innovation strategy, organisation and capabilities
• Drivers and barriers of innovation

The project plans to develop an initial, general survey that can be applicable across government levels and includes the main public sector activities. Thereafter, the project will examine the option of adding sector-specific modules that can provide more detailed information about sector-specific needs.

Work has also been initiated by the OECD (National Experts on Science and Technology Indicators, NESTI) towards developing guidelines on a broader international scale. A group of experts (led by the UK and Denmark) has been established to discuss approaches and outline an international framework for public sector innovation measurement. Nordic work and work in other countries will likely provide input to this process.

The Korean Government has undertaken an ambitious effort to create a Government Innovation Index (GII). The GII consists of a survey covering organisational capability, the degree of adoption and implementation of management systems and other programs, and barriers to innovation (see the appendix for a more detailed description of the GII). These data both generate indicators directly, and are used to construct a series of diagnostic indicators (or indices) to assess innovative capability in individual public sector organisations. The methods used for the Korean GII can be very useful towards constructing the Public Sector Innovation Index. In particular, the GII provides an example of an interactive tool that focuses on capabilities for the individual organisation. However, the underlying innovation model and set of indicators chosen may be less applicable for the PSII. For example, the GII focuses mainly on organisational innovation and does not cover other key issues such as procurement strategies, demand side factors, and mechanisms for knowledge sourcing, learning and implementation.

To understand the features of the public sector and its services relevant work has been conducted by the OECD in relation to ‘Government at a Glance project’. ‘Government at a Glance’ is providing indicators describing government performance. The ambition is to compare the political and institutional frameworks of government across OECD countries, as well as government revenues, expenditures and employment. Indicators describing government policies and practices in integrity, e-government and open government are also included. Further the project introduces several composite indexes concerning public management practices in human resource management, budgeting and regulatory management.

OECD Education has initiated a project (OECD, 2009) on the measurement of innovation in education. The group has established a forum for investigating relevant work in this area and discussing key questions on how to measure innovation in education and benefits and limitations of different approaches. Innovation in education may be different, both in nature and drivers, to innovations in other public services. For example innovations in health and education may contain differences, since medical innovations may draw heavily on traditional scientific knowledge and R&D, where innovations in education may have a more user-driven approach. Innovative services within Education seek to find solutions for user problems or needs, and this may or not imply the use of technology.
4 Building blocks – data sources and classifications

This section describes some of the key aspects and potential differences in the organisation of the public sector in the UK that can be of importance in relation to measuring innovation. Further focus will be put on how government is organised in the UK in relation to central and local government as well as the presence of a devolved government structure.

4.1 Classifying government

Government can be understood broadly to cover all agencies and institutions that provide public services. To understand the features of the public sector and its services relevant work has been conducted by the OECD in relation to ‘Government at a Glance project’. According to the OECD measuring government can be a challenging task:

23. “Government” is a particularly slippery term, presenting many difficulties in classification. The common assumption that it comprises all the agencies that provide public services points to the complexities involved as, for example, many health services are publicly funded but provided by private agencies, and local government can be a major provider of social services….. The key is to use the robust foundation provided by the System of National Accounts (SNA) which reflects a well-established consensus concerning the components of the public sector. The institutional sector classification provides the most practical approach to defining the dimensions that can be measured, providing categories of organizations which, taken together, constitute what is generally regarded as government.

Box 1 lists key functional areas of the public sector, broken down in terms of individual and collective goods and services. The distinction gives an overview of the functions and their general characteristic, which could suggest potential differentiations in both the types of innovations and how they are brought about. Likewise there may be interesting differences in e.g. the demand for innovation or the barriers vary between individual and collective services, considering that the individual focus might create a higher and more specific user demand.

Box 1: Key functional areas based on the Classification of Functions of Government (COFOG)

<table>
<thead>
<tr>
<th>Classification</th>
<th>Primarily individual goods and services</th>
<th>Primarily collective goods and services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service</td>
<td>Education</td>
<td>General public services</td>
</tr>
<tr>
<td></td>
<td>Health</td>
<td>Defence</td>
</tr>
<tr>
<td></td>
<td>Social Services and protection</td>
<td>Public order and safety</td>
</tr>
<tr>
<td></td>
<td>Recreation, culture and religion</td>
<td>Public economic services/economic affairs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Public environmental services/environmental protection</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Housing and community amenities</td>
</tr>
</tbody>
</table>

The distinction between individual and collective goods is based on the traditional economic classification of services arising from whether the consumption of one person rivals that of another or not. The distinction is also important from a measurement standpoint, since individual services lend themselves better to measurement than collective services which can be more diffuse in nature.

4.1.1 Central government

The UK central government consists of departments, executive agencies and non-departmental public bodies. This also includes Devolved Administrations for Scotland, Wales and Northern Ireland. Responsibilities include setting policy, administration of respective areas of government, and also the delivery of public services. A very rough distinction is that central government departments mainly work with policy and administration while executive agencies and non-departmental public bodies are more concerned with service delivery. However, this distinction is far from clear for most organizations, which will likely perform all three functions at least to some degree.

In general the basic structure for central government services in the UK is a Department and a series of service delivery executive agencies. The NHS is an example of the hierarchy of service providers, managed through the Department of Health and regional control. The Department has control of England’s Strategic Health Authorities, which oversee all NHS activities.

Since services delivery is connected in a down-stream perspective it would reasonable to both look at Departments as well as agencies and public non-departmental bodies, which has also been done in several other UK studies on innovation and measurement. At the same time it should be clear, that analyzing innovation will imply different analytical levels, having both a macro and micro level. The first indicating the general administrative level, and the second for the specific services and user-end relations concerning frontline service providers.

Between departments certain differences can be found in relation to their work with innovation. As found by the NAO a number of departments and organizations have stated that they have budgets specifically allocated for innovative activity, including research and development funding, support for innovation. Further surveys have shown that more than half of central government organizations have some form of internal innovation unit. This of course makes it easier to identify the level of input.

The devolvement of government into 4 countries influences the construction of an innovation index. As already identified by other reports the countries differ in their administration of certain services, due to devolution. Looking at NHS activities as an example the devolved administrations of England, Wales, Scotland and Northern Ireland run their local NHS services separately.

Turning to some of the previous UK measurements of public sector performance it becomes clear that in many cases only data from England are used, and are thus not fully representative for the UK as a whole. It would therefore be preferable, in line with the recommendations of the Atkinson report, to aim for a broader coverage.

4.1.2 Local government

The system of local government in the United Kingdom differs between England, Northern Ireland, Scotland and Wales. And the sub-national divisions within these which have been called counties have varied over time and by purpose. There are two main models of
organization for local government, two-tier councils (county and district, with a corresponding
division of responsibility in terms of types of services) and one-tier councils (in some cases
called unitary authorities). After reforms in the 1990’s, Scotland, Wales and Northern Ireland
have only one-tier councils, while both models are found in England. Local councils provide a
wide range of services, like emptying bins, maintaining highways, running education, social
services, parks and gardens.

4.1.3 Measurability of the public sector

As part of constructing a PSII the organization of the public sector is important to take into
consideration, because it will have potential impact on the construction of the indicators and
potential comparability. It also matters how and to what extent public sector activity can be
measured, as already identified in the Atkinson review.

In general it is suggested that all departments, agencies and public non-departmental bodies
are covered by the PSII as well as local government authorities. It would also be relevant to
include organisations at the level of frontline service providers, especially in the largest
sectors (according to budgetary issues). Frontline service providers refer to those institutions
that provide services directly to the public, for example: schools, hospitals, fire and police
stations, children’s social care institutions, etc. Clearly, there is a very large number and
different types of frontline service providers, making it a very complex and arduous
undertaking to measure innovation at this level. At the same time, however, it is very
important for our understanding and efforts to promote public sector innovation that we know
more about whether and how frontline service providers innovate. A pragmatic approach
here could thus be to place initial focus on a very select group of these institutions.

The structure of different sectors differs in terms of level of government, as the box below
illustrates. Some functions, such as the police and court system, may be organized both for
central and local government, where both general administrative organizations and frontline
service providers may be present at both levels. Others may be organized primarily at one
level of government. For example, Health is organized primarily through central government.

Despite all the diversity identified in the UK public sector it is argued that all major aspects
can reasonably be covered through the PSII model presented. This reflects a focus in our
approach on ‘generic’ aspects of innovation that are relevant across the public sector. Taking
as far as possible a common approach across government levels, sectors and countries will
enable a comparison across government overall, in order to give information on how far for
example frontline staff experience different barriers to innovation the administration.

Box 2. Distribution of services across levels – an example

<table>
<thead>
<tr>
<th>Service/Organisation</th>
<th>Central Administration</th>
<th>Central Frontline</th>
<th>Local Administration</th>
<th>Local Frontline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collective Public order and safety:</td>
<td>- Police</td>
<td>Police</td>
<td>- Police</td>
<td>Police</td>
</tr>
<tr>
<td>- Courts</td>
<td>Courts</td>
<td>Courts</td>
<td>- Fire</td>
<td>Fire</td>
</tr>
<tr>
<td>- Probation</td>
<td>Probation</td>
<td>Probation</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>- Prisons</td>
<td>Prisons</td>
<td>Prisons</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Individual Health</td>
<td>Health</td>
<td>Health</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

4.2 Data

In developing measures of public sector innovation, development work should strive to utilize existing data where available. Generally speaking, there are two ways of drawing on data from different sources. The first is to simply construct indicators from each data source separately. The second is to match data from different data sources at the level of individual organisations. This method is often complicated and can require substantial resources. However, if feasible, matched data would clearly provide great advantages for this project, given that the focus is innovation within individual organisations.

Clearly, if we were only interested in constructing aggregate indicators, it would be very straightforward to generate indicators from a variety of sources. What makes this more complex is our focus on innovation for the individual organisation.

What additional sources of data might be of interest to this study? We can identify three main categories of data that may be useful for measuring and analysing public sector innovation (where two additional types of data are customer satisfaction and employee satisfaction surveys):

- Input data – for example for expenditures on personnel costs and the procurement of goods and services.
- Innovation data – data on innovation activities, innovation outputs, etc., and potentially also on expenditures on innovation.
- Output data – measures of the quantity and quality of services provided by public sector organisations.

Both input and output data for public sector organisations come from a vast number of sources, dependent on the level of government, country, and department. Both the Treasury and ONS have undertaken extensive work to improve and harmonize these data flows. The Treasury has for example developed COINS (Combined On-line Information System). ONS/UKCeMGA have collected both output and input data from a broad range of sources in connection with productivity analyses. However, this data is at an aggregated level and not at the level of the individual organisation.

Essentially, any organisation level matching of data or construction of indicators based on other data sources would need to be undertaken for each sector or group. This will often be at the departmental level. Furthermore, the process for data matching and construction of indicators based on available output data may be very different for each case.

Hence, while we propose that the PSII in general should cover a broad range of public sector organisations, the complexity of data matching, etc. suggests choosing a small number of sectors for the inclusion of output data. The most natural choices here would appear to be Health and Education. Note that most output measures will be at the level of front line services – for example hospitals and schools for the two sectors in question. An additional source of outcome measures that may be fairly straightforward to match with innovation data is performance indicators of local authorities from the Comprehensive Area Assessment.
5 Modelling the Public Sector Innovation Index

This chapter outlines our model for the Public Sector Innovation Index. We first present the overall model, and thereafter discuss individual sets of indicators: their rationales, what they seek to measure, and potential limitations. At the end of the chapter we discuss how the model can be modified to account for differences across different types of public sector institutions.

Many innovation concepts are difficult to measure. We often need to rely on proxies that offer important but still partial information on what we seek to measure. It is also important that indicators are based on objective and factual information that organisations are able to provide. This will often mean that we should approach many concepts through a series of questions that together provide a fuller measure. Hence, in some cases individual indicators can ‘stand alone’ while it may be helpful to look at a set of indicators to examine certain aspects.

This motivates two types of measures: survey indicators that are based directly on data collected from organisations and diagnostic indicators that are constructed based on a set of survey indicators and potentially on other data sources. Both these types of indicators can then be used to analyse innovation in individual organisations and to benchmark against other organisations.

Figure 2: An illustration of the survey and diagnostic tool

The figure above provides a stylized illustration of the indicators included in the model. The overall structure of the model reflects both our aims to measure key, policy relevant aspects of the innovation process, capabilities and performance, and also the challenges related to the measurement of innovation.

5.1 Modelling the Survey Tool

The box below lists the types of individual indicators included in the model. We envision that indicators for innovation inputs, process and outputs can be obtained directly from responses by public sector organisations, while indicators of outcomes would be obtained from other data sources.

**Box 3: Survey indicators**

<table>
<thead>
<tr>
<th>Input</th>
<th>Process</th>
<th>Output</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovation expenditures (staff, funding, consulting expenditures and other knowledge purchases etc.)</td>
<td>Explicit innovation strategy and targets</td>
<td>Types of innovations (product, services, processes, delivery models, organizational design and practices, etc.)</td>
<td>Organizational performance (both productivity and quality measures)</td>
</tr>
<tr>
<td>Staff (education, experience, diversity etc.)</td>
<td>Systematic, internal measurement and evaluation of innovation</td>
<td>Degree of novelty and scope of innovations (e.g. incremental versus radical innovation, autonomous versus systemic innovation)</td>
<td>Employee satisfaction</td>
</tr>
<tr>
<td>Sources of innovation (e.g. management/senior staff versus employees/frontline staff, users, suppliers, collaborators, etc.)</td>
<td>Role of management in innovation (active involvement, risk management, support/commitment to innovation and implementation)</td>
<td>Related, intangible outputs, e.g. patents, copyright, trademarks</td>
<td>User satisfaction</td>
</tr>
<tr>
<td>Technological infrastructure for innovation (incl. access to and use of ICT)</td>
<td>Incentive and reward structures</td>
<td>Effects of innovations</td>
<td>Other intangible effects, e.g. increased trust and legitimacy</td>
</tr>
<tr>
<td></td>
<td>Practices for learning and diffusing knowledge and innovations</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Innovation collaboration and alliances</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Perception of enablers and barriers to innovation</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


5.1.1 Inputs to innovation

*Innovation expenditures (staff, funding, consulting expenditures and other knowledge purchases etc.)*

Spending provides an important quantitative measure of the resources and effort that organizations are committing to innovation. It can also provide information on innovative
procurements; what types acquisitions have been made and from whom (businesses, universities, other public organizations, etc.)

Quantitative measures of innovation spending are very difficult for many organisations to calculate, as they often do not have this type of data in their accounts. This has implications for the accuracy of this type of data. In some cases, a rough estimate may be very useful to assess the ‘innovation intensity’ of organisations, but in other cases, for example for productivity analysis, a lack of precision is more problematic. Furthermore, questions on innovation expenditures are time consuming to answer – this factor may be viewed negatively by organisations utilizing the online diagnostic tool.

Staff (education, experience, diversity etc.)

Human resource measures can provide valuable information on skill levels and the share of personnel that are actively involved in innovation activities.

It will typically be impractical – due to both data and time constraints – to obtain detailed information on skills for innovation. For example, measures here might be limited to education levels and the share of personnel involved in innovation. These are valuable, but fall short of providing a measure of overall skills for innovation, or of the innovative capability of staff.

Sources of innovation (e.g. management/senior staff versus employees/frontline staff, users, suppliers, etc)

What are the main sources of new ideas? Which key actors are the driving forces behind public sector innovations? We can gain some insight into this by asking organisations to assess the importance of different types of actors (both internal and external to the organisation) as drivers of innovation. This type of indicator can be used in a number of ways: to get a general idea of which sources contribute to public sector innovation; as a measure of how much customers are involved in innovation activities; as a measure of what extent frontline staff are included in the organisation’s innovation projects.

This type of indicator tells us which sources are most important to the organisation’s innovation, but it is not able to tell us how the source contributes.

Technological infrastructure for innovation (incl. access to and use of ICT)

Many types of innovations will be ICT-related, which emphasizes the importance of ICT capabilities as an enabler of innovation. This includes both the provision of services to users and internal processes. In addition, the types of online services that are available to users provide a measure of IT-sophistication for individual organisations.

The far majority of organisations will have used ICT to some extent in their innovation activities. Hence, in order to be interesting, measures of the role of ICT’s need to be able to differentiate degrees of capability. This can be a challenge in practice.

5.1.2 The process of innovation

Innovation culture (Explicit innovation strategy and targets; Systematic, internal measurement and evaluation of innovation; Role of management in innovation (active involvement, risk management, support/commitment to innovation and implementation); Incentive and reward structures; Practices for learning and diffusing knowledge and innovations)

Getting inside the ‘black box’ of how organisations innovate can provide valuable insights both for diffusing good practices and for policy changes to improve the functioning of public organisations. We list a number of factors above that are designed to capture important aspects of how innovation is organised and promoted in public organisations. These include
strategies, evaluation, managerial support, incentives and efforts to gather new knowledge and to share it.

It is inherently difficult to measure concepts such as innovative culture and attitudes towards innovation in an objective and systematic way. Questions need to be formulated in a way that does not ‘lead’ towards one right answer. Hence, while important information can be gained from indicators of this type, they will likely fall short of providing a complete picture of how innovation activities are organised and promoted.

**Innovation collaboration and alliances**

Much knowledge or knowhow can only be transferred through active collaboration. In addition, many innovations will require collaborative efforts either between different public organisations or with private businesses. Measures of innovation cooperation can provide information on which types of partners organisations have collaborative arrangements with, and which are of greatest importance. Simple indicators of collaboration can potentially also be followed up with additional details on the characteristics of these collaborations.

**Perception of barriers to innovation**

These can include straightforward questions on barriers for innovation in public sector organisations concerning political factors, organisational structure and attitudes, incentives, other internal conditions, and other external factors. These indicators can help identify which factors are most important and can be used in combination with other indicators to analyse aspects such as implementation, openness and innovative culture. However, these indicators cannot provide a deeper picture of what may often be a complex set of factors that lie behind them.

### 5.1.3 Innovation outputs and performance

**Types of innovations (product, services, processes, delivery models, organizational design and practices, etc.) and the Degree of novelty and scope of innovations (e.g. incremental versus radical innovation, autonomous versus systemic innovation)**

The objective in measuring outputs is both to gain information on what types of changes are being implemented and to obtain measures of innovative performance. This includes types of innovations (i.e. new services, new delivery or other operational processes, and managerial or organisational changes), the scope of these innovations in terms of the organisations overall operations, and whether the innovation is adoptive or modified from others or if it is inventive, or truly new in relation to practices elsewhere.

It is generally possible to obtain a number of characteristics on the implementation of innovations. It is, however, more difficult to measure the degree of innovative performance among organisations that have made innovations. One possibility is to measure the number of innovations implemented. The main caveat here is that the value of single innovations will vary greatly, and this will be difficult to account for. An alternative would be to measure innovative performance by the outputs or impacts of the innovations, for example in the form of cost reductions, increased quality, increased productivity, and improved customer satisfaction. Three issues here are time lags for effects to materialise, difficulties in measuring outputs themselves and the need for additional data sources. Much work is currently being undertaken on many of these issues. However, the complexity of measuring innovative performance based on outputs suggests that one should also look to measures of innovative capability as intermediate indicators of performance.

**Related, intangible outputs, e.g. patents, copyright, trademarks**

A number of data can be obtained on innovative outputs in the form of intangibles such as patents. However, these types of measures will typically only be relevant for a small number of public organisations. Hence, these indicators may be less suitable on a broader scale.
**Effects of innovations**

Effects here refer to qualitative estimates by organisations of the impacts of implemented innovations on a number of factors such as quality, efficiency and capabilities. They provide indications concerning both the outcomes of innovations and also which objectives organisations target in their innovation activities. However, as these are only rough qualitative measures of effects, they cannot function as a proxy for quantitative outcomes.

**5.1.4 Measures of public service outcomes and performance**

*Organizational performance (both productivity, quantity and quality measures)*

*Employee satisfaction*

*User satisfaction*

*Other intangible effects, e.g. increased trust and legitimacy*

Measuring outputs (goods and services delivered by public service organisations) and outcomes (broader end-outcomes) public services is a difficult task for a number of reasons. First, there does not exist a common output measure (such as sales revenue for businesses) for non-market services. Output measures are thus very sector specific. Though, even here a lack of a market price for public services makes valuation difficult even when service output can be identified. Problems are particularly acute for collective services that are not consumed by or offered to an individual. And, the outputs of public services are broad, including a number of social outputs that are hard to measure. This means that those quantitative measure we do have will often only constitute part of a public sector organisation’s total output (or value creation).

However, knowledge on public sector performance and how innovation is related to performance is important both for our understanding of innovation and policy development and evaluation. Hence, there is good reason to pursue this area of measurement, though at the same time being aware of its limitations.

We list above some types of output measures that are relevant for measuring the impact of innovations. In all cases, we assume that this data should be collected from other sources. Our primary focus among these is measures of outputs of public service (both quantity and quality). Furthermore, these should focus on organisations that mainly provide individual services and where output measures for these services are readily available.

Public sector output measurement is a very new area, but also one where continuous progress is being made. A practical approach here might thus be to choose a primary focus group(s) of organisations, develop this and thereafter expand to include additional sectors and additional measures of outcomes.

**5.2 Modelling the Diagnostic Tool**

The above survey indicators provide a broad range of information on innovative performance and how public sector organisations innovate. As we have argued above, these can be considered both as indicators in themselves and as data that can be further analysed and used to construct composite measures (or diagnostic indicators) that shed additional light on key aspects.

These diagnostic indicators can be constructed in a number of ways, each with benefits and shortcomings. However, on method does not necessarily exclude another. First, weighted indices can be constructed, generating a single score for each set of indicators. Examples of this approach are the European Innovation Scoreboard and also the Korean GII. Advantages
are simplicity in giving an overall assessment for benchmarking. Drawbacks are that it is often difficult to see what lies behind a single index measure and interpretations based on it risk misreading what lies behind the measure.

A second option is to present as a suite of indicators, making analysis and interpretation based on a combined view of the full set of measures. A third option is to construct composite indicators (indicators based on two or more indicators). A simple example here is organisations that have implemented both service and organisational innovations.

**Innovation performance**

As indicators of innovation performance, we have suggested types of innovations implemented, whether they are adopted or novel, and effects of innovation. These measures can then be examined together, as a combined measure.

**Implementation**

Implementation is a key issue for innovation. How do organisations ensure that innovative ideas are successfully developed and implemented? What are the key enabling conditions for implementation? This indicator makes a broader assessment of implementation, by examining organisational focus/practices on implementation, actual implementation of innovations, effects of innovations, and barriers to implementation.

**Openness**

We have suggested indicators covering a number of aspects concerning knowledge flows and interaction. These include learning activities, collaborative arrangements, procurement, adoption of innovations and other diffusion practices within and outside of the organisation. This information can be further utilised by examining these indicators together as an overall measure of openness.

**Innovative culture**

The above argument is even more relevant for innovative culture. Given the difficulty of measuring such a concept, we have suggested a series of questions or indicators to capture key (and measurable) aspects. However, there is a clear interest in drawing on this set of indicators to form an overall measure of organisations’ innovation culture.

**Demand and user involvement**

Demand and user involvement examines how responsive organisations are to demands or needs of users and to what degree users are involved in innovation processes. Input here can be efforts by organisations to study user needs, different forms of interaction with users in connection with innovation projects, and focus on user-oriented impacts of innovation (quality, access, ease of use, etc.). Also relevant here are efforts to promote and market services or the organisation itself.

**Innovative procurement**

Procurement is typically thought of as a potential policy tool to promote innovation among business suppliers. However, procurement can also function as a driver and channel of new knowledge for public organisations themselves. Questions on procurement practices can attempt to capture impacts in both directions. Additional indicators of relevance here are innovation spending on procurement, sources of externally acquired knowledge, and interactions with suppliers.

**ICT and innovation**

The role of ICT in innovation can be covered through various questions on ICT capabilities, types of ICT-related innovations, impacts, and barriers to implementation. This measure provides and overall view of the role of ICT as an enabler of innovation.
5.2.1 Benchmarking and analysis

The diagnostic indicators provide additional analysis of organisations’ own responses to the survey. These results can then be benchmarked against other groups\(^2\) that have been specified for comparison. There are a number of possibilities here, such as:

- Comparison with averages for comparable groups
- Comparison with top performers for comparable groups
- Comparison with results for other groups (that are perhaps less comparable, but where benchmarking may still be useful)

In all cases, this comparison can also include an analysis of strengths and weaknesses within selected areas.

5.3 Capturing heterogeneity in public sector organisations – a proposal

Three main dimensions for classifying organisations are: country, sector and level of government. There are without doubt important differences in innovation, organisation, etc. across all three of these dimensions. However, the overriding objective here should be to capture as much of this diversity as possible in a common framework. This allows greater comparison, a common understanding of key aspects of public sector innovation and some common messages. The latter is important; a complex framework that varies greatly from one sector or level of government to another may confuse more than it will benefit.

We thus propose that the PSII consists of a core set of questions/indicators that are common across all public sector organisations; that the framework above is utilised for all types of organisations, with only minor modifications to according to sector, level of government, etc.

5.3.1 Accounting for differences in level of government

In terms of design of the survey and diagnostic tool, we propose a broad classification of organisations by level of government, dividing by level of government and whether the organisation is mainly involved with general administration or the delivery of services to the public:

- Central government (including Devolved Administrations)
- Local authorities
- Frontline services (where organisations that deliver services to the public may either be a part of, or administered by, central or local government).

\(^2\) We have discussed above some potential classifications of public sector organizations, and examine this issue further in the next section.
This classification also proposes that potential country differences can be captured and analysed within the same framework. Comparison across countries may also be of interest, which argues for maintaining a common framework across this dimension.

Central government organisations are concerned with promoting own innovation, but also in promoting innovation in local government and frontline services. Hence, the framework for central government should include this specific aspect; actions to promote innovation in these two groups of organisations.

Local authorities will act to promote innovation in those frontline services that are part of (or administered by) local government, and their own operations and innovative capability may be impacted by central government. In addition, the framework for local authorities should consider linking innovation indicators to CAA performance indicators.

Frontline services in contrast are mainly focused on innovation within their own organisation, but this innovative capability can be influenced by both central and local authorities.

5.3.2 Accounting for differences in sector or function

While we stress again the importance of maintaining a common core of indicators across organisations, it may also be very relevant to introduce a small set of questions (or a separate module) that focuses on aspects that are specific to individual sectors. These can concern effects of innovations, barriers, specific organisational issues or types of collaboration, and could either consist of a separate module or a small set of additional or modified questions throughout the survey. These sector specific indicators should be developed in dialogue with stakeholders from respective sectors. It should also be recognised that this is a challenging task, and it thus may be advisable to initially choose only a selected set of sectors for separate modules.

We discussed above the option of linking output measures with collected innovation data. This should of course also be done in dialogue with key stakeholders and, as we mentioned above, the complexity of this task suggests focusing on a very limited number of sectors. Our proposal here is focus on Health and Education with respect to output measures.

5.4 In-depth analysis of key topics

Outputs of the Innovation Index essentially fall into three groups: sets of indicators, new methodologies, and deeper investigation of key issues. Our proposal mainly focuses on the first two of these groups. However, the survey and diagnostic tools can also be used as input in in-depth analyses and provide examples for analyses that can be included as part of the PSII. Potential examples here could be the implementation innovations, measuring the capacity for radical innovation, the role of procurement strategies in innovation, or more in-depth ‘snapshots’ of innovation in specific sectors.

We propose here that the PSII include one or two in-depth analyses of issues covered in the tool outlined above. These analyses could result in a short publication that consists of a brief case study of the issue, additional analysis drawing on the data collected for the PSII, and additional literature review on the topic.
6 Constructing and implementing the PSII – key steps

The diagram below outlines steps for the construction and implementation of our proposed PSII, and a proposed time plan for work. We have identified four ‘strands’ of work: Dissemination and promotion, Conceptual work, Data preparation, Technical or IT related work. Here we discuss key steps for the development and implementation of our model and sequencing of project work.

Consultations with users

This first step has a number of objectives: gaining feedback on user needs, promoting the overall idea (across both departments and countries, etc.), and initiating dialogue and collaborations with key departments that will be needed for the entire process. User groups, etc. would be presented with a fairly detailed proposal for the PSII.

Development work – survey, data and online tool

Actual development work would start following these consultations. This includes developing a survey questionnaire, detailed examination of options for using other data (this work will essentially have been initiated in consultations with key departments) and other data-related issues (eg. access and administration of data), and the development of a plan for the online system (how this would function, identifying practical and technical details that need to be addressed).

Testing

The questionnaire should be tested (potentially via the web-based tool) and feedback should be sought from user groups.

Based on this, the pilot survey questionnaire should be finalized. Note that the pilot survey is needed to generate indicators for use in benchmarking, etc for the diagnostic tool, and this also means that eventual users of the diagnostic tool should answer the same questions as in this pilot study. Hence, this is a very important step. Essentially, final decisions will be made here concerning the survey tool (though not necessarily for the diagnostic indicators).

The pilot survey

Work in constructing a population and sample may take some time, though this preliminary work can be initiated parallel to development and testing work. The pilot survey needs to be completed before remaining steps can be undertaken.

Constructing the diagnostic indicators

Careful analysis of the results will need to be done, including development and analysis of various methods for constructing diagnostic indicators. Note that this process will also require any other data sources to be used for the diagnostic indicators. This matching process can be begun as soon as the sample is determined for the pilot study.

A proposal concerning diagnostic indicators should be presented to user groups for feedback.
Work should then be finalized for all three strands: the diagnostic indicators, the data set and the web-based diagnostic tool.

**Box 4: Key steps and time plan for implementing the Public Sector Innovation Index**

<table>
<thead>
<tr>
<th>Activity</th>
<th>month 1-4</th>
<th>month 5-8</th>
<th>month 9-12</th>
<th>month 13-16</th>
<th>month 17-20</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Start</strong></td>
<td>1-2</td>
<td>3-4</td>
<td>5-6</td>
<td>7-8</td>
<td>9-10</td>
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<tr>
<td>Set up project group and detailed plan</td>
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<tr>
<td><strong>Conceptual development</strong></td>
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<td>Develop pilot survey</td>
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<tr>
<td>Test with small group</td>
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<tr>
<td>Conduct pilot survey</td>
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<tr>
<td>Finalise diagnostic indicators, benchmark groups etc.</td>
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<tr>
<td>Tabulate set of indicators</td>
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<td><strong>Data sources</strong></td>
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<tr>
<td>Examine data sources</td>
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<td>Collecting data from other sources</td>
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<td>Match survey with other sources</td>
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<tr>
<td>Establish database for diagnostic tool</td>
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<tr>
<td>Develop plan for use/implementation of tool over time</td>
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<td><strong>IT-structure</strong></td>
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<td>Develop online system</td>
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<tr>
<td>Complete on-line diagnostic tool</td>
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<td>Test on-line tool</td>
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<tr>
<td>Continuous updating of database</td>
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<tr>
<td><strong>Dissemination and promotion</strong></td>
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<td>Develop plan for dissemination of PSII</td>
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<tr>
<td>Consultation with stakeholders/users</td>
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<td>User-feedback on pilot survey</td>
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<td>Presentation of preliminary results to user groups</td>
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<tr>
<td>Launch of PSII and present initial results</td>
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</table>

Final preparations before launching the PSII

Thereafter, tabulations should be made (both survey and diagnostic indicators) for a publication that can be released when the diagnostic tool is launched. And, the web-based tool should be tested (for technical functioning – all details for indicators would be finalized at this point).

Launch of the PSII

The diagnostic tool is launched, perhaps through a promotional event. In order to attract additional attention for the Index, a publication can be released a the same time that reports results of the pilot survey, and shows examples of the types of benchmarking analysis that can be conducted based on this data.

Planning ongoing work

In terms of ongoing work, three issues are:

- The initial database is from the pilot study. Can this database be updated to also included ‘responses’ of those organizations that use the tool? For example on a quarterly basis? This issue should be examined towards the end of the project.

- How is the database updated each year? One option is to run a pilot study each year or at regular intervals. An alternative option is to use data from the year before (or the updated database) for benchmarking.

- How/when to consider modifications to indicators? What needs to be kept in mind here is that we always need to have an initial set of data before any changes can be implemented. Hence, large modifications would mean that a new pilot or start-up survey would be needed.
7 Conclusion

We summarise here the main elements of our proposal for the PSII.

Modelling the PSII

We propose an index that consists of a series of survey indicators, based directly on data collected from public sector organisations, and diagnostic indicators that build on collected data to construct overall or diagnostic indicators that focus on key aspects of public sector innovation. Furthermore, the index here focuses on innovation in individual organisations. We propose the following seven diagnostic indicators:

- Innovation performance
- Implementation
- Openness
- Innovation culture
- Demand and user involvement
- Innovative procurement
- ICT and innovation

Results can be benchmarked against other groups that have been specified for comparison. There are a number of possibilities here, such as:

- Comparison with averages for other comparable groups
- Comparison with top performers with other comparable groups
- Comparison with results for other groups (that are perhaps less comparable, but where benchmarking may still be useful)

Paralleling international work

We emphasize the importance of international comparability for indicators used in the PSII. This is also important for forming a common understanding of public sector innovation and key concepts. This work should thus be informed by international work on public sector innovation measurement, such as the Nordic project and OECD work.

Target population

The target population for the PSII should be broad, including all local authorities and central government. It is also important that the PSII is representative for the UK as a whole and thus includes organisations in England, Scotland, Wales and Northern Ireland. The PSII should also strive to include ‘front-line’ service institutions; ie. organisations that are mainly responsible for providing services to the public. This latter group, however, is particularly challenging given the large number of organisations and substantial differences across functions. Hence, it may be advisable to target a select set of sectors for this group.
**Drawing on other data sources**

It is important to utilize existing data where possible. Our focus on innovation in individual organisations, however, complicates the use of other data sources. Our interest here is in how indicators based on other data – for example output measures – are related to innovation at the level of individual organisations. This requires additional work, but at the same time may be very useful in aiding our understanding of how the individual public sector organisation innovates. Due to the complexity of this task, we have again recommended a narrow focus on selected sectors, for example Health and Education.

**Classifying public sector organisations and differentiating the survey and diagnostic tool**

In terms of design of the survey and diagnostic tool, we propose a broad classification of organisations by level of government, dividing by level of government and whether the organisation is mainly involved with general administration or the delivery of services to the public:

- Central government (incl. Devolved Administrations)
- Local authorities
- Frontline services (where organisations that deliver services to the public may either be a part of central or local government).

In order to maintain comparability to the greatest degree possible, we propose that the PSII consists of a core set of questions/indicators that are common across all public sector organisations; ie. the framework above is utilised for all types of organisations, with only minor modifications to according to sector, level of government, etc.

It may also be very relevant to introduce a small set of questions (or a separate module) that focuses on aspects that are specific to individual sectors. These can concern effects of innovations, barriers, specific organisational issues or types of collaboration, and could either consist of a separate module or a small set of additional or modified questions throughout the survey. These sector specific indicators should be developed in dialogue with stakeholders from respective sectors.
References


Appendix

Measuring Public Sector Innovation: Towards a common statistical approach

Successful promotion of innovation in the public sector is dependent on statistical data that identifies the key elements of innovation in public sector institutions. The Nordic project, which was initiated by the Danish Ministry of Science, Technology and Innovation, seeks to develop a framework for measuring public sector innovation. Project work started in November 2008 and is expected to run around two years. The project is also supported by the Nordic Innovation Centre, the Norwegian Research Council, Innovation Norway, The Finish Ministry for Enterprise and Employment, VINOVVA and the Swedish Association of Locals Authorities and Regions.

The main objective of the project is to develop a framework and a questionnaire for collecting internationally comparable data on innovation in the public sector. Project work is organised in 6 work modules:

- **Module 1 - Conceptual framework**: Background research, design of overall conceptual framework, indicators, incorporate insights from user needs and feasibility study. Key elements of this framework will be forming a definition of innovation in the public sector and a set of indicators that capture innovation activities, determinants and barriers to innovation, and forms of external interaction.

- **Module 2 - Survey methodology**: statistical unit, activity classifications, target populations, measurement of concepts.

- **Module 3 - Mapping user needs**: form expert/stakeholder group in each country (hold two national meetings with group; the first to discuss needs and uses for public sector innovation data and indicators; the second to gain feedback on proposed indicators and other project work).

- **Module 4 - Feasibility study**: Interviews, testing and study of potential respondents. The feasibility study will be undertaken in two stages: 1) interviews and cognitive testing of a group of potential respondents (public sector institutions); and 2) small scale testing of a pilot questionnaire (developed in module 5) with interviewees.

- **Module 5 - Draft of Pilot Questionnaire**: Developing one or more pilot questionnaires, including experimental modules.

- **Module 6 - Pilot testing of questionnaire**: A pilot questionnaire will be developed and tested in all participating countries. Following this testing, a larger pilot survey will be conducted in early 2010.

This first phase of the project (modules 1 to 5) is expected to be completed in January 2009.
The Government Innovation Index (GII)

As part of efforts to promote public sector innovation, the Korean Government developed the Government Innovation Index (GII). The GII, which was implemented in over 2005 and 2006, seeks to: Measure government innovation efforts, develop a tool for autonomous diagnosis and improvement of innovation capabilities at each institution, and to benchmark government institutions. The GII is a web-based tool, where organizations can enter their own innovation data, and then the tool conducts a series of diagnostic analyses based on the organizations data and a previously collected set of data that is used as a comparison standard. This comparison standard was based on a survey of 496 public sector organisations within central government, local government and education.

The GII consists of a survey covering four areas of organisational capability (Innovation leadership, Vision and Strategy, Personnel capability and Systemisation of management), the degree of adoption and implementation of pre-specified management systems and other programs, and barriers to innovation. These data both generate indicators directly, and are used to construct a series of diagnostic indicators (or indices) to assess innovative capability in individual public sector organisations. The GII includes diagnostic measures that are used to analyse and benchmark public sector organisations: Foundation readiness for innovation, Consistency of innovation activities, Internalisation of innovation, Barriers to innovation, Innovation Activation index and Performance Enhancement level.

The diagram below illustrates the GII:


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3 This short description of the Korean GII is based on Powerpoint presentations by the Korean Ministry of Government Administration and Home Affairs (2005) and Yoon (2006).