

**EPISIS** European Policies and Instruments to Support Service Innovation

Final report of Task Force 6

# Service Innovation Policy Benchmarking

Synthesis of Results and 15 Country Reports





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Synthesis of results and 15 country reports

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# Synthesis and key results of the policy benchmarking

The EPISIS – *European policies and instruments to support service innovation* – promotes development of service innovation at policy, strategy and operational levels through transnational cooperation between policy-makers and innovation agencies. EPISIS project is coordinated by *Tekes, Finnish Funding Agency for Technology and Innovation*. Other project participants include DASTI from Denmark, *PT-DLR* from Germany, *Vinnova* from Sweden and *Department for Business, Innovation and Skills* from the UK. In total, EPISIS consists of five different Work Packages and six Task Forces on specific themes under Work Package 1 (*Policy recommendations to support service innovation*). The project duration is three years between September 2009 and August 2012. More information about the EPISIS project including final results and Work Package and Task Force Final reports can be found [http://www.tekes.fi/en/community/EPISIS\\_reports\\_and\\_publications/1361/EPISIS\\_reports\\_and\\_publications/2871](http://www.tekes.fi/en/community/EPISIS_reports_and_publications/1361/EPISIS_reports_and_publications/2871).

Task Force 6 is part of the Work Package 1 of the project. The aim of the Task Force is to benchmark national service innovation policies in 15 different countries. The Task Force 6 is continuation for the *Innovation Policy Project in Services* (IPPS) project during which a service innovation policy survey was conducted covering 11 countries and regions. The IPPS project was coordinated by Tekes during 2006–2007.

## 1.1 Introduction

This work carried out by EPISIS Task Force 6 brings together latest service innovation policy developments in 15 countries including 11 Member States of the European Union: Austria, Denmark, Finland, France, Germany, Ireland, Netherlands, Poland, Slovenia, Sweden and the UK. In addition service innovation policy surveys were conducted in China, Korea, Norway

and the United States. Policy mapping followed a common template provided to national correspondents who were local experts on service innovation policy. Once the national reports were drafted, policy makers in each country (i.e. the members of the *European Service Innovation Think Tank* established by EPISIS, see complete list of names in Appendix 3, page 186) reviewed the document and gave their final approval for the outcome. In this way, national reports benefit from the common template which facilitates comparative analysis. The validity of the national reports in turn is improved by the comments and inputs from the national policy makers. As a whole, the policy material collected represents perhaps the most comprehensive up-to-date material on service innovation policy at the moment. The service innovation policy mapping would not have been possible without excellent input and support from the EU Commission representative Ms. Lisbeth Bahl-Poulsen and country correspondents listed below:

- **Austria**, Dr. Bernhard Dachs – AIT (Austrian Institute of Technology)
- **Denmark**, Dr. Torben Bundgaard Vad – Damvad Ltd.
- **Finland and EU Commission**, Dr. Jari Kuusisto – European Touch Ltd.
- **France**, Dr. Dyland Henderson, CM International
- **Germany**, Mr. Walter Ganz, Fraunhofer IAO
- **Ireland**, Dr. Dyland Henderson, CM International
- **Netherlands**, Dr. Pim den Hertog, Matthijs Janssen, and Leonique Korlaar – Dialogic Ltd.
- **Norway**, Mr. Rolf Røtnes – Damvad Ltd.
- **Slovenia**, Prof. Metka Stare – University of Ljubljana
- **Sweden**, Dr. Tommy Bergkvist – SMI – Strategic Management Institute
- **United Kingdom**, Dr. Selina Liang – University of Manchester
- **Poland**, Mr. Jacek Walendowski – Technopolis Belgium

- **China**, Prof. Guo Wenand Zhang Hongyun – Institute of Policy and Management, Academy of Science
- **Korea**, Dr. Jang, Pyoung Yol – Korea, Science and Technology Policy Institute
- **USA**, Mr. J. Stephen Ezell, Information Technology and Innovation Foundation

Special thank you is also dedicated to the members of *European Service Innovation Think Tank* who provided valuable input to the individual country reports. The following sections present the synthesis of key results and the 15 individual country reports.

## 1.2 Synthesis and key results of the service innovation policy survey

The results of this survey build a picture of evolving service innovation policy in practice. Surveyed 15 national approaches to service innovation promotion portray a wide variety of policy priorities, allocated resources, engaged actors as well as used instruments. In broad terms, service innovation policy and focus on non-technological innovation is gaining ground in surveyed European countries and, in particular, also in China, Korea and the USA. Service innovation policy area is still very much evolving as increasing number of countries are taking services in their innovation policy agenda. Overall, countries are at different stages of the learning curve and there seems to be very good opportunities for trans-national policy learning and European projects. One motivating factor towards joint European efforts comes from the notion that the key competitors like China, USA and Korea are beginning to invest heavily on service innovation promotion and overall policy development in the area. The analysis reveals that service innovation policy development follows a stylised life-cycle. While the policy area as a whole is maturing, different countries are at different stages of development. In broad terms there are countries:

- with well established service innovation policy that is developed systematically and as a continuous priority area – e.g. Finland and Germany
- with well established service innovation policy but development goes back and forth in somewhat volatile manner as priorities keep changing – e.g. Netherlands, and Norway
- who are building up their innovation system as a whole and service innovation is entering the policy agenda among other policy issues – e.g. China, Poland and Slovenia

In terms of driving force behind service innovation policy, there are not many cases where such a broad range of key actors push forward a common horizontal agenda. However, such a broad based approach could hardly be identified in Europe since most developed horizontal policy examples come from China, Korea and the USA. Even in these cases, the concept of service innovation tended to have several different meanings among policy-makers. In most countries, only a limited number of innovation policy actors are actively engaged in service innovation policy. Here Finland provides an example of well developed service innovation policy driven forward mainly by one ministry and the innovation agency, Tekes. Bearing in mind the systemic nature of service innovation, such a lack of horizontal approach is a challenge that needs to be tackled in several countries. Furthermore, most of the examined innovation policies seem to be rather conservative in nature. Typically service innovation policy employs rather conventional policy instruments that bear the legacy of technology policy. For instance, traditional public funding for innovation projects quite often uses criteria which are more or less adapted to the needs of service innovation development. The outcome is that in many countries technology bias still creates a challenge for service innovation policy development. It culminates in the lack of common language and skills needed in service innovation promotion. It is also common that the mindset of the decision makers is rather sceptical towards service innovation promotion.

However, there are also some novel developments for instance in China, Finland, Sweden and the USA. In China, service innovation promotion includes a major training programme targeting broad range of policy makers as well as businesses. The aim is to familiarise the target groups with the specific aspects of service innovation. In Sweden and USA, much of the service innovation promotion is based on improving framework conditions. Especially in Sweden, opening up of public sector services for private business has taken place. This has provided much needed stimulation for new service development and innovations in the public-private interface. In Finland, systemic service innovation promotion is on the agenda by the Strategic Centres for Science, Technology and Innovation. These Centres are new types of actors organised as limited companies which are owned by the leading actors of industry and academia. In the USA, prizes, challenges grants, government procurement and open data to spur innovation



are seen as key instruments for service innovation stimulation. Also framework conditions for innovation are emphasised in the USA. These include, in particular, the patent/intellectual property system; entrepreneurship; education; physical and digital infrastructure, including policies to spur deployment and adoption of broadband and wireless Internet; and regional cluster innovation policies. Finally, much of the service innovation support is focusing on services directly touched by the government e.g. health care, education, and government.

### 1.2.1 The main types of service innovation policies

Drawing together the types of policies supporting service innovation, the following stylised grouping gives an idea of the current situation within the EU and among the Member States. The survey could identify several service innovation policy approaches:

- Policies supporting service innovation in specific industry or in a sectoral context. At least Norway, Netherlands, UK, USA and the EU Commission seen to carry out this types of policies. In most cases, service innovation promotion targets industries and sectors that are important in terms of their innovation activities. For instance, knowledge based services and creative industries are frequently targeted by service innovation policy. Notably, retail sector is not targeted by service innovation policy in any of the surveyed countries. Still, retail is the largest service industry in terms of employment and turnover. Also in terms of service exports and from environmental point of view, retail industry in its various forms (e.g. rapidly growing internet based retail) is highly important but it has not really captured policy interest so far.
- Service innovation support in technology context can also be identified as an approach to service innovation promotion. This type of policy is fairly strong in countries like Germany, Korea and USA, to name a few examples. Although there is a strong argument in favour of such policies, a typical complaint is that the actual support for service innovation remains weak and it really 'works only on paper'. Hence, it seems that there is a definite need for further development of policy in this area. After all, innovative services and technologies are typically bundled together in order to provide value for the customers and users.
- The so called neutral and horizontal innovation policies are targeting businesses across the sectors without a defined focus on any technology or service development. From service innovation support point of view, neutral policies are often considered ineffective because of sustained technology bias. The argument is that service innovation projects tend to receive relatively limited support from such programmes. This type of experience has been recognised e.g. in Norway which is one of the very early pioneers of service innovation support.
- Thematic policies, such as grand challenges approach, are becoming popular at the EU level and also several Member States are probing this approach. These are still very much emerging approaches and it is hard to say how successfully they will be able to support service innovation. However, service innovation can be argued to be in a key role in tackling socio-economic challenges that are typically complex and beyond the scope of pure technological solutions.
- Demand- and user-driven innovation policy approach was indicated by majority of surveyed countries as a new emerging approach to service innovation support. The same applies to EU as well where, among other things, innovation promotion through public procurement is emphasized. This approach is still very much emerging but it seems to offer many new opportunities for service innovation stimulation. As such, user and broader stakeholder involvement in new service development appears to be a promising area of policy development. For instance, household tax credits has proved to be an effective instrument for stimulating demand for services in Finland and Sweden. These emerging new markets for services create room for service innovations. Overall, demand- and user-driven service innovation policies create many opportunities and new ways to promote service innovations. Recent open data initiatives, for instance in the USA and Finland, provide a good example of new types of measures that can support service innovation. However, at present supply-side policies are still very much dominating policy portfolios.
- There are still very few specific policies and tools targeting service innovation. In Finland, Tekes is one of the pioneering agencies providing innovation support targeting service innovation. Efforts to stimulate innovation in government services in the USA, provide another example of service specific innovation policy measures. Overall, the small number of dedicated policy measures reflects the relatively short time service innovation has been on the policy agenda. At the same time, much of the service innovation support is delivered through more general innovation policies and instruments.



## 1.2.2 Evolving policy debate on service innovation

The final discussions inspired by service innovation policy survey took place during the last European Service Innovation Think Tank meeting in Porto in May 2012. The discussions were structured around three main themes that portray many of the key issues policy makers are dealing with currently. Each of the three main themes was divided into more detailed questions that assigned countries were addressing in the debate. These questions can be well utilised as a check-list when planning service innovation promotion at national and regional levels.

### 1. Design and launch of successful service innovation policies – lessons learned?

- What kind of resources and funding is available for service innovation policy launch? Including National resources, EU resources [SLO, PL]
- What types of actors need to be involved in service innovation policy launch? [FR]
- How to focus service innovation policy and what types of instruments can be used? [NL, NO]
- How to improve knowledge and skills are needed among businesses, policy-makers, employees? [SL, PL, FR]
- How could these countries learn from the experiences of countries that have already established service innovation policy? [SLO, PL, NO, FR]

### 2. Next generation service innovation promotion – meeting the 2020 challenges?

- What should the new service innovation policy address?
- Themes: Intangibles [FIN], systemic innovations [SWE], technologies as drivers [DE, AT]
  - Focus: Users, renewal of industries and ecosystems as policy targets
  - Aims: Emerging socio-economic challenges and opportunities
  - What types of new policy initiatives should be developed?
- Demand- and user side [FIN], challenges driven approach [SWE]
- Specific issues: design [AT], work life development [DE], experiments, clinics & labs, etc.
- What types of knowledge and skills are needed among businesses, policy-makers, employees, and how can they be developed? [ALL]

### 3. Framework conditions and dynamic markets for service innovation – mission impossible?

- How EU will improve framework conditions for service innovation? [EC]
- Which actions can develop dynamic service markets in Europe? [UK]
- The role of public procurement in stimulating service innovation? [DK]
- How to link service innovation promotion to other policy areas such as SME- support, smart financing, education and research. [IRL]
- What specific infrastructures needs to be improved as a way to support service innovation (technology, research, education, skills others) [ALL]

Without going into details, it is clear that the debate around the questions was perceived useful. More broadly, the discussion topics above indicate many of the key future topics around service innovation policy debate.

#### 1.2.2.1 European Commission input to the service innovation policy debate

Various members of the European Commission provided valuable support and input to the service innovation policy debate. This took place during the EPISIS-project and in connection with the policy benchmarking survey. The issues that are brought up represent only a few examples of Commission's input and they are merely meant to highlight the importance of close interaction with the Commission during the EPISIS project. The impacts of Commission input are naturally reflected in all parts the project, even if in most cases they are not explicitly pointed out.

The main Commission input concerns new policy initiatives such as the Innovation Union and Horizon 2020 priorities. Together these have a major influence on service innovation policy measures at the EU and Member States level. The key message from the Commission's side has been that at present service innovation is not itself on the agenda but it is a perspective that can contribute to the research topics and innovation initiatives that will be launched during the coming years. According to the Commission, service innovation debate has reached to the point where it needs to be integrated to other existing themes. This follows from the fact that service innovation is not a separate item in the Horizon 2020 documents, although it is included in many of its elements. From this point of

view, it can be argued that service innovation is well presented in the current policy documents. The Horizon 2020 embraces service innovation as it is inclusive to different types of innovation including technology and social innovation. Service innovation can also have key role in tackling Grand Challenges type of issues e.g. Health, Education, and Environment. However, it is up to service innovation community to propose research projects and practical ways to make use of service innovation in tackling the Grand Challenges. For instance, in order to meet the sustainable growth and employment goals it is important to make better use of standards. At best, they could stimulate the development of innovative ethical environmental auditing services that can be applied at an affordable rate throughout all supply chains entering or originating within the EU. That in turn could encourage investment in sustainable production and service delivery.

Other important future topics from the Commission's point of view include intangibles and management, intellectual property and IPR. Currently, there is little doubt that IP is very often undervalued. It is important to ensure that firms could value their IP better so that they are able to raise more capital for future investment and growth. Better IP valuation practices provide a key for tackling the lack of financing for high-growth innovative service activities. It is also important to change the mindset among policy makers. At present the value of service innovation across the industries is not fully recognised. It is important to further develop statistics and measures to be able to highlight the real value of service innovation.

### **1.2.3 Service industry lobby organisations have relatively invisible role**

Service industry lobby organisation activities are almost invisible in the policy mapping material. Based on the collected material, they appear to be actively influencing policy only in two countries, Sweden and Denmark. There are many reasons for the relative weakness of industry lobby in services. However, it is clear that more active industry organisations could drive the cause of service innovation more effectively. Highly fragmented nature of services is clearly a challenge. While most industry organisations in services are almost non-present in terms of their policy influence, there are some highly influential service industry organisations, such as the lobby representing financial services. The challenge to be tackled is creating more level playing field for different types of services.

Many of the 'unrepresented' services represent growth potential and could provide important building blocks for tackling socio-economic challenges. Service innovation policy is the only one variable influencing the development in this area. Without effective industry representation it will be hard to improve framework conditions for the full range of service innovations that could benefit the society.

### **1.2.4 Service innovation policy design and delivery suffer from systemic deficiencies**

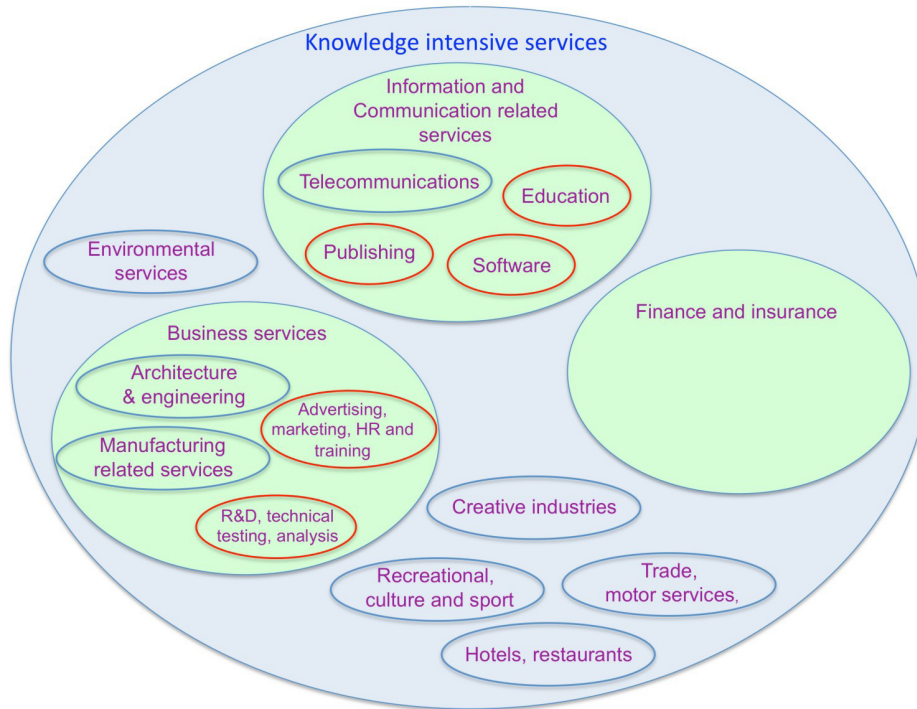
Lack of common language, knowledge and skills seem to limit the implementation of service innovation policy in many of the surveyed countries. Despite these widely acknowledged deficiencies only China has set up an initiative for service innovation capability development targeting at both businesses and policy actors. It seems that there is a clear need to address these systemic failures also at the EU level. State-aid-rules provide another example of an area where further development efforts are needed. Even though existing state-aid-rules allow support for service innovation, it seems that many Member States are not quite sure of the existing opportunities. At the same time, there seems to be a need to further develop state-aid-rules so that they are more suitable for supporting new types of innovation activities, for instance, user communities that are developing service innovations. Further more, in many countries the funding criteria for research and innovation projects are not fully recognising service innovation. As a result, funding for service innovation projects is suffering from systemic bias that tends to favour more traditional technology development projects.

### **1.2.5 Key services in terms of innovation activity**

Country correspondents compiled a list of key services in terms of their innovativeness. These inputs brought up a number of focal services from innovation point of view. Not surprisingly, *knowledge intensive services* represent the main category, with some margin, among innovative services. It consists of several sub-categories such as information and communication related services including publishing, telecommunications, software and education. *Business services* is another major category including such sub-groups as architectural and engineering services, manufacturing related services, research, development, technical testing and analysis, advertising, marketing human resources and training. *Finance and insurance* was pointed among innovative service in sev-



**Figure 1. Key services identified on the basis of their innovation activity.**



eral countries as well. Other innovative services pointed out include; recreational, cultural and sporting activities, and creative industries. Also environmental services, trade, hotels and restaurants we indicated among innovative services.

### 1.2.6 Key service industries in terms of employment and turnover

Country correspondents compiled a list of key services in terms of the economic importance, mainly in terms of employment and turnover. The following list of key services is based on the country correspondents' inputs:

1. Retail and wholesale trade
2. Transport and storage
3. Real estate renting and business services
4. Information and communication related services
5. Financial intermediation
6. Professional scientific and technical services
7. Knowledge based services
8. Hotels, restaurants, travel and tourism
9. Administrative and support services

The outcome is rather interesting and rather different that the list of most innovative services. Retail and wholesale trade is rated the number one in all countries as it is an important employer and one of the largest service industries. The same applies to transport and storage activities (2) and real estate renting and business services (3). From the place 4 onwards listed key service industries start to look more familiar from the innovation policy point of view. These include for instance (4) Information and communication related services, (5) Financial intermediation, and (6) Professional scientific and technical services. The questions is if these major service industries are unimportant from service innovation policy point of view? Or is this lack of attention due to the 'policy blind spot'? In other words, have these key industries escaped service innovation policy-makers' attention up to now? Either way, service innovation policy should recognise all types of services and make well-informed decisions on its focus areas. Equally, it should give clear indication of any industries that are left out from the policy focus.

## Appendices: Country reports

### 2.1 Appendix 1. Austria

Author: *Bernhard Dachs*, AIT-Austrian Institute of Technology

#### A. National policy context

##### 1. In general terms, how you would characterise public support for service innovation in your country?

Innovation policy in Austria is increasingly aware of the importance of service innovation. However, this growing awareness and recognition did not manifest in dedicated support programmes for service innovation so far. The vast majority of public support for R&D and innovation is open for all sectors of the economy, and does not discriminate individual sectors.

This is also true for thematic programmes, which became much more prominent in recent years. These thematic programmes target broad technological areas such as renewable energy, ICT or genomics, and are open to manufacturing and service industries in these areas. However, we also see that the share of innovative firms which received funding is much higher in manufacturing than in services, which may point to some “blind spots” in the Austrian innovation support system.

#### Strategy and innovation system level

##### 2. Does your country have a national innovation strategy in place?

The Austrian National Research and Innovation Strategy (Austrian Federal Government 2011) has been approved by the Austrian government in 2011. There are various references to the importance of service innovation in this document, including a statement that Austrian innovation policy “does not focus enough on non-technological aspects such as organisational innovations, service concepts and new business models” (Austrian Federal Government 2011, p. 25). The strategy, however,

does not recommend specific measures to promote service innovation. Instead, it follows the approach to focus on cross-cutting issues such as technologies to tackle the Grand challenges.

##### 3. Please present here a diagram that illustrates the key innovation policy actors and relationships between them on national/regional levels.

See page 14.

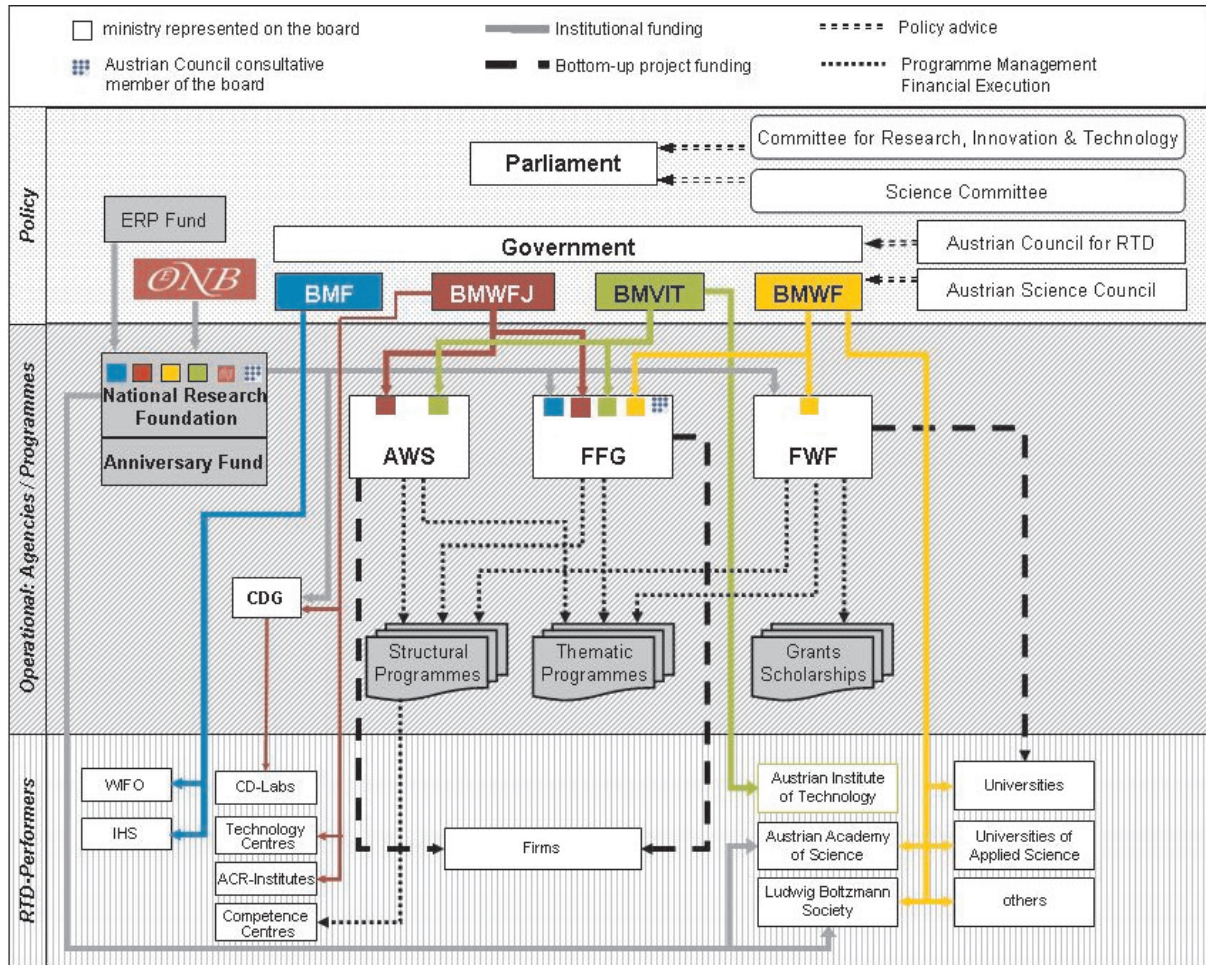
##### 4. Which policy actors have recognised services and related innovations?

Responsibilities for innovation policy in Austria are divided between four ministries and their affiliated agencies: the Federal Ministry of Finance (BMF), the Federal Ministry of Economy, Family and Youth (BMWFJ), the Federal Ministry of Transport, Innovation and Technology (BMVIT), and the Federal Ministry of Science and Research (BMWF).

##### 5. What are the actors that are most relevant and active in relation to service innovation policy design and delivery?

All four main actors recognize the importance of services and service innovation. Some of these actors, however, have a special role in the promotion of service innovation due to the division of responsibilities between the ministries. The responsibilities of the BMWFJ include the promotion of start-ups and small businesses, the creative industries and tourism. BMVIT holds the responsibilities for a number of innovative service sectors such as telecommunications, information and communication technologies and transport. BMF has no sectoral responsibility for service innovation, but is the main supporter of service innovation by granting the R&D tax credit (“Forschungsprämie”), which is, by volume, the largest single funding measure for R&D in the service sector. BMWF is responsible for scientific research and higher education and has therefore no direct link to service innovation in the business sector.

**Key innovation policy actors and relationships between them on national/regional levels.**



Notes: ÖNB (Austrian National Bank), BMF (Federal Ministry of Finance), BMWFJ (Federal Ministry of Economy, Family and Youth), BMVIT (Federal Ministry of Transport, Innovation and Technology), BMWF (Federal Ministry of Science and Research); AWS (Austria Wirtschaftsservice), FFG (Austrian Research Promotion Agency), FWF (Austrian Science Fund), CDG (Christian Doppler Research Society), WIFO (Austrian Institute of Economic Research), IHS (Institute for Advanced Studies), ACR-Institutes (Austrian Cooperative Research Institutes).

Source: ERAWATCH country fiche Austria 2011

At the level of the agencies, AWS and FFG give substantial support to service innovation, mainly by innovation and start-up funding and consultancy. Moreover, there are some important innovative service firms at the level of RTD performers. Competence centres, ACR institutes and the Austrian Institute of Technology are organized as independent legal entities and included in NACE 72, Scientific research and development services.

**Key service industries in the country**

Austria, like many other European countries, is a service economy. The most important economic sectors in terms of employment are service industries. In 2007, 17.7% of all employees in Austria worked in manufacturing, but 73% worked in services, including social and public services. If we deduct social and public services, the (market) service sector still accounts for 43% of all employees in Austria.

Figure 1 shows the most important sectors of the Austrian economy in terms of their share on overall employment.

A comparison of the shares of various services sectors on total employment between Austria and the EU25 reveals only little differences in terms of the relative importance of single service industries.

From the two figures, we can identify the most important service industries in Austria in terms of employment. Wholesale and trade and tourism are two key areas of the Austrian service sectors. Austria has some natural advantages in tourism. Wholesale and trade may be larger because many affiliates of foreign firms in Austria without own production activities are registered as trade firms.

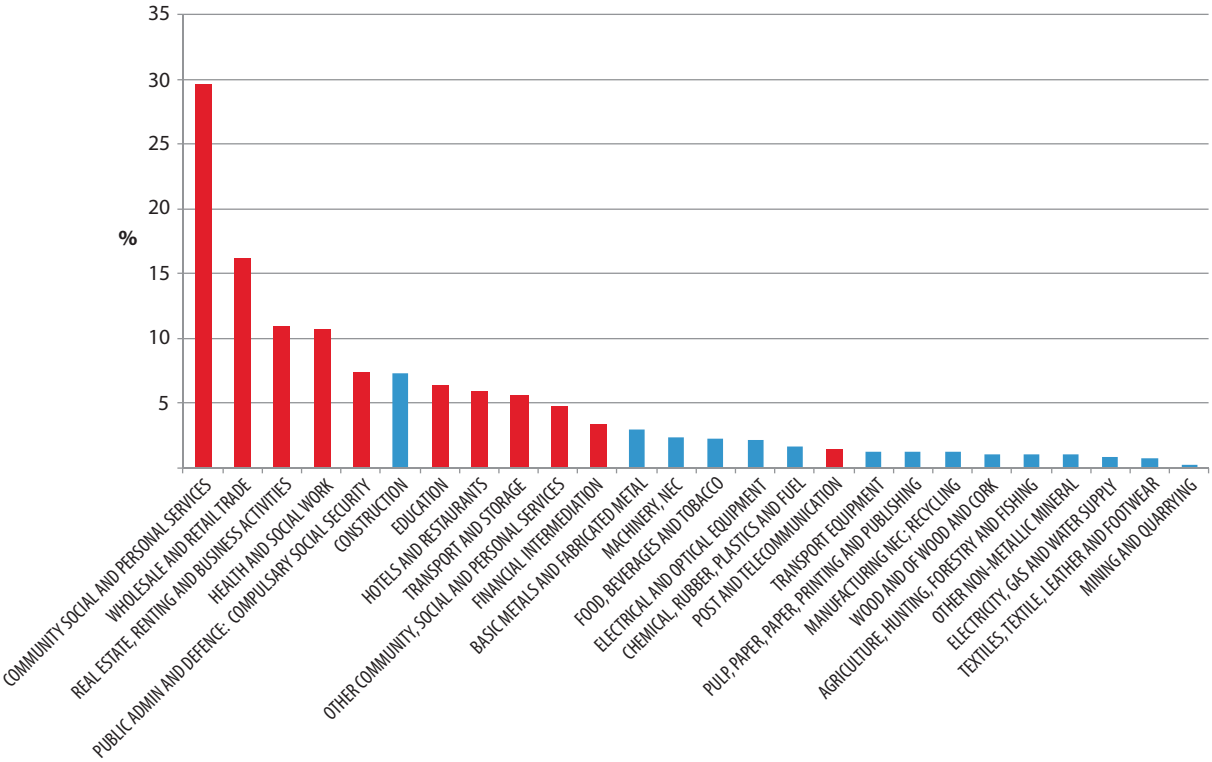
Another key sector is transport, which may do to Austria's location between the economic concentrations of Southern Germany and Northern Italy. The importance of the health sector points to a very high standard in terms of medical care.

On contrary, the share of community and social services, but also renting and business services is smaller. The latter is surprising, given that business services are a key driver of growth in services.

There are major differences in terms of R&D activities between individual sectors of the Austrian economy. We measure R&D activities by R&D intensity (R&D expenditure divided by turnover at the sectoral level) with data provided by Statistics Austria for the year 2009 (Schiefer 2011).

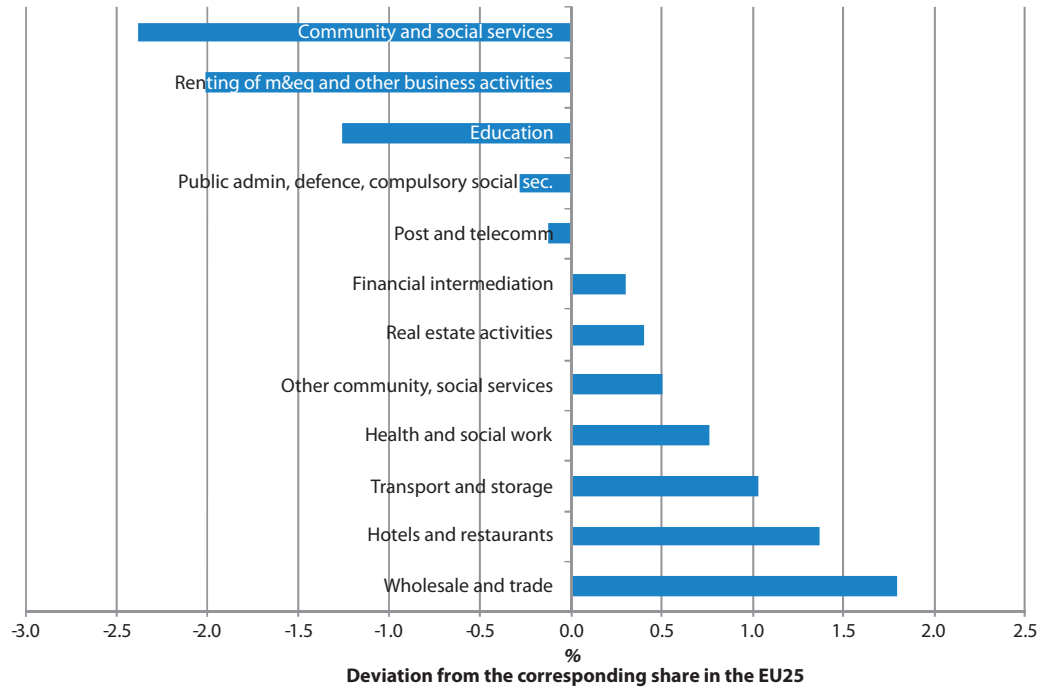
One sector, scientific research and development (NACE 72) stands out with R&D intensity of 77.1% of turnover. NACE 72 includes large Austrian contract research organisations such as the AIT, various institutes affiliated to the Austrian Academy of Sciences and other science organisations, R&D centres of multinational firms, or the Competence Centres, joint R&D facilities initiated by policy to promote science-industry collaboration.

**Figure 1. Share of various economic sectors on the total number of employees, Austria, 2007.** Source: EUKLEMS, November 2009, own calculations

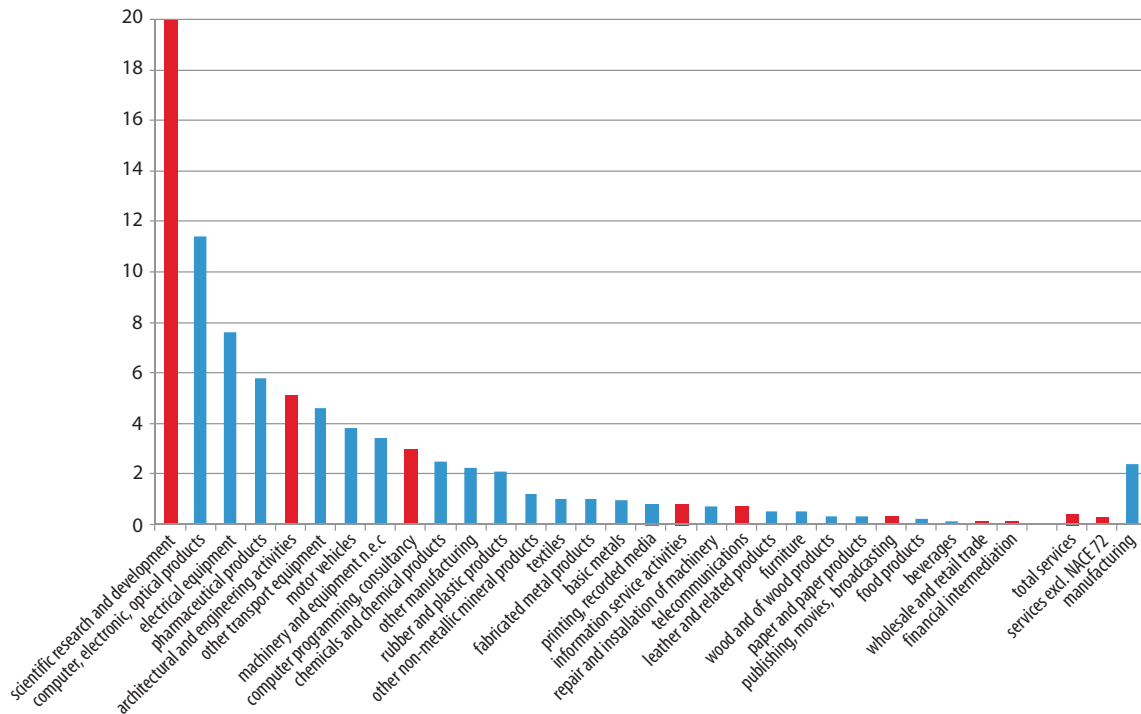


**Figure 2. Differences in the shares of various services sectors on the total number of employees, Austria and EU-25, 2007.**

Source: EUKLEMS, November 2009, own calculations



**Figure 3. R&D intensity of various manufacturing and service industries, Austria, 2009.** Source: Statistics Austria (Schiefer 2011)





NACE 72 is a part of the service sector, but R&D in this sector is mainly related to manufacturing. Data on R&D expenditure of NACE 72 by product groups reveals that only 5% of all R&D in NACE 72 (NACE 73 in the NACE Rev. 1.1) falls into a service-related product group (Schiefer 2008).

Another R&D intensive service sector is architectural and engineering activities (NACE 71) which includes some large engineering consultancy firms. Moreover, the software industry (computer programming, NACE 62) has an R&D intensity similar to that of the machinery or the chemical industry.

These two service industries, however, are an exception. The vast majority of service industries have very low R&D intensities. Overall R&D intensity in the service sector is only 0.4% (or 0.25% if we exclude NACE 72), compared to 2.4% in manufacturing (see the right end of the horizontal axis in Figure 3). Some parts of the service sector, such as hotels and restaurants or real estate do not report any R&D expenditure at all.

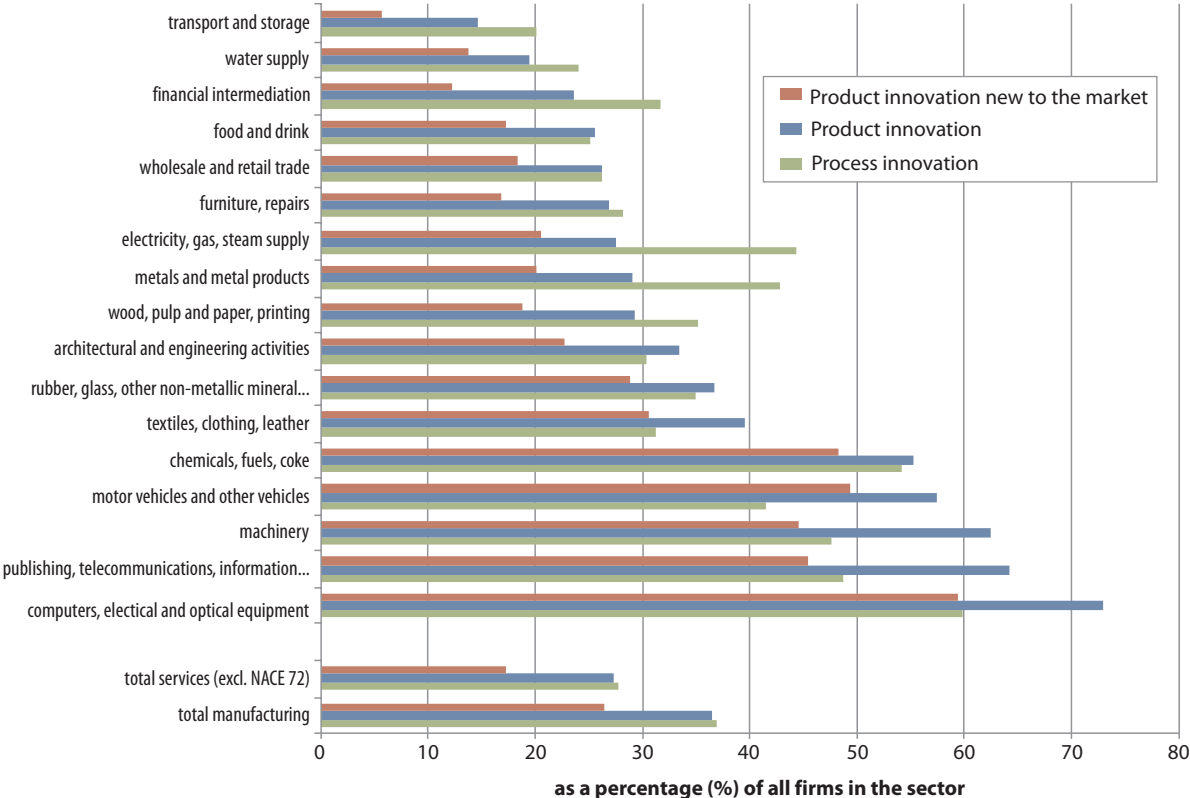
We see a considerably smaller gap between manufacturing and services if we look at innovation activities instead of R&D. The following figure shows the shares of firms which introduced new products, new products which were new to the market, and new processes to produce products.

There are only few firms with innovation activity in transport, in finance, or in wholesale, but a lot in information-related services such as publishing, telecommunications, or software. Architectural and engineering services are another service sector with above-average innovation activities.

From an innovation and R&D perspective, we can add architectural and engineering services, information service activities such as software programming, and telecommunication to the key service industries of the Austrian economy.

In total the service sector also lags behind manufacturing in terms of innovation. This holds also true if we look at alternative indicators of innovation performance, such as the share

**Figure 4. Innovation activities of various manufacturing and service industries, Austria, 2006–08.** Source: Community Innovation Survey 2008 (Statistik Austria 2010)



of new products on turnover. However, if we regard non-technological innovation such as marketing innovation or organisational innovation, the share of innovative firms in services is higher than in manufacturing.

## B. Policies promoting service innovation

### Policies and measures supporting *SUPPLY* of innovative services<sup>1</sup>

#### 6. Please, identify and describe policies and measures that are *specifically targeting services innovation* by promoting supply of service innovation

The Austrian system of innovation support includes measures at the federal, the provincial and community level. Due to the limited resources of this survey, it was not possible to look at the provincial and community level. However, most funding is allocated through federal sources.

There are only few measures that explicitly promote service innovation at the federal level in Austria.

The most prominent measure is the “**Dienstleistungsinitiative**” (DLI – services initiative) administered by the FFG on behalf of the Federal Ministry of Economy, Family and Youth (BMWFJ, see also Point 7). The aim of the DLI is to address service firms as new potential target group for funding by the FFG.

The DLI is implemented within the scope and under the funding guidelines of existing FFG support measures and provides additional money to service firms. This means that the DLI puts requirements to firms in terms of project management, scientific background of the projects, or its diffusion potential. The DLI started in October 2009 and will end in December 2012. FFG considers to continue the programme after 2012. The DLI received a total of 13.7 Mio EUR between since project start in October 2009 until December 2011 from the Ministry. According to preliminary figures provided by the FFG, the Dienstleistungsinitiative supported 30 projects with a total amount of 4.8 Mio EUR in 2011.

Another measure that explicitly targets service firms is “**Kreativwirtschaft Impulse**” This measure addresses creative industries such as design, fashion, architecture, advertising,

multimedia and games or music production. These activities are not entirely service activities (and the output mostly consists of physical products), however, we have included this measure because of it focuses on design and the aesthetic properties of artefacts rather than on its technological characteristics. The non-technological character of innovation in these sectors has been a considerable obstacle for public funding.

The scheme is administered by the AWS (see also point 7) on behalf of the Federal Ministry of Economy, Family and Youth (BMWFJ). In 2010 4.2 Mio EUR have been allocated by the scheme (AWS 2011, p. 24). Measures range from subsidies for training and awareness and the promotion of exemplary projects (“Leitprojekte”). Due to the small size of many of these firms, the measure has also a strong start-up/SME character.

Another programme that targets creative industries is the “**Filmstandort Austria (FISA)**” initiative. The scheme is also administered by the AWS (see also point 7) on behalf of the Federal Ministry of Economy, Family and Youth (BMWFJ). Its aim is to improve the quality, the attractiveness, and the international distribution of Austrian-related films and co-productions and Austria as a film location. The measure gives non-repayable subsidies. In 2010, 2.4 Mio EUR have been allocated (AWS 2011, p. 24).

Another service-related measure is the “**erp-Tourismusprogramm**”, a scheme to increase the quality of tourism services in Austria. The scheme is administered by the ERP fund, which is part of the AWS (see point 7). The ERP fund grants loans with low interest rates to successful applicants. Total funding was 67 Mio EUR in 2010 (AWS 2011, p. 22). It is not sure, however, if all projects supported by the measure satisfy the criteria for innovation laid down in the Oslo manual.

“**Benefit**” is a thematic programme in the field of Ambient Assisted Living (AAL). “Benefit” supports the development of assisting products and services which help elder people to preserve their independence. The share of service firms applying for this programme is high. The programme is organized by the FFG on behalf of the Austrian Federal Ministry of Transport, Innovation and Technology (BMVIT). The total volume was 6.4 Mio EUR in 2010 (FFG 2011, p. 23).

Another thematic programme with a strong focus on service industries is “**AT:net**” (austrian electronic network). AT:net initially supported the take-up and diffusion of services in con-

<sup>1</sup> The term “services” refers to the main economic activity of a firm and the fact that this activity is located in the service sector according to the NACE classification.

nection to broadband communication networks and addressed the downstream stages of the innovation process, in particular market introduction. In the second phase of the project, the scheme also supported investments in infrastructure if they were related to the aforementioned broadband-related services. The programme is organized by the FFG on behalf of the Austrian Federal Ministry of Transport, Innovation and Technology (BMVIT). The total volume was 5.5 Mio EUR in 2010 (FFG 2011, p. 23).

Finally, we also add the “**Innovationsscheck**”, or innovation voucher, a measure to stimulate co-operation between firms (in particular SMEs) and research organisations. The “**Innovationsscheck**” specifically targets non-innovative firms. We include this measure because an evaluation has revealed that the measure is predominantly (71%) used by service firms (Good and Tiefenthaler 2011). Thus, it is the only scheme that aims at non-innovative service firms.

The programme is administered by the FFG on behalf of the Austrian Federal Ministry of Transport, Innovation and Technology (BMVIT) and the Austrian Federal Ministry of Economy, Family and Youth (BMWFFJ). Participating firms obtain a 5,000 EUR voucher which can be used to buy consultancy studies, feasibility analysis, concepts for technology transfer or innovation projects etc from universities or other R&D organisations. Application procedures are as simple as possible. The aim of the programme is to lower the threshold to innovate for non-innovative firms. In 2010, 3.8 Mio EUR have been allocated to firms (FFG 2011, p. 23). In 2011, a variant of the “**Innovationsscheck**” with larger funding of up to 10,000 EUR with 25% participant’s contribution was introduced.

## **7. Please, identify and describe (sector) neutral innovation policies and measures.**

The Austrian system of R&D and innovation funding is almost completely sector neutral. Even thematic programmes such as programmes focussed on energy efficiency, transport technologies, or security can be regarded as sector neutral since they focus on generic technologies and do not explicitly exclude manufacturing or service industries.

In the following paragraphs we will discuss the main sector-neutral R&D and innovation policy measures in Austria. The selection is based on the volume of funding.

There is no single figure how much the Austrian government spends on the promotion of innovation in the business

sector. However, we have detailed information on the volume of **public R&D funding**. According to Statistics Austria (2012, p. 155), 2.6 Bn EUR were allocated to the promotion of R&D in 2009. The higher education sector received 1.7 bn EUR, 560 Mio EUR have been allocated to the business sector.

Schiefer (2011) gives detailed information on the allocation of public R&D funding in the business sector from the bi-annual R&D survey of Statistics Austria. In 2009, public support for R&D in services amounts to 265 Mio EUR, compared to 290 Mio EUR in manufacturing industries.

The largest instrument for public funding of R&D is the **R&D tax credit** (Forschungsprämie), which amounts to around 254 Mio EUR or half of total public funding for R&D in the business sector. 64.8 Mio EUR or 25% of the total funds are allocated to service firms. This share is smaller than the share of service firms on total business R&D expenditure in Austria (32%). The R&D tax credit is nevertheless the largest single public support measure for R&D and innovation in services in Austria.

There are two major funding bodies for the promotion of R&D and innovation in the business sector, the **Forschungsförderungsgesellschaft** (FFG) and the **Austria Wirtschaftsservice** (AWS). FFG allocated 159 Mio EUR to firms for R&D in 2009 (Schiefer 2011). 74.8 Mio EUR or 47% of these funds go to service firms.

The FFG incorporates various schemes, some of them are own programmes, some of them are organized by the FFG on behalf of the Austrian federal ministries. The largest programme is the **General Programme**, a scheme that allocates funds based on the evaluation results of bottom-up proposals. The General Programme is open to all sectors and technologies and non-technological innovation projects within the funding guidelines of the FFG. In 2010, the FFG General Programme including sub-programmes had a volume of 287 Mio EUR (FFG 2011, p. 23). According to preliminary figures provided by the FFG, 108 service innovation projects have been supported by the General Programme in 2011.

Two other important funding lines in the FFG are schemes to promote co-operative research and the thematic programmes. Examples are COIN, COMET for co-operative research, and FIT-IT or IV2Splus (all described in detail by TREND-CHART) for thematic programmes. The aforementioned programmes AT.net and benefit are also thematic programmes. These measures are funded by the federal government (see below), but administered by the FFG.



Structural or thematic programmes are an important development in Austrian innovation policy, because they are a move away from general programmes towards programmes that target specific horizontal or thematic challenges. They are nevertheless open to both, manufacturing and service firms.

A third major source of funding for R&D in the Austrian service sector is **direct funding** by the federal government. A considerable share of these funds supports R&D in targeted areas such as information and communication technologies, transport, energy efficiency, or genomics, and is administered in thematic programmes by the funding bodies AWS and FFG on behalf of the Austrian federal ministries.

Direct federal funding amounts to 87.7 Mio EUR in 2009 and goes almost entirely (91%) to service firms (Schiefer 2011). A closer look at the data reveals that these funds 63.4 Mio EUR of direct federal contributions go into NACE 72, scientific research and development services. Some of these organisations receive block grants from the government, but most of the funds to NACE 72 are presumably allocated on a project basis.

Empirical evidence cited above shows that R&D in NACE 72 is mainly related to manufacturing. If we deduct public funds allocated to NACE 72 from the funds received by the total service sector, total public support for R&D in services decreases from 265 Mio EUR to 89 Mio EUR. In other words, most of the public support for R&D in services does benefit manufacturing R&D. However, even if we deduct NACE 72 from the service sector, public funds still have a higher share on total R&D expenditure in services (9%) compared to manufacturing (8%).

Other public sources for support of business R&D include funds by the **Austrian provinces** (the "Länder", 40.6 Mio EUR in 2009) and by public sources other than the federal and provincial budgets (17.9 Mio in 2009).

Besides funding for R&D, there are also a number of measures which aim more broadly at facilitating innovation in the Austrian business sector. It is not possible to give a number for the financial volume of these measures Austria, since Statistics Austria does not keep account. We know, however, the organisations involved. The most important one is the **Austria Wirtschaftsservice (AWS)**. The aim of AWS is to facilitate access to finance, in particular, start-up financing and financing of SMEs. In addition, AWS also provides consultan-

cy services related to innovation and R&D. The total funding provided by AWS with guarantees, loans, venture capital etc. in 2009 was 814 Mio EUR, which equals a net present value of 138 Mio EUR (AWS 2011).

AWS programmes are mostly sector-neutral. Three exceptions with regards to services are the "Kreativwirtschaft Impulse", a scheme to promote creative industries in Austria, "Filmstandort Austria", a scheme to support Austrian-related movie productions, and "erp-Tourismusprogramm", a scheme to increase the quality of tourism services in Austria,

### **Policies and measures supporting DEMAND for innovative services**

#### **8. Please, describe here policies and measures that seek to promote service innovation by creating demand for novel services.**

There is no major demand-side scheme to support innovation in place in Austria so far. However, some first steps such as an amendment to the law on public procurement to allow innovation aspects in procurement have been made. Moreover, there have been some major public procurement processes such as the tender for a road charging system for the Austrian motorways or the purchase of new busses for the Austrian national railroad operator ÖBB which included some aspects of demand-led innovation policy.

### **Policies and measures seeking to develop FRAMEWORK CONDITIONS AND INFRASTRUCTURE for service innovation**

#### **9. Please, describe here policies and measures that seek to create favourable framework conditions for service innovation.**

Like demand and supply policies, policies to develop framework conditions are sector neutral. We found no measure that would specifically target service industries, with two exceptions. First, the "Kreativwirtschaft impulse" programme described in Point 6 also provides training. Second, the implementation of the EU services directive and similar legal measures in Austria can be seen as a regulatory initiative to improve market access for service firms with may also be a stimulus for innovation.

## C. Checklist of policy measures

The below table summarises the policies identified in the previous sections under the areas of the EPISIS-strategy.

**Table 1. Programme relevance to the thematic areas of the EPISIS-strategy.**

Programme/policy	Promotion of service innovation by targeting new types of innovation actors, novel types of innovation activities and innovative business solutions	Promotion of service innovation related competencies and capabilities	Promotion of markets and infrastructure as a driver of service innovation
Dienstleistungsinitiative	✓		
Kreativwirtschaft Impulse	✓	✓	
Filmstandort Austria	✓	✓	
erp-Tourismusprogramm	✓		
benefit	✓		
AT:net	✓		✓
Innovationsscheck	✓		
R&D tax credit	✓		
Direct public funding of business R&D	✓		

## D. Future developments and service innovation policy needs

This section focuses takes a forward-looking view of service innovation policy development. Please, bring up here your ideas of future developments and needs for new types of service innovation policy measures.

### 10. Are there some new policy measures being developed for services and related innovation in your country?

None, as far as we know

### 11. Can you recognise any gaps that could be addressed by new service innovation related policy measures?

The major gap that needs more attention is the support for specific forms of service-related innovation, such as innovation based on technology diffusion and non-technological innovation. The finding of a major evaluation of Austrian RTDI policy that the Austrian funding system is “incapable of ad-

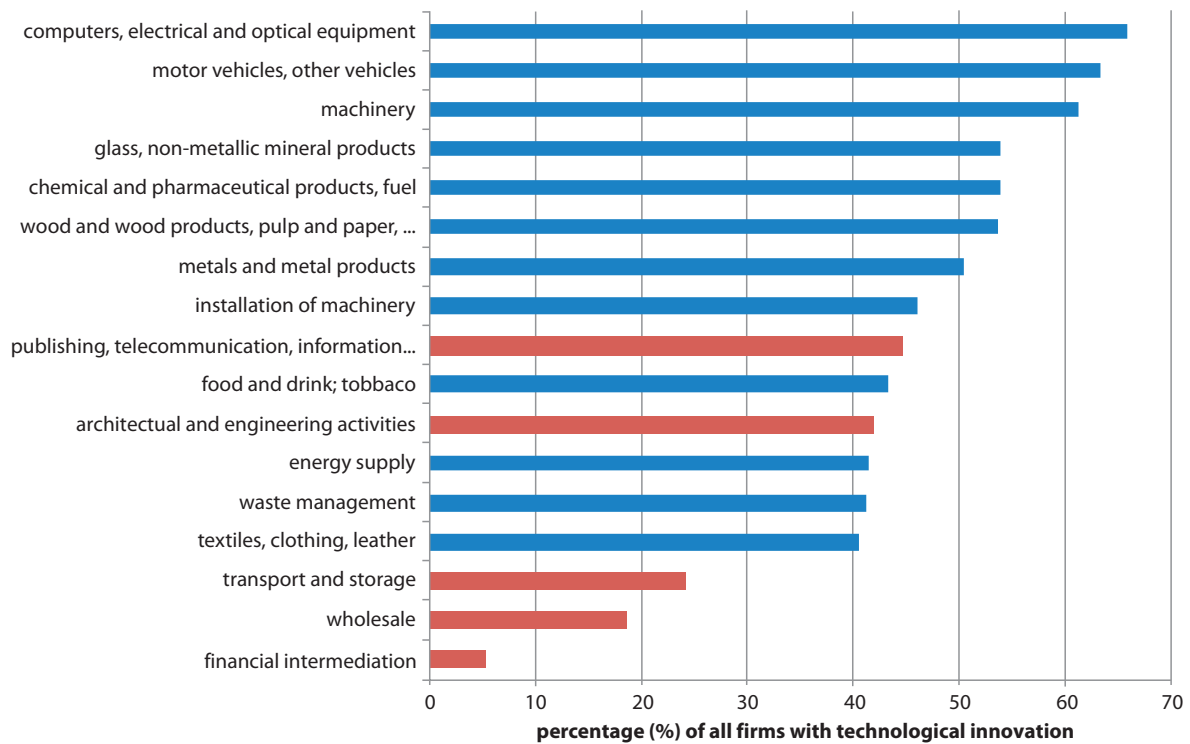
ressing the relevant RTDI-activities of service companies” (Aiginger et al. 2009) is still true to a large degree.

The Austrian system of innovation funding is sector neutral and large schemes such as the FFG General programme indeed also support service projects. However, chances of innovative firms to receive innovation funding are still unequally distributed between sectors in Austria. The figure below demonstrates that more than 60% of all innovative firms in sectors such as computers and electronics, motor vehicles or machinery receive funding, but only 25% in transport, and even less in wholesale and finance. Technology-related sectors such as telecommunication, engineering services or software have higher shares of funded firms. This is a strong indication that the Austrian system of innovation funding is biased towards R&D and technological innovation to a considerable degree.

The strong focus of public funding on support for R&D and R&D tax credits rules out support for various forms of non-technological innovation which are important in service industries. New service innovation related policy measures should target this gap.



**Figure 5. Share of firms with technological innovation that received innovation funding in various sectors of the Austrian economy, 2006–2008.** Source: Community Innovation Survey 2008 (Statistik Austria 2010)



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## 2.2 Appendix 2. China

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### A. National policy context

China's service sector has developed rapidly since the opening up and reforms in 1978. The annual average growth rate of value added by the service sector has been more than 10% from 1979 to 2007, which is even higher than the growth rate of the manufacturing industry (Zhang & Evenett, 2010). But the manufacturing sector still plays the dominant role in the proportion of GDP. In 2010 it made up for 49.2% of GDP, while the service sector was responsible for 38.5%<sup>2</sup>.

Over the recent years, the interests towards service industry and service activities have been growing by government simultaneously the economic significance of services. Since the early 1990's high level policy documents in China have recognized services industries. But extensive policies attention to services and related innovation was received until the end of the 20th century. The twelfth five-year plan (2015–2020) at national level has made it clear that service development should be as the strategic key for upgrading the structure of industry. Development of Services sectors should be market-oriented, industrialized, and socialized. Meanwhile, many of other existing policy documents are available to service organization such as Medium-and Long-term Strategic Plan for the Development of Science and Technology Program (2006–2020), Medium-and Long-term Strategic Plan for the Reform and Development of education (2010–2020), Promotion Plan for Modern Service Sectors as well as some new service specific policy documents such as Promotion Guidance for high-tech service sectors and etc. The policy instruments are diversify which include building a fair and transparent market access standard, exploring new service standard format of the market, adjusting the taxes and loans for service organizations, providing funding for research- development-, and technology programs, building some public service platform and system environment for the development of service industry.

In China, we did not have specific government or agency which is responsible for policy making on service innova-

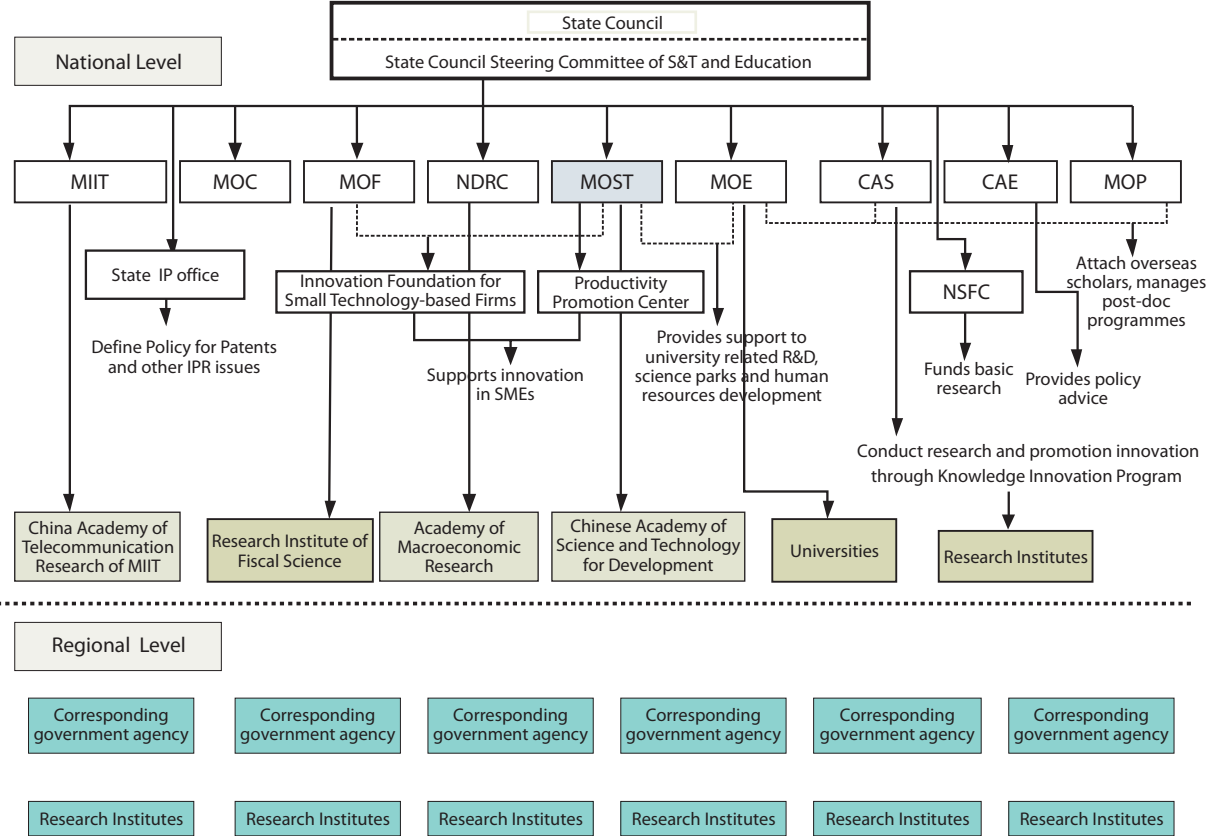
tion. The broader China Innovation System is as Figure 1. Service sectors in China are highly fragmented, and innovation activities fall under the remit of a number of ministerial agencies. The most relevant and active actors in relation to service innovation policy design and delivery include:

- Ministries agencies
  - MOST – Ministry of Science and Technology
  - NDRC – National Development and Reform Commission
  - MIIT – Ministry of Industry and Information Technology
  - Corresponding agency on the regional level
- Research Institutes
  - Development Research Center of the State Council
  - Chinese Academy of Science, CAS
  - Chinese Academy of Engineering, CAE
  - Institutes under different ministerial agencies
- Universities
  - Tsinghua University
  - Zhejiang University
  - Beijing University
  - Fudan University
- Intermediaries
  - Industry association
  - Public and private intermediary servicesindicate 5–10 most important service industries in the country.

A number of services are given priority in the development of China in next 5 years. In Part IV of the 12 FYP(five-year-plan) in the national economic and social development program, the innovation of producer services are highlighted which include financial services, logistic services, high-tech services(including R&D and design services, IP services, inspection and testing services, IT services, biology technology services etc.) and business services (e.g. accounting, auditing, taxation, engineering, consulting, certification, accreditation, credit evaluation, brokerage, management consulting, market research, legal services and human resources services). In addition, Wholesale and Retail Trades, domestic services (e.g. housekeeping service, nursing services etc.) as well as tourism, and sports industry are explicitly mentioned.

<sup>2</sup> China Statistical Yearbook, 2011

Figure 1. China Innovation System. Source: This chart is modified according to Inno Policy Trendchart 2009, Country report, quotes OECD



**Important service industries in terms of GDP contribution**

According to China Statistical Yearbook of the tertiary industry 2011, the most important service industries in terms of GDP contribution in 2009 include:

Wholesale and Retail Trades 8.5%, real estate 5.5%, finance 5.2%, and transportation, Storage and Post 4.9%. These constitute more than half of the added value of the service sector. However, the share of value-added by information Transmission, Computer Services and Software to the GDP of the service sector accounts for only 2.4%, Leasing and Business Services 1.8%, Scientific Research, Technical Services and Geologic Prospecting 1.4%, domestic services 1.5%, culture, sports and creation service 0.7%.

In accordance with national standard industrial classification system, IP services was include into business services, while Scientific Research, Technical Services and Geologic Prospecting include R&D and design services, inspection and testing services, as well as S&T commercialization services.

In terms of the **producer services** with development priority, only financial services and transportation, Storage and Post contribute almost more than 5 percent of the GDP. On the point of **life services**, Wholesale and Retail Trades is only accounts more than 5% of GDP.



### Important service industries in terms of employment

In terms of employment, the total number of the tertiary industry is 263.32 million, accounts for 34.6%<sup>3</sup> of the entire employed persons in 2010.

Information Transmission, Computer Services and Software counts for 4.6 million employee, financial counts for 5 million, Leasing and Business Services counts for 11.25 million, transportation, Storage and Post counts for 11.18 million, Wholesale and Retail Trades counts for 72.38 million, Scientific Research, Technical Services and Geologic Prospecting counts for 6.87 million. Public services, education and other services amount to nearly 60% of the employment in 2010.

### Important service industries in terms of R&D activities

Unfortunately, there are no official statistics for R&D activities of service sectors. The data of R&D activities was still limited to manufacturing enterprises, scientific research and development institute and advanced education. However, from the indicator of technology contracts imported by industry<sup>4</sup> we found that except the manufacturing as well as Production and Supply of Electricity, Gas and Water, the value of contracts of Information Transfer, Computer Services and Software are the biggest one by more than \$1.27 billion, and business services is \$270.76 million, Scientific Research, Technical Service and Geologic Perambulation is \$393.49 million, financial services is \$154.63 million. It means that demand of technology is gradually increasing among service sectors and it can be inferred that indigenous R&D investment by service firms would be improved in the near future.

## B. Policies promoting service innovation

There are seldom policies in China which have the specific topic of “service innovation”. Service related policies are more focusing on the development of “modern services” and “high-tech services”. This section describes selected supply, demand, framework conditions and infrastructure measures that either specifically target services related innovation or can be considered potentially relevant for service enterprise.

<sup>3</sup> China Statistical Yearbook of Tertiary Industry, 2011

<sup>4</sup> China Statistical Yearbook on Science and Technology

### Policies and measures supporting SUPPLY of innovative services

Measures that seek to promote the supply of service related innovation include finance related measures and such as: fiscal measures, support for public sector research, support for training and mobility, as well as grants for industrial R&D. To our knowledge, there exist 13 dedicated nationwide service innovation policies. The supply side measures are including tax relief and preference, government funds and projects, investment, education and training, but the implementation rules are few.

### Policies and measures that are specifically targeting services innovation by promoting supply of service

#### Decision on the tertiary industry development(DTID)

This policy was initiated in 1992 by state council. It is probably the first policy targeting service industry from Chinese central government. National economy was divided into three categories at that time. The primary industry, which include agriculture, forestry, fishery, and animal husbandry; the second industry include mining industry, manufacturing industry, construction industry, produce and supply electric power, gas, and water. The tertiary industry points to the industry which do not produce material products, so it is mainly represent service industry. The objective of is to establish socialist market system, urban and rural socialization service system, and social security system in ten or more years.

The supply-side policies and measures:

- To increase service industry share in national credit program
- To offer income tax relief on start-up service enterprises
- To simplify approval procedures for setting up service business
- To promote labour system reform and achieve autonomy in enterprise employment process

#### Opinions on accelerating the development of service industry (ADSI 2007) and its implementation policies

According to China's National Science and Technology Development Plan for the 11<sup>th</sup> Five-year Period (2006–2010), opinions on accelerating the development of service industry

(OADS) was launched in 2007 by state council to support the further development of the service industry. The most important part of the policy is the restructuring of the service sector with the overall goal to develop a modern service industry. This shall be reached first and all through production-oriented services which should integrate the manufacturing sector and the traditional service sector. OADS 2007 proposed the overall objective in the next five to ten years for service industry: by 2010, the service industry accounts for the proportion of GDP increased by 3% compared to 2005, employees in service industry accounts for the proportion of total society increased by 4% compared to 2005. Service trade volume reached \$400 billion. Conditional large and medium-sized cities form the industrial structure mainly on service economy. Service industry's GDP proportion reaches to more than 50% by 2020.

OADS 2007 is a high level national plan with not much specific policies. The "Several opinions on implementing policies measures for accelerating the development of the service industry" have been issued by State council in 2008 and are the implementation rules for the respective policy issued in 2007. OADS 2008 proposed measures both from the supply and demand side, the supply-side policies and measures include: To arrange service industry special funds by central budget.

- To provide discount loans for technology introduced projects in service industry
- To fund R&D in technology digestion, absorption and re-innovation activities
- To offer tax preference for R&D in service enterprise
- To offer tax credit for producer services including software development, IT, IP service, engineering consulting, technology transfer, service outsourcing, and modern logistics
- To relax service sector on market access, the registration fee was reduced to 30000 Yuan for general service enterprise by the department of industry and commerce
- To promote service employee training.

#### **Notice on promoting the development of high-tech service industry (high-tech service)**

This policy was published in 2011 by state council. The objective is to increased turnover of high-tech service industry by more than 18% in 2015. By 2020, the high-tech service industry system will be well established, and becoming the dominant power of service industry. The high-tech service industry mainly focuses on eight sectors here: R&D service, IP ser-

vice, inspection service, S&T commercialization service, IT service, digital content service, and biology service. The supply-side policies and measures include:

- To increase the financial support by central and social investment funding
- To offer tax relief and preference for qualified high-tech enterprise
- To reform education and training system.

#### **Notice on implementation act on Huoju innovative programme for S&T service system (Huoju program)**

Huoju program was issued by Ministry of science and technology in 2011. The objective is to carry out a series of S&T service system pilot every year in the 12<sup>th</sup> Five-year period: to set up no less than 100 S&T service agencies, to attract no less than 1000 100 S&T service agencies into pilot cluster, to build 100 or so S&T service public platform, to establish 10 or so service talents training base, to train 100 S&T service innovation team, and 100 S&T service professionals, to carry out no less than 1000 commercialization of the S&T project, and to break through 800 billion RMB overall contract transactions at the end of 12th Five-year period. The supply-side policies and measures include:

- To increase financial support to pilot regain, and local science and technology department arrange special funding
- To attract foreign advanced talents and research team, and set up training base trough international cooperation
- To reform tax policies in income tax, turn over tax, and technology transition tax.

#### **Notice on the income tax policy issues to technology advanced service enterprise (technology advanced service)**

This policy was co-published by Ministry of Finance, Ministry of Science and Technology, the State Administration of Taxation, Ministry of Commerce, and National Development and Reform Commission. The policy will be implemented in 21 service outsourcing demonstration cities from 2010/07/01 to 2013/12/31. Two of the tax preference policies were addressed here:

- 15% income tax relief on qualified technology advanced service enterprise
- Employee education and training expenditure, no more than 8% of the total wages part is permitted to deduct when calculating the taxable income amount, the amount

exceeding 8% can be carried over to future tax years for deduction.

### **Authentication and management method for technological enterprise incubator (high-tech incubation service centre)**

This policy was launched by Ministry of Science and Technology in 2006 according to the Medium-and Long-term Strategic Plan for the Development of Science and Technology (2006–2020). The objective is to accelerate the development of technological enterprise incubator, and enhance the management of incubator. Related supply-side policies and measures include:

- To offer qualified high-tech incubation service centre tax relief on turnover tax, income tax, housing property tax, and urban land used tax.
- To innovation friendly regulation in planning, land using, and financing from local government
- To encourage local government, enterprise and individual set up divers public incubator.

### **Notice on enhancing and improving relative issues about insurance service in high-tech enterprise (high-tech insurance service)**

This policy was an implementation policy for the Medium-and Long-term Strategic Plan for the Development of Science and Technology (2006–2020), launched by China insurance regulatory commission, Ministry of Science and Technology in 2006. The objective is to improve insurance service for high-tech enterprises. The supply-side policies and measures include:

- To financially support insurance organizations exploring new model of S&T insurance
- To encourage national insurance organizations cooperating with abroad insurance organizations in knowledge exchange and staff training
- To give high-tech product has the priority under the same condition in export credit insurance business, and the highest premium rate preference according to China export insurance company regulations.

### **Opinions on encouraging government and enterprise outsourcing to develop service outsourcing industry (outsourcing service)**

This policy was issued in 2009 by Ministry of Finance, National Development and Reform Commission, Ministry of Science

and Technology, Ministry of Industry and Information Technology, Ministry of commerce, State-owned Assets Supervision and Administration Commission, China banking regulatory commission, China securities regulatory commission, China insurance regulatory commission. Service outsourcing industry is intelligence intensive modern service industry. The objective is to encourage public and private outsourcing from professional enterprise, promoting the development of service outsourcing industry. The supply-side policies and measures include:

- To establish outsourcing information platform
- To train outsourcing related staff from local government and enterprise
- To use fiscal, financial, and tax incentive regulations promoting outsourcing.

### **Opinions on promoting rural financial product and service innovation (rural financial service)**

This policy was published in 2010 by People's bank of China, China banking regulatory commission, China securities regulatory commission, China insurance regulatory commission. The objective is to adjust the rural credit structure, and to ease the loans difficult in rural areas. The supply-side policies and measures include:

- To encourage qualified small and medium rural relative enterprise issue short-term financial bonds
- To carry out innovation incentive market access policy for rural financial product and service
- To increase the financial sector funds, and risk compensation fund by local government
- To education and train innovative rural financial talent.

### **Opinions on improving IP information utilization and service capability, promoting IP information service platform building (IP information service )**

This policy was launched in 2006 by Ministry of Science and Technology. It is an implementation policy for the Medium-and Long-term Strategic Plan for the Development of Science and Technology (2006–2020). The objective is to improve the utilization and service capability of IP information. The supply-side policies and measures include:

- To build IP information database founded by public finance
- To educate information service experts by multiple method
- To establish self-discipline system in IP information service industry.



### **Notice on implementing energy contract management to develop energy conservation service industry (energy conservation service)**

This policy was published by state council in 2010. The objective is to set up a mount of professional energy conservation enterprise, and large energy conservation enterprise by 2012. To establish a well structured energy conservation service system by 2015. The supply-side policies and measures include:

- To offer tax relief including specific turnover tax relief, value-added tax relief, and income tax relief policies for the first three years of start-ups
- To support special funds by central government budget
- To train for qualified personnel in energy conservation service industry.

### **Opinions in developing housekeeping service industry (housekeeping service )**

This policy was launched by Ministry of Commerce in 2010. The objective is to build a housekeeping service center in every regional level cities, to set up a number of qualified housekeeping enterprises, and to train 0.2 million housekeeping staff every year within 3 to 5 years. The supply-side policies and measures include:

- To train housekeeping employee for qualified service skill and quality
- To improve relative regulations in land using, taxation, funds, and social security, etc.

### **Taxation polices for venture capital enterprises**

This policy was launched by the Ministry of Finance, State Administration of Taxation in 2007. It's an implement policy of Medium-and Long-term Strategic Plan for the Development of Science and Technology (2006–2020). The objective is to support venture capital enterprises by tax preference. The specific policies and measures include:

- Those who equity invests in small and medium-sized high-tech enterprise more than 2 years could use 70% of total investment amount to deduct the income tax.

### **Neutral innovation policies and measures**

We also outline 4 policies and measures which are indirectly aimed at services, but are applicable for service companies.

### **Conditions and measures for high and new technology enterprise**

This policy was published by the Ministry of Science and Technology in 2000. According to the strategic of science, economic and social development, 11 technologies are defined into high-tech in China including IT, bioengineering and new medicine technology, new materials and application technology, advanced manufacturing technology, aerospace technology, modern agricultural technology, new energy and energy efficient technology, environment protection new technology, ocean engineering technology, nuclear technology, and other traditional industry transformation in the application of new technology and new processes. One of the conditions of high-tech enterprise is: "involving in one or more of the above technology in form of R&D, production, and technical service". High-tech enterprise in China could enjoy the preferential treatment of national policies and regulations. Some of the supply-side policies and measures include:

- To exempt from corporate income tax since the profit-making year for two years, after the expiration of tax exemption, income tax rate is reduced 15%.

### **Policy for the development of software and integrated circuit industry**

This policy is targeting one of the leading "national strategic emerging industries". The most important part of the policy deals with tax incentives and credits for the software and IC industry, IT services would be targeted in this policy. The supply-side policies and measures include Specific income tax preference and relief policies. Financial support: encourage all kinds of investment funding from central budget, bank, and private enterprise.

- Education and training related policies: improve incentive methods by share stock and option, reform course design, establish training base, and import of foreign talents.

### **Tax deduction management approach on R&D expenses(TD R&D)**

This policy was launched by State Bureau of Taxation in 2008. It's one of the implement policies of Medium-and Long-term Strategic Plan for the Development of Science and Technology (2006-2020). The objective is to encourage enterprise R&D activates, and to standardize the tax deduction policy. Follow-

ing R&D actual expenses can be 150% plus deducted when computing taxable income amount: 1. book, material translation fee; 2. materials, fuel and power fee; 3. wages, salaries, bonuses and allowances; 4. depreciation or rent fee; 5. amortization of intangible assets expenses; 6. Equipment manufacturing fee; 7. field test fee; 8. Demonstration, assessment and inspection fee. These expenses should directly related to R&D activities.

### **Innovation Fund for Small Technology-based Firms (Innofund)**

Hi-tech services were involved in Innofund after 2010. The objective is to promote the core service and competitive capability of small technology-based firms. Based on previous condition for applicants, Hi-tech services applicants have to satisfy the following criteria: 1. Revenue of Hi-tech services of core businesses is greater than 60%; 2. Professional qualification of professionals and technological personnel/total employees is greater than 60%, high qualification professionals of total employees is greater than 20%; 3. Have certification of independent intellectual property rights. Innofund 2010 Key support in the following six Hi-tech sub-fields: IT service sector, biomedical technology services sector, new materials technology services sector, opto-mechatronics technical service sector, resources and environmental protection technical services sector, new energy and energy efficient technology service sector.

### **Policies and measures supporting DEMAND for innovative services**

Policies and measures supporting demand for innovative service are very limited. The following section identifies and describes demand-side measures that are targeting services related innovation. Promotion of demand-side measures refers to policies that seek to increase either the motivation or the likely success of innovation by means of systemic policies, regulation and procurement. Systemic policies provide an environment that amplifies other innovation policy measures by optimising relationships between actors. Regulation defines the competitive space and can be used to extend it. In procurement of the purchaser can specify goods and services in terms of a function which offers higher performance than what is currently available off-the shelf and hence requires an innovative step to achieve it<sup>5</sup>.

### **Public procurement of innovative services**

The law for government procurement in China was launched by State Council in 2003. It clearly defined that government procure services by purchase, lease, entrustment, and employment in the form of contract. Under the Medium-and Long-term Strategic Plan for the Development of Science and Technology (2006–2020), public procurement was proposed to one of the important aspects to promote the development of innovation. The focus of public procurement will be on the product of indigenous innovation. Five measures of government procurement management on budget, assessment, contracts, order, import and export were published in 2007 to address the priority of indigenous innovation products in government procurement.

In terms of the policies which are directly targeting public procurement of services, there are some but not much. The most important one was in “opinions on implementing policies measures for accelerating the development of service industry (2008)”, information service is proposed to have the priority in government procurement. High-tech service was also highlighted in government procurement under the policy of “Opinions on developing high-tech service industry, 2011”.

### **Regulation stimulating demand for innovative services**

The widely used demand-side regulations for innovative services in China from include opening up, awareness raising, building communication channels and price regulation. Under the policy of “opinions on accelerating the development of service industry, 2007”, one of the objectives is to foster amount of service outsourcing enterprise with international qualification by opening up. Opinions on developing high-tech service industry (2011) also encourage opening up and cooperating with outside world to support our high-tech service. Awareness rising is used especially in rural area and technology service. For financial service in rural area, various and flexible forms are encouraged to increase the public awareness on credit in Huoju program, Technology service brand and advanced models are established in order to raise the public awareness to the development of S&T service system. Building communication channels is highlighted in the policy of “Opinions on encouraging government and enterprise

<sup>5</sup> Mapping Innovation Policy in Services: Country report – Finland



outsourcing to develop service outsource industry, 2009". Government will actively build communication channels between large and medium-sized enterprises and service outsourcing enterprises. In terms of price regulation, it was initiated since 1992. To reform price system, free price and fee standard in service industry was highlighted in the policies of DTID, IADSI 2008.

### **Systemic policies for demand-side of innovative services**

To establish cluster is one of the systemic policies issued by Chinese government. Under the policy of "Opinions on developing high-tech service industry (2011)", high-tech service cluster is suggested relying on the advantages of regional efforts to improve the innovative ability and entrepreneurial environment. Within the high-tech service cluster, government is responsible for coordinating and policy supporting. Large enterprise is the core cooperating with small and medium-sized enterprise. Enhancing the interactive development of high-tech service sector and manufacturing sector.

### **Policies and measures seeking to develop FRAMEWORK CONDITIONS AND INFRASTRUCTURE for service innovation**

#### **Medium-and Long-term Strategic Plan for the Development of Science and Technology (2006–2020)(strategic plan for S&T)**

Medium-and Long-term Strategic Plan for the Development of Science and Technology (2006–2020) was issued by the State Council in January 2006. On the basis of strategic plan for S&T the related departments under the State Council, including the National Development and Reform Commission, the Ministry of Education, the Ministry of Science and Technology, the Ministry of Finance, the State Administration of Taxation, the Ministry of Personnel, the Ministry of Information Industry, the Ministry of Commerce, the State-owned Assets Supervision and Administration Commission, the China Banking Regulatory Commission, the China Insurance Regulatory Commission, and the China Customs have worked to develop 99 detailed rules for the implementing policies.

In terms of framework conditions and infrastructure for service innovation, the Implementing policies mainly addresses: R&D investment; tax incentives; financial support; public procurement; technology absorption and innovation of introduced technologies; creation and protection of intellectu-

al property; talent pool; education and science popularisation; S&T innovation infrastructure; co-ordination system.

#### **The 12th Five-year Plan on National Economic and Social Development (12 FYP, 2011–2015)**

The 12 FYP was issued by the State Council in October 2011. It is a high level guidance on economic and social development on national level with not much specific policies. These are usually defined later in some "implementation guidelines" on regional or industry level

In terms of framework conditions and infrastructure for service innovation, in part IV of the 12 FYP the innovation of producer services is highlighted including promoting the innovation in service products and service models, and accelerating the synergy of manufacturing services and advanced manufacturing. The policy include: 1. Improving service industry regulations: land supplying, tax preference; 2. enlarging public procurement scope; 3. establishing service industry standardization. But here is no reference directly to service innovations, the focus is basically put on the scientific and technology innovations and services should help to increase technology innovations in the service sector in a broader sense.

#### **Medium-and Long-term Strategic Plan for the Reform and Development of education (2010–2020) (Strategic plan for education)**

Medium-and Long-term Strategic Plan for the Reform and Development of education (2010–2020) was published by State Council in 2010. The strategic goals are to realize modernization of education, and form a learning society by 2020. Gross enrolment rate of high school reached 90%, and Gross enrolment rate of University reached 40%. New labour force by education from an average of 12.4 years rise to 13.5 years. The main working age population by education from an average of 9.5 year rise to 11.2 years of which 20% of the proportion of highly educated. The number of people with higher education than double by 2009.

In terms of framework conditions and infrastructure for service innovation, the strategic plan for education describes a national education and training system for service talents through compulsory, vocational, higher, further, national and special education. The implementation actions from central government include personnel training system reforming, the recruitment system reforming, school system reforming, and management system reforming.

### **Opinion on enhancing service and promoting informationize of SMEs. (informationize of SMEs)**

This policy was launched in 2008 by National Development and Reform Commission, Information office of State Council, Ministry of Science and Technology, Ministry of Information, Ministry of Commerce, People's Bank of China, department of Taxation, and Department of Statistics. The objective is to use of SMEs using internet to publish and access to information more than 90%, use of IT in production, management and innovation activities more than 40%, and use of e-commerce procurement, sales and other business of more than 30%.

In terms of framework conditions and infrastructure for service innovation: 1. The legal standard environment is going to improve including information security, private information protection, online payment, network credit, and online transaction; 2. Policy environment is going to improve such as fiscal, taxation, and finance; 3. Credit system is going to establish for SMEs' IT service provider. Improve credit evaluation system, market enter and exit mechanism. Enhance SMEs' trust in the social service system.

### **Opinions on building SMEs technological innovation service system (SMEs TISS)**

SMEs TISS was launched by State Economic and Trade commission in 2000. The objective is to set up 40 or so technology innovation service centre in capital cities, and to establish an open network technology innovation system since 2000 within two years. The technological innovation service centre provides information service, technology development and commercialization, technology transaction service, financial service, consultant and training, etc. for SMEs.

In terms of framework conditions and infrastructure for service innovation, The policy encourage local government to build technological innovation service centre based on the advantages of S&T, education, and human resources under planning of provincial technological innovation service system. the center technological innovation service centres are mainly focus on providing IT service, technology development and transfer, new technology trading service, multi-channel financing service for SME technology innovation , other professional services such as policy for organizational innovation, technical consultancy, and training.

### **Regional policies and measures supporting innovative services**

#### **Opinions on promoting Shanghai modern service industry and advancing manufacturing industry development, building international financial and shipping center (Shanghai)**

This policy was launched by State Council in 2009. The objective is to develop Shanghai to be an international financial center and shipping center by 2020, and to promote the development of modern service industry and advanced manufacturing industry. This is a general policy which proposed several core tasks but no specific implementation measures. The core tasks are establishing financial market system, financial institutions and business models, enhancing financial service ability, and improving financial development environment. Shanghai municipal government published the implementation opinions soon afterwards. The innovative service friendly policy including:

- Supporting cluster of investment bank, fund Management Company, assets Management Company, currency Brokerage Company, and lease financing company, etc.
- Actively promoting financial operation pilot
- Opening up financial service to outside world
- Establishing information platform of financial service
- Offering tax reduction or exemption regulation
- Set up 10 billion RMB of Shanghai indigenous innovation and high-tech industrialization project funds
- Set up "one thousand people plan" to introduce overseas high-level talents.

#### **Opinions on improving development of service industry (Qingdao)**

Qingdao, on the coast of the Yellow River, lies in the south of Shandong Peninsula. Qingdao municipal government was launched opinions on improving development of service industry in 2011. The objective is to establish Qingdao a regional service industry center in Northeast Asia. By 2015, the added value of service industry reached 570 billion Yuan, the average annual growth of 20% or so. Service industry Actual utilize of foreign investment of \$2.5billion, average annual growth of more than 15%. To achieve 58 billion Yuan of tax from service industry, more than double by 2010. Service



sector absorb new employment of about 500,000 people. The innovative service friendly policy including:

- To increase policy support. To develop policies and measures on tourism industry, modern logistics, cultural and creative industry, and housekeeping industry. To implement service friendly regulations on market access, taxation, financial, land using, price, and talents, etc. during the “12th five-year plan”
- To improve education and training mechanism. To introduce overseas creative talents, and cooperate with universities and institutes. To establish a number of modern service industry personnel training base.
- To implement service standardization. Newly launched 10 national and provincial service industry standardization pilots, and 50 Qingdao local service standards by 2015 the standardized pilots are mainly focus on tourism, modern logistics, commerce, finance, sports, community, housekeeping service, and intermediary service sectors. To establish public service platform. Focus on four major market transaction platforms of commodities, property rights, resources and environment, and financial products.
- To enhance awareness rising. To notice the importance of service sector, and introduce the new trends and advanced technology of service sector. To create a good social environment for the development of service industry.

## C. Checklist of policy measures

### National level policy measures

NO.	Title of measure	Produced by	date	New types of innovation actors, activities and business solutions	Service innovation related competencies and capabilities	Markets and infrastructure as a driver of service innovation
1	Medium-and Long-term Strategic Plan for the Development of Science and Technology (2006–2020)	State Council	2006	Encouraging enterprise to be the main actor in technology and service innovation,	Improving universities and institutions reforming for education and training qualified personnel.	1. Innovation friendly regulations: finance incentive and tax preference; 2. Public procurement for indigenous innovation; 3. Technology standardization setting.
2	China's National Science and Technology Development Plan for the 12 <sup>th</sup> Five-year Period (2011–2015)	State Council	2011	Developing producer service industry and consumer service industry.	N/A	1. Improving service industry regulations: land supplying, tax preference; 2. Enlarging public procurement scope; 3. Establishing service industry standardization.
3	Medium-and Long-term Strategic Plan for the Reform and Development of education(2010–2020)	State Council	2010	N/A	Public education service system: pre-primary, compulsory, vocational, higher, further, national and special education	N/A
4	Law for government procurement	State Council	2003	N/A	N/A	Government procurement services by such methods as purchase, lease, entrustment, employment, etc through entering into a contract with consideration.
5	Decision on the tertiary industry development	State Council	1992	Three innovation actors: nation, collective, and individual	Encouraging administration staff shift from government departments to service industry	Service industry friendly regulation: reform of personnel system, reform of price system, tax preference, and financial supporting from government



NO.	Title of measure	Produced by	date	New types of innovation actors, activities and business solutions	Service innovation related competencies and capabilities	Markets and infrastructure as a driver of service innovation
6	Several opinions on implementing policies measures for accelerating the development of service industry	State Council	2008	1. Encourage new business models such as chain operation, franchising, e-commerce, logistics, and exclusive shop. 2. Developing professional associations for software and information services	Education and training for workforce capability	1. Public procurement priority for software and information services which developed in China; 2. Service industry standardization and social credit standardization; 3. Open and reform for service industry
7	Opinions on developing high-tech service industry	State Council	2011	1. Establish technology center for high-tech enterprises. 2. Encourage integrative innovation.	Training for high-tech service	1. Enlarge public procurement for high-tech services such as information, inspection, and IP services; 2. Systematic innovation for triple helix; 3. High-tech service industry technology system, service system, and statistic standardization; 4. Smart financial solutions such as start-up foundation, SME foundation for high-tech service enterprises
8	Notice on promoting implementation to develop high-tech service industry	National Development and Reform Commission	2010	Innovation model in information, biotechnology, digital content, R&D, design, IP and S&T commercialization service industry	N/A	Regulation and financial supporting; developing national innovation system; improving high-tech service industry standardization
9	Notice on printing and delivering act on HuoJu innovative programme for S&T service system	Ministry of Science and Technology	2011	New business model for S&T service: S&T achievements publicly traded, shareholding incubation, and stage equity participation.	1. Bring in human resources from abroad, training S&T service innovation team, establish S&T training center; 2. Enhancing professional business ability.	1. Innovation friendly regulations: turnover tax on technology transition, income tax on technology transformation, tax preference on national level high-tech enterprise;
10	Notice on the income tax policy issues to technology advanced service enterprise	Ministry of finance, with other 4 department	2010	Technology advanced service enterprise	N/A	Innovation friendly regulations on qualified technology advanced service enterprise: 1. 15% income tax relief; 2. Employee education and training expenditure, no more than 8% of the total wages part is permitted to deduct when calculating the taxable income amount, the amount exceeding 8% can be carried over to future tax years for deduction.

NO.	Title of measure	Produced by	date	New types of innovation actors, activities and business solutions	Service innovation related competencies and capabilities	Markets and infrastructure as a driver of service innovation
11	Authentication and management method for technological enterprise incubator (high-tech incubation service centre)	Ministry of Science and Technology	2006	High-tech incubation service centre	N/A	Giving qualified high-tech incubation service centre tax relief on turnover tax, income tax, housing property tax, and urban land used tax.
12	Opinions on encouraging government and enterprise outsourcing to develop service outsourcing industry	Ministry of Finance with other 8 department	2009	Divesting IT and related service department from government and Large-Midiate enterprise by merge and equitation with professional outsourcing supplier.	Training for government officials or enterprise human resources	1. Public procurement such as IT consultancy, operation and maintenance, software R&D, system testing, data processing, training ,renting and outsourcing 2. Technology standardization for outsourcing and service from supplier.
13	Opinion on enhancing service and promoting informative for SMEs.	National Development and Reform Commission with other 7 department	2008	Information service network among information service supplier , financial enterprise and logistics enterprise to create value.	Multi-actors and disciplinal of SMEs informative education and training system	1. Innovation friendly regulation in terms of tax and financial policies; 2. Information security standardization, personal information protection, and network credit standardization.
14	Notice on enhancing and improving relative issues about insurance service in high-tech enterprise	China insurance regulatory commission, Ministry of Science and Technology	2006	1. Exploring new model to promote S&T insurance supported by national financial investment; 2. New model for export credit insurance product and service innovation.	Encourage national insurance organization cooperate with abroad insurance organizations in knowledge exchange and staff training	Innovation friendly regulation: high-tech product has the priority under the same condition in export credit insurance business; giving the highest premium rate preference according to China export insurance company regulations
15	Opinions on promoting rural financial product and service innovation	People's bank of China, China banking regulatory commission, China securities regulatory commission, China insurance regulatory commission	2010	New model of financial service innovation: one insurance staff responsible for one village, financial supervisor regulation, and loan+technology service.	Rural financial programme staff training	Payment service infrastructure, enlarge payment network in rural area;

NO.	Title of measure	Produced by	date	New types of innovation actors, activities and business solutions	Service innovation related competencies and capabilities	Markets and infrastructure as a driver of service innovation
16	Notice on implementing XingHuo special action to rural technology service system	Ministry of Science and Technology	2003	Rural technology service organizations: government promotion agencies, productivity promotion center, and technology market.	1. Inviting foreign expert exchanging knowledge; 2. Learning from advancing rural developing experience, improving our rural technology service negotiation ability and service ability.	1. Innovation friendly regulation: incentive measures, tax reduction, project founding for encouraging expert and professors working in rural area; 2. Smart financial solutions: Ministry of Science and Technology will invest more than 0.1 billion within three years to supporting technology service system in rural area.
17	Opinions on improving IP information utilization and service capability, promoting IP information service platform building	Ministry of Science and Technology	2006	Advancing social responsibility through IP information sharing, building IP information service platform for society.	Educate information service experts by multiple method from different levels	1. Financial supporting: Building IP information database founded by public finance; 2. IP information database offer free service to public
18	Opinions on promoting Shanghai modern service industry and advancing manufacturing industry development, building international financial and shipping center	State Council	2009	Forming market-oriented, financial market and financial enterprise dominated financial innovative mechanism	Improving financial service ability and the service competencies of financial cluster; reinforcing the comprehensive capacity of transportation	Improving financial tax and law, enhancing social credit system, perfecting financial regulatory platform; setting up equity funds for shipping industry, allowing large ship manufacturing enterprises to participate in financial lease company.
19	Notice on implementing energy contract management to develop energy conservation service industry	State Council	2010	N/A	Training for qualified personnel in energy conservation , improving capability in market competition	1. Innovation friendly tax regulations for energy conservation service industry: turnover tax relief, value-added tax relief, income tax relief for the first three years; 2. Financial supporting by central government budget
20	Opinions in developing housekeeping service industry	Ministry of commerce	2010	New housekeeping service association model by using housekeeping service network center	training housekeeping employee, improving service skill, service quality, and standard	Improving housekeeping service standardization
21	Opinions on building SMEs innovation service system	State economic and trade commission	2000	Establish 40 or so technology innovation service center since 2000 within two years, building a open network technology innovation system	Improving service quality, enhancing competitive capability for technology innovation organizations	Systemic innovation among enterprise, university, and research institute for value creation



## Regional level policy measures

NO.	Title of measure	Produced by	date	New types of innovation actors, activities and business solutions	Service innovation related competencies and capabilities	Markets and infrastructure as a driver of service innovation
22	Opinions on improving leapfrog development of service industry	Qingdao municipal government	2011	Establishing modern service industry system: Producer service as main part, consumer service as basic part, and public service as security part.	Establishing a series of S&T service industry strategic alliances, promoting S&T service ability	1. Service industry standardization in tourism, modern logistics, commerce, finance, sports, housekeeping, and agency service industry; 2. Smart financial solutions: supporting service enterprise on stock market, corporate bonds, and project finance.
23	Opinions on improving development of service industry	Anhui province government	2009	Carry out Modern service industry reform pilot for new service models	Training and attracting competent talents, Creating new majors on service in universities	Innovation friendly regulations: enlarge tax preference scope in service industry; rate relief in use of water, gas, land and management; relax control over service industry market entry
24	Opinions on strengthening reform of service industry	Chengdu municipal government	2011	Developing emerging service industry like e-commerce and service outsourcing, and exploring new model of services	Improve technology, human resources, and management capability by enterprise cooperation, mergers and acquisition, and restructuring.	1. Founding for emerging service industry by state-owned investment corporation; 2.50% of the city collective construction land will be using for modern service industry
25	Opinions on improving S&T service innovation and entrepreneurship	Ningbo Science and Technology department	2011	7 main actor: R&D service, technology consultancy service, IP service, energy saving and environmental protection service, inspection service, software and IT service, S&T financial service.	Training for qualified S&T personnel, new major on S&T service in university	Financial supporting from local government: project founding, tax relief; establishing S&T service industry network platform
26	Opinions on improving development of high-tech enterprises in Zhongguancun	Zhongguancun science park management committee	2009	Establishing an inter-science park joint conferences system to coordinate big project, supervise and check for implementation.	Enlarging open lab knowledge sharing by knowledge sharing network.	1. Systemic innovation among open lab, universities and industry; 2. Founding for technology standardization, and workflow standardization.
27	Opinions on promoting ShangHai modern service industry and advancing manufacturing industry development, building international financial and shipping center	Shanghai municipal government	2009	Establishing Financial product innovation, and financial business pilot.	Implementing "Thousand Person Plan" to brain gain high-level professionals on finance and shipping; establishing Pudong international training center.	1. Innovation friendly regulations: tax relief, tax preference and tax rebate; 2. Talent evaluation standardization; 3. Financial supporting: credit supporting, special funds.

NO.	Title of measure	Produced by	date	New types of innovation actors, activities and business solutions	Service innovation related competencies and capabilities	Markets and infrastructure as a driver of service innovation
28	Opinions on enhancing development of modern information service industry	Guangdong province government	2007	N/A	Introduction of overseas talent; improving training on modern information service, establishing human resources training base.	1. Tax relief and tax preference for modern information service enterprise; 2. Enlarging public procurement scope on modern information service; 3. Technology standardization, IP protection.
29	Opinions on enhancing development of modern service industry	Jiangsu province government	2011	Encouraging new business model, new technology tool, and new service philosophy; exploring emerging service market on telecom value-added service, digital multimedia, and animation and game industry.	1. Improving indigenous innovation capability in service enterprises, and developing service innovation international competencies; 2. Introducing "modern service industry talents project" to train professional personnel	1. Innovation friendly regulation on finance, fee, tax, land using and training; 2. promoting service industry standardization on both national level and local level;
30	Notice on carrying out reform pilot of service industry in Shanghai	Shanghai province government	2011	Supporting service enterprise in R&D investment, triple helix, and BPR; Encouraging new business model by new technology in cloud computing, the internet of things, and biometrics.	Service personnel training, improving public service capability	1. Innovation friendly regulations on market access, programming, finance, and tax; 2. Proactive in national and international service standardization setting; 3. Financial supporting from national and local government

## D. Future developments and service innovation policy needs

There are some new documents and official files being developed for services and related innovation. The main policy measures and initiatives of these files focus on S&T service system and Hi-tech services.

In terms of building S&T services system, Ministry of S&T has issued Pilot program of S&T services system in 2011. This program aims to improve capability of S&T service agencies and firms and cultivate emerging S&T services industry. The main task of developing S&T services system are fostering S&T services agencies and firms, building S&T innovation public service platform, establishing S&T services training base for talents and supporting S&T services agencies and firms clus-

ters. The first step of this action is to launch 20 pilot projects proposed by public service platform and private S&T services firms in high-tech Industry Park. The further popularizing of this policy implementation all over the country will be put into practice in the future.

At the end of 2011, the state council published a document to give guidance of developing Hi-tech services industry. This official file indicates that the annual average growth rate of Hi-tech services industry should be more than 18 percent. Hi-tech services industry would become the leading force in service industry until 2020. The most important fields of hi-tech services industry should be focused on R&D and design service, IP service, inspection and testing service, Science and technology commercialization, IT service, digital content service, electronic business service and biotechnology ser-

vice. Meanwhile, there are some new policies were submitted mainly on financing and tax credit, public procurement, fair and transparent market environment, statistic standardization for hi-tech service industry and etc. But these are mostly general guidelines issued by government on the national level, detailed implementation rules and policy measures are still need to be put forward into practice on regional and industry level.

At first, currently most of investment in China goes into areas of infrastructure, real estate, and manufacturing. Government does not put strong support on innovative services and this leads to the slow development in this area. Even if some broader financial policies include the support of innovative services, the evaluation criteria of these policies are not proper for the characteristics of service activities. For example, the hi-tech enterprises could enjoy tax credit but the R&D investment should be up to required standard. Many innovative services cannot reach this criterion because they might not have independent R&D unit and difficult to calculate how much their R&D investment is.

Secondly, the lack of market orientation in many kinds of services is the main barrier to further development, such as inspection and testing services, S&T achievements transformation services and IP services, it makes marketing access difficult to these fields or existing companies are not worth to delivering these services. Nowadays, governments hope the business sector to take over such services and operate in a market oriented way.

Thirdly, professional service capability and internationalization of services are needed to be improved in some kinds of services such as IP services, biotechnology services. Moreover, improving productivity of services and innovation capability are urgently required in R&D services, design services, IT services and etc.

At last, generally speaking, service industry is still at the low level in China and unbalanced development of service industry around China is obvious. The service industry is in a very early stage in most regions of the country, and more advanced services can only be found in Beijing, Shanghai and Guangdong province.

## Future options of services innovation policy

### Generic Policies and Specific Policies

Services innovation may indeed benefit from generic policies. However, in practice these generic policies are mostly having a technology and manufacturing bias such as the conceptualization of R&D. Even some specific innovation policies are aimed at facilitating technological innovation. They are not proper to be used in service sectors. As a result, on one hand, more and more generic (innovation) policies should enlarge their support sectors from manufacturing to services, for example, adjusting evaluation criteria of hi-tech enterprises with manufacturing bias to meet hi-tech services enterprises needs. On the other hand, some new specific policies should be developed for service sectors which focus on promoting new business models, service innovation related capabilities as well as markets and infrastructure as a driver of service innovation.

### Supply-side Policy and Demand-side Policy

The findings of mapping study illustrate that most service related innovation policies are Supply-side policies. The number of pure demand-side policy is very limited. Conversely, demand-side measures should become more and more important element of China innovation policy, also in service related issues. These should include: innovative procurement for services, outsourcing IT services, inspection services and IP services to private firms, internationalization of services, and tax incentive for purchasing services.

### Policy Coordination and Collaboration

Service innovation is a multi-dimensional complex phenomenon. It requires recognition across the public administration and various interest groups. Innovation policies related service innovation should be coordinated in design and implementation within governments and different actors such as businesses, R&D institutions and other stakeholders. Meanwhile, many guidance documents at the national level requires detailed action plan and implemented measures at regional level or different service industry.

## 2.3 Appendix 3. Denmark

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### A. National policy context

Denmark has no innovation programmes targeted exclusively at services. Instead, all programmes are seen as potential support measures for service innovation. Here, the rationale is making innovation support measures industry neutral and to further the role of service industries within this framework. An overall national innovation strategy is currently underway. The role of service innovation in the national strategy has not yet been determined.

#### Service innovation policy

In Denmark the policies specifically promoting service innovation is laid down in *Innovation Denmark 2007–2010* (DASTI 2007) and its successor, *Innovation Denmark 2010–2013* (DASTI 2010a). Specifically within the service sector, the goals of the most recent plan are:

- Approved Technological Service Institutes will provide knowledge to at least 17,500 service companies annually after year 2013 (in 2009 the figure was just over 15,000 service companies)
- An increase in Danish service firms' participation in international projects
- An increase in Danish service firms' participation in the national innovation networks under the Council for Technology and Innovation (RTI)
- New and existing innovation networks for service innovation shall receive support.

As a supplement to *Innovation Denmark 2007–2010*, a strategy for service innovation and for innovation in the public sector was developed. In addition to the four objectives outlined above, these documents emphasised partnerships between research and public and private parties and led to the expansion of the industrial PhD programme to include the public sector. In addition, the *Copenhagen Manual* was developed in an effort to systemise the measurement of service innovation.

The objectives and action plans in this area are developed in dialogue with the stakeholders in Denmark. The approach to service innovation support in Denmark focus on

including service industries in existing largely industry neutral instruments and programmes rather than developing instruments specifically targeted at service industries (DASTI 2008).

#### Key actors

Figure 1 below summarises the funding bodies in the national innovation system in Denmark organised by their role in the innovation value chain. As shown, the Danish landscape is characterised by many semi-independent legal bodies with a high degree of autonomy, but with a place in the innovation value chain.

Both of the plans mentioned above are developed by the **Council for Technology and Innovations (RTI)**. The council is part of the **Agency for Science, Technology and Innovation** within the **Ministry of Science, Innovation and Higher Education**.

The goal is here, that the Council for Technology and Innovation through concrete measures will help service industries develop their value creation and competitiveness. The Council for Technology and Innovation formulated a service innovation strategy in 2008, targeted at improving the service sector framework conditions for research and innovation.

In addition, a **services committee** has been established, which is to put additional focus on service innovation within the existing framework of measures. The Committee was established in 2009 and its task is to advise the Council for Technology and Innovation on service innovation.

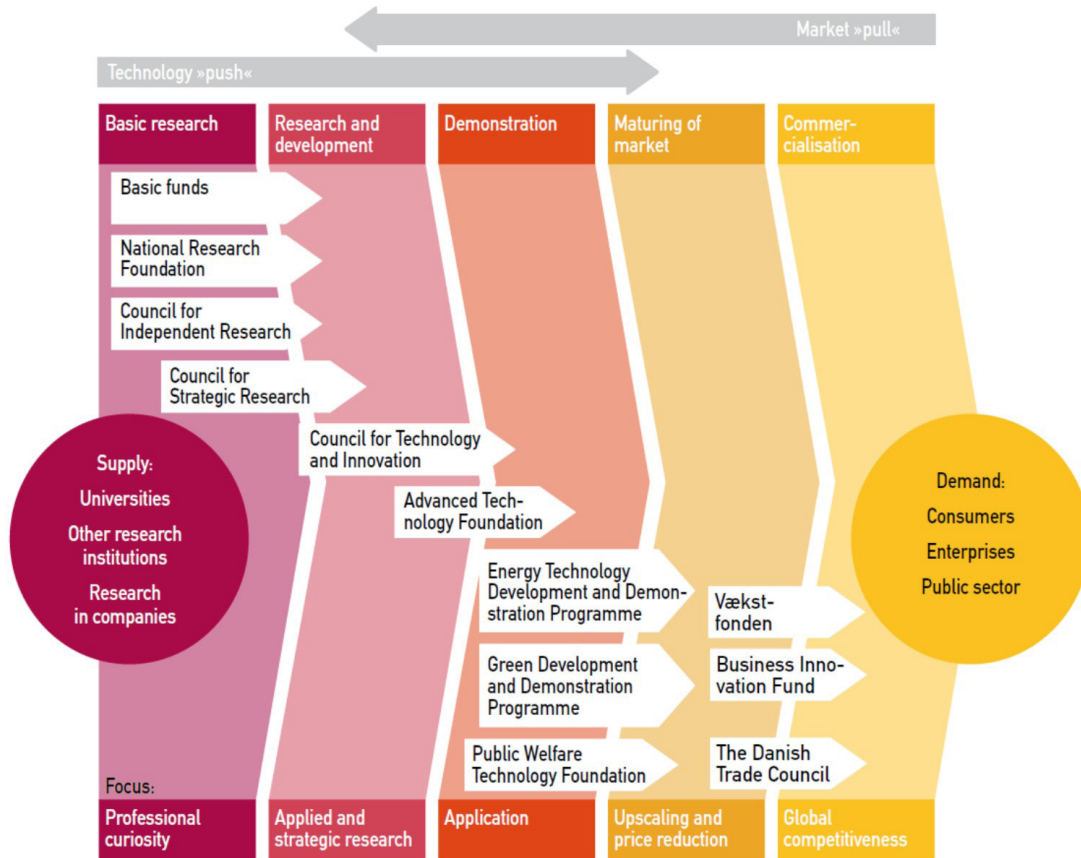
Finally, the Council for Technology and Innovation and Ministry for Research, Technology and Innovation have developed a strategy for assessing the impacts of research and innovation programmes, which also encompasses some perspectives on measuring the impact of service innovation programmes. This is developed under the EPISIS-framework.

More generically, the **Ministry of Business and Growth** is charged with setting the framework conditions of the service sector (and the rest of the business sector). Under its auspices, the **Danish Competition and Consumer Authority** is responsible for the competition and antitrust regulation in the service sector. In addition the **Danish Enterprise Agency (EST)** is responsible for national regulation and growth initiatives of the service sector and for oversight of the five regional **Business Development Centres**, implementing business policy and instruments regionally (see MBG 2011) These actors are, however not specific to the service sector.



**Figure 1. Actors in the Danish national innovation system organised by role in the innovation value chain.**

Source: DASTI 2010a



### The most important service industries

Figure 2 identifies the size of public and private service industries by their share all full-time equivalents.

In the private sector, the service industries accounting for the largest share of private gross value added in 2010 are Trade and transport (26.7%), Business services (10.4%) and Finance and insurance (8.7%). Also in terms of shares of private sector employment, Trade and transport, Business services and Finance and insurance are the most important, accounting for 37.5%, 14.7% and 9.8% in 2010, respectively. (Statistics Denmark 2011)

Turning to productivity, Real estate, Finance and insurance and Information and communication are the top performers in 2010. These industries generate EUR 96.5, 92.6 and

54.1 per hour of labour, respectively. For comparison, the average private labour productivity is EUR 52.6. (Statistics Denmark 2011)

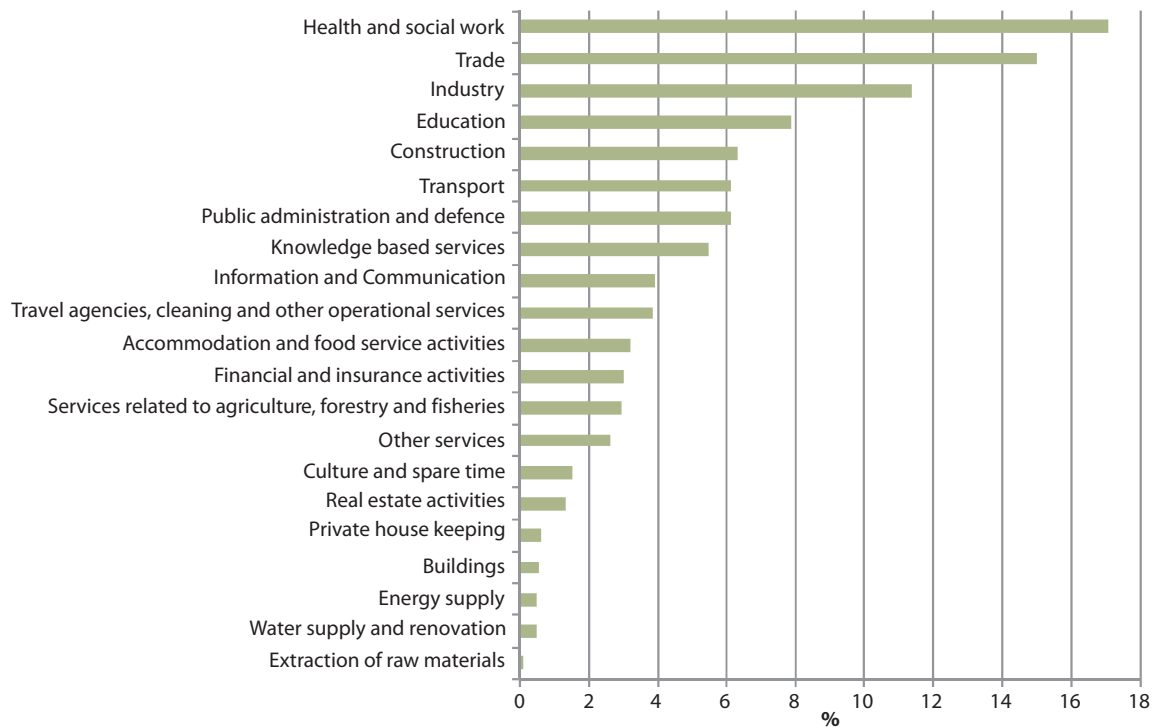
In terms of research and development (R&D), the service industries with the highest share of R&D-performing businesses are Businesses service (15.5%), Finance and insurance (12.5%) and construction (10.2%) in 2009. Across industries the total share of R&D-performers are 14.8% (2009). (Statistics Denmark 2011)

Specifically for innovation (excluding R&D) the service industries with the highest share of innovative businesses are Information and communication (55.4), Finance and insurance (53.9) and Business service (44.8) in 2009. For comparison 43.8 businesses in Denmark were innovative in 2009. (Statistics Denmark 2011)



**Figure 2. Share of full time equivalents in service industries as per cent of total full time equivalents.**

Source: Statistics Denmark 2011



## B. Policies promoting service innovation

As mentioned above, Denmark has no innovation programmes targeted directly exclusively at services, but a number of policies and policy schemes in which the promotion of services and service innovation are an important part, along with other sectors and types of innovation. The following programmes and policies are relevant in this context and summarised in Table 1.

### The Knowledge Coupon programme (Innovation Vouchers)

The Knowledge coupon programme is a scheme aimed at small and medium sized businesses without or with limited experiences in with collaboration with academic institutions. Knowledge Coupons support these businesses' acquisition of knowledge or original research and gives them access to buy consultancy services, sparring and training worth up to EUR 13,500 from a knowledge institution.

The condition is that the knowledge gained through co-operation with the knowledge institution has to be for a concrete development project in the business. Thus, the knowledge coupons ensure a greater commercial exploitation of public research and increase the researchers' attention on SMEs' knowledge needs (DASTI 2009).

### The Knowledge Pilot programme (Innovation Assistant Programme)

Another programme supporting small and medium sized companies is the Knowledge Pilot programme, where companies get support to hire a highly educated person (a knowledge pilot). The highly educated person is an academic employee, educated at master's level or higher, and is hired to solve a specific development project in the company that will strengthen the company's innovation or growth potential. The overall purpose of the programme is to increase small and medium sized companies' innovation activities and growth potential by hiring an academic employee. The scheme is based on an assumption

**Table 1. Overview of the most important national innovation programmes in promoting services.**

Programme/policy	Rationale	Running time	Resources	Outputs/outcomes
The Knowledge Coupon programme (Innovation Vouchers)	Support small- and medium-sized businesses' acquisition of knowledge or original research	Since 2008	EUR 13.400–67.200 per coupon EUR 2,7 million per year	Strengthens cooperation between companies and knowledge institutions Increases development activities Increases research and development (DASTI 2009)
The Knowledge Pilot programme (Innovation Assistant Programme)	Increase small and medium-sized companies' innovation and growth potential by hiring an academic employee	Since 2005	Grant covering part of the salary of the employee, EUR 1.700 per month EUR 1,3 million per year	537 companies hired a Knowledge pilot In 69 percent of the cases the Knowledge Pilot led to increased turnover, in 64 percent the company expanded its' market and in 81 percent of the cases a new product, process or service was developed (See DASTI 2011a).
The Industrial PhD programme	Educate researchers at a PhD-level with an insight into the business side aspects of research and innovation. Facilitate knowledge sharing and create networks between companies and university researchers	Since 1971/1988	EUR 18 million in 2011	Higher patenting activity in companies hiring an industrial PhD Higher growth in gross profits for companies hiring an industrial PhD Employment growth higher for companies with an industrial PhD Higher Patenting activity in companies (DASTI 2011b)
The Innovation Consortium programme	Strengthen cooperation between companies, research institutions and advisory/knowledge dissemination parties, and supporting the development of knowledge or technologies that benefit entire industries within the Danish business community	Since 1995	Max. EUR 2,7 million per consortium	Participants have annual increases in gross profit in the first five years after the start of participation, which are on average 3.7 million DKK above what would be expected in the absence of programme participation Higher Patenting activity in companies (DASTI 2010b)
The Open Funds programme	Strengthen the interaction between knowledge institutions and enterprises on innovation and knowledge	Since 2008	EUR 2,2 million in 2011	New methods of cooperation New cooperation partners normally not involved in innovative activities New types of innovation (incl. service innovation) New competences for employees
The Innovation Network Programme	Strengthen interaction in research, innovation and technology development between companies, knowledge institutions, Approved Technological Service Institutes and the public sector	Since 1999	EUR 1,3–2,7 million per network during a 4-year period	750 companies acquire new competences increasing their ability to innovate annually 550 companies acquire new ideas leading to innovation annually 300 companies create new products, services or processes annually (DASTI 2010c)
The Innovation Incubators	Professional support for early stage knowledge-based start-ups	In the current form since 2010, but existing since 1998	Total allocation of EUR 800.000 yearly	310 young innovative companies have been given venture capital through the initiative 266 companies have patented or sought IPR for their products/services through the initiative 69 new companies in 2010 (DASTI 2011c)

Source: DAMVAD 2011

that SMEs hire fewer highly educated persons and often do not have contact with the knowledge institutions.

Possibilities of themes of the project cover a wide range of topics and include product/service development, strategy development, marketing strategies, etc. The funding is given as a grant covering part of the salary of the employee, and can be provided for a period of 6–12 months, at a maximum of EUR 1.700 per month (DASTI 2011a).

### **The Industrial PhD programme**

An industrial PhD project resembles a regular PhD project, with the exception that the PhD researcher is hired by a private company and associated with a university. The researcher works on a 3-year business oriented research project relevant to the company. The researcher's time is divided equally between the company and the research at the university.

The purpose of educating industrial PhD's is to educate researchers at a PhD-level with an insight into the business side aspects of research and innovation. Furthermore, the purpose is to facilitate knowledge sharing and creating networks between companies and university researchers, and finally, at a societal level, to create growth in Danish businesses through closer cooperation on research and development between companies and universities.

The company applies for funding at the Danish Agency for Science Technology and Innovation and if approved, the company receives a subsidy towards the salary of EUR 2,000 per month (See DASTI 2011d).

### **The Innovation Consortium programme**

The Innovation Consortium programme provides a flexible framework for collaboration between companies (including service companies), research institutions and non-profit advisory/knowledge dissemination parties. Together, the parties develop new knowledge or technology beneficial to the participants and entire industries in the Danish business community. Public funds cover the expenses at the knowledge institutions. The companies fund their part of the work.

An innovation consortium must consist of at least two companies that participate throughout the entire project, one research institution and one advisory and knowledge dissemination party. Additionally, an innovation consortium may involve or attach other types of partners that are considered relevant to the project.

The consortiums' collaboration is based on a joint project

aimed at developing and bringing research based knowledge to maturity, so that it can form the foundation for Danish companies' innovation in the years to come. The joint project is furthermore aimed at resulting in the completion of high-quality research, relevant to Danish companies. Furthermore, the project ensures that the new knowledge is converted into competences and services specifically aimed at companies, and that the acquired knowledge is subsequently spread widely to the Danish business community including in particular small and medium-sized companies (DASTI 2010b).

### **The Open Funds programme**

The open funds support collaborative projects between companies and knowledge institutions, which aim to strengthen the interaction between knowledge institutions and enterprises on innovation and knowledge, and activities focusing on strengthening innovation and the growth potential for the companies in the target group. The programme supports projects, which do not naturally belong under other programmes available. Funding of up to 50 percent of the project's budget is available.

To apply for funding, the application from the participating parties are obliged to focus on e.g. new ways of cooperation between companies and knowledge institutions, the involvement of partners not normally participating in publicly funded cooperative projects on innovation or new areas of research. The common denominator is that the project has to strengthen the cooperation between companies and knowledge institutions and create innovation in businesses (See DASTI 2011e).

### **The Innovation Network Programme**

The Innovation Network Programme aims at constituting a platform for cooperation between companies, knowledge institutions and approved technological service institutes (GTS) with a particular academic or technological focus area that the networks themselves define. The networks act as a forum where the participants can share their experiences and develop new ideas within a specialist or technologically delimited field. The networks' main function is to strengthen interaction in research, innovation and technology development between companies, knowledge institutions, Approved Technological Service Institutes and the public sector.

The rationale behind the innovation networks is to create permanent national networks, which in the future will form a part of the infrastructure of the Danish innovation system. The networks have pools for innovations projects, where the par-



ticipants can work together to create ideas or work with specific challenges.

The Danish Agency for Science Technology and Innovation supports and co-finances a total of 22 national innovation networks. The networks cover a wide variety of areas and are open to all interested parties – companies, knowledge institutions, organizations and others. Under the Programme, three innovation networks aimed at boosting service sector growth and export were established in 2010 (DASTI 2010c):

- Innovation Network for a Knowledge-Based Experience Economy: The focus is on the development of new business models based on experiences. The target group is companies, which as a part of their business model are dealing with experiences.
- Service platform: The network is a unifying platform for activities, which could increase innovation in service. The network has as its starting point the four challenges: Internationalization, productivity, strategy and management and workers' skills. The target group is broad and includes both service companies and manufacturing companies whose products have a high level of service content.
- Innovation Network for Marketing and consumer awareness: The network is intended to bring together core com-

petencies in Denmark in consumer understanding, marketing, branding and ensure that this knowledge is anchored with advertising agencies and companies. The target group for the network is advertising and communications agencies, but also manufacturing companies, who need knowledge at a high level regarding service innovation.

### Quantitative impact assessment as a basis for policy

A key feature of Danish innovation policy is large scale quantitative impact assessments of innovation programmes. DASTI has conducted a number of such impact assessments and has developed *Manual for Excellent Impact Assessments* (DASTI 2011f). A complete overview of documented impacts of the programmes summarised in Table 1 above is published in (DASTI 2011g).

Some impact assessments are generic, measuring the impact of investments in research, development and innovation on firm productivity (see table 2). Others are programme specific, measuring the impact of participation on the economic performance of firms against similar non-participants (see table 3).

**Table 2. Value added per employee by R&D activity, industry and firm size.**

	Value added per employee (R&D active)	Value added per employee (no R&D)	Difference in pct.	Number firms
High tech manufacturing	492,100	399,100	23%	1,871
Other manufacturing	471,000	382,800	23%	3,806
Knowledge intensive service	512,600	480,100	7%	2,608
Other service	518,600	447,100	16%	3,620
< 100 employees	482,600	435,700	11%	9,336
100+ employees	504,500	422,000	20%	2,916
Total (all firms)	493,900	431,300	15%	12,252

Source: DASTI 2010e

**Table 3. Level of innovation after participating in Innovation Networks.**

Year after participating in Innovation Networks	Increased probability of being innovative
The same year	0.4786**
Year 1 after participation	3.6678***
Year 2 after participation	N/A
Year 3 after participation	N/A
Year 4 after participation	4.6386***
Year 5 after participation	3.2029***

Note: The significance is marked with asterisk : \*\*\* = 1 pct.-level, \*\* = 5 pct.-level and \* = 10 pct.-level. N = 5,201

Source: DASTI 2011h

## The Innovation Incubators

Finally, to support researchers or knowledge based entrepreneurs and to contribute to creating more knowledge intensive entrepreneurial companies, six approved innovation incubators exist with a total funding of EUR 25 million from the Danish state. These incubators are spread across the country and can assist researchers in starting their own company based on their research or help entrepreneurs with a business idea that includes a high level of technology. The incubators offer knowledge, counselling and advice. Furthermore, on behalf of the Danish State, the innovation incubators offer up to EUR 800.000 in pre-seed and seed capital for new and innovative companies (DASTI 2011c).

To qualify for support from the incubators, the applicant has to present a new service or a new product with a high level of knowledge, based on technology or research. The funding can support three early stages of a project's lifetime:

**Pre-investigation:** In this phase the project is initially evaluated with a focus on potential and risks. Following this, the

potential of the idea's commercialisation and technological perspectives is analysed and evaluated through a pre-investigation. On average EUR 10.800 is allocated for this stage.

**Pre-seed funding:** In this second phase, pre-seed funding is offered as an initial capital injection for the company. A maximum of EUR 470.000 can be offered at this stage, in the form of a loan or equity, provided that the company finds supplementary private investments equalling 18 percent or more of this amount. It is a requirement that the company is at its' early stage and has a maximum of EUR 6.700 in turnover at this point.

**Primary project funding:** Finally, the incubators can offer funding for further development activities for projects showing special potential of up to EUR 330.000 as equity or loans, if the company is able to raise a private investment of 60 per cent or more of the total investment.

The funding for stages two and three can be used for counselling, technological studies, development, patenting, market research, etc.

## C. Checklist of policy measures

The below table summarises the policies identified in the previous section under the areas of the EPISIS-strategy.

**Table 4. Programme relevance to the thematic areas of the EPISIS-strategy.**

Programme/policy	Promotion of service innovation by targeting new types of innovation actors, novel types of innovation activities and innovative business solutions	Promotion of service innovation related competencies and capabilities	Promotion of markets and infrastructure as a driver of service innovation
The Knowledge Coupon programme (Innovation Vouchers)	✓	✓	✓
The Knowledge Pilot programme (Innovation Assistant Programme)		✓	
The Industrial PhD programme		✓	
The Innovation Consortium programme	✓		
The Open Funds programme	✓		
The Innovation Network Programme	✓	✓	
The Innovation Incubators	✓		

Source: DAMVAD 2011

## D. Future developments and service innovation policy needs

The most important policy development on the horizon is the launch of a national innovation strategy sometime in 2012. The place of service innovation in the strategy is still undecided. Currently, the key policy developments in innovation policy are not exclusively aimed at innovation in services.

In the latest country report, PRO INNO EUROPE (2011) identifies three major innovation challenges and policy responses for Danish innovation policy. To a large extent, these are likely to be relevant for service innovation too:

**Challenge 1:** To increase the supply of highly skilled labour: The obstacles to innovation have changed little within the last years. The growing labour shortage has become increasingly problematic, but this probably ends with the recent recession in the global economy. However, the challenge of supplying relevant highly skilled/educated labour resists.

**Challenge 2:** To strengthen human capital formation: Another aspect of the recent labour shortage is Denmark's own inability to provide human resources equivalent to the demands of innovation. The recent policy response is comprehensive and ambitious, but the proposed initiatives have a very strong focus on formal competencies and limited emphasis on improving creativity, collaboration and learning by doing, using and interacting, where Denmark historically has done well.

**Challenge 3:** To promote innovation by SMEs: The Danish focus on science-based sectors and 'high technology research' in fields such as nanotechnology, information technology and biotechnology, has been argued to fail to take into consideration characteristics of the Danish national innovation system, such as the large number of SMEs. There has been limited emphasis on the innovative capabilities of firms and their need for research-based competences, although recent Danish innovation strategy has increased the emphasis on the role of SMEs.

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## 2.4 Appendix 4. Finland

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### A. Service innovation policy in Finland

The origins of service innovation policy in Finland can be traced back in the late 1990's when high level policy documents in Finland recognized the need to promote services and related innovation. Subsequently ministries and government agencies started to take service innovation promotion on their agenda (Prime Minister's Office, 1999; 2007). However, it took several years before service innovation promotion developed into concrete policy measures and support actions. Such gradual development also took place in the Ministry of Employment and Economy and Tekes that is implementing innovation policy measures that are targeting both businesses and public sector organisations.

#### Policy approach to service innovation support in Finland

Despite the gradual start service innovation promotion has become part of the mainline innovation policy in Finland. Service innovation is seen as a driver of renewal and competitiveness up to a degree that in 2010, 52% of Tekes funding for enterprises (228 million Euros) was targeted at services (Tekes, 2011). There are very few sector specific policies in Finland and this applies also service innovation promotion. This means that service innovation promotion cuts across the industries rather than targets any sector or industry branch as such.

One of the key lessons from the Finnish experience is that changes to existing policy instruments do not guarantee effective delivery of service innovation support. Agencies, and service organisations alike tend to face deep learning curve as they are seeking to support and develop innovative services. In addition, there are a number of challenges related to multidimensional nature of service innovation. To overcome these challenges, effective service innovation policy delivery requires among others: new skills development, new types of instruments, adjustment of project funding and evaluation criteria and development of a horizontal policy approach (European Commission, 2007; 2007a; Tekes, 2007).

### Service innovation as part of the innovation strategy in Finland

Finnish innovation strategy (2009) seeks to address broad range of innovation activities. Accordingly, incentives and development measures are targeted at business, management, operating methods, design, creative industries and service and social innovations. New incentives will be created in order to launch innovation activity in enterprises in all sectors where innovation activity might play a key role in enhancing performance and productivity. Furthermore, the aim is to upgrade the entire public innovation and business support system to improve the productivity and competitiveness of the national economy, branches of industry, businesses in different sectors and regions, and the public sector. New government programme document also recognises the importance of service innovations across the sectors as source of competitiveness, job creation and source of productivity gains (Prime Minister's Office, 2011). More detailed implementation plan of the Government Programme recognises the importance of non-technological innovations (Prime Minister's Office, 2011a). New venture fund targeting businesses in services and creative industries is on the agenda. However, source of funding for this measure has not been specified in the document. Over all, there is an indication that research, development and innovation supports to businesses will be subject to some funding cuts. This is a new situation in Finland where R&D&I supports have been growing steadily over the years.

#### Key actors in the Finnish Innovation system

Finnish innovation system has been relatively stable over the recent years although some adjustments and up-dates have been implemented. On top of the system is parliament that has the highest decision making power on innovation policy.

*Research and Innovation Council* is a high level organisation, chaired by the Prime Minister. It advises the Government and its Ministries in important matters relating to the direction, follow-up, evaluation and coordination of research, technology and innovation policy and it also prepares relevant plans and proposals.

*Finnish Innovation Fund (SITRA)* is an endowment based organisation operating directly under the parliament. Sitra has a role as an initiator of new openings and debate in the system. It has a broad mandate to work and it can make rapid interventions to new areas considered of having national importance.



Ministry of education is in charge of education and basic research in Finland. Universities and polytechnics are responsible for education, research and capabilities related to service sector and service innovations. Academy of Finland is a funding agency that operates under the Ministry of Education. It focuses on leading edge science and basic research. It is also committed to playing an active and major role in the Finnish research and innovation system and it promotes research that seeks new multidisciplinary and interdisciplinary subjects and approaches. In addition the Academy of Finland is enhancing the contribution of high-level scientific research to development aimed at new innovations.

Key research performers in Finland include universities and polytechnics that operate under the Ministry of Education and Culture. Private sector research performers include research institutes and businesses.

Ministry of Employment and the Economy is in charge of innovation-, employment and regional policies. In addition to

taking a legislative role, the ministry is responsible for the management and control of several innovation policy actors such as Tekes and Technical Research Centre of Finland.

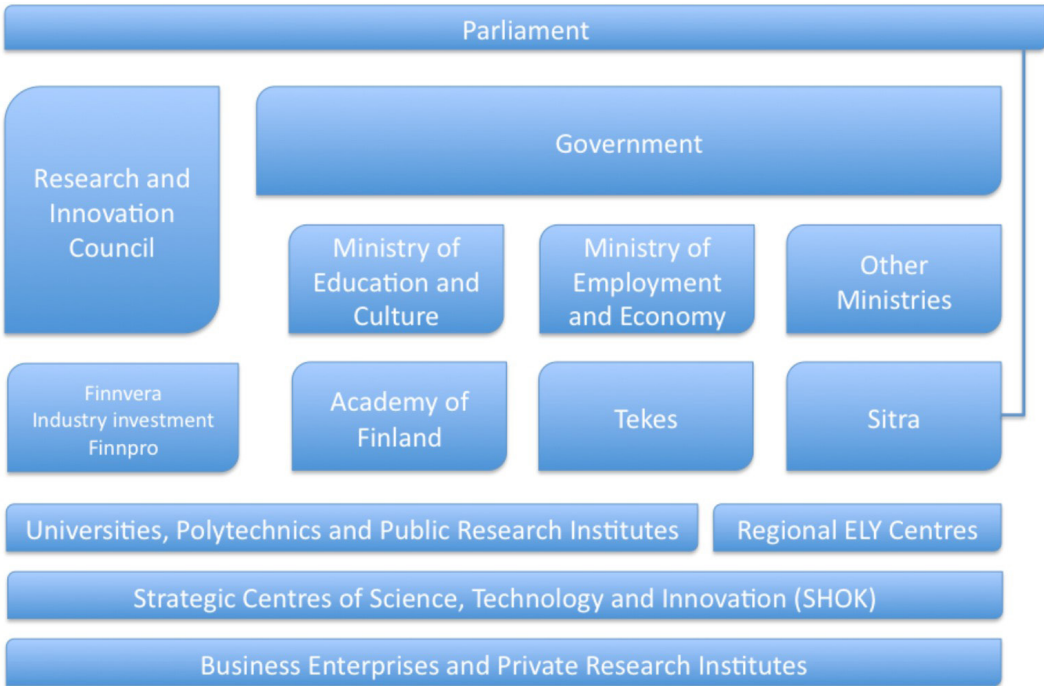
Tekes is an executive agency operating under the Ministry of Employment and the Economy. It is a key funding agency for applied research, innovation activities and technology development. In this role Tekes can influence research and innovation activities by the research performers and businesses.

Finnvera is a specialised financing company owned by the State of Finland. It provides its clients with loans, guarantees, venture capital investments and export credit guarantees. Finnvera is the official Export Credit Agency (ECA) of Finland.

Finnish Industry Investment Ltd is a government-owned investment company. Our mission is to promote Finnish business, employment and economic growth through venture capital and private equity investments.

Finpro is assisting the growth and success of Finnish companies in international markets. It seeks to open up future bu-

**Exhibit 1. Finnish innovation system / innovation environment.** Source: adapted from Finnish Science and Technology Information Service [www.research.fi](http://www.research.fi)



business opportunities by observing and informing of changes in international markets. Finpro is a public-private organization and part of the Ministry of Employment and the Economy Group, Finpro also works closely with other actors in Finnish innovation ecosystem such as ELY-centres, Tekes and the Ministry for Foreign Affairs.

The Strategic Centres for Science, Technology and Innovation (SHOK) established in Finland are new public-private partnerships for speeding up innovation processes. Their main goal is to thoroughly renew industry clusters and to create radical innovations. In Strategic Centres, companies and research units work in close cooperation, carrying out research that has been jointly defined in the strategic research agenda of each Centre. The research aims to meet the needs of Finnish industry and society within a five-to-ten-year period. In addition to Centres' shareholders, which include relevant companies, universities and research institutes, public funding organisations have made a commitment to providing funding for the centres in the long term. Within each Strategic Centre, some €40–60 million annually are invested in research. The following Strategic Centres are in operation:

- Forest cluster: Forestcluster Ltd
- Metal products and mechanical engineering: FIMECC Oy

- Built environment innovations: RYM Ltd
- Information and communication industry and services: TIVIT Oy
- Energy and the environment: CLEEN Ltd
- Health and well-being: SalWe Ltd.

### Key service industries in Finland

Latest enterprise information from Statistics Finland describes the key private sector services in the country based on their turnover, employment and number of enterprises. Wholesale and retail trade is the largest service industry by all of three measures. Other key service industries include Professional, scientific and technical activities, Transportation and storage, Administrative and support service activities, and Information and communication. In terms of turnover the key service industries in Finland are.

- Wholesale and retail trade, repair of motor vehicles (115.726 mill. Eur.),
- Transportation and storage (20.644 mill. Eur.),
- Information and communication (15.870 mill. Eur.),
- Professional, scientific and technical activities (11.399 mill. Eur.),
- Administrative and support service activities (8.627 mill. Eur.).

**Exhibit 2. Enterprises in Finland 2010.**

Industry (TOL 2008)	Enterprises		Personnel		Turnover	
		%	1,000	%	€ mil.	%
Agriculture, forestry and fishing	56,403	17.7	67	4.7	1,484	0.4
Manufacturing	21,776	6.8	330	22.9	123,449	34.4
Construction	40,805	12.8	146	10.1	24,168	6.7
Wholesale and retail trade, repair of motor vehicles	45,430	14.2	251	17.4	115,726	32.2
Transportation and storage	22,576	7.1	129	8.9	20,644	5.8
Accommodation and food service activities	11,167	3.5	54	3.7	5,391	1.5
Information and communication	8,546	2.7	80	5.6	15,870	4.4
Financial and insurance activities	4,842	1.5	45	3.1	–	–
Real estate activities	14,796	4.6	18	1.3	5,441	1.5
Professional, scientific and technical activities	32,347	10.1	89	6.2	11,399	3.2
Administrative and support service activities	12,967	4.1	104	7.2	8,627	2.4
Human health and social work activities	17,790	5.6	54	3.8	4,262	1.2
Other industries	290,506	9.3	76	5.3	22,449	6.3
<b>All industries</b>	<b>318,951</b>	<b>100</b>	<b>1,444</b>	<b>100</b>	<b>358,909</b>	<b>100</b>

Source: Statistics Finland 2012

Based on the number of enterprises, Wholesale and retail trade, repair of motor vehicles (45,430), Professional, scientific and technical activities (32,347) and Transportation and storage (22,576) represent the major service industries in Finland. In terms of personnel employed, the Wholesale and retail trade, repair of motor vehicles (251,000), Transportation and storage (129,000), Administrative and support service activities (104,000), Professional, scientific and technical activities (89,000), and Information and communication (80,000) represent the largest service industries in Finland.

**Key industries from the service innovation point of view**

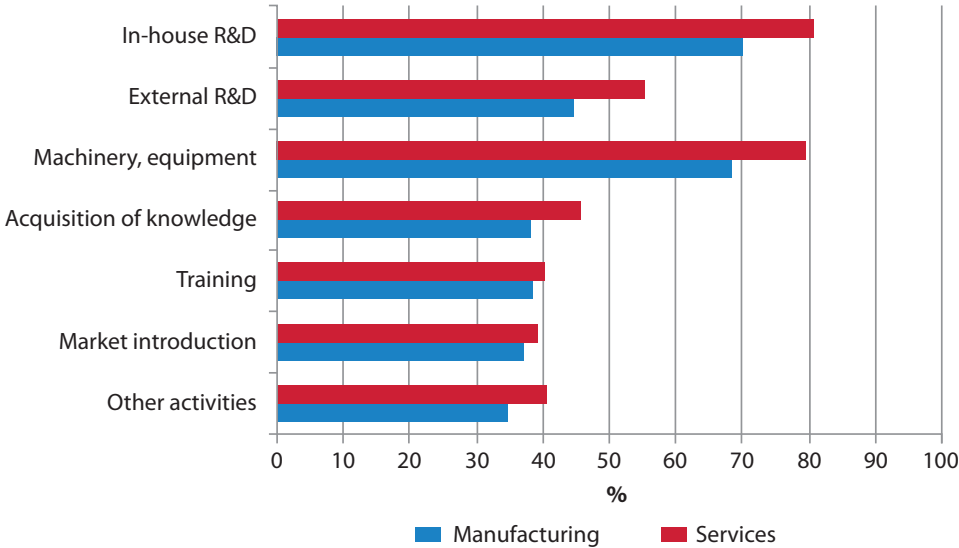
In Finland service innovation is seen as important driver competitiveness across the industries manufacturing and public sector included. Competitiveness and renewal of manufacturing industries is increasingly based on intangible value, tailored solutions for users and various types of product-service combinations. Knowledge intensive services tend to be most innovation intensive industries.

**Innovation activity still more common in manufacturing than in service enterprises in total terms**

The innovation survey carried out every second year is part of the joint project Community Innovation Survey (CIS) coordinated by Eurostat and made in all EU Member States (Statistics Finland 2010). According to the survey nearly one half of enterprises employing at least ten persons practiced innovation activity related to product and process innovations in 2006–2008. The majority of these also introduced product or process innovations. During the time period in question, innovation activities were most often directed to research and development and purchases of machines and equipment.

Innovation activity related to product and process innovations was still more common in manufacturing than services and large enterprises engaged in innovation activity more often than small ones did. The key objectives in innovation activity were improvement of the quality of products, enlargement of the product selection and growing of the market share, but such as increasing the flexibility of processes and

**Exhibit 3. Prevalence of innovation activities in manufacturing and services, 2006–2008, share of enterprises with innovation activity.**



**Exhibit 4. Innovation activity by service industries.**

Industry	Product innovations (goods and services)	Process innovations	Product or process innovations	Innovation projects	Innovation activity	All elements
	%	%	%	%	%	%
Computer programming, consultancy and related activities	58.0	44.0	66.8	45.1	73.2	22.0
Telecommunications	58.8	50.8	58.8	58.8	65.9	45.8
Information service activities	47.7	45.0	54.4	34.2	54.4	24.8
Sewerage, waste treatment	31.6	45.5	53.8	19.8	53.8	9.8
Activities auxiliary to financial services and insurance activities	33.4	38.9	50.0	19.4	50.0	11.1
Architectural and engineering activities; technical testing and analysis	28.1	36.4	41.9	28.1	47.7	18.5
Wholesale trade, except of motor vehicles and motorcycles	33.4	33.7	43.7	17.1	45.1	10.7
Publishing activities	29.5	26.8	39.1	20.7	43.5	8.3
Financial service activities	28.5	31.8	40.1	19.8	42.0	10.7
Insurance, reinsurance and pension funding	31.1	28.0	36.0	31.7	41.3	13.5
Electricity, gas, steam and air conditioning supply	7.0	25.6	29.8	22.2	39.9	2.0
Repair and installation of machinery and equipment	16.4	22.7	29.2	15.8	32.0	5.6
Water collection, treatment and supply	8.3	21.0	23.8	16.6	26.6	5.5
Postal and courier activities	6.2	16.9	16.9	16.9	21.3	6.2
Transportation and storage	8.6	16.7	17.9	9.4	20.2	4.0
<b>All NACE – Total</b>	<b>30.5</b>	<b>34.4</b>	<b>43.3</b>	<b>25.0</b>	<b>46.8</b>	<b>13.5</b>
<b>Manufacturing, total</b>	<b>33.2</b>	<b>38.8</b>	<b>48.5</b>	<b>29.5</b>	<b>52.5</b>	<b>15.6</b>
<b>Services, total</b>	<b>27.8</b>	<b>30.0</b>	<b>38.0</b>	<b>20.5</b>	<b>41.0</b>	<b>11.5</b>

Source: Statistics Finland 2008.

cost-effectiveness were equally important targets. Enterprises felt the most important information sources for work related to the development of product and process innovations were customers, and equipment and material suppliers and for group enterprises other enterprises in their group.

According to Statistics Finland survey (2008) the six most important service industries by their innovation activity include: Computer programming, consultancy and related activities, Telecommunications, Information service activities, Sewerage, waste treatment, Activities auxiliary to financial services and insurance activities, Architectural and engineering activities; technical testing and analysis. All of these represent knowledge intensive services and many of them make extensive use of ICT. Sewerage and waste treatment related services represent an interesting activity in this group and it signifies the importance of innovations in environmental services.

## B. Supply-side policies promoting service innovation

Universities and research institutes operate under the Ministry of Education and Culture. However, their service innovation related research activities are often funded by Tekes. In the service education field polytechnics are in important role as they provide education and training for key service sector employees including business services and health care services. In addition to service innovation capability building polytechnics have a key role in service innovation related knowledge dissemination for the SMEs.

Six operational Strategic Centres for Science, Technology and Innovation represent rather novel industry-driven supply-side policy measure. These not for profit limited companies are industry driven not for profit research organizations. In 2012

public funding for these organisations were around 37 million Euros. This makes 60% of the overall budget of the Strategic Centres. Public funding for these centres comes from Tekes. The difference in comparison to traditional technology programmes is that here the research agenda is developed within the Strategic Centres rather than by Tekes. ([www.tekes.fi](http://www.tekes.fi))

However, Tekes delivers also more traditional R&D&I programmes that will be presented in the following sections. Tekes funding is targeted to three types of actors including research performers, business R&D&I and the Strategic Centres for Science, Technology and Innovation. On an annual basis Tekes grants around EUR 600 million towards innovative projects aimed at generating new know-how and new kinds of products, processes, and service or business concepts. Funding is also available for developing organisations as working environments. Tekes's customers include companies, universities, research institutions, government organisations, local and regional authorities and other organisations operating in Finland. The finance is also available for R&D projects undertaken by foreign-owned companies registered in Finland. International companies with R&D activities in Finland do not need to have a Finnish partner to be eligible for funding. The financed project should, however, contribute to the Finnish economy. With a view to promoting international R&D cooperation, Tekes funds collaborative research and development projects and facilitates researcher mobility.

### **Service innovation development by the Strategic Centres for Science, Technology and Innovation**

Strategic Centres for Science, Technology and Innovation have several applied research programmes developing innovative services and new service based business models. The most important ones are presented in the following sections.

#### **Future Industrial Services**

Finnish Metals and Engineering Competence Cluster has launched a five-year (2010–2015) national research – and development program under the name FutIS (Future Industrial Services). The purpose of the program is to ensure the competitiveness, and therefore long-term prospects, of the metals and engineering industry in Finland.

The goal is to help the metals and engineering industry to switch focus from goods- and production-centric business models to service-centric business models.

The national project, with EUR 39.3 million in research- and development funds, was launched in February 2011.

#### **Efficient Energy Use (EFEU) research program**

The Strategic Centre for Science, Technology and Innovation (SHOK) in Energy and Environment CLEEN Ltd has started a new research program on efficient energy use. The objective of the EFEU program is to produce methods, tools, technologies and service concepts that enable a stepwise improvement of energy efficiency as compared to that what gradually developing technologies would have otherwise to offer. A systematic and methodological approach in measuring, analysing and optimising energy efficiency will be utilised in the research. The volume of the five year program will be 12 million Euros and it will be carried out by a wide group of companies and research institutions.

#### **The Centre of Expertise Programme**

The Centre of Expertise Programme (OSKE) is a fixed term special government programme aimed at focussing regional resources and activities on development areas of key national importance. The programme promotes the utilisation of the highest international standard of knowledge and expertise that exists in the different regions. The operations model of the programme was reformed for the term 2007–2013 as a cluster-based model, the overriding objective of which is to increase regional specialisation and to strengthen cooperation between centres of expertise. The National Programme involves 13 national Clusters of Expertise and 21 regional Centres of Expertise. The Centre of Expertise Programme is expected to:

- generate new innovations, products, services, businesses and jobs based on top-level expertise
- support specialisation and division of tasks between regions to form internationally competitive centres of expertise
- increase the capacity of regional innovation environments to attract internationally active businesses, investment and top professionals

Pivotal cooperation parties include companies, universities, institutes of higher education, research institutes, technology centres and various sources of finance (cities, municipalities, regional councils, Employment and Economic Development Centres, especially their technology divisions and county administration boards).



At present this programme is under review and some changes in the concept are expected starting from the year 2013<sup>6</sup>.

## **Tekes programmes promoting service innovations**

### **Serve – Pioneers of Service Business 2006–2013**

The Serve – Pioneers of Service Business programme encourages Finnish companies to become global forerunners in the customer-centric, knowledge-based service business. Serve aims at the creation of new knowledge in service innovation and encouraging the development of innovative and internationally competitive service concepts in companies by challenging traditional ways of doing things both at the strategic and the operational level.

Internal mid-term evaluation of the Serve programme was published in 2008 two years after the programme started. In this case internal evaluation was seen appropriate because the novel programme had been operating only for such a very limited time. Overall, the outcomes of Serve programme were perceived positive and the programme period was extended from 2010 until 2013. However, it is clear that such a novel programme has to face a number of challenges. Internally Tekes had to develop new capabilities and funding criteria that allow effective operation of the programme. Tekes also had to find new customers and targets for funding because service innovations are developed across the industries, often by organisations that did not have any previous contact with Tekes. Take up of the Serve programme has been good among the businesses and within the research community. Service innovation research has clearly become more active in Finland and businesses have engaged in more systematic new service development activities. Serve programme has clearly improved internal capabilities of Tekes and widened its knowledge base in line with its strategy beyond technology development. Serve programme has also contributed service innovation related policy development in Finland and it is internationally recognised as one of the leading actors in this policy area. Impacts of the Serve programme in terms of job and business creation, or business growth are not addressed in the midterm evaluation. This is due to the limited two year period of analysis (Suutari and Järvelin, 2008).

### **Tourism and Leisure Services 2006–2012**

The Tourism and Leisure Services programme encourages R&D activities by companies producing leisure services. Development focuses on new service concepts, new ways of producing services and the creation of new spatial concepts, such as those utilising virtual technology. The central aim of the programme is to develop innovative, customer-oriented service concepts. The programme concentrates on the development of tourism, sports, well-being and cultural services.

### **Spaces and Places 2008–2012**

The Spaces and Places programme seeks answers to questions like: What kinds of premises yield the best results? What kind of environment would best promote learning or working? What would a shop that combined virtual, physical and social spaces and places be like? The target group of the programme includes service sector players, information and communication technology companies and the construction and real estate industry. The programme encourages the participants to cooperate across sector boundaries.

### **Innovations in social and healthcare services 2008–2015**

Based on its vision, the programme will renew health and social services and increase business opportunities through innovative activities. The goals of the Innovations in social and healthcare services programme (2012–2015) are:

- effective, customer-oriented health and social services
- more extensive preventive actions
- diversified partnership and cooperation.

### **Learning Solutions 2011–2015**

Tekes launched Learning Solutions programme in February 2011. The objective of the programme is to develop internationally important learning solutions in cooperation with participants in the sector, to develop new operating approaches, create new skills and develop products, services and comprehensive packages for international markets. Learning Solutions will be implemented from 2011 to 2015 and its estimated budget is EUR 52 million, of which Tekes' share is EUR 30 million.

<sup>6</sup> The Centre of Expertise Programme, <http://www.oske.net/en/oske/>

### **Tekes industry and SME activation initiatives**

In addition to programme based work Tekes is running a number of more limited initiative promoting innovation activities under various different themes. Such themes include: innovative public procurements, finance industry activation, industrial renewal, design knowledge development, logistics development, media business development, and market driven mobile services initiative.

### **BestServ Forum (2005–11)**

BestServ Forum was Tekes funded research and development forum for industrial service business. The foundations of the forum are in BestServ-prestudy concerning the opportunities of service business for Finnish industry. 30 leading Finnish industrial enterprises participate in the Forum among Technology Industries of Finland and VTT Technical Research Centre of Finland. The main objectives of BestServ Forum are to exchange experiences, cases and knowledge in service innovation related issues. The forum also had a role in activating and directing research and development activities in service business context.

### **European Regional Development Fund and Social Fund**

European funds have financed several service innovation projects in Finland. The EU participates in the development of Finnish regions with five programmes financed with resources from the European Regional Development Fund. The Fund supports projects that develop businesses, the creation of innovations, networking, knowledge, and the accessibility of areas. Along with financing from the ESF programme, financing from the ERDF programmes is used for the promotion of competitiveness and employment. The European Regional Development Fund funds innovation systems that support the development of ideas and products and international networks. They are used, for example, to disseminate know-how and productise the best ideas. The European Social Fund supports e.g. the provision of education that responds to the needs of working life and the acceleration of the transition to working life following studies.

## **C. Key demand-side policies promoting service innovation**

Demand and user-driven innovation concepts are in many ways closely linked with service innovation. They focus on understanding the user and customer needs thoroughly and designing services and products based on this knowledge. Also the importance of user innovations (business users, consumers and user communities) and their commercialisation is recognised in the Finnish innovation policy. Point of departure is often the end user or customer and the context where the end user consumes the service. By emphasising demand it is about solutions that are by nature close to services and not only about technology or products.

Also in the innovation policy context these two domains share many common features. Demand- and user-driven innovation policy in Finland is developing new forms of support, taking advantage of public procurement, and focusing on demand and competition are the ways to promote innovation in services. Regulation instruments must be tuned to make them favourable to services and entrepreneurship. As demand is the major incentive for companies to produce services and products, the aim of demand and user driven innovation policy is to learn to use demand in a more active way; to create new incentives for incentives.

As part of the implementation of Finland's national innovation strategy, the Ministry of Employment and the Economy has outlined an action plan and policy framework laying down the key elements of a demand and user-driven innovation policy. The action plan running through the years 2010–2013 covers the action points that promote policy implementation in the private and public sectors. The Ministry is implementing the action plan in cooperation with several other ministries and a broad range of stakeholders, such as Tekes, VTT, the National Consumer Research Centre and Forum Virium Helsinki.

### **The key rationale behind user-driven innovation policy**

In addition to scientific and technological development, broad-based innovation policy also pays attention to growing role of other sources of knowledge and innovations. This



point of view is increasingly important bearing in mind demand and user-orientation and the broadening of innovation activity in the society.

User-driven innovation makes use of information on customers, user communities and customer companies. It engages users as active participants in innovation activity. The key aspect of user-driven innovation is information on user needs, whether these needs are already identified, still hidden or potentially emerging. Information and communication technology in particular, offers various new opportunities and means of acquiring information on users and engaging them in innovation. The aim of user-driven innovation policy is to raise market actors' awareness of new innovation tools. It also seeks to create a social infrastructure supporting user-driven innovation while removing obstacles to and boosting incentives for innovation activity.

#### **Indicator development for user innovation activities by consumers and business users**

User innovation activities have been recognised as an important source of innovations. However, there is very limited evidence on user innovation activities. This lack of information can be traced back to insufficient statistics and lack of indicators describing user innovation activities. To address this institutional failure to recognise an important source of innovations Statistics Finland is conducting a pilot of user innovation measurement in connection with the CIS survey in Finland. In this pilot indicators are being developed for the activities businesses have in the areas of: a) user needs analysis and utilization of user information, b) engagement with users as an innovation resource and, c) utilization of innovations developed by users. The results of this pilot survey will be published during the second half of 2012. Ministry of Employment and Economy, Tekes, University of Vaasa, MIT, University of Rotterdam and UN University of MERIT are engaged in joint project where indicators are developed for user innovations by consumers. This pioneering work will create a) indicators for measuring consumer innovation activity, b) indicators for measuring diffusion of consumer innovations, and c) internationally comparable knowledge on consumer innovation activities in Finland.

#### **World Design Capital Helsinki 2012 project**

Design as a broad concept represents an important element in user-driven innovation and it is also part of the Finnish innovation policy programme. In order to boost the role of design as a source of user-driven innovations major projects have been set up around the topic. One of them is World Design Capital Helsinki 2012 is a joint venture of five neighbouring cities: Helsinki (595 000 inhabitants), Espoo (252 000 inhabitants), Vantaa (203 000 inhabitants), Kauniainen (8 700 inhabitants) and Lahti (102 000 inhabitants). Together these cities form the metropolitan area with over a million inhabitants.

The project has several other stakeholders include the Ministry of Employment and the Economy and the Ministry of Education and Culture. Besides these also other ministries, The Finnish Innovation Fund (Sitra) and The Finnish Funding Agency for Technology and Innovation (Tekes) are involved. Other partners include 20 leading businesses, universities and several design organisations. The project emphasised openness, continuity, collaboration and the social dimensions of design<sup>7</sup>.

#### **Open public data as a driver of service innovation**

Public administration has accumulated large data sets which can be accessed very cost effectively via internet. Opening and free use of such data are supported by several international examples and social discussion. The importance of the availability of public data in connection with productivity, competitiveness, and well-being has been recognised in Finland<sup>8</sup>. In March 2011, the Finnish Government accepted a principle where data sets have to be openly available for everyone to reuse and marked with uniform and clear terms of use. Data transfers are viewed in light of their over-all benefits to national economy, which, as a principal rule, means non-chargeability. In its directive of the re-use of public sector data the European Union Commission has stated that the Member States need to take action to improve the utilisation of public data (European Parliament, 2003). Ministry of Transport and Communications in Finland has published a road map to utilization of open public data (Poikola, Kola and Hintikka, 2010). At present open access to public data is progressing in Finland on various fronts. One of the most recent developments is the

<sup>7</sup> World Design Capital 2012, <http://wdchelsinki2012.fi/>

<sup>8</sup> The importance of PSI lies especially in its economic value. PSI is difficult to measure. However, the MEPSIR study (2006) has concluded that estimates for the overall market size for PSI in the EU range from EUR 10 to EUR 48 billion, with a mean value around EUR 27 billion. This amounts to 0.25% of the total aggregated GDP for the EU (EUR 10.730 billion). [http://ec.europa.eu/information\\_society/policy/psi/what\\_is\\_psi/index\\_en.htm](http://ec.europa.eu/information_society/policy/psi/what_is_psi/index_en.htm)



decisions to open location based public information on the 1st of May in Finland. International examples show that this will be a major booster for innovative services development.

### **Demand driven innovation policy seeks to create an innovation friendly market**

Open markets and effective competition are general prerequisites of innovation. Growing demand provides a key stimulus to the development of new products, services and solutions. In innovation-friendly markets, market actors are knowledgeable, responsible and demanding, but also eager to experiment. Demand driven innovation policy aims at improving the innovation-friendliness of the market. The demand for innovations can be influenced with tools such as regulation, public procurement and standardisation. Demand driven innovation policy measures can be divided into four main areas that are: *competence development, development of incentives, infrastructure improvements and regulatory reform.*

*Competence development* can take place with the help of foresights, market trends analysis and with the creation of lead markets, just to name some options. For instance, widely communicated foresight results can raise awareness and stimulate innovation friendly demand. Research can enhance competencies related to demand driven innovations, and it can also help us to meet major societal challenges. Education and capabilities needed in practical operations are also important elements of demand driven innovation policy. They can be used to improve competences in public procurement, increase consumer awareness of the benefits of innovations, and for the more efficient utilisation of standards.

*Incentives stimulating demand for innovations* can be enhanced using financing incentives, including taxation, and funding for demand driven research, development and innovation activity. Here, the public sector can set an example to other market actors by acting as a pioneer in, for instance, meeting societal challenges, such as climate change. Related measures include the development of new operating models and test environments, and incentives favouring the public procurement of innovations.

*Infrastructure improvements* are often necessary for demand driven innovations. Hence, also the policy often comprises of many different types of policies. In addition to broad-based policy approach, predictability of innovation-related decision-making and consistency of public sector measures is

important. Cooperation between the public and private sectors through the Public Private Partnership (PPP) enables the utilisation of new, innovative operating models, for example, in the development of public services and their productivity.

*Regulatory reform* can be an important driver of demand for innovations. It is therefore important to take account the impacts of regulatory changes on innovations and the development of innovative markets. For instance, setting challenging targets for market actors can yield better outcomes than detailed regulations. Various softer forms of steering exist as well such as recommendations and labelling which can be deployed to enable well-informed consumer choices and influence consumption. *Standards* which create markets and stimulate innovation also help achieve the objectives of demand-driven innovation policy. Competition and effective markets play an important role, since they can stimulate innovation activity as well as the diffusion of innovations.

### **Some policy initiative supporting demand-driven service innovations**

#### **Innovative public procurement**

Innovative public procurement is an important part of demand-driven innovation policy. Characteristic for this new procurement is a dialogue between all parties involved and that the procurement is formulated around the goals that the public sector wants to achieve by the services. Traditionally the main focus in public procurement has been on the legal dimensions of the contract formulation and on the strict definitions of the procured service. This has not left much room or incentives to the producers to innovate services. The new target/goal based procurement demands that the whole procurement process is planned in a new way.

It is vitally important that the public servants learn to focus on the outcomes of the service rather than to the formal process. It is a fact that the traditional procurement puts emphasis too much on formulating the mere content and formal requirements of the service. In the new type of procurement more weight is placed to defining goals and targets that the service is aimed to accomplish. By focusing on the outcomes of the service the scope of the possible solutions and activity is easily widened to include also market actors and different agencies of the local authority. Goal and outcome based thinking opens more avenues for new innovative solutions and services.



In terms of institutional and market failures, there may be demand for pending new solutions in the market, for example in the prototype phase, but lack of trust in the performance or functioning of the new solution forms a bottleneck for market access. A public authority may act as the lead user and offer a test environment for finishing a new solution, completing its functional testing and proving its performance. Catalytic procurements of this type aim to reduce market risk for companies and speed up market access. Unlike pre-commercial procurements, a catalytic procurement mainly involves a (nearly) finished product or service.

Tekes provides funds for the planning of public contracts aiming at renewal of services and activities. This funding is targeted at all Contracting Authorities, and it typically covers 50% of total project costs.

### **Domestic help credit initiative**

Domestic help credit initiative seeks to create more supportive market conditions for innovative service development. It has been successful tax incentive in terms of take-up by consumers, new service enterprise creation and growth. It has also encouraged entrepreneurs to exit informal economic activities and become a legalised enterprise. These tax credits are granted to households for using domestic help or for buying domestic services or work. The aim is to encourage households to employ someone to work for them (Tax Administration, 2007). The government budget for the year 2009, expanded the credit up to 3.000 Euros per person and also the scope of the credit has been expanded as a result of the success of the measure (Ministry of Finance, 2008). Since the beginning of 2012 the credit per person was cut to 2000 Euros per year (Tax Administration, 2007). In 2006, the tax credit scheme had some 243,000 users, with the total deduction granted amounting to €165 million. In 2007, about 8%–9% of households used this system. It is estimated that, in 2010, the proportion of users will increase to 10% of all households. Impacts of the scheme are quite significant. With the assistance of the tax credit scheme, the majority of previously undeclared work has shifted into the legal sphere. According to the entrepreneurs' own estimate, the proportion of undeclared work has decreased from about 60% to 25% of household servic-

es. The level of undeclared work has diminished particularly in the area of renovation work, where a high proportion of such workers were employed both on an informal and legal basis prior to the introduction of the domestic help credit scheme. Another significant benefit of the scheme is that it has activated a new type of demand for household services worth hundreds of millions of euro, having initiated a whole new service market, at least in terms of cleaning services (Ministry of Finance, 2007; Eurofound, 2010).

### **Internationalization of services**

Designed to promote the development of service activities, the Industrial Services project was launched by Finpro in the autumn of 2010. Project targets include expanding the role played by industrial services in Finnish manufacturing industry, developing operational models for service businesses and supporting the development and internationalisation of Finnish manufacturing industry's own service operations. The project's target groups are industrial companies that wish to develop their service business operations in international markets. The aim is to develop practical tools for supporting companies as they change from being suppliers of products to suppliers of solutions who operate as their customers' partners. Companies participating in the Industrial Services project receive practical assistance from Finpro in developing their service operations while Finpro collects valuable related experience.

Luovimo is another internationalisation programme for 20 companies in the creative sector. It encourages co-operation between different sectors and companies and supports the international expansion of top-rated companies in concrete ways. Luovimo's leading principle is the development of a concept, product or chargeable service to the point at which it is fully ready for the next stage. Companies selected through the programme's application process operate in the design, film, television, audiovisual, music, performing arts, games and content-production sectors. Luovimo consists of the participants' collective co-creation process and company-focused development programmes in which each company's business activities and its readiness for internationalisation are developed through a tailored consulting programme<sup>9</sup>.

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<sup>9</sup> Finpro, [www.finpro.fi](http://www.finpro.fi)

## D. Policy measures checklist based on EPISIS strategy

The following list seeks to group identified policy measures under the themes of EPISIS-strategy for European service innovation. Some of the policy initiatives reach across the thematic areas, for instance this is the case with the Demand and user-driven Innovation Policy (UDI). Like service innovation promotion UDI policy represents rather a novel approach that is horizontal in nature. It is also rather a heterogeneous policy programme that is not always easy to label under a specific theme. It appears that largest number of policy measures can be placed under the competencies and capabilities development theme. This is perhaps the most traditional area of innovation promotion and as a result there are many well-established policy measures around this topic area. Innovative service and solutions business thematic area includes most of the Tekes programmes and many elements of the UDI policy programme.

### Multi-disciplinary competencies, capabilities and knowledge co-creation

*National approach to service innovation support* in Finland relies heavily on on knowledge and capabilities development. Ministry of Education and Culture, Ministry of Employment and Economy, and Research and Innovation Council are key actors influencing service innovation related competencies, capabilities and knowledge co-creation. On the executive agency level Academy of Finland and Tekes are the main actors.

*Finnish Innovation Strategy* is also targeting service innovation. It promotes the development of new types of incentives and development measures that are targeted at business, management, operating methods, design, creative industries and service and social innovations.

*Demand and user-driven innovation policy framework and action plan* by the Ministry of Employment and the Economy develops knowledge on client insight, service design, co-creation and demand factors as drivers of innovation.

*Tekes* has numerous programmes that are addressing multi-disciplinary competencies, capabilities and knowledge co-creation. Universities, polytechnics and research institutions and businesses can receive funding under these Tekes programmes.

*Academy of Finland* has research programmes supporting basic research that builds knowledge creation on service innovation related issues.

*Strategic Centres of Science, Technology and Innovation* are important Triple Helix actors on cluster level development bringing together leading businesses and researchers. They have dedicated research programmes for service innovation and they emphasize demand factors in research

*World Design Capital Helsinki 2012* project emphasised openness, continuity, collaboration and the social dimensions of design. Design as a broad concept represents an important element in user-driven service innovation and it is also part of the Finnish innovation policy programme.

*European Regional Development Fund and Social Fund* provides resources for regional actors that are developing multi-disciplinary competencies and service innovation related capabilities.

### Innovative service and solutions business

Demand and user-driven innovation policy framework and action plan by the Ministry of Employment and the Economy addresses new types of innovation activities such as open innovation, user innovation, co-creation and other new types of innovation innovation.

*Tekes programmes promoting service innovation: Serve, Tourism and Leisure Services, Spaces and Places, Innovations in social and healthcare services, Learning Solutions, Industry and SME activation initiatives.*

*The Centre of Expertise programme* involves 13 national Clusters of Expertise and 21 regional Centres of Expertise. The programme is expected to:

- generate new innovations, products, services, businesses and jobs based on top-level expertise.

### Dynamic (European) markets

*Demand and user-driven innovation policy framework and action plan* by the Ministry of Employment and the Economy addresses: innovation friendly regulation and labelling, smart standardization, public procurement related innovations, open public sector data, lead market initiatives and indicator development for user innovation activities.

*Tekes* provides funding for public procurement related innovation projects.



Domestic help credit initiative administered by the *Ministry of Finance* has created demand and supply and new markets for home help. The impacts in terms of jobs and enterprise creation are addressed in the previous sections of the report.

Programme/policy	Promotion of service innovation by targeting new types of innovation actors, novel types of innovation activities and innovative business solutions	Promotion of service innovation related competencies and capabilities	Promotion of markets and infrastructure as a driver of service innovation
Finnish Innovation Strategy	✓	✓	✓
Demand and user-driven innovation policy	✓	✓	
Academy of Finland		✓	
Strategic Centres of Science, Technology and Innovation	✓	✓	
European Regional Development Fund and Social Fund	✓	✓	✓
Tekes programmes: Serve and 5 other programmes & initiatives	✓	✓	
Domestic help credit initiative	✓		✓
The Centre of Expertise programme	✓	✓	
World Design Capital 2012	✓	✓	

## E. Future developments and service innovation policy needs

Finnish innovation policy tends to be rather stable in nature and it appears that there will be no radical changes in sight. However, government finances are tight at the moment and this situation may well have an impact also on the innovation promotion budgets.

Some major service industries in Finland, retail trade included, are heavily concentrated. This is not catering well dynamic market conditions as a driver of innovation.

Service innovation promotion in Finland has been built on relatively narrow basis. Service innovation policy is mainly taking place under the Ministry of Employment and the Economy. Tekes works under the ministry as an executive agency. It is relatively well resourced and independent in policy implementation. Tekes is also active in supporting non-te-

chnological innovations. It is funding business R&D&I projects and service innovation related research in universities and other research performers. It is also active in international context promoting the case of service innovation policy. However, Ministry of Education and Culture, Ministry of Social Affairs and Health, Ministry of Transport and Communications, and Ministry of the Environment are key actors that could also make valuable contributions to the service innovation promotion.

Some new initiatives were identified:

- Tax incentive targeting SMEs and their R&D&I activities. The decision of this programme will be made during 2012 (Prime minister's Office, 2011a).
- Venture financing targeting creative businesses and service businesses will be established. Finnvera Ltd. will be in charge of this new fund (Prime minister's Office, 2011a).

- Tekes is preparing a number of new programmes to be launched in the near future. The potential new initiatives include experience and know how based intangible value creation, future working environments, and games development programme. All of these future programmes will include elements supporting service innovation development (Tekes, 2012).

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[http://www.rakenerahastot.fi/rakenerahastot/en/01\\_structural\\_fund\\_activities\\_in\\_finland/02\\_projects/03\\_expertise/index.jsp](http://www.rakenerahastot.fi/rakenerahastot/en/01_structural_fund_activities_in_finland/02_projects/03_expertise/index.jsp)
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## 2.5 Appendix 5. France

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### A. National policy context

Innovation policy in France has until very recently been horizontal in nature, and largely prioritising support in areas such as R&D and commercialisation. This position is most clearly expressed in the current National Research and Innovation Strategy, published in 2010<sup>10</sup>. The context for service innovation policy is, however, changing rapidly in France. This, in part, has resulted from the publication of an influential study of services innovation<sup>11</sup>, outlining the key dimensions of service innovation, alongside recommendations for future policy. The key findings from this report have been developed further and presented as an action plan by the Ministry for the Economy, Industry and Employment's Director General Directorate General for Competitiveness, Industry and Services (DGCI)<sup>12</sup>.

#### Strategy and innovation system level

The National Research and Innovation Strategy represents the primary strategic statement on innovation in France. Published by the Ministry for Higher Education and Research (*Ministère de l'Enseignement supérieur et de la Recherche*) this document sets out a national strategy for innovation underpinned by the recognition that stronger synergies are needed between research and market / societal needs. Key thematic priorities, underpinning by an analysis of underlying challenges, include:

- Healthcare, nutrition and biotechnology
- Environmental urgency and eco-technology
- Information, communication and nanotechnology

This document does not identify services innovation explicitly as a theme, instead focusing on the role of all types of innovation in addressing future economic and societal challenges. Its recognition of the importance of multidisciplinary re-

search and 'enabling' areas suggest themes of relevance of service companies.

While the Ministry for Higher Education and Research is an important actor with respect to higher education and its contribution to innovation and technological development, the Ministry for Economy, Industry and Employment is equally relevant, with responsibility for business innovation and economic development. It has also recently commissioned research to examine policy for services innovation, and has published an Action Plan in Favour of Services Innovation. This Action Plan is based on: three axes and six actions:

*Axis 1: Prioritising, diffusing and developing innovation in services*

- A1. An SME guide to services innovation
- A2. Establish a national service innovation competition

*Axis 2: Mobilising financial support for innovation in services*

- A3. Mobilise the financial support of OSEO
- A4. Launch a new platform for multi-services

*Axis 3: Coordinating actors and assessing the creation of a services innovation cluster*

- A5. Create an innovation in services cluster
- A6. Mobilise public actors in support of services innovation

The Action Plan assigns a prominent role in delivery to a number of key organisations in the French innovation system, and an important coordinating role to the Ministry's DGCI. The Directorate is tasked with promoting competitiveness, growth, and employment in industry and services, covering all types of business ranging from freelance entrepreneurs, up to multinationals.

These organisations include:

#### OSEO<sup>13</sup>

OSEO is of public agency<sup>14</sup> with responsibility for providing funding and assistance to SMEs. It does this through the provision of financial support at all phases of the SME lifecycle (including start-up, buyout-transfer, growth, international devel-

<sup>10</sup> Ministry for Higher Education and Research (2009) National Research and Innovation Strategy. Available at: [http://media.enseignementsup-recherche.gouv.fr/file/S.N.R.I/28/7/SNRI\\_rapport\\_general\\_GBdef\\_158287.pdf](http://media.enseignementsup-recherche.gouv.fr/file/S.N.R.I/28/7/SNRI_rapport_general_GBdef_158287.pdf)

<sup>11</sup> Ernst and Young (2010) Etude sur les dispositifs d'innovation service " De la nécessité de soutenir l'innovation service ". Available at: <http://www.pme.gouv.fr/services/etudes/etude-innovation-service1109.pdf>

<sup>12</sup> Plan d'action en faveur de l'innovation dans les services. Available from: <http://www.economie.gouv.fr/files/259%20DP.pdf>

<sup>13</sup> [www.oseo.fr](http://www.oseo.fr)

<sup>14</sup> Reporting to both the Ministry for Higher Education and Research, and the Ministry for the Economy, Finance and Industry.

opment) and in their R&D and innovation projects. This support covers three areas of activity:

- **Funding for innovative projects:** support to innovative projects, technology transfer, creation of innovative companies, profit-sharing loans, support for recruitment in innovation
- **Funding investments and operating cycle** alongside banks
- **Guaranteeing funding granted** by banks and equity capital investors

OSEO's Strategic Industrial Innovation Support Programme (ISI), for example, grants up to €10 million in funding for collaborative strategic projects involving companies with up to 5,000 employees, and research establishments. Furthermore, soft green loans finance up to 40% of total investment in tangible and intangible assets that integrate environmental protection issues.

OSEO's public funds are primarily targeted at technological projects (indeed non-technological projects are not currently eligible for funding). Despite this OSEO has been active in European policy learning platforms to gather good practices around support for services innovation. In addition to the EPISIS taskforce OSEO has engaged in two Europe INNOVA Knowledge Intensive Services Platform projects – Knowledge Intensive Services in the Planning, Installation, Maintenance and Scrap (KIS-PIMS) for Renewable Energy Productions Systems<sup>15</sup>, and GreenConServe<sup>16</sup> – developing policy for the innovation support system for green service innovators. As part of these projects OSEO has implemented a number of voucher schemes for innovative projects in these areas, although demand from companies has not been as high as expected.

### **ANR (Agence nationale de la recherche)**<sup>17</sup>

The National Agency for Research (ANR) was created in 2005 and provides funding for research and optimisation projects through competitive calls for projects. In 2008 the Agency provided some €650.2 million to consortia of public laboratories and businesses working in six areas: humanities and social sciences, ecosystems and sustainable development, sustainable energy and the environment, biology-health, engineering, processes and security of information and communi-

cation sciences and technologies. Some 240 SMEs participated in these programmes. The Agency also runs the Carnot Institutes programme and contributes to collaborative research projects by Competitiveness Clusters (see section B).

The ANR was created with the aim to spur the French research and innovation system to:

- develop new concepts with the so-called “white programmes” (programmes blancs) the content of which is decided by the scientific community. These are non-thematic calls aimed at giving major impetus to ambitious and internationally competitive projects
- increase research on economic and social priorities through thematic calls for projects
- intensify collaboration between public and private research by promoting collaborative research
- intensify international partnerships.

ANR has, since 2010, introduced specific research calls for services innovation, although this continues to be a limited area of activity.

A number of other relevant agencies are identified in the Action Plan for Services Innovation (although these are not currently addressing services innovation explicitly):

Other actors relevant to innovation and technology support include:

- Regional authorities implement their own innovation strategies support measures. (State-Region contracts), for example, Rhône-Alpes, Bretagne and Languedoc-Roussillon.
- ADEME (*Agence de l'Environnement et de la Maîtrise de l'Energie*) – Environment and Energy Management Agency) fund research projects in the field of energy and environment
- Associations like ANRT (*Association nationale de la recherche et de la technologie – National Association for Research and Technology*) or Carnot Association which encourage research and make links between research entities and enterprises

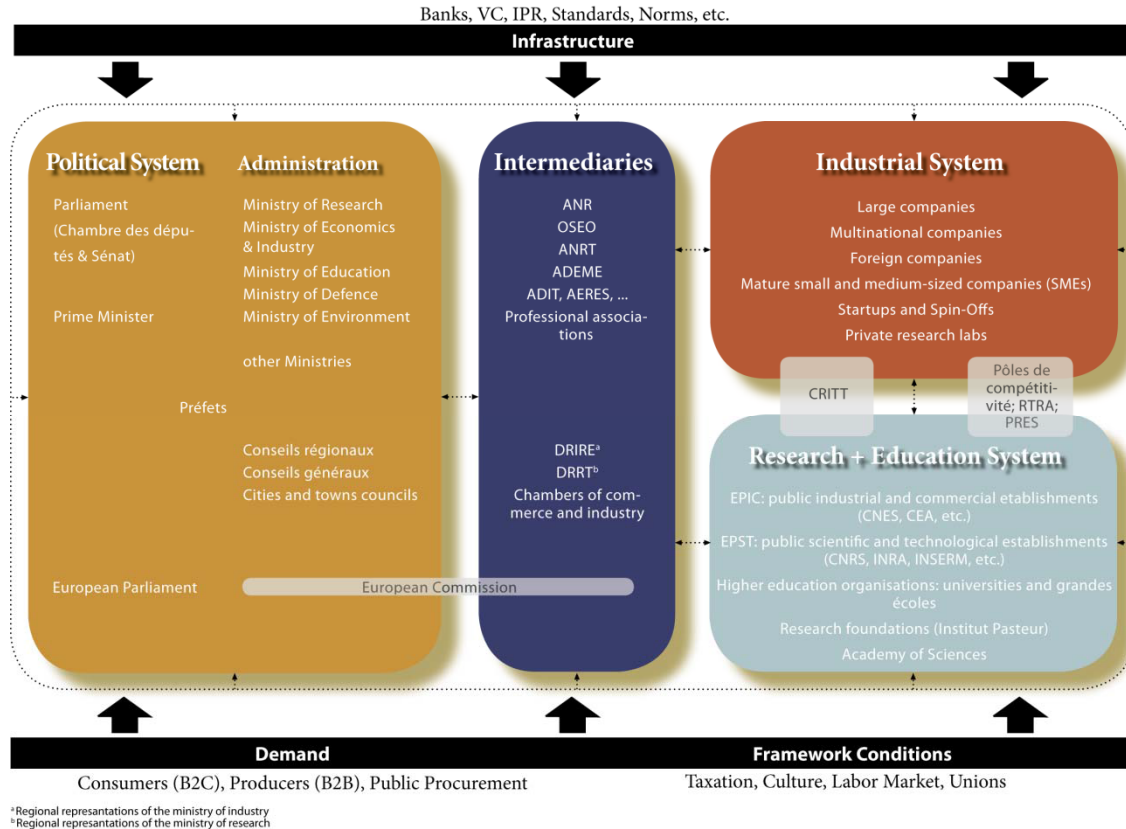
A summary of the wider national innovation policy landscape for innovation in France is set out in figure 1 below.

<sup>15</sup> <http://www.europe-innova.eu/web/guest/innovation-in-services/kis-innovation-platform/kis-pims/about;jsessionid=914D811C648C98A5180C7DFF2815D82B>

<sup>16</sup> <http://www.europe-innova.eu/web/guest/innovation-in-services/kis-innovation-platform/greenconserve/about>

<sup>17</sup> [www.agence-nationale-recherche.fr](http://www.agence-nationale-recherche.fr)

Figure 1. The French innovation policy landscape.



### Key service industries in the country

The French services sector has grown significantly in the past decade and now accounts for 80% of total Gross Domestic Product (GDP), equivalent to €1,704 billion<sup>18</sup>. The sector also employs some 19.3 million people<sup>19</sup>.

The most important services sectors in France according to their contribution to value added (at current prices) are<sup>20</sup>:

- Finance, Insurance, Real Estate and Business Services – €598.9 billion

- Community, Social and Personal Services – €433.2 billion
- Wholesale and Retail Trade – Restaurants and Hotels – €214.5 billion
- Transport, Storage and Communication – €112.3.

In relation to innovative activity in services, Business Expenditure on R&D (BERD) has risen steadily and now accounts for 12.5% of all such expenditure (€3 billion) in 2009<sup>21</sup>.

<sup>18</sup> OECD (2009) StatExtracts database

<sup>19</sup> OECD (2009) StatExtracts database

<sup>20</sup> OECD (2008) StatExtracts database

<sup>21</sup> OECD (2007) StatExtracts database



## B. Policies promoting service innovation

To date there has been limited attention given to services innovation policy measures in France. Indeed, while France has implemented measures to support technological innovation (grants and reimbursable loans to finance R&D and innovation projects in SMEs, for instance), less effort has been devoted to non-technological innovation such as organisational innovation, the introduction of ICT, or to the improvement of products with design<sup>22</sup>.

Despite this picture the recent publication of studies and the Ministry of Economy's Action Plan for services innovation suggests that this picture may be changing. The rationale expressed in the Action Plan, for example, indicates the strategic contribution that services play in the French economy. The few measures that have been developed are considered in turn, below:

### Policy and measures supporting SUPPLY of innovative services

Specific measures in support of services innovation include:

#### Competitive Clusters<sup>23</sup>

The Competitiveness Clusters policy was launched in 2005 (and is now in its second phase – 2.0) and is designed to support the strategic governance of clusters, and the provision of finance for projects such as innovation platforms. It also supports the development of cluster ecosystems in areas such as competence management, international development, IPR management, and seeks to encourage greater levels of SME participation in R&D projects.

The Competitiveness Clusters bring together companies, public and private research organisations and training providers to undertake innovative collaborative projects. Each cluster adopts a scientific or sector focus, and sets its own priorities according to its membership focus.

Following an evaluation of the first phase of the programme three objectives have been outlined:

- To strengthen cluster strategic piloting and management through
- To provide clusters with new financing tools (structuring projects)
- To develop the support to new dimensions of the innovation ecosystem (human resources competences, and IPR.

NEKOE<sup>24</sup>, based in Orléans, is the first Competitiveness Cluster to adopt an explicit focus on services innovation. It was launched in 2009 and brings together industry, the university sector and researchers as well as political actors in support of innovation in services. NEKOE's strategy is based upon the need to anticipate future socioeconomic changes that will require services organisation to innovate, and the industrial sector to respond through new services. NEKOE's strategy is to build tools and methods, support innovation projects, and develop new educational programmes.

All NEKOE's activities are based around the principle of ensuring that the user is at the heart of the innovation process. This calls for a deeper understanding of how a business can be most effectively configured around innovative services. In developing solutions for business NEKOE's focus includes both technological transformation, as well as disciplines such as service design and service science. NEKOE believe that there is significant potential to make better connections between these areas, and the practical needs of companies.

*Horizontal (sector neutral) I* policy measures are also available to support innovation in France. These are summarised below, however, the explicit focus on services innovation is not currently evident.

#### R&D Tax Credit<sup>25</sup>

The Research Tax Credit is a key measure to encourage corporate R&D. It does so through the provision of tax incentives,

<sup>22</sup> European Commission (2008) 'INNO-Policy TrendChart – Policy Trends and Appraisal Report FRANCE'. Available from: <http://www.proinno-europe.eu/page/innovation-and-innovation-policy-france>

<sup>23</sup> <http://proinno.intrasoft.be/index.cfm?fuseaction=wiw.measures&page=detail&id=9461>

<sup>24</sup> [http://www.nekoe.fr/page\\_acceuil\\_nekoe.html](http://www.nekoe.fr/page_acceuil_nekoe.html)

<sup>25</sup> [http://erawatch.jrc.ec.europa.eu/erawatch/opencms/information/country\\_pages/fr/supportmeasure/supportmig\\_0011?tab=template&country=fr](http://erawatch.jrc.ec.europa.eu/erawatch/opencms/information/country_pages/fr/supportmeasure/supportmig_0011?tab=template&country=fr)

and is available to all companies, irrespective of their sector or size. Companies are able to register for tax credits through a declaration, enabling them to benefit from tax reductions associated with research-related spending in areas such as R&D personnel, R&D subcontracting, patenting costs, etc. Eligible expenses are mainly associated with the human and technical resources allocated to research and subcontracting. The R&D Tax Credit calculation is based on the volume and increases made in R&D investment. The projected budget for this measure in 2012 will be €2.7 billion.

### **The Strategic Investment Funds (FSI)**

The FSI was established in 2008 and aims to help growing SMEs obtain finance. It was conceived in response to the economic downturn, and provides equity capital in order to obtain a minority stake in companies undertaking industrial projects that are likely to create economic benefits and competitiveness. The aim is to do this through support for innovative and enterprising industrial projects (including specific areas such as biotech). The budget for this measure was €20 million (2009).

### **Technological Platforms<sup>26</sup>**

The Technology Platforms support the public education and training institution provision of innovation and knowledge transfer activities. This seeks to encourage stronger links between the institutions and SMEs through the provision of support services. The Technological Platforms have three main objectives:

- to provide resources and competences of HEI, training institutions but also secondary technical education institutions (professional high schools) and lifelong learning professional training organisms, for the benefit of SMEs
- to create a common space for training and technological services
- to develop of a network gathering various technology transfer structures.

The budget for this measure was €20 million (2002–2006).

### **National Competition for the creation of new technology based firms<sup>27</sup>**

This measure supports the creation of new-technology based firms through an annual competition and support services. The programme seeks to reduce the risks associated with new innovative ventures and provides a supporting process for such projects. In addition to finance the selected companies are able to access tools and support.

The budget for this measure in the 1999 to 2008 period was €257 million.

### **Financial support to foster R&D partnerships between key accounts and SMEs<sup>28</sup>**

This programme supports the creation of R&D partnerships between large companies and SMEs and is funded by OSEO. The main goal of this measure is to foster links between enterprises and open SMEs up to large companies' knowledge and contacts. Support is available for innovation projects led by an SME, which require further commercialisation support (feasibility studies, development, testing...).

### **Technological Development Networks<sup>29</sup>**

The Technological Development Networks are designed to support innovation, technology transfer and technological development in SMEs. The networks operate on a regional basis (typically managed by regional innovation agencies), and comprise key public and private actors and enable SMEs to access services in support of innovation projects. Delivery is undertaken through a network of counsellors who identify innovation networks and provide access to finance from a public or private laboratories, technical centre etc. The budget for this network was €2.6 million in 2006.

### **SME dual innovation projects (RAPID)<sup>30</sup>**

The SME dual innovation project provides funding for industrial research or experimental development projects. These projects are selected on the basis of their potential to offer innovative solutions to military and civil market needs. The grant

<sup>26</sup> <http://proinno.intrasoft.be/index.cfm?fuseaction=wiw.measures&page=detail&id=-1452>

<sup>27</sup> <http://proinno.intrasoft.be/index.cfm?fuseaction=wiw.measures&page=detail&id=8104>

<sup>28</sup> <http://proinno.intrasoft.be/index.cfm?fuseaction=wiw.measures&page=detail&id=9539>

<sup>29</sup> <http://proinno.intrasoft.be/index.cfm?fuseaction=wiw.measures&page=detail&id=5099>

<sup>30</sup> <http://proinno.intrasoft.be/index.cfm?fuseaction=wiw.measures&page=detail&id=9637>

support covers innovation projects carried out by SMEs (and joint projects). It is funded by the General Authority for Armament (DGA) with an annual budget of €10 million for 2009, awarded by the Business Competitiveness Fund.

### Carnot Centres<sup>31</sup>

The Carnot Centre designation scheme was launched in 2006, and was available to existing centres that undertake research with companies and other actors. The designation is available for a four year renewable period to public research bodies such as laboratories, research units etc. A total of 33 Carnot centres (employing 12,000 researchers) have received funding since 2006. The budget for the centres was €62 million in 2007.

### Other

No service innovation policy measures were identified in the other mapping categories of:

- Policies and measures supporting demand for innovative services
- Policies and measures seeking to develop framework conditions and infrastructure for services innovation.

## C. Checklist of policy measures

The table below summarises the policies identified in the previous sections under the areas of the EPISIS-strategy.

**Table 1. Programme relevance to the thematic areas of the EPISIS-strategy.**

Programme/policy	Promotion of service innovation by targeting new types of innovation actors, novel types of innovation activities and innovative business solutions	Promotion of service innovation related competencies and capabilities	Promotion of markets and infrastructure as a driver of service innovation
The NEKOE Competitiveness Cluster	✓	✓	✓
R&D Tax Credit	✓	✓	
Strategic Investment Funds	✓		
Technological Platforms	✓		
National competition for the creation of new technology-based firms	✓		
Financial support to foster R&D partnerships	✓	✓	
SME dual innovation projects	✓	✓	
Carnot Centres	✓	✓	

<sup>31</sup> <http://proinno.intrasoft.be/index.cfm?fuseaction=wiv.measures&page=detail&id=-203&CO=5>

## D. Future Developments and Service Innovation Policy Needs

The publication of an Action Plan for services innovation, described in section A of this report, indicates the start of a new approach to services innovation in France. This Action Plan outlines axes and actions relevant to many of the key actors noted in section A and B, including OSEO, ANR and the FSI. This is likely to see the development of existing activities in support of services innovation, as well as the targeting of new measures towards services innovation.

The main gaps identified in the Action Plan relate to the limited understanding and awareness of services innovation, as well as the limited support available for services innovation in policy measures. In this respect while innovation has received increasing prioritisation in France in recent years this has largely produced measures supporting 'technological' innovation. As a consequence there are likely to be 'cultural' challenges in reorienting actors and existing supports towards services innovation.

Other challenges include the need to promote better inter-disciplinary activity in support of services innovation. In this respect there are greater opportunities to focus research and development activities in support of services innovation projects.

Building better indicators of services innovation is a further area for action. Here, the existing metrics do not adequately reflect services innovation. This will be important if France is to measure the impacts of the new Action Plan.

## 2.6 Appendix 6. Germany

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### A. National Policy Context

The German research landscape is highly diverse and complex in structure (see fig 1 & 2). Despite varying regional interests, Germany has created a research and innovation system via co-operation between the Federal Government and the Länder governments, that is effective and efficient – also from an overall national perspective.

In Germany there are several ministries with different priorities in charge of promoting “services”. To get a short overview, we will simplify at this point the responsibilities of the ministries: The German Federal Ministry of Education and Research (BMBF) is in charge of service research, the German Ministry of Economics and Technology (BMWi) is roughly spoken responsible for innovation and development in differ-

ent sectors of the economy, including the service sector, and the German Ministry of Labour and Social Affairs (BMAS) is in charge of all aspects of labour and working conditions in regard to services. As the borders of research, development and innovation are sweeping the need of coordination is high. Furthermore due to the blurring of borders and viewed by an external perspective, it is evident that in some cases, research is funded as innovation and innovation is funded as research or development.

The main drivers of publicly funded service research in Germany have been the Federal Ministry for Education and Research and the corresponding project management agency “Arbeitsgestaltung und Dienstleistungen” (i.e. “Work Design”). They have started their activities in the mid 1990’s under the umbrella “Services for the 21st Century”. Until then, there has been no funded institutional service research (e.g. service research centres and university chairs) and only a very few service research projects – mainly in the context of human resource management and quality management – in Germany.

**Figure 1. German policy actors addressing service innovation.**

Policy Level	Policy Actors	Service Innovation Policy Focus
Federal	<ul style="list-style-type: none"> <li>■ Federal Ministry for Education and Research (BMBF)</li> </ul>	<ul style="list-style-type: none"> <li>■ Service Research</li> </ul>
	<ul style="list-style-type: none"> <li>■ Federal Ministry for Economics and Technology (BMBF)</li> </ul>	<ul style="list-style-type: none"> <li>■ Federal support of economic development</li> <li>■ Structural service economy issues</li> </ul>
States (Länder)	<ul style="list-style-type: none"> <li>■ Ministry of Economic Affairs, Baden Württemberg</li> <li>■ Ministry of Economic Affairs, North Rhine-Westphalia</li> <li>■ Ministry of Economic Affairs, Saxony</li> </ul>	<ul style="list-style-type: none"> <li>■ State/Länder support of economic development</li> <li>■ Transfer from research into practice</li> <li>■ Research infrastructure improvement</li> </ul>
Regional	<ul style="list-style-type: none"> <li>■ Regional, municipal and local authorities</li> <li>■ Trade and professional associations</li> </ul>	<ul style="list-style-type: none"> <li>■ Support of innovation cluster development</li> <li>■ Support of regional development</li> <li>■ Infrastructure improvement</li> </ul>



Figure 3. Areas of the "Forschungsunion".



international attention and broad support from the scientific community as well as from the private sector.

The growing importance of the service sector makes the process of Tertiariation seem to be inevitable. Nonetheless, the right approach to dealing with this trend is essential in order to assure Germany's role as a global economic leader. The Federal Government is aware of the significance of services for innovation and has taken this into consideration by establishing services as a specific field of innovation within the "High-Tech Strategy for Germany". The new and updated High-Tech Strategy launched in 2010 is continuing this policy. It is entitled: "Ideas. Innovation. Prosperity. High-Tech Strategy 2020 for Germany".

At the Federal policy level the leading policy actors who are responsible for service innovations are the **Federal Ministry of Education and Research (BMBF)** and the **Federal Ministry of Economics and Technology (BMWi)**.

The **Federal Ministry of Education and Research** has pursued its own service research programme since several years and was focusing on Productivity in Services, Professionalization of Service Work, Technology and Services and People related Services over recent years. In March 2006, the service research programme "Innovation with services" was launched by the Federal Ministry of Education and Research. It has a budget of € 70 million and a planned duration of 5 years.

The main topics of the programme are (BMBF 2006b):

- Innovation management for services- Service Productivity (development of methods and tools, technology design for successful service innovations)
- Innovation in growth sectors of the German economy (business services, services for elderly people)
- Human resource management in service companies (work design, "Dienstleistungsfacharbeit", i.e. skilled service work)

A special focus of the programme is transfer activities. One important goal of the programme is to implement the research findings into practice. Moreover, the programme is designed as a "learning programme", i.e. upcoming calls for proposals will reflect the results of current projects as well as general trends in the service sector.

Service research is an established part of public research and innovation policy and is making a distinct contribution to increase the competitiveness of companies and to bring ahead specific service research. The important role of services in innovation is further emphasised by the fact that service research is part of the Federal Government's 2006 "High-Tech Strategy" and continues to play an important role in the High-Tech Strategy, which was extended in 2010. The explicit consideration of services also reflects the nature of services. By now, they have become a systematic component of any kind of economic activity.

When the focus shifts towards customer utility and a solution orientation, it no longer makes sense to distinguish between product and service. Since services and service research are agents of innovation and a driving force in it, it was therefore sensible to include them as part of the High-Tech Strategy. In the context of this line of reasoning, services are viewed as mediators and connectors between company, technology, market and customer. It is often only through them, a focus on solutions and utility becomes practicable.

Beside that ongoing program "Innovation with Services" the ministry developed an Action Plan "Services 2020" along the High-Tech Strategy of the BMBF. The plan contributed to defining the contents of the programme "Innovation with Services" in the area of services and technology. This was the start to combine service research with technology-oriented technical programmes of the Federal Ministry of Education and Research (BMBF). The "Action Plan DL 2020" consistently implements the recommendations of the Research Union of the High-Tech Strategy of the Federal Government and makes close ties between technological innovation and services the focus of research funding. During the implementation of the Action Plan, the focus is on those fields having a particularly strong connection to services and that, combined with service research, have the potential to provide answers to pressing societal questions. The "Action Plan DL 2020" provides a framework for these aspects of research funding. Funding guidelines have already been developed jointly with other BMBF departments.

Examples include the areas of healthcare regions, mobility, and assistance in the context of demographic change. The fact that the research proposals were focussed more closely on markets and people and thus were more likely to deliver practical solutions and business models suitable for the market, illustrates the effectiveness of this approach. The farthest-reaching experience with the implementation of the Action Plan lies in the connection between the fields of service and energy research: The accompanying, scientific research of the BMBF competition "Energy-Efficient City" was conducted by service researchers.

Examples of Pilot Measures in the Action Plan are:

- Energy-efficient city: the goal is to develop innovative and holistic approaches by recognising the key role services play to spur energy efficiency in cities. Joint efforts of services and energy research are bringing in new strategies, busi-

ness models, cooperative structures and solutions for saving energy at the urban level.

- Future health regions: Competition "Health Regions of the Future": the objective is to create new services in process innovation and networking of players in the regions in addition to medical excellence.
- Mobility and assistance in an aging community: An initiative for development of instruments, business models and cooperative structures of assistance systems for older persons on the basis of technologies and services integration.

Apart from this, services are represented as a cross-sectional topic within other research programmes (like in IT research programmes, etc.). Recently the BMBF started to develop a new research program "Research for Manufacturing, Services and Work" that will be expected to be going public this year. The focus will be shifting to technological and social aspects of value creations as well as to standardisation and implementation of ICT in order to deepen and widen out the knowledge of services innovation process. It is supposed to be targeting a more integrative perspective as to strengthen linkages to the "areas of demand" of the "Industry Science Research Alliances".

**The German Federal Ministry of Economics and Technology (BMW i)** has the fundamental task of promoting growth and employment. There is no industry-specific promotion approach and therefore generally all industries are eligible for promotion. The activities of the BMW i relating to services are not embedded in one central division, but the organisational units in the Ministry reflecting various service industries (crafts, trade, tourism, liberal professions, media, energy, etc.) or the corresponding associations. These are complemented by the functions of the Transportation, Health and other departments. The BMW i is in charge of the exportability of German services and has initiated political activities in this area together with the Foreign Trade Chambers. They are considering a high need for research with respect to the organisation of the enterprises and the qualification of the employees.

Research promotion is instituted at the BMW i in various contexts. Within technology programmes, innovations are encouraged along three different funding lines (BMW i, 2001):

- "Innovation"
- "Research cooperation"
- "Technological consulting".



Within the funding line of "Innovation", the BMWi supports young technology businesses in the development of new products, processes and also services. Instruments of this funding line are the programmes "Equity Capital for Small Technology-Based Firms" (BTU), the "ERP Innovation Programme", the "Programme for the Promotion of Research, Development, and Innovation in SMEs" (KMU) and external industrial research facilities. It should be noted that service enterprises are generally not eligible for promotion in the last-mentioned programme.

With the funding line of "Research cooperation", the BMWi supports joint research projects of medium-sized enterprises and research institutes. Funding takes place within the following programmes: "PRO INNO" (promotion of the innovative competence of medium-sized enterprises), "IGF" (joint industrial research of medium-sized enterprises), "ZUTECH" (future technologies for small and medium-sized enterprises) and "INNONET" (promotion of innovative networks). The "ZIM" programme aims to support the power for innovation and the competitiveness of Small and Medium Enterprises, including the trade and the liberal entrepreneurial people in a sustainable way and thus to contribute in the growth of businesses and the securing of employment. Apart from industrial enterprises and research institutes, innovative service enterprises are particularly supported within the PRO INNO programme.

The funding line of "Technological consulting" is intended to encourage the transfer of knowledge in medium-sized enterprises. In this area, predominantly craft-specific subjects are at the focus. In this regard, inter-company vocational education and technology transfer centres have been established all over Germany. Furthermore, there are specific consulting initiatives in the East German states and, in addition, in growth markets abroad, e.g. in Eastern Europe. Contact points for the initiation and realisation of transnational R&D cooperation have been established there.

In addition to these funding lines, the BMWi also focuses on fostering the application of information and communication technologies. For example, projects of applied research and pilot projects are funded on the subjects of "Electronic Business and Legal Processes in Public and Private Services", "Telecooperation and Telework", "Security and Convenience in Online Services", etc. The intention is to encourage the creation of jobs by copycat effects from best-practice examples. Research topics are not at the core of the promotion activity. Projects have been funded in this area with about 70 million € since 1999.

Hence, the innovation activities of the BMWi can be described as having a bottom-up rather than a top-down character. This enables the BMWi to respond to the current requirements of the economy in a flexible way. Accordingly, services research is almost never conducted explicitly but always promoted in conjunction with other industries. An explicit promotion strategy for research in the field of services is not discernible.

Another relevant activity of the BMWi in this context is the operation of an Internet platform ([www.ixpos.de](http://www.ixpos.de)) on which the complete range of German foreign trade funding is presented in an integral view. This portal guides interested entrepreneurs through the large variety of instruments, services and information offered by the individual governmental and semi-governmental actors. Although the portal does not primarily address service enterprises, specific information and funding offers can meanwhile be found for numerous service industries (logistics/construction/tourism, wholesale and retail trade, financial services and crafts).

The Federal Ministry for Economics and Technology is also responsible for the structural aspects of service sector regulation (e.g. "services directive"). In the last years the BMWi targeted particularly topics like Standardization in collaboration with the German Standardization Board (DIN) on national as well as on European Level.

**At the State or *Länder* policy level**, all the economic ministries of Baden-Württemberg (BW), North Rhine-Westphalia (NRW) and Saxonia support concrete measures to foster the service sector. Particularly BW and NRW *Länder* started systematic action programmes in the past to strengthen the service economy. The range of activities reaches from measures to support the regional economic development, via activities to improve the mutual transfer among service economy, politics and service research to smaller support of innovative networks and advanced trainings or skill development measures.

**Finally, there are also activities at the regional policy level.** At least implicitly, these activities aim at strengthening the service economy and at supporting service innovations. Policy actors on the regional level are, above all, regional, municipal, and local authorities as well as regional networks beside trade and professional associations. The activities focus on an improvement of regional structures, on a support of innovation cluster development, and on infrastructure improvement. Against the background of an increasing change of the economic structure (Ruhr area, etc.), these support measures are more and more directed towards services.



## Key Service Industries in Germany

As in all sophisticated economies, there is a trend towards a growing tertiarization also in Germany (see tables below). As shown in studies about the sectoral change, the services sector has developed at different levels with regard to the value creation, employment and productivity.

It is conspicuous that the growing tertiarization does mainly relate to an increase of services close to business support and communication support (Eickelpasch 2011). These studies also show, that knowledge-intensive services have become increasingly important. "The winners of the structural change are the industry-related services". For this segment also the productivity has grown (Eickelpasch, 2011, p. 43). An expert of Eickelpasch's team found out, that the manufacturing industry is an important customer of services and that product related services also become growingly important in connection with new business models. Furthermore high-quality services became more important within industry itself.

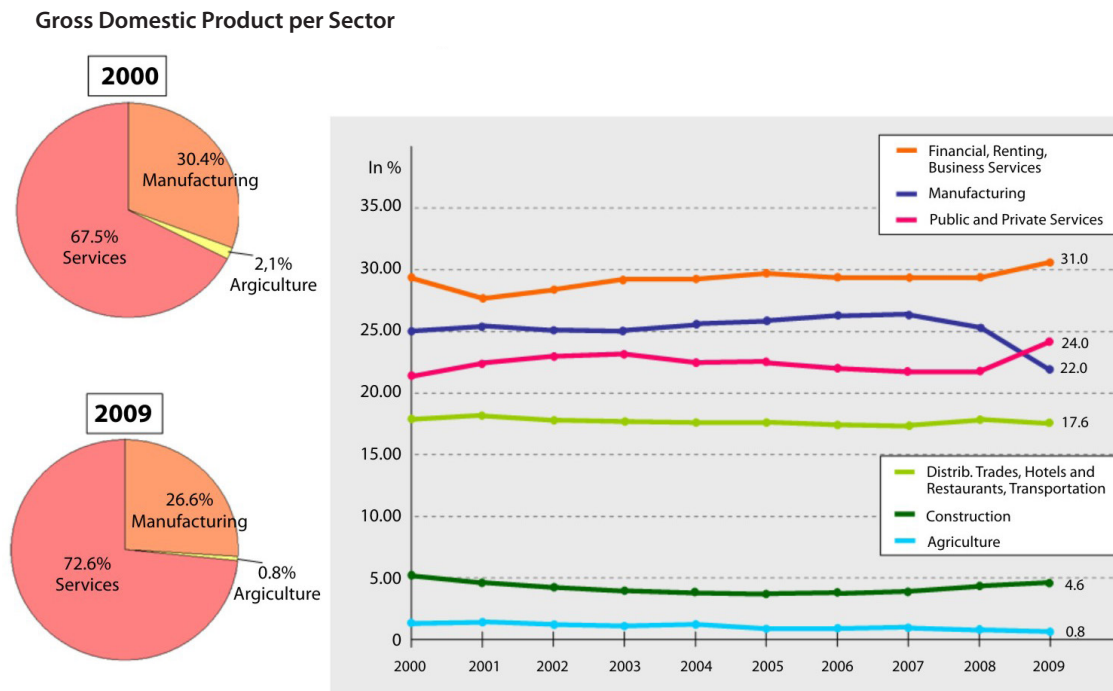
According to the expertise of Eickelpasch, Germany is the second largest exporter of commercial services, behind the

USA and ahead of UK and China. "Technological Services mainly are exported from the big international industrial companies... this once more indicates the close link between industry and services" (Eickelpasch, 2011, p. 44). Even if this expertise is exploring the special link between industry and services for Germany, it should not be underestimated, that also the relations between business-to-business providers of services are highly relevant for economy and employment politics.

Recent studies and estimations confirm that the interplay of industry and services is an essential driver of economic growth in Germany. Thus it is not surprising that research and economic policy reacted by putting this connection on the political agenda, as for example including it in the above mentioned programme "Research for productivity, services and work". In addition also the "areas of demand" of the Industry-Research-Alliance and in particular any consequences of the demographic change, should be considered when defining future research programmes. An important aspect is to emphasize the development of person-related services.

A phenomenon that presently can be observed, is a change on enterprise level in the direction that the impact of

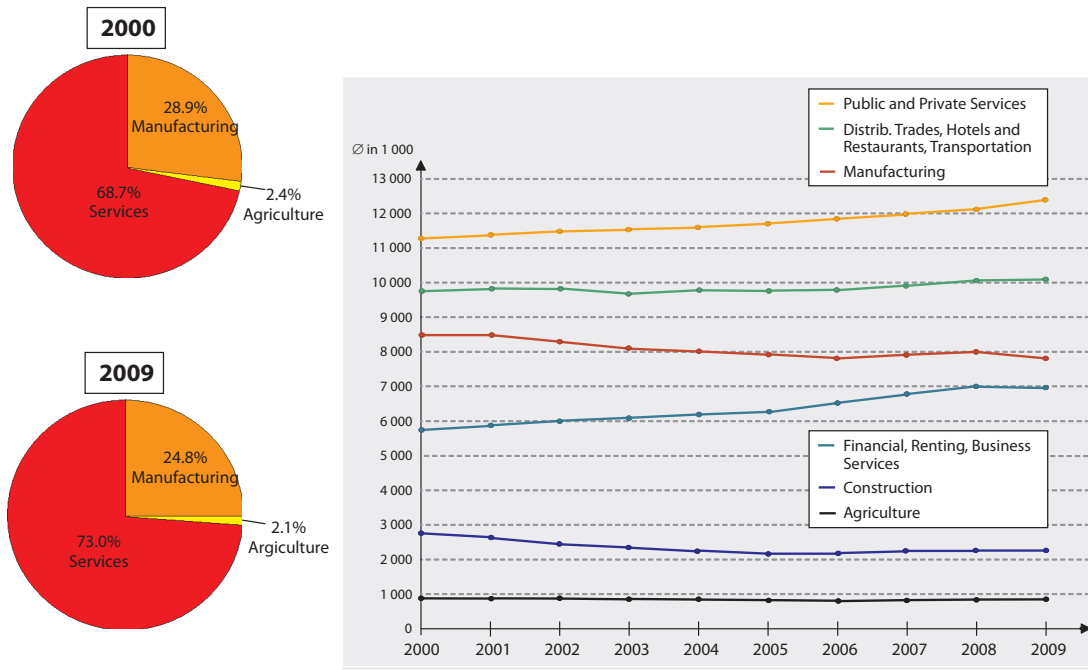
Figure 4. GDP and different Service Industries.



Source: Statistisches Bundesamt

Figure 5. Employment and different Service Industries.

Employment per Sector



Source: Statistisches Bundesamt

services on economic success is growing and that at the same time more investments are done in this area.

This is applicable amongst others for the investment in a systematic development of services (combined with new models of organisation and the usage of methods for organisational development), analogous to the product development, but also related to the usage of Information and Communications Technologies, the usage of new sales channels, the customer interaction or the establishment of innovative service competences for employees.

As explained above the production in Germany still is a very strong economic sector, setting ideas for the business related services. There is some evidence, that this still ongoing high proportion of the production in Germany, possibly is one of the reasons for Germany for having emerged out of the global financial and economic crisis. Against this background it is not surprising, that the German discourse about innovation strategies is determined by a significant role of the production.

## B. Policies Promoting Service Innovation

### Policies and measures supporting Supply of innovative Services

Here we need to point again to the above mentioned activities of the BMBF in the course of the currently running research programme “Innovations with services”. As already mentioned, the BMBF is offering a specific research and development programme in the field of Service Innovations. This programme enabled to build up a research community across various disciplines as well as to establish the Service Engineering as an international known research area. Service Engineering deals with the systematic development of services and tries to combine existing know-how in Engineering with innovative services. With this systematic approach, especially advanced in Germany, there is a chance to explore slumbering opportunities for new employment and to improve the quality of services.

However, it is particularly important to develop a new research programme “Research for productivity, services and work”, which addresses an intensified integration of all three perspectives (production, services and work) and in addition will support the goals of the Science-Industry Cooperation. This includes the further development of the “Action Plan Services 2020”. Those kind of activities will contribute to push innovations in Services through common projects that involve both, research and economy (as done before). An important issue is to involve the development of new competencies of companies and employees to apply new innovative concepts for services.

From the BMBF it is aimed to gain more research departments that include topics of the area of Services in their tenders and thus enforce the horizontal cooperation within the BMBF for new service specific research questions.

The Federal Ministry of Economics and Technology (BMWi) is very active with regard to the support of service innovation (see above). Next to the coordination of the application of the European Services Directive particular focus is on the initiative to explore the need for standardization in the area of Services in cooperation with the German Institute for Standardization (DIN). Furthermore many activities were started in the technical areas that include a strong service component. An example is the – currently ongoing Theseus programme “Internet of things”, that includes the development of IT based product related services in cooperation between research institutes and industrial companies.

In the above mentioned Länder a variety of activities was started to support Service Innovations. Focal areas are the support of local service clusters and networks but also sector specific transfer activities, depending on the individual Länder economic structure. This includes measures for qualification of consultancies working in intermediary organisations as the Chamber of Trade or the Chamber of Industry and Commerce. Additionally support is offered for technical oriented service projects by innovation vouchers.

### **Policies and measures supporting Demand for innovative services**

Political activities and measurements, that support the demand and the need for (new) services can be allocated to the three levels, describes as below.

In this context it is important to mention the initiative of the government, the Industry-Research-Alliance that is sup-

posed to implement and bring forward the High-Tech Strategy 2020 for Germany. In this way impulses can be set for a “demand for innovative services”, furthermore it is an important contribution for the “awareness raising as a driver of demand for innovative services”. As mentioned above it can be seen as a bridge between the areas of demand as well as within them. Services play an important role in coping with societal and economic challenges:

#### **a) Solution instead of product:**

Products are increasingly differentiated through accompanying services and innovative solutions are realised as individualised, “hybrid” forms of output that are tailored to the needs of the customer. Usage-based concepts (such as operator models for example) increasingly replace product-oriented structures with service relationships.

#### **b) Global competition instead of local market:**

The swift development of ICT is increasing the significance of information as a component of solutions – and with that also the possibility of separating services from their place of creation. Because of that, digital services, for example, can be marketed worldwide from one central location.

#### **c) Systemic thinking instead of focus on individual output:**

Instead of “supply” of a product or a service, the focus is shifting to the project-like, joint value creation of the actors involved. The design of the entire system of these actors offers enormous potential but also requires new approaches. Healthcare, traffic and energy supply systems, for example, connect numerous stakeholders using services.

The departments of the BMBF as well as the departments of the BMWi or other ministries will uptake the central idea and integrate it in their research and development projects (see above). Currently at the BMBF there is a new call in development, which connects the idea of e-mobility with the topic Service Innovation. There is a clear view on the need, that there is not only a need for technical solutions but only innovative new service concepts and business models will allow the transformation of mobility. This includes a change of perspective, meaning to use round-trip innovation that combines a top-down approach with a bottom-up approach (linkage of user-driven perspective).

In the different Länder there are, amongst others, competitions for excellent service concepts or new business models, open also for SMEs. The winners are presented media ef-



fectively, which contributes to a higher appreciation of services and their impact on the value chain and employees. Those measurements for transfer enable the Länder to build up new competencies in companies and for employees, finally leading to the ability to design and create new services and to define new efficient service- processes. One example is the transfer programme of the Baden-Württemberg-Stiftung in cooperation with the Ministry of Economics.

In the meantime also intermediary organisations as for example the Friedrich-Ebert or the Hans-Böckler Stiftung or the Union Verdi succeeded in establishing platforms for the discourse and in implementing measurements for qualification for various service sectors as well as in winning more relevant actors. It should be noted that the German Confederation of Skilled Crafts included learning modules about development and improvement of services in the education and training for becoming a business economist of trade.

Caused by international discussion about Service Science progress also was triggered in the academic environment. It was started to create endowed chairs for service related areas or to explore and realize Service Science, as happened for example at the University Karlsruhe in cooperation with a company. Nevertheless it is more important that different scientific disciplines deal constructively with topics of Service Innovation and that a transformation will followed by many chairs of a service-oriented Science, for example in the study of informatics, economics and engineering science. Moreover, also Social Sciences have merged to a community platform 3SR (Social Science Service Research) to face the challenges of structural change.

Adding that also in Germany there was a discussion about how to build up tax incentives in order to push innovations in companies. Furthermore it was explored how far the public sector is possible to stimulate need for services by Public Procurement. However, both subjects lost weight in discussions in recent time.

## C. Checklist of Policy measures

Programme/policy	Promotion of service innovation by targeting new types of innovation activities and innovative business solutions	Promotion of service innovation related competencies and capabilities	Promotion of markets and infrastructure as a driver of service innovation
BMBF-Programme "Innovation with Services"	✓	✓	
Action Plan 2020	✓		
Other BMBF Funding Programmes	✓	✓	
BMWI Funding Programmes	✓	✓	✓
BMWI Regulation & Directives			✓
BMWI KDL Initiative	✓		
Bund-Länder-Kommission			✓
Funding Programmes of the Länder	✓	✓	
Forschungsunion (Industry-Research-Alliance); High-Tech-Strategy (HTS)	✓	✓	
Activities of Intermediaries (ZDH, verd.i, HBS)		✓	

## D. Future Development and Service Innovation Policy Need

It is essential to highlight, that there is a special need for research and action for the following topics that are closely linked to the political discourse of the Industry-Research-Alliance (see chapter A).

Those issues clearly include:

- To focus on the gearing of production, technologies and services as well as to push innovations for business models.
- Further development of the agenda "Action Plan 2020" with focus on the needs of the Industry-Research-Alliance and associated challenges for the development of innovative services.
- The development of innovative person-related services in the context of the socio-demographic change.
- To transport innovations through the design of „good“ services work and the development of new organisational models.
- To explore the need for standardization and protection requirements in the field of Services and to develop measures for Research and Development from users' and providers' perspective.
- To develop concepts that suits for a transfer to SME.

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## Annex 1. Checklist of Policy measures (detailed version)

Policy Measure	Innovation Activities and innovative Business Solutions	Service Innovation related Competencies & Capabilities	Markets & Infrastructure
BMBF-Programme "Innovation with Services"	Joint Research Projects between Industry and Science promoting Service Innovations	Specific calls for Skill Development and Professionalization	
Action Plan 2020	Joint research calls including different BMBF Programs to foster Innovation in Services (i.e. AAL, Health Care, Energy)		
Other BMBF Funding Programmes	i. g. Joint Calls for Product Related Services, Hybrid Solutions; IT 2020 addressing Service Issues, Human-Computer-Interaction	Program Work Design: Specific calls for Skill Development (Open Innovation, Innovation Strategies)	
BMW Funding Programmes	e.g. Theseus (Internet of Things)	e.g. Theseus (Internet of Things)	e.g. Theseus (Internet of Things)
BMW Regulation & Directives			Implementation of the Service Directive; Sectoral Regulations;
BMW KDL Initiative	Activities in Standardization of Services (in Cooperation with the National Standardization Board in Germany)		
Bund-Länder-Kommission			Coordination of Activities (e.g. Service Directive)
Funding Programmes of the Länder	Activities Addressing Specific Service Industries; Innovation Vouchers;	Transfer of Research Results; Service Contest; Activities Addressing Specific Service Industries,	
Forschungsunion (Industry-Research-Alliance); High-Tech-Strategy (HTS)	Shaping Areas of Societal Research Demand; Raising Awareness; Generating Lead Projects (e.g. Industry 4.0)	Shaping Areas of Societal Research Demand; Raising Awareness; Generating Lead Projects (e.g. Industry 4.0)	
Activities of Intermediaries (ZDH, verd.i, HBS)		Promoting Competencies in specific Service Branches and Industries	

## 2.7 Appendix 7. Ireland

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### A. National Policy Context

Services innovation has been identified as an important policy priority in Ireland in recent years. This has been given particular impetus following a number of related studies published by Forfás – the national policy advisory body for science, technology and innovation in the 2006–2008 period. These studies were closely followed by the creation of an Expert Services Group examining services, which reported in 2008. This robust period of policy development has helped to foster an environment in which the development of support for both the services sector and services innovation has been embedded in the work of key economic development agencies.

#### Strategy and the innovation system

Innovation policy in Ireland has responded to the growing focus on services innovation. In this respect while Ireland has not sought to develop its own services innovation strategy per se, the concept of services innovation, alongside product and process innovation has been reflected in key policy statements such as the Department for Job, Enterprise and Innovation's 'Strategy for Science, Technology and Innovation' (2006–2013), 'Building the Smart Economy' (2008)<sup>32</sup>, and the more recent 'Innovation Taskforce' report (2012)<sup>33</sup>. While these strategy documents do not identify the services sector as distinct themes for support, they recognise the multidimensional nature of the innovation process and the relevance of services to both the Irish economy and its innovation prospects.

In responding to this strategic agenda Ireland's development agencies have been particularly active in prioritising services innovation, both with respect to examining the fit of existing supports with service needs as well as the design and development of new services innovation supports (see section B). The key agencies with responsibility for service innovation support include Enterprise Ireland and IDA Ireland are set out below:

**Enterprise Ireland (EI)** is the government agency responsible for the development and promotion of the indigenous business sector. Its mission is to support sustainable economic growth, regional development and secure employment. Support is available in a number of key areas designed to help Irish enterprises start, grow, innovate and win export sales on global markets.

Services innovation has become an important focus to EI work and was given a clear expression in its most recent Corporate Plan<sup>34</sup>. In this period EI has established a dedicated Internationally Traded Services Division to design and deliver support to the sector. It has also undertaken steps to ensure that its Research and Innovation support measures are adapted to the needs of services innovation projects.

**IDA Ireland:** Ireland's inward investment promotion agency is responsible for the attraction and development of foreign investment in Ireland. It is focused on securing investment from new and existing clients in the areas of High End Manufacturing, Global Services (including Financial Services) and Research, Development and Innovation (RDI). In supporting companies looking to invest in Ireland (as well as those already located in Ireland and wishing to develop their activities) IDA Ireland offers a tailored range of support that addresses the specific requirement of individual Clients.

Service innovation represents an important element of IDA Ireland's most recent Corporate Strategy<sup>35</sup>. This highlights the growing focus that it intends to give to services innovation projects as an inward investment target. Within this the 'servitisation' of companies is seen as a driver of new employment opportunities in Ireland. Like Enterprise Ireland, the IDA Ireland has also restructured its activities to respond to the challenge of services innovation, and has developed new support measures accordingly.

Other relevant agencies for services innovation include *SFI Ireland*, which funds scientific research in three broad areas: Biotechnology, Information and communications technology (ICT) and Sustainable energy and energy-efficient technologies. These technologies represent important enabling technologies and provide the basis for successful innovation in a range of different sectors.

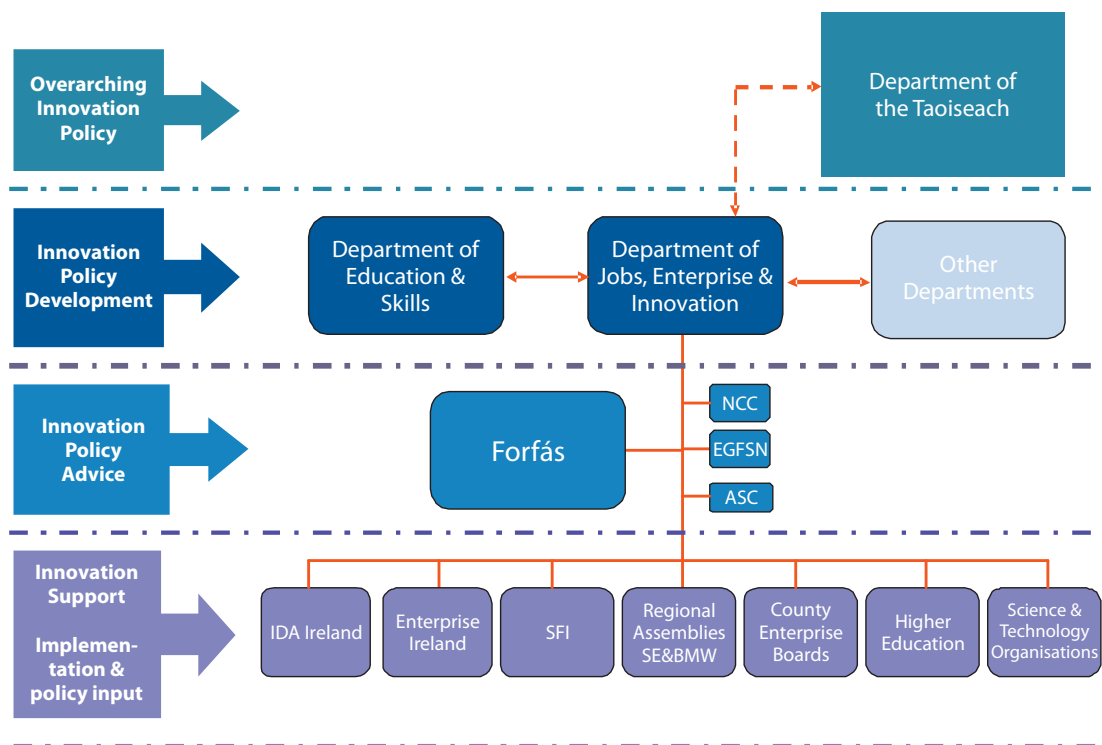
<sup>32</sup> 'Building Ireland's Smart Economy, A Framework for Sustainable Economic Renewal', Available from: [http://www.taoiseach.gov.ie/eng/Building\\_Ireland's\\_Smart\\_Economy/Building\\_Ireland's\\_Smart\\_Economy\\_.pdf](http://www.taoiseach.gov.ie/eng/Building_Ireland's_Smart_Economy/Building_Ireland's_Smart_Economy_.pdf)

<sup>33</sup> [http://www.taoiseach.gov.ie/eng/Innovation\\_Taskforce/Report\\_of\\_the\\_Innovation\\_Taskforce.pdf](http://www.taoiseach.gov.ie/eng/Innovation_Taskforce/Report_of_the_Innovation_Taskforce.pdf)

<sup>34</sup> <http://www.enterprise-ireland.com/en/Publications/Reports-Published-Strategies/Enterprise-Ireland-Corprate-Strategy-2008-2010-eng-.pdf>

<sup>35</sup> <http://www.idaireland.com/news-media/publications/library-publications/ida-ireland-publications/IDA-Ireland-Strategy-2020.pdf>

Figure 1. An overview of the Irish innovation policy landscape.



Services innovation has also been addressed at the *regional* level in Ireland, with the Border Midland and Western Regional Assembly and the Southern and Eastern Regional Assembly participating in an EU study<sup>36</sup> designed to map and develop policy measures in support of Knowledge Intensive Services.

There is general recognition across the innovation policy landscape that services innovation is both an important driver for economic growth development, and an appropriate issue for support. A summary of this policy landscape is provided figure 1 above.

### Key service industries in the country

The Irish services sector has grown significantly in the past decade, and despite the economic downturn, it accounts for

67% of total Gross Value Added (GVA), equivalent to €97 billion<sup>37</sup>. The sector also employs some 1.4 million people<sup>38</sup> in 141 thousand active enterprises<sup>39</sup>.

The most important services sectors in Ireland according to GVA contribution is:

- Wholesale and retail trade; repair of motor vehicles and motorcycles (G) – €15 billion
- Information and communication (J) – €9 billion
- Professional, scientific and technical activities (M) – €7 billion.

In relation to innovative activity in services Business Expenditure on R&D (BERD) has risen steadily and now accounts for 60% of all such expenditure (€1.1 billion) in 2009. In the most recent Community Innovation Survey (2008), however, prod-

<sup>36</sup> <http://www.atlantkis.eu/en/index.php>

<sup>37</sup> OECD (2009) StatExtracts database

<sup>38</sup> OECD (2009) StatExtracts database

<sup>39</sup> CSO Ireland (2009) 'Annual Service Inquiry'.



uct, process and organisational innovation rates were lower in the services sector (40.6%) than on average (52.3% of all companies)<sup>40</sup>.

## B. Policies promoting service innovation

Policy measures in support of services innovation have been an area of growth in recent years, as noted in section A. This formed part of the wider recognition of the importance of services to the Irish economy and the limitations in the existing models of support. The rationale for support was also expressed in relation to the potential strategic benefits of supporting indigenous enterprises to implement services innovation, as well as attracting new and innovative services to Ireland. This focus has seen measures developed and implemented for both services innovation, as well as the refinement of existing innovation measures to better cater for services projects.

Enterprise Ireland and IDA Ireland have taken the lead in responding to the services innovation agenda, but other organisations are also relevant such as the Regional Assemblies, and InterTradelreland. Support measures for each agency are considered in turn below.

### Policy and measures supporting SUPPLY of innovative services

Supply measures represent the main area of activity in support of services innovation in Ireland. These measures are evident at both the national level through Enterprise Ireland and IDA Ireland as well as regionally.

#### Enterprise Ireland services innovation support R&D Fund

The R&D Fund, launched in 2008<sup>41</sup>, is one of the key instruments to support investment in R&D and addresses the target for gross expenditure on R&D to be 2.5% by 2013 – in line with the Lisbon /Barcelona agreements.

The R&D Fund is designed to provide support for research, development and technological innovation relevant at all stages of company development, and which will enable companies to progress from undertaking an initial research project to high level innovation and R&D activity.

Available support under the Fund includes:

- R&D Stimulation grant – for companies to explore a potential project
- R&D Fund – Small projects – this supports product, process or service R&D projects under €150 thousand
- R&D Fund – Larger projects – this supports companies with larger projects up to a maximum of €650 thousand
- Innovative High Potential Start Up (HPSU) Fund – specific funding for HPSU companies comes in the form of equity investment.

The R&D fund is available to all Enterprise Ireland clients. In order to facilitate greater involvement by service industries it has promoted the scheme directly to eligible service companies. This has helped to address the widespread assumption amongst many service companies that the scheme was only available to 'pure' technology companies. As a consequence this has been instrumental in its ability to support a greater number of R&D projects through the Fund. The overall budget for the scheme was €53.2 million in 2010.

#### Competence Centres

Launched in 2007 the €7 million Competence Centre programme is a joint initiative between IDA Ireland and Enterprise Ireland. It was established following the publication of the Strategy for Science Technology and Innovation (2006–2013) and forms part of the policy priority to commercialise technologies through stronger links between business, research and higher education expertise. The Competence Centres are designed as industry led collaborative entities, and comprise teams of highly qualified researchers undertaking market focussed strategic R&D for the benefit of industry.

A total of nine such centres have been launched. Of these the services innovation focus is most clearly expressed in the Innovation Value Institute (IVI)<sup>42</sup> – a consortium of academic institutions, partners and end users. ICT is seen as a central enabler of services innovation and a key mechanism to develop customer interfaces and scale up activities internationally. Key partners include the National University of Ireland, Maynooth, Intel and the Boston Consulting Group. IVI offers members access to leading edge research through an

<sup>40</sup> CSO Ireland (2008) Community Innovation survey database

<sup>41</sup> Following the 2006 'Community Framework for State Aid for Research and Development and Innovation.'

<sup>42</sup> <http://ivi.nuim.ie/>



open innovation model, alongside support to assess ICT investments, and education and training opportunities.

Enterprise Ireland is currently exploring the potential for other centres in service related areas of financial service and e-learning.

### **Going Global Fund**

The Going Global Fund is focused on locally trading companies that have successfully established businesses in Ireland, and wish to internationalise as a route to growth. The fund supports companies up to a maximum of €25 thousand and can assist successful applicants to:

- Evaluate and assess overseas market opportunities,
- Develop plans to localise their current service/product offer for overseas markets,
- Identify suitable channels to international markets,
- Examine possibilities for web-enabling its service offer for export markets and,
- Undertake overseas market research.

While the fund is available to all Enterprise Ireland clients it is seen as particularly important for Irish service companies given their relatively small home market.

### **Innovative Business Models for International Services Companies**

Launched in 2009 the Innovative Business Models programme provides companies with consultancy and workshop support to review their business models and position them to achieve success in international markets. The support is targeted at senior management teams in Irish service sector businesses which are:

1. Internationalising for the first time;
2. Reviewing problems in an existing market; or
3. Opening up new markets

Support is provided through a programme of workshops (2 full days and 2 half days), one-to-one consultancy support and market research and support, and centred on developing a deep understanding of the customer, competition and revenue models in the new market.

In addition to these supports focusing on services innovation Enterprise Ireland also has a number of *horizontal supports* for innovation and technology. These, however, tender to have a strong 'pure' technological focus and have not experienced strong take up from services companies or services innovation projects. Key measures here include:

### **Innovation Partnerships**

The Innovation Partnership scheme (formerly known as the Applied Research Grants Scheme for Universities and the Institutes of Technology) was launched in 2001 to support collaborative applied research with direct industrial and commercial application, between industry and third level colleges.

The programme responds to the limitations in technical capability and industry-specific research organisations that can assist SMEs with their R&D requirements. In this context the role of higher education institutions to provide technical support is important.

The Innovation Partnership scheme is open to academic staff of higher education institutions in collaboration with an Irish-based company, including both manufacturing and internationally traded services. Successful project proposals must demonstrate a clear benefit (jobs and exports) to the participating companies. The programme funds an average of 45 projects per year to a value of €130 thousand to 150 thousand<sup>43</sup>.

### **Innovation Vouchers**

The Enterprise Ireland Innovation Voucher scheme<sup>44</sup> offers companies financial support (up to €5K) to address a business opportunity or problem with support from a Knowledge Provider. This measure is intended to build links between Ireland's public knowledge providers and small businesses and create a cultural shift in the small business community's approach to innovation. The project was launched as a pilot in 2007 and drew on the experiences of the Limburg region in the Netherlands<sup>45</sup>.

There are currently a total of 28 providers in Ireland, including Universities, Institute's of technology and other science and technology organisations. An additional ten

<sup>43</sup> [http://www.sirac.org.uk/web\\_images/documents/Innovation%20PartnershipsTom\\_Bannon.pdf](http://www.sirac.org.uk/web_images/documents/Innovation%20PartnershipsTom_Bannon.pdf)

<sup>44</sup> <https://innovationvouchers.ie/>

<sup>45</sup> [www.proinno-europe.eu/admin/.../Innovation\\_Vouchers\\_IJE.pdf](http://www.proinno-europe.eu/admin/.../Innovation_Vouchers_IJE.pdf)

Knowledge Providers can be accessed in Northern Ireland to facilitate cross-border partnerships. Pooled Innovation Vouchers for up to ten small companies are also allowable under the scheme, with each contributing their €5 thousand Innovation Vouchers to explore a common research project. Co-funded Fast Track vouchers have also recently been launched.

### **IDA Ireland services innovation support**

The IDA Ireland, as noted in the Section A provides support for companies to invest in Ireland, as well as those seeking to develop their activities in Ireland. It has a close relationship with its clients and will respond to identified needs with a tailored package of supports. From this perspective IDA Ireland's clients include both internationally traded services and manufacturing companies.

IDA Ireland's major areas of support for innovation are centred on Research, Development and Innovation funding, as well as joint funding (with Enterprise Ireland) for the Competence centres noted above<sup>46</sup>. While this support is sectorally neutral the IDA Ireland has introduced a small scale project to raise awareness and understanding of services innovation. The *Services Innovation Programme (SIP)*<sup>47</sup> was launched in 2009. It forms part of the IDA Ireland's tailored suite of support aimed at clients already based in Ireland, and provides specialist consultancy support to access:

- Best practice in leading services innovators worldwide.
- Leading Irish-based services innovators.
- Academic research and theory on services innovation.

How the services innovation ecosystem in Ireland works: corporate competencies, research capabilities, government agencies and experts can all be drawn upon in developing services innovation.

This programme is partially grant-supported under the IDA Ireland's training grant scheme (up to a maximum of €100 thousand (60% grant funded), and where appropriate, support may lead on to Feasibility and R&D funding.

### **Regional and inter-regional services innovation support**

#### ***Border, Midland and Western Regional Assembly & South East Regional Assembly KIS portal***

The BMW and S&E Region were both participants in a recent EU Interreg project – Atlant-KIS – designed to identify and maximise the contribution of knowledge intensive services to economic development. Both are now participating in the development of a KIS portal ([www.kis4smes.com](http://www.kis4smes.com)) to provide better access information on KIS providers, as well as opportunities for collaboration with potential partners.

As part of this project the Interreg project the BMW Region has Audited KIS provision in the region<sup>48</sup> and has begun to work with partners to create a national research and innovation hub for the medical technology sector. It draws on the region's specialist research centres and researchers and is intended to provide stronger and more visible access points to specialist services (known as MeTRIC).

*Horizontal measures* for innovation are also evident at the inter-regional level. Here InterTradeIreland is a cross border body established by the Irish and UK governments to support the peace process in the island of Ireland. It has developed a number of relevant horizontal innovation support mechanisms:

#### ***Innova – All-Island Collaborative R&D Programme***<sup>49</sup>

The Innova programme provides support for company to company collaborative R&D projects on a cross-border basis, supported by research institutions where appropriate. These projects are intended support the development of new products or process with commercial potential, as well as developing innovative capabilities amongst partners.

The programme was launched in 2008 and offers companies up to £250 thousand/€285 thousand per partnership to cover staff, equipment, consultancy and operating costs of the innovation project. A total of €11 million was committed over the first two years of the project, supporting 17 North-South collaborative partnerships.

<sup>46</sup> [http://www.idaireland.com/news-media/publications/library-publications/ida-ireland-publications/research\\_innovaton.pdf](http://www.idaireland.com/news-media/publications/library-publications/ida-ireland-publications/research_innovaton.pdf)

<sup>47</sup> <http://www.advancedorganisation.com/images/IDABriefing.pdf>

<sup>48</sup> BMW Regional Assembly (2011) 'Audit of the Innovation System in the Border, Midland and Western Region'. Available from: [http://www.bmwassembly.ie/publications/annual\\_reports/BMW-AR09-1.pdf](http://www.bmwassembly.ie/publications/annual_reports/BMW-AR09-1.pdf)

<sup>49</sup> <http://www.intertradeireland.com/innova/>

## Acumen<sup>50</sup>

The Acumen programme is a cross-border business development programme designed to stimulate cross-border trade amongst SMEs in both parts of Ireland. This includes support for cross-border trade through tailored consultancy and salary support for a sales person, market research, and graduate placement (50% salary subsidy). The programme is available to manufacturing and internationally traded services across the Island. Projects to help companies develop their knowledge of cross-border markets, identify new business opportunities, improve sales and marketing strategies, and generate new sales and economic benefits.

The programme was launched in 2003 and combines two previous programmes – FOCUS which supported sales development, and ACUMEN, which focused on business development. A total of €10 million was committed in the 2008-2011 period<sup>51</sup>. Acumen has supported over 300 companies and helped to generate over €58 million /£50 million worth of sales<sup>52</sup>.

## Policies and Measures supporting DEMAND for innovative services

### Enterprise Ireland services innovation awareness raising

Support measures designed to raise awareness of services innovation have been developed by the Enterprise Ireland Ser-

vices Division. These respond to the limited understanding that companies have in most sectors of services innovation, and seek to present good practice case studies of successful services innovation, and broaden understanding and address misconceptions about service design. These events are typically structured around a leading Enterprise Ireland or IDA Ireland client company and a recent project they have undertaken.

The 'Outside In' programme (see figure 2) has been operational in recent years and is open to financial, business, software and retail companies looking to innovate. The events are also targeted at manufacturing and 'hybrid' companies, public services and others looking to move into services innovation. Attendance at such events has been strong, and illustrates the growing interest of companies around services innovation concepts.

## Policies and Measures seeking to develop FRAMEWORK CONDITIONS AND INFRASTRUCTURE for service innovation

Ireland has not sought to develop measures to target services innovation framework conditions and infrastructure per se. The Enterprise Ireland / IDA Ireland Competence Centre programme, however, exhibits elements of support in this area, not least in its development of collaborative networks and training and education services targeted at ICT usage.

Figure 2. A recent example of a services innovation awareness event.



<sup>50</sup> <http://proinno.intrasoft.be/index.cfm?fuseaction=wiw.measures&page=detail&id=9355>

<sup>51</sup> <http://proinno.intrasoft.be/index.cfm?fuseaction=wiw.measures&page=detail&id=9355>

<sup>52</sup> <http://www.intertradeireland.com/acumen/>

### C. Checklist of policy measures

The table below summarises the policies identified in the previous sections under the areas of the EPISIS-strategy.

**Table 1. Programme relevance to the thematic areas of the EPISIS-strategy.**

Programme/policy	Promotion of service innovation by targeting new types of innovation actors, novel types of innovation activities and innovative business solutions	Promotion of service innovation related competencies and capabilities	Promotion of markets and infrastructure as a driver of service innovation
R&D Fund	✓		
Going Global	✓	✓	
Business Model Innovation	✓		
Services Innovation programme	✓		
Awareness seminars	✓		
Competence centres	✓	✓	✓
Innovative Capability programme		✓	
BMW Region KIS Portal			✓
Innova	✓	✓	
Acumen	✓	✓	

### D. Future Developments and Service Innovation Policy Needs

Since 2008 there has been a rapid growth in the services innovation support agenda in Ireland. This has seen the growth in targeted initiatives and the re-targeting of existing supports. The overall balance of support available to companies in Ireland, however, continues to be horizontal in focus – available to manufacturers and internationally traded services.

In developing the services innovation agenda further it is understood that Enterprise Ireland is examining the potential to embed ‘user-driven’ innovation in their research and innovation supports. This stems from their recognition that this form of innovation represents an opportunity for companies to build a deeper understanding of customer needs as part of the co-creation of innovation activities.

Other future activities include the continued development of the BMW and S&E Region’s KIS portal, and plans for the medical device service hub (MeTRIC).

In reviewing the current system of support for services innovation in Ireland, against the EPISIS strategic themes it is clear that most measures are supply-oriented, and addressing areas such as ‘New types of innovation actors, activities and solutions’, and ‘Competences and capabilities’. This reflects the relative ease through which changes can be implemented in these areas, relative to more strategic changes.

While this context for services innovation in Ireland has progressed significantly the main areas for future development lie in relation to developing support around the concepts of user driven innovation, continuing to build awareness of the services innovation support and infrastructure available in Ireland, and innovation friendly procurement policies.

## 2.8 Appendix 8. Korea

**Author:** Dr. Jang, Pyoung Yol – Korea, Science and Technology Policy Institute

### A. National policy context

#### Public support for service innovation

In Korea (ROK), service innovation is a key policy issue since the service industry represents 60.8% of GDP and 67.6% of employment (as of 2008), and this contribution is expected to increase with the advancement of the economic structure. In major developed countries such as the United States, the United Kingdom and France, the service industry's contribution to GDP and employment exceed 75 percent, with the OECD average standing at 69 percent.

The international competitiveness of the Korean service industry has remained relatively weak. Korea ranks 24th out of the 26 OECD member states in terms of labour productivity. But the domestic service industry's

Labour productivity stands at a mere 40 percent of that of the domestic manufacturing industry. Thus, despite its growing contribution to the national economy, the domestic service industry has a long way to go to improve its international competitiveness.

Despite the service industry's substantial contribution to the national economy, government and private R&D investment has historically been focused on the manufacturing industry. Moreover most of public support for innovations has mainly focus on the manufacturing innovation rather than service innovation. However, recently the Korea government moves policy focus from manufacturing to service innovation, especially service R&D.

#### National innovation strategy

Korea has a national innovation strategy, Science and Technology Basic Plan(577 Initiative) of the Lee Myung Bak (current presidents of Republic of Korea) Administration. The main strategy of the plan is:

- Invest 5% of GDP
- Nurture 7 major technology areas
  1. Key industrial technologies

2. Emerging industrial technologies
  3. Knowledge-based service technologies
  4. State-led Technologies
  5. National issues-related technologies
  6. Global issues-related technologies
  7. Basic & convergent technologies
- Advance 7 science & technology systems
    1. World-class human resources
    2. Basic & fundamental research
    3. SMEs' innovation
    4. S&T globalization
    5. Regional innovation
    6. S&T infrastructure
    7. S&T culture
  - Become one of 7 major science & technology powers in the world

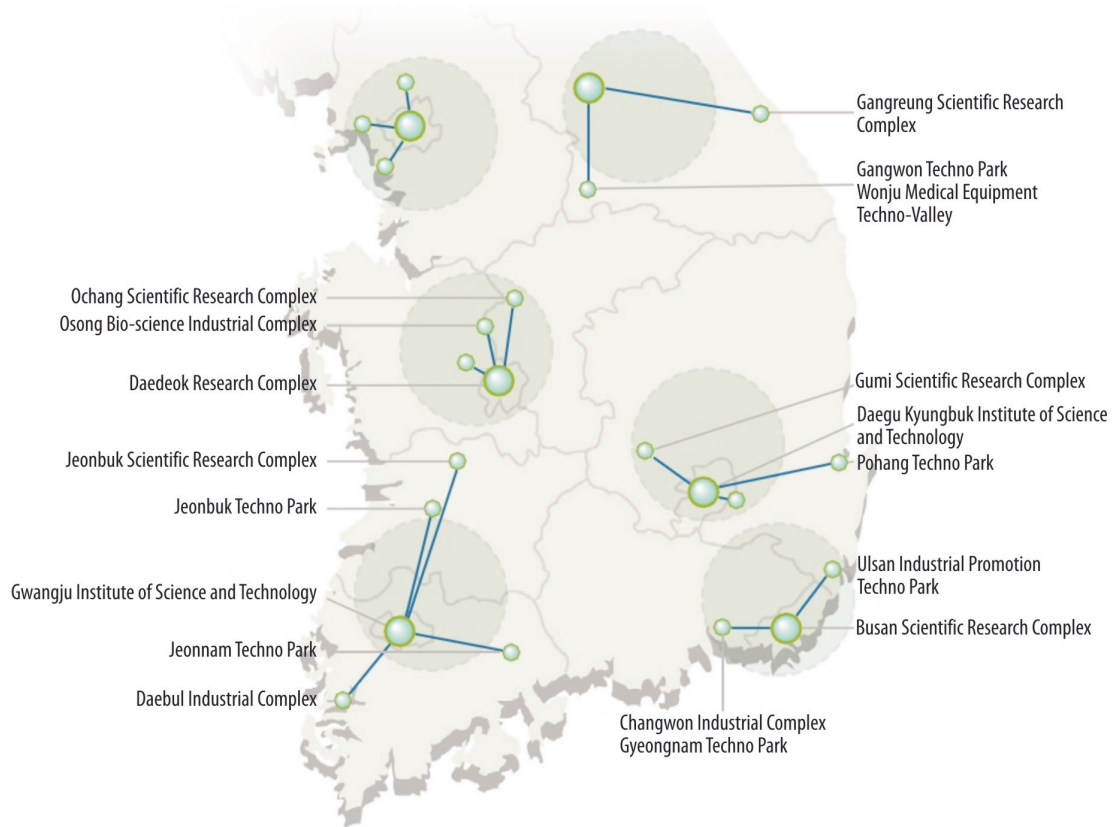
577 Initiative was established in order to systematically pursue the science and technology policy of Lee Myung Bak Administration.

In 577 Initiative, 7 major technology areas include 3) knowledge based service (technology). Knowledge based service area includes 1) developing knowledge-based service technologies such as S/W, culture technology, and design which have immense effects on the job creation, 2) Developing knowledge-based technologies for enhancement of industrial productivity such as intelligent manufacturing system technology. The target knowledge based service includes converging contents, advanced logistics, converging technology of communication and broadcasting, etc.

#### Key innovation policy actors and relationships

In national level, National Science & Technology Commission (NSTC) sets S&T policy priorities and conducts inter-ministerial coordination of R&D programs and S&T policies. The number of ministries and agencies engaged in R&D is 19 in 2011. Each ministry has its own R&D managing organization. In regional level, there are local governments, Techno-Parks, research complexes, scientific research complexes, etc.

**Figure 1. Major Regional level innovation actors.** Source : MEST(2008)



### Key services innovation policy actors

National Science & Technology Commission (NSTC) plays a key role for national R&D budget coordination and allocation. To improve the efficiency of R&D activities and S&T policy programs, the NSTC was launched on March 28, 2011, as a permanent agency with a strengthened mission to set S&T policy priorities and conduct inter-ministerial coordination of R&D programs and S&T policies. It reports directly to the President of the Republic of Korea. NSTC sets the strategic direction and policy about service R&D and innovation.

In addition to NSTC, Ministry of Strategy and Finance (MOSF) collaborates with NSTC about service R&D bud-

get and service R&D program. In particular, MOSF has a role of inter-ministerial coordination of all the service related policies.

Each service related ministry has its own service innovation domain and area. For example,

- Ministry of Knowledge Economy (MKE): Business service.
- Ministry of Education, Science and Technology (MEST): Education service
- Small & Medium Business Administration (SMBA): SME service
- Ministry of Health & Welfare (MHW): Medical & Welfare service
- Ministry of Culture, Sports and Tourism: Contents, Sports, Leisure, Tourism service.

## Service innovation policy design and delivery actors

In the perspective of overall and strategic service innovation policy design and delivery, National Science & Technology Commission (NSTC), Ministry of Strategy and Finance (MSF), and Ministry of Knowledge Economy (MKE) are most relevant and active.

In the perspective of specific service domain, each ministry is responsible for service policy design and delivery. Only some ministries including Small & Medium Business Administration (SMBA), Ministry of Health & Welfare(MHW), Ministry of Culture, Sports and Tourism(MCST) are active. Since each ministry has its own affiliated organization(s), service innovation policy is delivered through affiliated organization(s) in working level.

In the regional level, some local governments including Seoul and Incheon are active in service innovation policy delivery. Since local governments also has their own affiliated organization(s), service innovation policy is delivered through affiliated organization(s) in working level, similar to national level.

## Key service industries

### a) Size of the service industry

In terms of employment (2008), wholesale and retail trade sector occupies 15.4% of total employment ratio. Subsequently, hotels and restaurants (8.7%), business services (8.1%), construction (7.7%), education service (7.4%), other community, repair and personal services (5.8%), transportation (5.1%), health and social welfare (3.6%), public administration, defence and social security (3.6%), finance and insurance (3.5%), recreational, cultural and sporting activities (2.3%), real estate and rental business (2.1%), telecommunication (1.1%), household service (0.6%), electricity, gas and water supply (0.4%), and international and foreign organizations (0.1%) occupy the employment ratio in the descending order.

For comparison, agriculture, hunting, forestry and fishing occupies 7.2% and mining and manufacturing occupies 17.4% of total employment ratio.

In terms of GDP(2011, 3rd quarter), wholesale and retail trade sector occupies 8.4% of total employment ratio. Sub-

sequently, finance and insurance (7.2%), real estate and rental business (6.9%), construction (6.1%), public administration, defence and social security (5.8%), education service (5.4%), telecommunication (4.7%), business services (4.5%), transportation (4.5%), health and social welfare (4.2%), electricity, gas and water supply (2.3%), hotels and restaurants (2.0%), other community, repair and personal services (1.9%), and recreational, cultural and sporting activities (1.3%) occupy the GDP ratio in the descending order.

For comparison, agriculture, hunting, forestry and fishing occupies 2.8% and mining and manufacturing occupies 31.9% of total GDP.

### b) R&D activity

The average ratio of company which performs the R&D activity in service industry is 7.1% (2011). 92.9% of service companies do not perform the R&D activity. The telecommunication has 19.6% R&D activity ratio. Education (19.5%), finance and insurance (9.8%), science and technology service (7.5%), wholesale and retail trade (6.6%), recreational, cultural and sporting activities (6.2%), business services (5.9%), other community, repair and personal services (4.6%), hotels and restaurants (4.3%), transportation (2.1%), health and social welfare (1.4%), and real estate and rental business (0.8%) has R&D activity ratio in the descending order.

### c) Other innovation activity

The four innovation activity ratio indicates the ratio of companies that performs one of 4 innovations (service product innovation, service process innovation, organizational innovation and service marketing innovations) but do not perform R&D activity. The average four innovation activity ration is 28.8%(2011). The telecommunication has 46.7% four innovation activity ratio. Education (42.8%),recreational, cultural and sporting activities (37.4%), finance and insurance (32.9%), hotels and restaurants (32.7%), business services (32.3%), wholesale and retail trade (27.9%), other community, repair and personal services (24.4%), health and social welfare (23.1%), transportation (22.5%), science and technology service (22.1%), and real estate and rental business (17.4%) has four innovation activity ratio in the descending order.



## B. Policies promoting service innovation

### Service innovation policies and measure (Supply)

#### Service R&D Programs

Korean government announced “Service R&D promotion plan” in 2010. In this plan, special service R&D national program was designed and corresponding budget was allocated for each program.

- Education Service R&D Program (5 billion KRW(2012), 1 Euro = 1500 KRW)
- Healthcare & Welfare Service R&D Program (9 billion KRW(2012))
- Tourism & Contents Service R&D Program (6 billion KRW(2012))
- Business Service R&D Program (55 billion KRW(2012))
- Small & Medium Enterprise Service R&D Program (20 billion KRW(2012))
- Public Service R&D Program (5 billion KRW(2012))

In this plan, the new growth high value service industry such as global education service, global healthcare service, finance, contents/SW, tourism/MICE (Meeting, incentives, convention, exhibition) and business service industry (engineering, design, advertisement, consulting, R&D outsourcing, etc) were selected as target investment service areas.

### Sector neutral innovation policies and measures (Supply)

#### Basic Service R&D Program

The basic service R&D program is sector neutral and independent program. The result of the basic service R&D program can be used by those firms and other organizations that are developing innovative services.

### Service innovation policies and measure (Demand)

#### Service R&D Tax incentive

11 knowledge-based service sectors (including healthcare and medical service, education, etc.) can receive tax credit for the R&D to develop a service by the Korean government from 2011.

#### Service R&D Research Institute Certification

Service related research institutes in 11 knowledge-based service sectors (including healthcare and medical service, education, etc.) can receive certification of R&D research institute when they meet the requirements from 2011.

#### Service R&D Project Competition

To promote the creative and innovative service R&D research activities, service R&D project competition for undergraduate and graduate students in university was initiated from 2010.

#### Service R&D International Conference

Service R&D International conference was held to share the service R&D knowhow among foreign and domestic industry-academia-research institute from 2009. Domestic and international service R&D policy and best practices were presented.

#### Service Customer Ideas Contest

In service R&D, creative ideas are more important than the technical expertise. To reflect this service R&D's characteristics, service customer ideas contest was designed. The outstanding ideas would be selected as the government R&D projects.

### Framework conditions and infrastructure for service innovation

#### Service R&D Infra – Service R&D Experiment Laboratory

As a platform to experiment a new type of service, Korean government has a plan to build the service experiment laboratory based on virtual and augmented reality technology.

The existing explicit innovation policies are mostly concerned with the supply side and even more with R&D&I support of various types, ranging from funding of science in public institutions through to fiscal incentives for firms to increase their R&D&I spending.

#### Service R&D Statistics

Since the R&D investment statistics in the service industry are insufficient and inadequate, total national R&D Survey statistics on service industries will be investigated separately about service R&D after revising current statistics framework from 2013.



## Service R&D IPR

To promote service R&D and support the international patent application, the guidelines of business model patent will be established.

## C. Checklist of policy measures

Table 1 summarises the policies identified in the previous sections under the areas of the EPISIS strategy

**Table 1. Programme relevance to the thematic areas of the EPISIS-strategy.**

Programme/policy	Promotion of service innovation by targeting new types of innovation actors, novel types of innovation activities and innovative business solutions	Promotion of service innovation related competencies and capabilities	Promotion of markets and infrastructure as a driver of service innovation
Service R&D Programs	✓	✓	
Basic Service R&D Program	✓	✓	
Service R&D International Conference		✓	✓
Service Customer Ideas Contest	✓	✓	
Service R&D Project Competition	✓	✓	
Service R&D Tax incentive			✓
Service R&D Research Institute Certification			✓
Service R&D Infra – Service R&D Experiment Laboratory			✓
Service R&D Statistics			✓
Service R&D IPR			✓

### **New types of innovation actors, novel types of innovation activities and innovative business solutions**

- Service R&D Programs
- Basic Service R&D Program
- Service Customer Ideas Contest
- Service R&D Project Competition

### **Service innovation related competencies and capabilities**

- Service R&D Programs
- Basic Service R&D Program

- Service R&D International Conference
- Service Customer Ideas Contest
- Service R&D Project Competition

### **Markets and infrastructure as a driver of service innovation**

- Service R&D International Conference
- Service R&D Tax incentive
- Service R&D Research Institute Certification
- Service R&D Infra – Service R&D Experiment Laboratory
- Service R&D Statistics
- Service R&D IPR

## D. Future developments and service innovation policy needs

### New policy measures being developed for services and related innovation

Ministry of Strategy and Finance (MOSF) focuses on the establishment of “Service Industry Development Fundamental Law” to promote the service R&D and innovation and to enhance the productivity and competitiveness of service industry.

In addition, National Science & Technology Commission (NSTC) is developing the “Service R&D Mid & Long Term Plan” which will materialize and actualize the service R&D policy in national level.

### Gaps that could be addressed by new service innovation related policy measures

The policy regarding the service export and internationalization of services will be more and more important in the perspective of national level competitiveness.

### Emerging service innovation policy

Even though small and medium enterprises and self-employed small businesses dominate the service industry especially in terms of employment, the productivity and competitiveness are low compared to those of international level. Hence, government’s service innovation policy will exert all possible efforts to increase the productivity and strengthen competitiveness of SMEs and self-employed small businesses.



## 2.9 Appendix 9. The Netherlands

**Author:** Dr. Pim den Hertog, Matthijs Janssen, and Leonique Korlaar – Dialogic Ltd.

### Service Innovation Policy in The Netherlands

Notwithstanding the fact that the Netherlands is predominantly a service-dominant economy (more than 70% of value added is in services), there is no formal service innovation policy to date. This is not to say that services and service innovation are absent from the innovation policy debate. The importance of services and service innovation (also in manufacturing industries and society at large) is gradually acknowledged and has been discussed on various occasions. Over the last few years various initiatives were taken to spur service innovation or improve the accessibility of both generic and specific innovation policy schemes. However, these policy initiatives or policy experiments can best be labelled as a 'toe in the water' and are not based on a widely accepted policy vision or policy strategy regarding service innovation. From the set of policy experiments that were initiated only a few have or will develop into regular, standing policy.

Remarkably, these policy experiments are more likely to be generic innovation policy schemes from which service innovators may benefit such as a broadened tax credit scheme (WBSO and a new RDA scheme, see below). This is due to an overall shift in innovation policy (since late 2010) away from subsidies and specific policies towards relatively more fiscal and credit facilities and overall more generic policies. An exception is the development towards nine key areas or 'top clusters', for each of which a customized set of tools is used to support innovation and more widely competitiveness. The creative industry and logistic service industry are the two exceptions in what seems to be a policy dominated by fairly established (mostly technology dominated) agricultural and manufacturing clusters. All in all, both the service innovation landscape as well as the policy mix regarding services and service innovation, at least in comparison with some forerunner countries, remains patchy. Services and service innovation is not top of mind among those involved in and around national science technology and innovation (STI) policy-making in the Netherlands.

### A. Service sector in the Netherlands

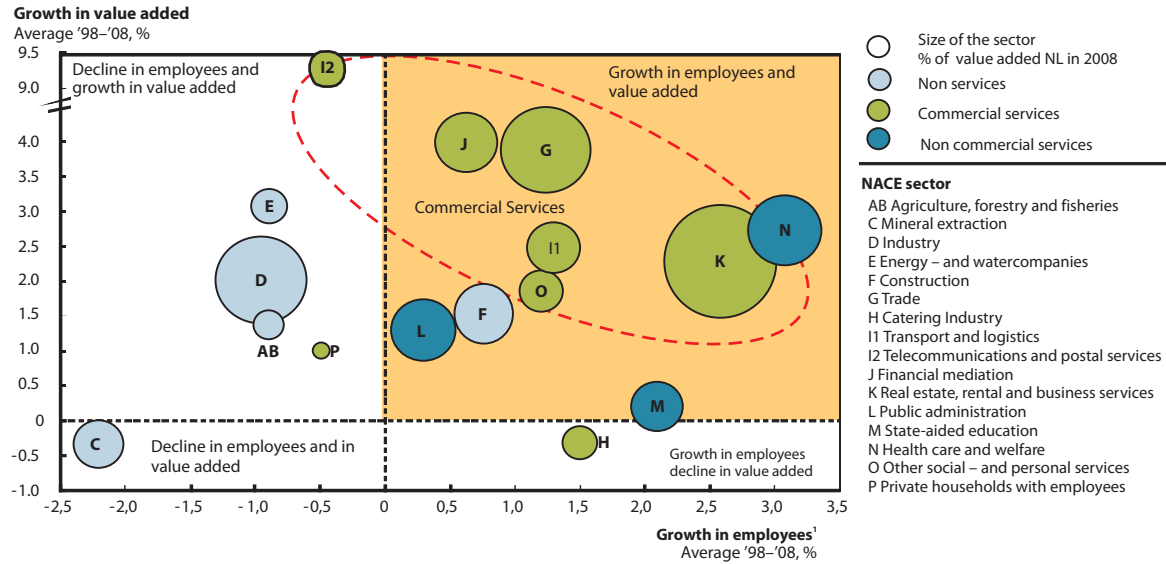
Services dominate the Dutch economy; more or less 70% of the Netherlands' gross national product and almost its entire employment growth over the past ten years are due to the service sector. A study from McKinsey (2010), on request of the Dutch Innovation Platform, reveals that the service sector in the Netherlands, compared to other countries, is relatively large. The most important sectors with regard to added value are the subsectors trade and real estate & business services. Together these sectors account for 1/3 of the added value in the Netherlands (see figure 1).

As can be seen from the figure below the largest growth in terms of employment is in health care & welfare sector. The telecommunications sector shows a tremendous growth in added value (annual growth of 9.3%). In general, one can say that the service sector in the Netherlands can be seen as a growth engine, both in terms of added value and employment. More importantly, apart from being an important set of industries in itself, it plays a key role in the Dutch economy; it's an important supplier for the rest of the economy (AMSI, Exser and GGDC, 2010).

Table 1 shows that manufacturing firms tend to engage more often in innovation activities. The construction sector, which is sometimes considered as services itself, falls nicely in between manufacturing and services. Within the category 'services of the business economy', financial and insurance activities are the most innovative subsectors, followed by information and communication. In terms of percentage of enterprises engaging in innovation, real estate holds the lowest score. However, in terms of the amount of money spend on innovation 'accommodation and food service activities' rank lowest (Eurostat, 2011).

The fact that service innovation occurs in service sectors as well as in industrial sectors can be derived from figure 2. Nevertheless, the majority of innovation within industry has a technological nature. Within service sectors there is a dominance of non-technological innovation, in figure 2 measured by including organisational and marketing innovation. The share of firms that engages exclusively in technological innovation is not much smaller, but between 2006 and 2008 this difference increased. Most firms, regardless which sector, engage increasingly in both technological and non-technological innovation.

Figure 1. Importance of the service sector in the Netherlands 1998–2008 Source: McKinsey (2010), edited by Dialogic.



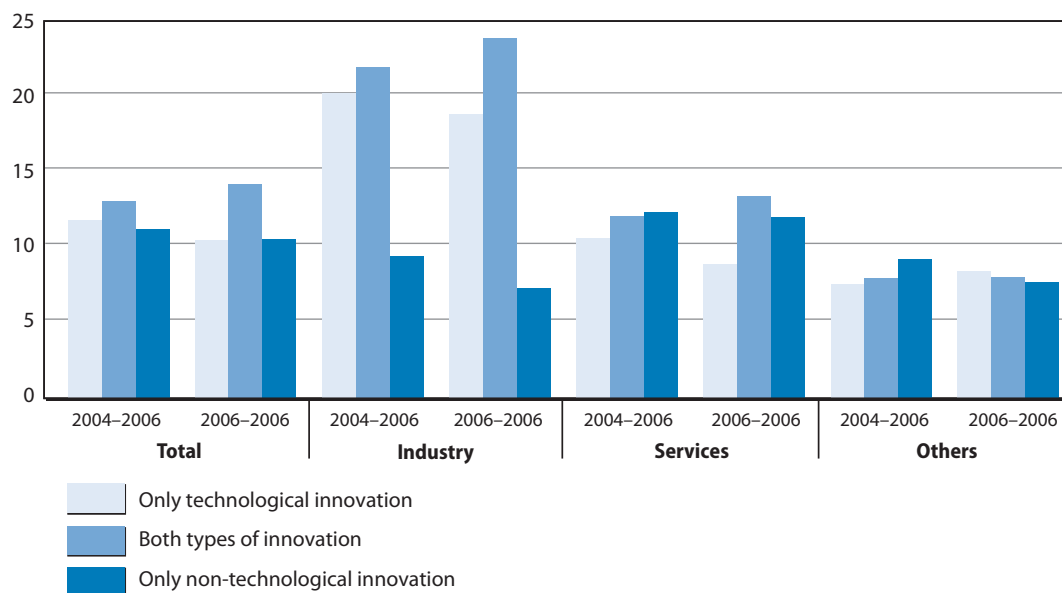
<sup>1</sup> Persons who have a job at a company located in the Netherlands, all persons who have a paid job (even for only a couple of hours a week)

Table 1. Innovation activity and expenditure in 2008.

	Firms engaged in innovation activities (%)	Firms engaged in innovation activities (#)	Total innovation expenditure (m€)
Industry (except construction)	81,61%	3.525	7.177.933
Manufacturing	81,56%	3.365	6.678.046
Electricity, gas, steam and air conditioning	87,39%	30	110.521
Water supply	82,14%	107	123.259
Construction	73,16%	706	106.772
<b>Services of the business economy</b>	<b>65,24%</b>	<b>5.447</b>	<b>3.873.264</b>
Wholesale and retail trade; repair of motor vehicles and motorcycles	61,85%	2.012	966.612
Transportation and storage	64,65%	517	228.170
Accommodation and food service activities	64,00%	225	17.486
Information and communication	73,80%	897	1.219.831
Financial and insurance activities	77,46%	302	841.582
Real estate activities	50,26%	122	89.957
Professional, scientific and technical activities	68,23%	885	376.334
Administrative and support service activities	60,93%	486	133.293

Source: Eurostat (2011)

**Figure 2. Share of technological and non-technological innovators per grand sector (% of firms). 2004–2006, 2006–2008.**  
Source: CBS (2010)



Compared to other countries The Netherlands runs behind in the field of innovation in the services sector. The number of technological innovative companies in the service sector stays behind compared to the EU average (EU 27) as well as the R&D expenses. In addition, labour productivity in the services sector is high (specifically in the financial service sector, real estate & rental services), but over the past few years the labour productivity growth lags behind compared to other EU countries. The growth of the Dutch export of services also stays behind compared to the export of goods and compared to the worldwide import of services. The administrative and regulatory burden on business and the lack of qualified personnel have been mentioned as the most important barriers (McKinsey 2010). In addition, EIM (2004) mentioned earlier that the service companies are relatively small and young, the number of new entrants is limited and management skills remain behind.

### The Dutch innovation system and the role of services

The Dutch government is aware that innovation is important in all industries. Innovation in services therefore receives significant policy attention. However, the 'basic package' of innovation policy instruments (mainly carried out by NL Agency – the innovation Agency of the ministry of Economic Affairs, Agriculture and Innovation) consists of generic measures, targeted at all sectors – not just manufacturing or services (Inno Policy 2007). The effectiveness of these measures has improved as a result of a closer collaboration between the ministry of Economic Affairs, Agriculture and Innovation and Agency NL. And due to the establishment of the inter-departmental Knowledge & Innovation directorate there is better coordination in the governance system between the ministry of Economic Affairs, Agriculture and Innovation (responsible for industrial R&D and innovation) and the ministry of Education, Culture and Science (responsible for research and education) (Inno Policy 2009).

In the policy agenda of the Cabinet of Balkenende IV was mentioned that the main target for the coming years was to increase the private expenditures on R&D. Therefore the *SME-innovation vouchers*, the *Innovation Performance Contracts* (IP-Cs) and *TechnoPartner* were continued. Also the well known R&D tax credit scheme aimed at reducing the costs of R&D personnel (*the WBSO scheme*) was continued and extended for services. With the start of the programme '*Netherlands Digitally Connected*', an important additional impulse was given to ICT- and process innovation with SMEs. Also the investment impulse from the *Fund for the Enhancement of the Economic Structure* (FES) was continued. In 2009 two new measures were introduced, with a total budget of 280 million euro for 2009 and 2010, to prevent the loss of knowledge workers by R&D intensive firms. The *Knowledge workers scheme* enabled firms to temporarily second their R&D personnel to public knowledge institutes for a period of one and a half years. *The High Tech Top Projects scheme* helped firms in the high-tech industry to keep their R&D workers employed by giving support for large R&D projects (Inno Policy 2009).

In addition, the Ministry of Economic Affairs continued the 'programme-based package' with instruments for specific key areas. Within these instruments there were several 'pilots'/explorations to support innovation in service industries. In 2003 the *Innovation Platform* was established by Balkenende II in order to spur innovation and entrepreneurship in the Netherlands. One of the first initiatives of this platform was to identify key areas in which the Netherlands could excel. Within these key areas teams of companies and knowledge institutes started writing proposals for *innovation programmes*. Four proposals were written targeted at important parts of the service sector. One of them was *Service Innovation & ICT (SII)*. Early 2010 the first phase of the innovation pi-

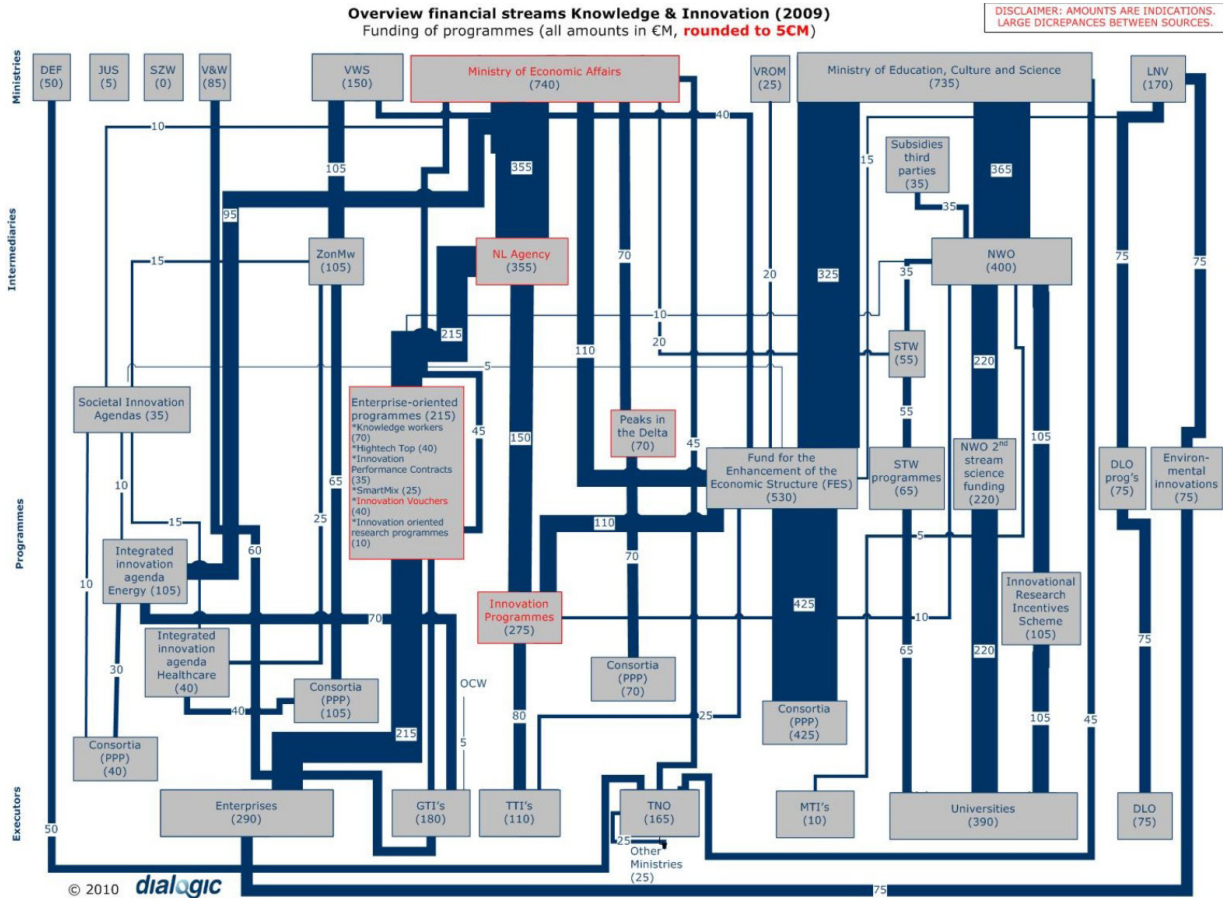
lot programme of SII started, which was targeted at the creative industry and the financial sector by focusing on financial logistics and smart information and media services. Early 2011 it was decided – due to new government policies – that there would be no second phase and that phase one should be terminated prematurely.

Another important instrument to facilitate the business climate in the Netherlands was the '*Peaks in de Delta scheme*' which was active from 2006–2010. This programme was targeted at economically strong regional clusters in the Netherlands. One of the regions was the 'North Wing of the Randstad'. This programme aimed at strengthening the creative industry, tourism, logistics, life sciences and business services by subsidising various types of projects. This programme has resulted, among other things in the establishment of *Exser* and financial support of the *Holland Financial Center* (HFC) and *AM-SI*. See box 1 for more information about these institutions and other important actors in the service sector.

Figure 3 gives an overview of the Dutch innovation system, by giving an overview of the most important actors and programs. An exception is the WBSO, which is not mentioned in the figure below, but will be discussed extensively in section B. Please note that this overviews reflect the situation in 2010. At the end of 2010 with the start of the Cabinet Rutte the Ministries of Economic Affairs (EZ) and Agriculture (LNV) were merged and some of the responsibilities of e.g. the Ministry of Education, Culture and Science (OCW) transferred to the newly created Ministry of the Economy, Agriculture & Innovation (EL&I). This has resulted in some changes in the institutional set up and the resulting financial streams. Further, over 2011 major restructuring took place resulting (a.o.) in changing of the financial flows and changes at especially the programme level.



Figure 3. Overview of financial streams with regard to Knowledge & Innovation. Source: Dialogic 2010.



**Legend**

Boxes with red marking represent organisations or policy instruments with relevance for service innovation.

**Acronyms Ministries:**

- DEF Defence
- JUS Justice
- SZW Social Affairs and Employment
- V&W Transport, Public Works and Water Management
- VWS Health, Welfare and Sport
- VROM Housing, Spatial Planning and the Environment
- LNV Agriculture, Nature and Food Quality

**Acronyms other organizations:**

- STW Technology Foundation STW
- NWO The Netherlands Organisation for Scientific Research
- ZonMw The Netherlands Organisation for Health Research and Development
- GTI Grand Technological Institute
- TTI Technological Top Institute
- MTI Societal Top Institute
- TNO Netherlands Organisation for Applied Scientific Research
- DLO Agricultural Research Institute



## Box 1. Important institutions in the service sector

**AMSI** (Amsterdam Centre for Service Innovation) was established at the end of 2008 by a joint effort of Amsterdam Business School/University of Amsterdam, VU University and Novay and was further supported by founding corporate partners Air France KLM, IBM Benelux, Rabobank and Amsterdam City. AMSI focuses on research and education (for both students and executives) in management of service innovation. Next to a master track at both the University of Amsterdam and VU University and a 10 day Leadership Programme Driving Strategic Service Innovation, in collaboration with University of California at Berkeley, a small research portfolio is developed. One of its main research projects is a research project into Open Service Innovation in the Greater Amsterdam and Utrecht region named **United We Stand** (financed by Peaks in the Delta, see box 3).

**Exser** is an intermediary organization created at the end of 2008 focusing on reinforcing the innovative growth of Dutch service providers by focusing on the development and provision of knowledge and experience involving the management-related elements of innovation. The national government, the municipality of Almere and the province of Flevoland originally supported the initiative with a start-up grant of € 4 million (i.e. a Peaks in the Delta grant). Since 2011 Exser is an independent foundation.

**HFC** is a public-private initiative set up by organisations within the financial sector, the government and regulators. This foundation aims at strengthening the financial sector in the Netherlands and increase employment in this sector. In doing so, HFC focuses on a number of priority areas in which the Netherlands has a strong position or is able to get a strong position: retirement management, financial logistics, trading venue and financial sustainability. HFC was also involved in the innovation programme Service Innovation & ICT and in writing the proposal for the Pensions innovation programme (which eventually did not materialize due to a switch in Cabinet).

**Netspar** was established in 2005 and is a Network for Studies on Pensions, Aging and Retirement. It aims at connecting the two main groups of pension practice and pension science. Netspar wants to contribute to the improvement of financing opportunities for the elderly through network development, formulating and executing scientific research and knowledge transfer programmes. Netspar was also involved in the innovation programme Service Innovation & ICT and in writing the proposal for the Pensions innovation programme.

**Novay** (before Telematica Institute) is a research institute focusing on ICT-driven innovation. Thereby it uses a network

approach: Novay often works together with companies, universities and/or the government. Recent projects are focused on digital identity, ambient assisted living and agile service development. Novay was one of the initiators of the innovation programme Service Innovation & ICT.

**IIP Create** is a national Think Thank in the field of creativity, technology and entrepreneurship. As a national platform for the creative industry, IIP Create represents creative entrepreneurs/SMEs, knowledge institutions and large companies and aims at jointly facilitating innovation and up-scaling of innovations. IIP Create was one of the initiators of the innovation programme for the Creative industry (which eventually – at least for the time being – did not materialize in a separate innovation programme then due to a switch in Cabinet) and is now involved in setting up the agenda for the top cluster 'Creative Industry'.

**Service Science Factory** is an initiative of the Maastricht University School of Business and Economics and started its activities in 2010. It labels itself as "an interdisciplinary and intercultural approach to service research and a new format for interdisciplinary education". It offers action learning, teaching and research and is well connected to local players including players in close by Germany and Belgium.

**NCSI** (Netherlands Centre for Social Innovation) is an initiative from the Dutch Innovation Platform, in order to increase productivity and job satisfaction in the Netherlands. The Centre's mission is "to support and initiate innovation in the areas of management, organisation and work in private companies and public organisations by executing concrete actions and experiments, disseminating knowledge, supporting practically applied research and formulating relevant questions for academic research in order to combine efforts for better use of technology and talents". Although not mentioned explicitly, most pursued types of improvements and renewals fall in the domain of service innovation. The NCSI will exist until the 1<sup>st</sup> of April 2012.

**iMMovator Cross Media Network** is a network organisation focusing on stimulation innovation and the economic value of the cross media sector by means of projects, publications and organizing several events in which knowledge development and – diffusion are covered. It is partly financed by the European fund for the regional development of the European Commission.

**THNK – The Amsterdam school of creative Leadership** and the **Duisenberg School of Finance** are two educational establishments in the service sector, respectively the creative industry and the financial service industry.

## B. Policies promoting service innovation

In this chapter we will describe the most important Dutch policies promoting service innovation. It should be mentioned that many of the instruments that will be described were available in the last few years, but have been stopped in the mean time or will not be continued in the future due to the shift in innovation policy (see section D). In the paragraph below we will differentiate between supply-side policies and demand-side policies and between sector neutral innovation policies and innovation policies specifically targeted at service innovation. Demand-side innovation policy instruments aim to increase the demand for innovations, to improve the conditions for the use of innovations, and/or to improve the articulation of demand (Technopolis, 2011). Supply-side policies seek to promote innovation by promoting supply of services (e.g. by means of R&D support).

### Key supply-side policies promoting service innovation

Policies and measures supporting the supply of innovative services are rather scarce in the Netherlands. They are mostly concerned with either adapting public education or R&D&I support. We mention here only those initiatives which were created by public institutions or with the help of subsidies from the central government. All were already briefly introduced in the previous chapter as important institutions in the service sector, but will be described more detailed here. An important research project led by AMSI and financed out of the **Peaks in the Delta** budget is included in a separate box below (see box 2).

**AMSI** (Amsterdam Centre for Service Innovation) focuses on leadership in service innovation, both through education and research. AMSI has created an academic environment and network that supports service innovation research. According to its website, AMSI develops new opportunities for students to enhance their competencies in the process of analyzing, understanding and implementing service innovations in private and public organisations. Through its research and executive education AMSI facilitates executives and managers in service organisations in their ambitions to become more effective in their innovation processes and create new valuable services for their stakeholders.

Apart from participating in some European research projects and regional research projects one of its core research projects is *United We Stand* (see box 2). In close collaboration with the University of California at Berkeley AMSI has developed a 10 day Leadership Programme Driving Strategic Service Innovation. The Programme consists of 10 days of intensive training: 6 days in Berkeley (including a visit to Silicon Valley) and 4 days in Amsterdam. The programme thus far ran twice and was well evaluated by its participants. Over the years, members of AMSI contribute to regular Bachelor and Master courses at both University of Amsterdam and Free University Amsterdam. Since summer 2011 separate master tracks on entrepreneurship & service innovation are being taught at both University of Amsterdam and VU University (AMSI, 2011). AMSI recently organized a series of three lectures in Amsterdam by distinguished scholars in the field of service innovation and entrepreneurship.

**Exser** is a center for service innovation that focuses on the development and provision of knowledge and experience involving the 'soft' and management-related elements of innovation. It does however not provide research or education herself as it mainly functions as an intermediary. Exser was originally set up as is a center for service innovation in which businesses, scientists and government work together to strengthen and accelerate innovation management and service innovations. The goal is to share knowledge and experience e.g. through the creation of communities of practice; through creating and providing state-of-the-art knowledge regarding innovation themes that are shared by service providers from various sectors and through contributing to multidisciplinary teaching and training of current and future generations of professionals with responsibilities for the design, development and realization of new services. Although various lines of activities were set up, annual conferences and many smaller meetings were organised, it proved difficult in practice to organize a critical mass of especially firms to engage in the centre's activities. Since early 2011 Exser is self supporting and it operates at a somewhat reduced scale advertising itself as a platform for cross-sectoral innovation where Exser combines various roles. It is still involved in initiatives such as the development of document services campus and has developed two day master classes on for example the topic of managing service innovation (Exser, 2011).

## Box 2. United We Stand (UWS) on Open Service Innovation

At the end of 2009 an ambitious 2,5 years research project named United We Stand – Open Service Innovation in the Northwing of the Netherlands (i.e. the greater Amsterdam and Utrecht Region i.e. the heartland of the Dutch service economy) took off. The project is financed through the Peaks in the Delta programme (i.e. regional economic development programme initiated by the central government that was stopped in 2010 when a new government came into power) and co-financed by two Provincial governments and two local governments. The project is performed by the two Amsterdam universities (working through their joint institute i.e. AMSI), Utrecht University and a research-based consultancy firm (i.e. Dialogic). The project aims to:

- develop and increase applied research and knowledge on (managing) chains and networks of open service innovation;
- provide practical insights and tools to firms that want to engage in processes of open service innovation;
- co-develop with policy-makers actions to put the Greater Amsterdam-Utrecht region on the map as a “place to be” when engaging in open service innovation e.g. by developing a more focused international acquisition strategy for attracting (and keeping) service innovators and formulating design criteria for developing an open service innovation campus.

Researchers, involved firms and policy-makers go through a joint learning process. This learning process is fed by:

- case studies on open service innovation (mostly internationally active service and manufacturing firms) and alliance management for managing coalitions of service-dominant firms that innovate jointly;
- various surveys among service innovators and more specifically among ICT, creative industry and technical engineering firms;
- analyses of the spatial interaction between especially knowledge intensive business services and international firms;
- good practices in service innovation management (developing various protocols);
- identification of strategic policy options for spurring (open) service innovation.

The project will finalize in the summer of 2012, however various research data (e.g. an extensive database as a result of survey among service and manufacturing firms in the greater Amsterdam and Utrecht region) is becoming available now and will be used for the next years to come and inform both service innovation researchers, service innovation managers and policy-makers. More details are available (in Dutch) at: <http://www.opendiensteninnovatie.nl>

**Service Science Factory** is a relatively young initiative initiated by Maastricht University. There is a link between the well established Maastricht Academic Centre for Research in Services (MAXX), which is in fact the marketing department of the faculty of Economics and business studies of the University of Maastricht that performs contract research and regular academic research. According to its website it offers “an innovative place where students, researchers and professionals work in a pressure-cooker environment on inventing new or improving existing services. It offers companies, governmental entities or different organisations the possibilities to present their problems to dedicated project teams. After six to eight weeks these organisations receive a working solution i.e. a complete service or its prototype. According to its website (visited mid December 2011) it has currently three of such projects running and completed 7 of those projects.

**NCSI** (Netherlands Centre for Social Innovation) is an initiative from the Dutch Innovation Platform and aims at increasing productivity and job satisfaction in the Netherlands. The Centre’s mission is “to support and initiate innovation in the areas of management, organisation and work in private companies and public organisations by executing concrete actions and experiments, disseminating knowledge, supporting practically applied research and formulating relevant questions for academic research in order to combine efforts for better use of technology and talents”. Although not mentioned explicitly, most pursued types of improvements and renewals fall in the domain of service innovation. The NCSI will exist until the 1<sup>st</sup> of April 2012. At the moment there is a competition via the Battle of Concepts for the best idea to make sure that social innovation will also stay at the agenda of organisations after NCSI stops (NCSI, 2011).



An important instrument to spur social innovation is the **ESF Action E: social innovation, vital companies**, which provides grants to employers who improve organisational process and increase sustainable employability to increase the effectiveness of labour. Organisations can apply for a grant of 18.000 euro in order to hire an advisor. In 2011 the Agency of the ministry of Social Affairs and Employment (Agency SZW), responsible for administering subsidies relating to socio-economic policy, received 4,526 applications with a total requested amount of grants of 81.5 million euro, while the budget only allows support for a total amount of 25.2 million euro.

In addition to these initiatives the **WBSO** (R&D work Stimulation Act, a massive R&D tax credit scheme) is an important sector neutral supply-side instrument of which the service sector can make use of as well. Since 1994, the WBSO aims to increase business R&D by offering tax reductions to firms with R&D personnel. Expressed in euros, it is by far the largest innovation instrument aimed at supporting private R&D in the Netherlands. For 2012, as much as 864 million euro is reserved for the WBSO fiscal incentive scheme (NL Agency, 2011). The WBSO budget is determined each year. This flexibility, in combination with its size, makes it an important instrument for innovation policy. In order to help companies fight the crisis, the Dutch government increased the WBSO budgets temporarily. In 2009 the budget was raised with 150 million euro, which was supplemented with another 60 million euro in the years to follow. In the transition to new innovation policy (see section D), an extra amount of 149 million euro was reserved for 2012. Currently, the expectations are that these exceptional measures will come to an end fairly soon (the more so as various additional fiscal innovation schemes are in the making including the RDA and RDA-plus. Exact figures are provided in table 2.

Tax reductions through WBSO are available for both companies (with or without employees) and knowledge institutions. For the first 220.000 euro of salary an organisation annually spends on R&D, 50% is exempted from taxes. R&D labour costs above the wage limit receive a tax reduction of 18%, with a maximum of 14 million euro.<sup>53</sup> Table 2 shows how these parameters changed in the past years. Start-ups receive additional support in the form of higher percentages of tax reduction (64%), which can add up to benefits of 30.800 euro per year. Instead of reduction on wage taxes, self-employed get reduction on income taxes, up to 6.017 euro per year.

Traditionally, the WBSO mainly focuses on SMEs. By 2010, the share of SMEs had grown to 97%, capturing almost 73% of the WBSO budget. In 2010, a total number of 19.450 different organisations were granted WBSO (for in total 31.500 R&D projects), accounting for 73.700 labour years of R&D work<sup>54</sup>. The amount of money that was assigned to these projects exceeded the budget of 700 million euro. However, from experience it is well known that not all projects that are granted WBSO actually start, and sometimes organisations overestimate the number of hours they are going to spend on R&D. The actual use of WBSO tax reductions in 2011 (resulting from earlier awarded projects) is currently evaluated.

The fiscal instrument has a generic and broad coverage. Formerly, WBSO focused exclusively on technological R&D. In 2009 this measure was broadened and now also applies the R&D component of ICT-based services, in addition to the already covered domain of software development. The extension partially explains the still increasing number of participating enterprises. As a result the relevance of WBSO to supporting innovation in services is on the rise. 2010 figures on the use of the WBSO scheme show that about 32% of the granted R&D-hours are in services (see figure 4).

**Table 2. Budget (in euros) and other parameters for WBSO in period 2008–2012. Source: NL Agency (2011).**

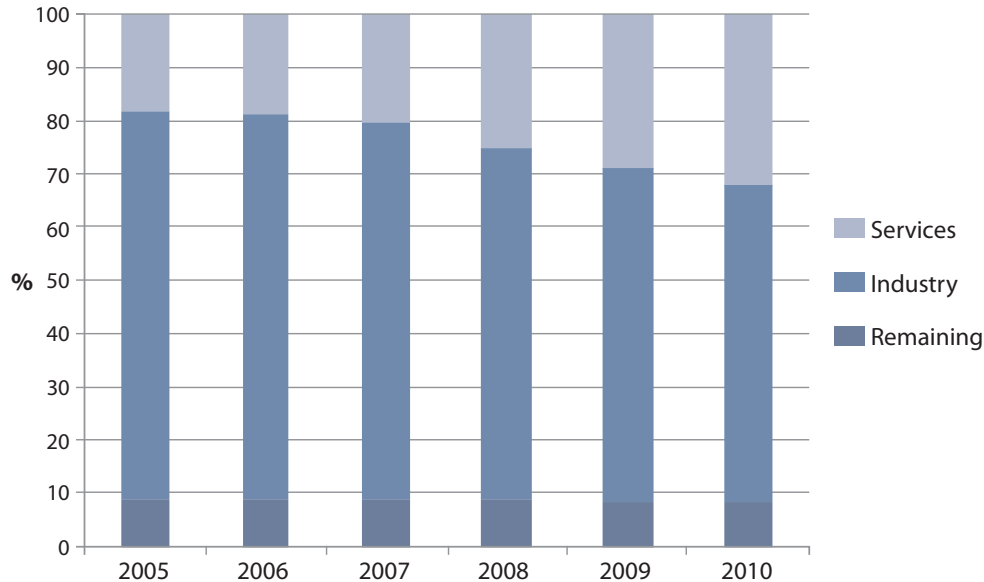
	2008	2009	2010	2011	2012	2013*
Total budget	600m	750m	810m	810m	864m	715m
Wage limit (per year)	110.000	150.000	220.000	220.000	150.000	
Total limit (per year)	8m	14m	14m	14m	8,5m	
Reduction rate 1st box	42%	50%	50%	50%	45%	
Reduction rate 2nd box	14%	18%	18%	18%	14%	

\* 2013 is expected

<sup>53</sup> Numbers mentioned account for the year 2011, in which exceptional measures were in force.

<sup>54</sup> One R&D labour year is equal to 1400 hours of R&D-work.

**Figure 4. Granted R&D-hours by the WBSO per sector.** Source: NL Agency (2010), edited by Dialogic.



Two-third of the growth in comparison to the 29% of 2009 is caused by ICT services. In 2010, this domain was responsible for 1300 extra WBSO applicants, most of them smaller than 10 employees. Projects concerning ICT-based services can only enjoy WBSO tax reduction if they rely on software that was developed in-house. Also the subsectors trade and transport experienced a big growth in R&D labour years that were assigned, probably because of their formerly low use of WBSO (NL Agency, 2010).

### Key demand-side policies promoting service innovation

There are three important instruments to support service innovation from the demand side. These instruments, all sector neutral instruments, are described below.

**Innovation vouchers** were introduced in 2004 as a part of the Subsidy Policy for Innovation. The aim of this instrument was to improve the knowledge diffusion from public research institutions to SMEs. By using an innovation voucher, entrepreneurs can request research institutions to perform a specific study. Besides providing SMEs access to knowledge, it also supports knowledge institutions to engage in demand-oriented research.

After successful completion of several pilots, the instrument was continued in a slightly altered form and larger scale from 2006 onwards. Budget was made available to assign 6000 vouchers. Half of them were for orienting purposes; SMEs could only use this type of voucher once. The other kind of voucher was bigger, having a value of 7500 euro each. SMEs could request a big voucher each year, but had to contribute at least one third of the value. The most recent batch, released in 2010, had again a modified form. One modification was the introduction of private vouchers, which could be used for research at private research institutions (as opposed to knowledge vouchers that could only be spend at a selected list of public research institutions). Because of their frequently applied nature, the own contribution of SMEs for this type of vouchers was raised to 50%. Another type of voucher that was available in the 2010 tender was the patent voucher. SMEs could use these for decreasing the costs of patent applications.

According to the 2008 evaluation, innovation vouchers were frequently used for service innovation. A bit more than half of all the big vouchers were spend on product innovation, but the focus of small vouchers was mostly at the development of new services. Taken together, service industri-

es are a large part of the users. Most prominent was the category of 'other business services', which includes legal services, accountancy, tax consultancy, marketing and research agencies, as well as architects, HRM services and agencies specialized in engineering and consultancy. This is a very diverse group of service activities, accounting for a big number of firms. Many of them belong to the latter type of agencies, engineering and consultancy, which basically concerns the development of new solutions (products or services) for clients. Besides the afore-mentioned category, also trade, ICT services, research and financial institutions belong to the frequent users of innovation vouchers (Dialogic, 2008). Innovation vouchers were not issued at a continuous rate. When a batch was entirely given away, there was no certainty whether and when a new batch of vouchers would be released. Despite positive evaluations of the use of innovation vouchers, the instrument was abolished in 2010 (NL Agency, 2011).

**Innovation programmes.** Based on the idea of *backing winners*, Dutch innovation policy was given a more programmatic approach. In the period 2004-2006 six key sectors with scientific and economic excellence (Flowers & Food, High Tech systems and Materials, Water, Chemistry, Creative Industry and Pensions & Retirement Management) were selected or successfully qualified for governmental support.

Since the end of 2005 consortia of companies, universities and research institutes could develop requests for funding for innovation programmes in order to tackle bottlenecks in the specific sector. In the end, ten programmes actually started between 2005 and 2010 (direct expenditures totalling at 915 million euro), some of them are still running. The individual programmes are designed to meet sector-specific issues. A variety of governance structures and instruments is used for initiating the research and activities as described in the strategic agenda of each innovation programme. Tenders are a popular instrument for assigning subsidies for research like collaborative research and feasibility studies.

Service-relevant innovation programmes were Logistics and Supply Chains, Service Innovation & ICT, Creative Industry and Pensions (see box 3). Innovative activity and output was realized in most of them, but the latter two innovation programmes never started and Service Innovation & ICT was discontinued halfway. A recent evaluation by Dialogic (report

expected early 2012) suggests that the programmatic policy instrument was more suited to technological innovation. Non-technological industries (as compared to manufacturing industries/clusters) were found to experience more problems when identifying bottlenecks for growth and developing strategic agenda's that are supported by the whole sector. Developing strong agenda's for legitimizing governmental support was essential for receiving money. Discussions on this account concerned the question whether some industries failed to do so themselves because of their own lack of internal organisation, or whether the programmatic approach did not fit these sectors that well and was mainly based on R&D model as practiced in manufacturing industries. In the creative industry, for example, it has been argued that the variety of activities under this label can hardly be considered to be a single sector. Moreover, sectors like these claim to engage mostly in cross-sectoral activities, which makes them less appropriate for having their own sector-based innovation programme (Dialogic, forthcoming).

**SBIR** is the Dutch equivalent of the 'Small Business Innovation Research'- measure as developed in the U.S.A, combined with the European approach of pre-commercial procurement. This instrument allows the government to support innovation on topics with societal relevance. When a challenge is identified, NL Agency or the Netherlands Organisation for Applied Scientific Research (TNO) arranges a competition in which the desired outcomes are expressed. Organisations can submit projects that will be evaluated on the basis of several criteria (impact on problem, entrepreneurship, innovativeness, economic perspective, ecological and social aspects, and quality of the proposal). After the assessment phase, winners receive the possibility to do a feasibility study during maximally half a year. The most realistic ones will be determined in another assessment round, after which the actual development of the winning projects can be started. Finally, possibilities for commercial exploitation will be explored. This last phase is not financially supported by the government any longer. However, the government can act as a launching customer that allows the firm to enter a commercial stage with a low time-to-market. In 2010 the SBIR budget increased towards 26.3 million euro (see table 3).

By the end of 2010, 28 competitions had been launched by five different ministries. According to a recent evaluation,

### Box 3. Innovation programmes targeted at service innovation

**Service Innovation & ICT:** this innovation programme is targeted at the creative industry and the financial sector by focusing on financial logistics and smart information and media services. The mission of the programme is to make sure that the Netherlands develops into a hub for Smart content, Lifestyle experience and Connectedness and a Centre of Excellence for Financial logistics. In order to reach this, the programme consist of four parts: a R&D-call for the development of specific service innovations, a TOP-programme for the development of new ICT-knowledge, an infrastructure programme in order to develop a platform that supports the new service innovations and a programme focusing on knowledge dissemination and value acceleration. In 2009 the Minister of Economic Affairs made a reservation of 12.5 million euro for the period 2009–2011. In 2011 it was decided that there would be no financial follow-up.

**Logistics and Supply Chains:** this innovation programme is focused on R&D (primarily knowledge development), demonstration projects (to pilot the knowledge), knowledge diffusion and human capital in order to improve the collaboration in the sector, to reduce market failure, reduce the tightness on the labour market for supply chain professionals and improve valorisation of knowledge towards SMEs. The Netherlands wants to become the expertise center in Europe for applied research and education in logistics and supply chain management. For the period 2009–2013 this programme has a budget of 25 million euro.

**Creative Industry:** this innovation programme is focused on improving the reputation and acquaintance of the Netherlands as a creative economy. An important goal of this programme is to deliver innovative services for societal issues. In addition, the creation of strategic alliances and integral education are important deliverables. The proposal for this innovation programme was approved in 2010, but due to a shift in innovation policy (see also the next chapter) the government didn't make any reservation and the programme didn't start. The applicants were requested to use this proposal as input for the development of the new strategic research agenda for the creative Top Cluster.

**Pensions:** in the retirement management sector there are several bottlenecks, like the lack of entrepreneurship and an innovative culture, not enough international focus and cross sectoral collaborations, too little facilities for start-ups and lack of availability of human capital. This innovation programme is set up to improve this in order to achieve a leading position as the Netherlands on the international market for retirement management. In 2010 the governments made a reservation of 10 million euro in total for the period 2011–2014. But later on this reservation was cancelled and the programme has never started.

**Table 3. Budgets for SBIR in period 2005–2010.** Source: NL Agency 2011.

	2005	2006	2007	2008	2009	2010
Total budget	1,1m €	3,5m	3,1m €	7,4m €	18,2m €	26,3m €

the SBIR is a popular instrument amongst governmental departments that seek solutions for problems with societal relevance. Participating companies enjoy the possibility of engaging in entrepreneurship and innovation with a social goal. SBIR competitions create new markets. Apart from the direct support like finance, winning a competition helps companies to position themselves towards potential partners, clients and the government itself.

The SBIR is a generic measure without specific attention for services. However, some of the main societal topics are likely to induce service innovation, e.g. health & care, transport and logistics, and safety. So far, most projects had a technological character. Examples of service innovations resulting from SBIR can be found in the competition 'Sustainable recreation and landscape quality'. A winning project was based on the cooperation with new parties in the care and education-

al sectors, resulting in recreational experiences like a caring-learning-working-staying overnight concept for young people who need special care. Another winner concerned sustainable recreation in hikers' cabins, designed to meet the increasing demand for fixed short-stay accommodations in sustainable and comfortable surroundings (NL Agency, 2011).

### Important policies improving framework conditions for service innovation

There are hardly any policies specifically improving the conditions for service innovation. Some general initiatives do have relevance for service innovation though:

- Support for ICT: There are several policy measures supporting the development of ICT-infrastructure and the adoption of ICT, which is likely to result in new ICT-based services. An example is 'Netherlands Digitally Connected', which supported ICT-related and process innovation within and between SMEs from 2007–2010. Another relevant initiative comes from ICT Regie, a national temporary network organisation occupied with ICT research and innovation for enhancement of the Dutch innovation climate. In 2007 she launched the ICT-Innovation Platform Creative Industry (**IIP Create**). This platform aims to develop an economically successful ecosystem for uniting creative SMEs, knowledge institutions and large companies. Focus is collaboration around technological renewal, creative design and scaling up of innovation. Another project for collaborative ICT research is COMMIT, which received 110 million euro for innovative projects (50 million euro from the government and 60 million from knowledge institutes, companies and social stakeholders). **COMMIT**, started in November 2011 as the last project from the Fund for the Enhancement of the Economic Structure (FES), is a public-private partnership, in which knowledge institutes and companies work together on ICT-research.
- The educative activities of **Exser**, **AMSI** and **Service Science Factory** lead to development and diffusion of skills and knowledge on the account of service innovation management.
- In the announcement of intended plans for renewing innovation policy, the Dutch government involved an economic analysis ('**Amsterdam letter**') concerning the strong financial business services in the Greater Amsterdam region. Given the acknowledged economic relevance of services like

banks, insurance, pensions, telecommunications and ICT consultancy, the government is willing to offer extra support in order to capture more of the region's potential.

## C. Checklist of policy measures

In this section we will organize the policy actions identified under section B under the strategic themes of the EPISIS-project. Thereby, we will differentiate between policies and measures seeking to 1) promote service innovation by targeting new types of innovation actors, novel types of innovation activities and innovative business solutions, 2) promote service innovation related competencies and capabilities, and 3) promote markets and infrastructure as a driver of service innovation.

### New types of innovation actors, novel types of innovation activities and innovative business solutions

The most important measures to promote new types of innovation actors, new types of innovation activities and innovative business solutions are the innovation programmes, IIP Create, COMMIT, SBIR, the WBSO, the ESF ACTION E – social innovation, vital companies and the Innovation vouchers. The innovation programmes (Service Innovation & ICT, Logistics and Supply Chains, Pensions and Creative Industry) are important measures to stimulate innovation in the service sector. The individual programmes are each designed to meet sector-specific issues and are stimulating innovation through collaboration between firms, institutes and universities. This will be continued with the Top Sector approach, with the top sectors Creative Industry and Logistics as service relevant top sectors. As for the creative industry; innovation through collaboration (also by formerly non-innovative actors) is supported here by the platform of IIP Create. Similarly, the project COMMIT specifically aims at connecting ICT-based organizations in order to let them engage in joint R&D, possibly resulting in digital services. In the 'Amsterdam Letter' can be read that the government wants to offer extra support to stimulate innovation in the service sector in the Greater Amsterdam region. Another programme for eliciting innovative activities is the SBIR, which attracts (new types of) innovation actors by rewarding them for solutions to societal problems. Both Exser and the Service Science Factory offer their expertise on service inno-



vation to support the ambitions of other organizations on this account, some of them fairly inexperienced. The WBSO programme promotes new innovation activities and new business solutions through tax reductions in order to support R&D amongst SMEs and start-ups. The Innovation vouchers promote new innovative activities as well by stimulating knowledge diffusion from universities to SMEs. And finally, the ESF Action E – social innovation, vital companies stimulate new organizational process innovations in order to increase the effectiveness of labour.

### Service innovation related competencies and capabilities

With regard to measures seeking to promote service innovation related competencies and capabilities one can think of support for education, knowledge based value networks and co-creation of knowledge. Important initiatives in the Netherlands are the establishments of Exser, AMSI, the Service Science Factory and NCSI. As a platform for cross-sectoral innovation Exser stimulates networking and co-creation of knowledge (e.g. on managing service innovation). AMSI is also an important network that focuses on leadership in service in-

novation both through research and education. Co-creation of knowledge is an important factor in the Service Science Factory, in which students, researchers and professionals work together to invent new or improve existing services. NCSI also has an important platform function by executing concrete actions and experiments and diffusing knowledge. The programmes Netherlands Digitally Connected and COMMIT specifically aim to spread and develop knowledge which should help organizations to engage more in the development of ICT-enabled services.

### Markets and infrastructure as a driver of service innovation

The innovation programmes and their successor (Top Sector approach) in a way also stimulate markets and infrastructure as a driver of service innovation, by addressing important bottlenecks in the sector (e.g. rules and regulations). In addition, SBIR is an instrument that focuses on the creation of markets for innovation by government as launching customer. The most important instruments that support infrastructure as a driver of service innovation are the ICT-related initiatives, such as Netherlands Digitally Connected.

**Table 4. Programme relevance to the thematic areas of the EPISIS-strategy.**

Programme/policy	Promotion of service innovation by targeting new types of innovation actors, novel types of innovation activities and innovative business solutions	Promotion of service innovation related competencies and capabilities	Promotion of markets and infrastructure as a driver of service innovation
WBSO	✓		
Innovation Vouchers	✓		
The innovation programmes	✓	✓	✓
Top Sector approach	✓	✓	✓
ESF ACTION E	✓		
Exser	✓	✓	
AMSI		✓	
NCSI		✓	
Service Science Factory	✓	✓	
SBIR	✓		✓
Netherlands digitally connected		✓	✓
COMMIT	✓	✓	✓
IIP create	✓	✓	

## D. Future developments and service innovation policy needs

The Dutch Ministry of Economic Affairs, Agriculture and Innovation has introduced a new government policy on the business sector in order to become one of the five leading knowledge economies. An essential part of this policy is a more exclusive focus on nine economic top sectors or so called 'Top Areas' (life sciences, high-tech materials & systems, agro-food, water, energy, horticulture and propagation materials, chemistry, the creative industry and logistics). The Dutch government has set aside 1.5 billion euro to increase the competitiveness of these sectors. What is new in the egalitarian Dutch context is the exclusive focus – other sectors will not receive any targeted support anymore.

The most important characteristics of the new policy are (Ministry of Economic Affairs, Agriculture and Innovation, 2011):

- *A sectoral approach:* The Top Areas are sectors in which The Netherlands has a strong international position and in which companies and research institutions have strong inter-organisational linkages. For each sector an integral policy agenda is created across the whole line of innovation policy: from foreign affairs to education policy, from regulatory pressure to research policy and from development aid to infrastructure and ICT.
- *Joint decision making:* Research organisations, the business sector and the government – the so-called 'golden triangle or triple helix' – will cooperate within these top areas. Companies and public research organisations will be more involved in formulating the government innovation policy and the research agenda.
- *Generic tax-reduction measures and more venture capital:* The government will end 500 million euro of sector-specific financial contributions to businesses and instead introduce more generic tax-reduction measures (most notably a significant increase of the WBSO scheme). According to the government, the turn away from sector-specific funding is in favour of innovative SMEs that generally profit more from generic support. Grants will be turned into loans, so that business will have the right incentives for innovation.
- *Important role for entrepreneurs:* In order to boost innovation, the Dutch government wants to stimulate entrepreneurship. For this reason the regulatory burden for busi-

nesses will be brought down by 10% in 2012 and 5% annually after 2012. Also the minimum capital requirement of 18.000 euro's for starting a business (PLC) (which made The Netherlands an exception) will be dropped. There will be an end to unreasonable demands for medium-sized enterprises and individual entrepreneurs in procurements by the government.

Thus, in the first place administrative bottlenecks are addressed, such as the removal of unnecessary rules and regulations. In addition, the government has set aside 1.5 billion euro's (which includes *existing* funding of research institutions as TNO and NWO), to improve the competitiveness of the nine selected sectors. The 1.5 billion is rerouted from existing financial flows. No new money is brought into the system. On the contrary, the extensive FES-funds will no longer be used for research and innovation.

The creative industry and logistic services industry are the two sectors in which service innovation plays a central role. Both top clusters are exceptions in what seem to be a policy dominated by fairly established (mostly technology dominated) agricultural and manufacturing clusters. In these clusters innovation is mainly stimulated by generic (fiscal) innovation instruments. The **WBSO** will be continued in 2012 (with a budget of 864 million euro) and in 2013 (with an expected budget of 715 million euro). In addition firms can make use of the Research and Development Deduction (**RDA**) which starts the 1<sup>st</sup> of January 2012. In contrast with the WBSO, which is targeted at reducing labour costs, the RDA can be used to reduce the costs for R&D projects, by offering a tax deduction for income taxes and corporate income taxes. In 2012 there is a budget of 250 million euro which will increase until 500 million in 2014 and beyond. In 2013 companies will also be able to make use of a RDA+ scheme of 50 million, which can be used to reduce cost for joint R&D activities that are put under contract by a public knowledge institute. The expenditures on these R&D-activities (with exception of labour costs) can first be subsidized by the first RDA instrument. After that an extra tax credit of 25% can be applied. Another important fiscal instrument is the **Innovation box** (625 million euro in 2012), which gives a discount on corporate incomes taxes for companies making profit out of innovative activities. All in all, one can say that fiscal instruments will be the most important support measures is this new policy.

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## 2.10 Appendix 10. Norway

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### A. National policy context

The Norwegian national policy context with respect to innovation policy and service innovation can be summarized in the following six main themes:

1. During the last decades there has been a clear ambition to make industrial policy instruments industry neutral, even though sector based policy aims have come more to the front again the last years.
2. Despite long time emphasis on a sector neutral innovation policy, Norway has all the time continued a traditional sector policy towards certain sectors
3. There is an increased awareness among all actors of the importance of services businesses and innovation in services. However, no significant changes in policy instrument design and support measures for service innovation have yet been made.
4. Research and evaluations nevertheless indicate that service enterprises increasingly take part in different innovation promoting schemes.
5. Norway practices strict rules for public procurement and transparency in public administration. This provides stable framework conditions for businesses that deliver their services to the public sector.
6. At the same time however the boundary between the public and the private sector is rather fixed and not really up for experimentation in Norway, which leaves little room for public-private service innovation and cooperation.

The six main themes will be further described below.

During the last twenty years, the Norwegian authorities have developed a clear ambition to make industrial policy instruments more industry neutral. However sector based policy aims have come more to the front again the last years. The incumbent Government has in its basis document (Soria Moria erklæringen) emphasized five sectors of strategic importance in the industrial policy; the marine sector, the maritime sector, the energy sector, the environment sector and the tourism sector. The document also underlines that the Government is aware of the service sectors importance for Norway's industrial development.

Norway's innovation policy is formulated in the Report to the Storting St. meld. 7 (2008–2009) (white paper). The main aim of the policy is to strengthen Norwegian industry's ability to innovate. The innovation policy is not explicitly linked to sector policy objectives. Both policies to strengthen the framework conditions for innovation and targeted programs to enhance innovation in enterprises are open for all industry sectors. In particular the policy should be relevant to service businesses that make up the bulk of the Norwegian economy.

The political emphasis on enhancing service innovation should also be seen against the background of what OECD in its Review of Innovation Policy in Norway (OECD, 2008) called the Norwegian puzzle: "Norway is one of the best-performing countries in terms of growth and level of labour productivity. However, the EU's Innovation Scoreboard puts Norway below the EU average in 2007, which indicates that Norway "underperforms" against conventional S&T and innovation indicators, despite its persistently high economic growth. The very uneven and, for some indicators, very weak Norwegian performance may be seen to reflect the specific structure of the Norwegian economy, in which an exceptional strong role is played by resource-based industries. Non-R&D based innovation, for instance in the service sector, seems to underlie the exceptional productivity performance of the private service sector."

Despite the increased awareness of the importance of innovation in services, Norway has nevertheless continued a traditional sector policy towards certain sectors, partly connected to the sectors of strategic importance mentioned above. In the context of innovation policy special schemes are available for enterprises in sectors as agriculture (which is the subject of a particularly high degree of protection against foreign competition), the marine sector, the maritime sector, tourism and energy. In this light, emphasis on enhancing service innovation should rather be seen as an aim than a de facto policy.

Norwegian policy instruments are also to a large degree designed to promote business activities in rural regions, which also influence innovation policy schemes. In general, more funds are available for enterprises in rural areas than in urban areas.

### The national approach to service innovation support

The report to the Storting on innovation policy (St. meld. 7 (2008–2009)) underlines both the size and heterogeneity of the service industries. The report also rejects an over all poli-

cy for service innovation. The policy should rather be relevant for both service and manufacturing industries. The policy instruments should embrace all sorts of innovation. Still the report emphasizes the schemes designed to enhance innovation in certain service sectors such as tourism and the maritime industry.

To better understand the policy implications of the increasing role of services in innovation, the Ministry of Trade and Industry commissioned in 2005 a comprehensive study of innovation in the Norwegian services sector. The report, which proposes a fresh conceptual framework for analyzing different service industries, was published in 2006 (Econ and Menon, 2006. ECON-Report No. 2006-025). The report made an important contribution to better understanding service innovation, also in the governmental bodies responsible for different R&D and innovation promoting policy instruments.

However it is fair to say that no significant changes in policy instrument design of policy measures have yet been made. There are reasons to believe that governmental bodies involved in project evaluation has been made more aware of the innovation potential in service innovation projects. Research also indicates that service enterprises increasingly take part in different innovation promoting schemes.

To bring service innovation more to the front of the innovation policy, the Research Council of Norway approved in

2011 the Center for Service Innovation (CSI) as one of seven national centers for research driven innovation. The Center will be further described below.

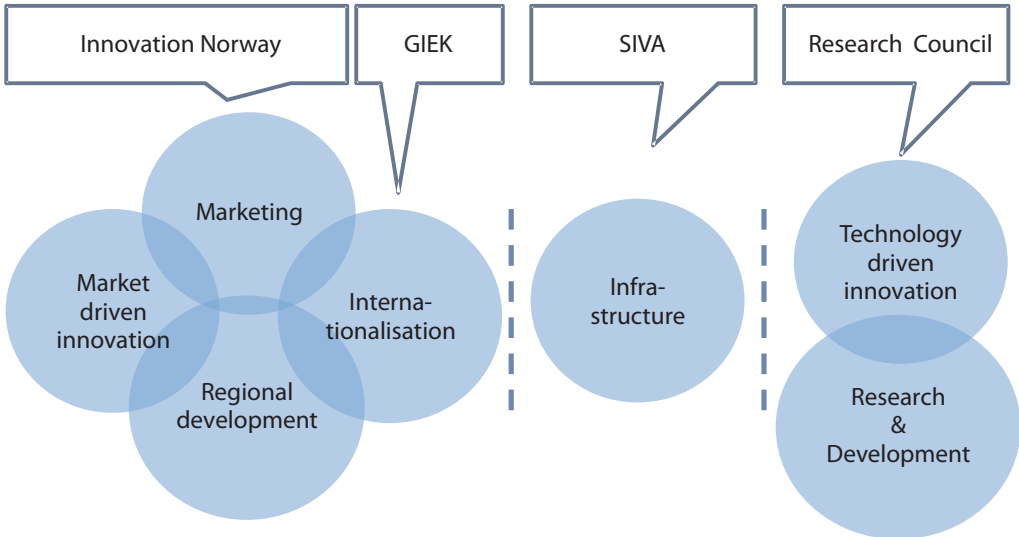
Finally it should be noticed that Norway practices strict rules for public procurement and transparency in public administration. Although the focus is on the public sector as a procurer and the public sector in itself, the strict rules establishes stable and clear framework conditions for businesses that deliver their services to the public sector.

At the same time however the boundary between the public and the private sector is rather fixed in Norway, which only leaves little room for experimentation and public-private service innovation and cooperation.

**Most important actors from a service innovation policy point of view**

In comparison with most other countries, the responsibilities and administration of Norwegian research and innovation policy is rather concentrated among primarily two large institutional actors with a relatively clear division of labour between them. That is the Norwegian Research Council and Innovation Norway. Innovation Norway's research and development contracts (The OFU/IFU programme) constitute the most visible overlap between the two actors.

Figure 1. Norwegian Innovation policy system. Source: DAMVAD 2011.



There are only two small exceptions to this rule namely SIVA and GIEK. The two exceptions are introduced in further detail below. At the overall level, it should be noticed that the Research Council is more linked to research-driven innovation while Innovation Norway is more linked to market-driven innovation. The work and responsibility of the two institutions is thus much wider than for innovation and funding agencies in other countries. However, this is followed by public mandates that are equally broad or even imprecise.

### **Innovation Norway**

Innovation Norway is the most important actor for innovation and development of Norwegian enterprises and industry in Norway. It supports companies with competence, advisory services, promotional services and network services. Also the marketing of Norway as a tourist destination is one of Innovation Norway's key tasks.

The main aims of Innovation Norway are broadly defined to contribute to:

- Enhancing innovation in Norwegian enterprises and industry
- Building competitive Norwegian enterprises at both domestic and international markets
- Promoting Norwegian enterprises
- Promoting Norway as an attractive tourist destination
- Securing development in rural areas
- Transforming ideas into successful business cases
- Promote interaction between enterprises, knowledge communities and R&D institutions

Innovation Norway is also the official trade representative for Norway abroad. The organisation shall assist Norwegian businesses to grow and find new markets through its local presence. The organisation is represented in more than 30 countries worldwide and in all Norwegian counties.

### **The Research Council of Norway**

The Research Council is Norway's other large body for the development and implementation of the national research strategy. The Council is responsible for enhancing Norway's knowledge base and for promoting basic and applied research and innovation in order to help meet research needs within society. The Research Council also works actively to encourage international research cooperation.

The Research Council serves as an advisory body on research policy issues, identifies research needs and recom-

mends national priorities. Through the establishment and implementation of targeted funding schemes the Research Council facilitates the translation of national research policy objectives into action. The Research Council also serves as a meeting place for researchers, funders and users of research findings, as well as for the different sectors and subject fields that are affiliated with the world of research.

### **SIVA**

SIVA is the Industrial Development Corporation of Norway. It is a governmental corporation and national instrument founded in 1968. SIVA aims to develop strong regional and local industrial clusters through ownership in infrastructure, investment and knowledge networks as well as innovation centres. The enterprise is organized in main areas Real Estate, Innovation, Industry and International. Special tasks are organized separately. SIVA has ownership in 150 companies in total. This includes subsidiary companies and attached companies. SIVA owns 51 industrial plants, and is part owner in 25 knowledge and research parks, 52 commercial gardens, 19 industry incubators and 9 seed / venture companies. In addition, it has follow-up responsibility for 22 R&D incubators and 12 NCE's.

### **GIEK**

It is the role of GIEK to make guarantees for Norwegian companies' export credits on behalf of The Norwegian Government. With assistance from GIEK, exporters shall be able to offer credit or finance without bearing the entire risk themselves. GIEK's role is to secure competitive terms for the industry and promote the export of Norwegian goods and services and investment abroad.

### **The design council of Norway**

The purpose of the Design Council is to promote the use of design as a strategic tool for innovation to achieve greater competitiveness and profitability in Norwegian business and industry.

### **Argentum**

Argentum is an asset manager specializing in Nordic private equity funds. It is active in both the primary and secondary market and emphasize close co-operation with Nordic and international investors, as well as with Nordic private equity managers. Argentum is funded by the Norwegian Government. Argentum currently has NOK 6.5 billion (approximately EUR 0.8 billion) under management and a staff of 16.

## Investinor

Investinor AS is a government funded investment company. It invests venture capital into internationally oriented and competitive Norwegian companies in the early growth and expansion stages.

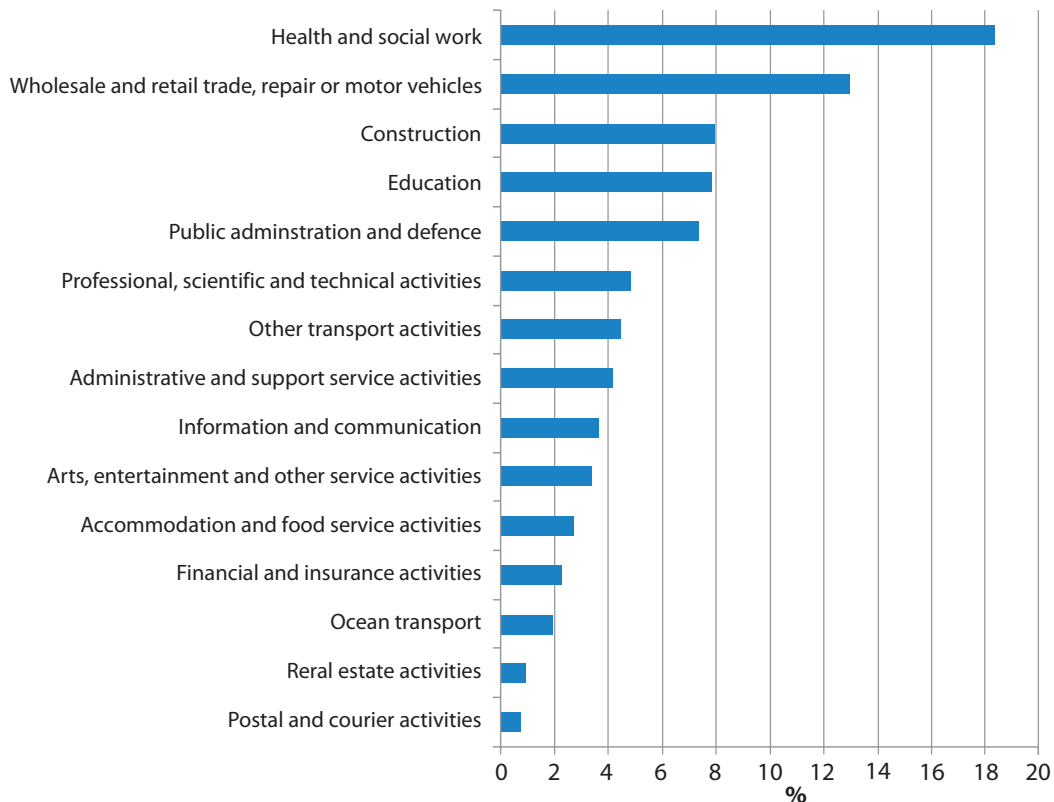
## Most important service industries in the country

The production of services account for around 76 percent of employment (man hour) and 52 percent of value added in the Norwegian economy (2010). Construction works are not included in the figures. Services share of total value added is a lower number than in most other advanced economies. This is mainly the result of a dominant oil sector in Norway.

Since a larger part of services are performed within the public sector in Norway, services only account for about 45 percent of the market-oriented value creation in Norway.

The figure below shows the most important service industries in Norway sorted by size. The largest service industries with respect to both employment and value added is Health and social work with 18 per cent of total man-year. Wholesale and retail trade, repair of motor vehicles employs 13 per cent of total man-year. Put together business services in the form of Professional, scientific and technical activities, Information and communication services and Administrative and support service activities employ 12,5 per cent of total man-year.

**Figure 2. Share of man-year in service industries as percent of total man-year.** Source: Statistics Norway, National Accounts. Construction is included. 2010, DAMVAD



## The most important industries from a service innovation point of view

OECD (2008) found in Econ and Menon (2006) an interesting typology of services to help understand why and how service firms innovate and how policy affects their innovative activity. The typology defines the following service groups:

- *Problem solvers* create value by solving specific problems for their customers. These services are not very standardised. Law firms, medical doctors, engineers, architects and researchers are typical problem solvers.
- *Producers of assisting services* generate customer value by taking over time consuming activities that are easy to standardise for firms and households. Security services and cleaning services are typical examples.
- *Producers of digital and manual distributive services* generate value by facilitating interaction between customers, for instance by selling goods and transporting commodities, passengers and information.
- *Producers of leisure services* generate value by stimulating customers' emotions, perceptions and spiritual experience. Leisure services are very heterogeneous and include activities such as sports, arts, entertainment, restaurant services and media services.

The report finds very differentiated patterns of innovation in the four main groups:

For *problem solvers*, innovation is often the core activity owing to a strong focus on adaptation and tailor-made solutions. Innovation surveys also indicate that a relatively large share of their innovative activity is for product innovations rather than process innovations. They focus on new solutions, new diagnostic tools, analytical concepts and differentiating brands.

Firms that produce *assisting services* aim their innovations towards process improvements. These services have a lot in common with traditional commodity production. To a large extent, process innovation in this group is linked to improved worker efficiency through standardisation, quality control and scale effects.

Innovation among providers of *distributive services* is a question of reducing transaction costs between customers. This can be obtained through process innovations as well as new forms of distributive services, in terms both of new ways of distributing and of what is distributed. Process innovations are often linked to digitisation and automation, and often focus on a more efficient user-producer interface. Integration of logistic systems in transport is a typical example.

Menon (2010) has calculated the scope of service industries in accordance to the nomenclature in Econ and Menon (2006), see Table 1.

**Table 1. Service segments shares of Norwegian business economy. 2008.**

Sector	Number of enterprises	Turnover 2008 (Mill NOK)	Value added 2008 (Mill NOK)	Share of Value added (business)
Knowledge service and problem solvers	32,814	578	194	11%
Producers of assisting services	5,034	124	60	3%
Producers of manual distributive services	87,358	1,880	396	23%
Producers of digital distributive services	4,684	290	99	6%
Producers of leisure services	8,659	102	36	2%
Construction	12,909	295	91	5%
Electric power generation and transmission	741	129	51	3%
Manufacturing	10,304	790	212	12%
Oil and gas	668	1,110	545	31%
Agriculture, forestry and fishing	2,902	41	15	1%
Other	10,112	201	41	2%
<b>Total</b>	<b>176,185</b>	<b>5,540</b>	<b>1,740</b>	

Source: Menon Business Economics and Dun & Bradstreet, Public administration and defence; compulsory social security, and stat owned hospitals are excluded.



## B. Policies promoting service innovation

### Policies and measures supporting SUPPLY of innovative services

The two main actors on the supply-side of policies promoting service innovation, are Innovation Norway and The Research Council of Norway. These bodies manage several schemes and instruments promoting innovation. However, none of the schemes are designed specifically for service innovation.

#### Innovation Norway

Innovation Norway manages several schemes with the purpose of promoting innovation. These include financial-schemes, competence-schemes, advisory-schemes, cluster-schemes and promotion. According to the annual report of 2010, approximately 26 pct. of the grants from Innovation Norway's different schemes were given to the service industry. This amounts to 1 621 mill. NOK. Table 2 shows the amount of grants to service industry by sector, and the percentage of total grants for each sector.

**Table 2. Amount of grants to service sector.**

Sector	Mill. NOK to service industry by sector	% of total grants to service industry by sector
Agriculture	165	7%
Marine (seafood)	64	5%
Tourism	231	88%
Oil and gas	72	46%
Health	95	66%
Energy and Environment	154	30%
ICT	225	85%
Maritime	357	62%
Culture and adventure	62	72%

However, none of the schemes mentioned above are designed specifically to promote *service* innovation. One could say that some of them might be more suitable for the service industry than others, but one would probably find that more technological projects receive grants to a larger extent than service related projects without much technology development involved.

### Sector specific schemes

Many of the schemes that Innovation Norway is managing are sector specific. Agriculture, tourism and maritime are the sectors for which there are most sector-specific schemes. Schemes designed to promote tourism and maritime industry, are to a large extent also designed for the service industry, since these industries contain a large amount of service businesses.

### Financial schemes

The financial schemes are designed for both the service industry and the goods industry. These schemes are probably the most relevant schemes for the service industry although technological projects more often receive grants. Innovation Norway manages both different kind of loans and different kinds of grants to businesses. An example of a loan type is "Innovasjonslån". This is a loan granted innovative projects in small and medium sized businesses. The loan will typically account for half of the project cost. Small and medium sized innovative business can also receive grants, but there are strict regulations in the EEA concerning how much each business can receive, and to what kind of projects.

The OFU/IFU support scheme is a scheme directed towards innovative projects with an established relationship between a customer (both private and public) and a supplier in connection to a development project. This instrument supports major research projects and a significant share of the support goes to service companies, specifically in the health sector and ICT-sector. (Menon 2010).

### Cluster-schemes

Clusters-schemes are also relevant for the service industry, to some extent. Two cluster programmes, called ARENA and NCE, are aimed at stimulating innovation in larger networks of companies. The ARENA programme is less capital intensive and places lower demands on innovation content and organization. To some extent one can say that the NCE programme is a continuation of the ARENA programme for companies that are successful. There are a much higher proportion of service companies participating in the ARENA programme than in NCE. Of the 12 NCE's one finds three centers with a clear focus on service innovation. One is focused at food traditions and development of culinary concepts to the tourism industry. Another NCE is also focusing on Tourism Innovation. Final-

ly there is a NCE focusing on the development of commerce and trade technology to the energy market. (Arena and NCE is also financed by the Research Council).

### **The Research Council of Norway.**

The Research Council of Norway manages several instruments promoting R&D. In 2008 the Research Council reviewed some 500 innovation-oriented projects (see Sund and Thoresen, 2008). They found that 52 percent of the projects had a service content or were service relevant. For 25 percent of the projects the service content constituted more than 70 percent of the activity in the project.

The funding schemes for R&D projects can be divided in four main groups:

- Research programmes (including large-scale programs)
- Independent projects
- Infrastructure and institutional measures (including center-schemes)
- Networking measures.

### **Research programmes**

There are several types of programmes, including user-directed innovation programs. These programs are designed specifically for companies seeking further innovation of their activities or industries. These programmes comprise the Research Council's main instrument for achieving its industry-oriented R&D objectives. Users are responsible for establishing the basis for research, while the Research Council helps to create an arena for cooperation between the companies and the research community as regards the initiation, planning and implementation of research activities. Projects require at least 50 per cent co-financing from private enterprise. User-directed research seeks to promote R&D initiatives in industrial circles, and thus serves to enhance the focus on R&D within trade and industry as a whole.

An example of research programme, is the BIA programme. The BIA programme seeks to promote the greatest possible value creation in Norwegian trade and industry through research-based innovation in companies and the R&D groups with which they cooperate. The BIA programme provides funding for research that will result in new products, processes and services in or across a variety of sectors, regardless of branch of industry, with the exception of those areas that are covered by the thematically oriented programmes. Relevant

thematic areas for the projects include environmental technology for a more sustainable business sector, new business models, and management and organisation, also in combination with technology, to name a few.

The RENEW scheme (FORNY ordningen) is targeted at so called TTOs at Norway's universities and hospitals. The scheme intends to finance commercial applications for innovations that spin out of research. In the period 1996–2008 about 300 companies were founded through the scheme. A significant share of these companies was service companies. There are also a significant proportion of ICT projects that touches the service field.

Another relevant scheme is SkatteFUNN. Under the SkatteFUNN scheme, business enterprises engaged in research and development activity on their own or in collaboration with others may apply for a tax deduction. The scheme is legal-right based and regulated in the statutory framework, and is open to all branches of industry and all types of companies – regardless of size. To be eligible for a tax deduction, business enterprises must be subject to taxation in Norway, although they do not have to be currently liable for taxation. Companies may receive a 20% tax deduction of incurred, documentable expenses under the SkatteFUNN scheme. The size of the tax deduction is calculated and limited by the Norwegian Tax Administration in accordance with Section 16–40 of the Norwegian Taxation Act and appurtenant regulations.

### **Infrastructure and international measures: Center for Service Innovation**

The Research Council also manages the SFI-scheme, which are Centres for Research-based Innovation (SFI). The purpose of the scheme is to build up and strengthen Norwegian research groups that work in close collaboration with partners from innovative industry and innovative public enterprises. In 2010 the Center for Service Innovation obtained status as SFI-center. This center, coordinated by the Norwegian School of Economics, focuses on the innovation challenges facing the service sector. CSI aims to enhance the innovation capabilities of its business and academic partner and includes researchers from all NHH Departments.

The CSI partners include five of Norway's largest service providers within the areas of Communication, ICT, Finance, and Logistics, academic partners and business knowledge partners specializing in innovation process management and ICT-sup-

ported service innovation. They also include bridging partners assisting knowledge dissemination and SME-partner inclusion. Through bridging partners it will enable more SMEs to take part in open innovation driven by the largest buyers of sub-contracted services in Norway. The CSI-board, where business partners hold the majority positions, identifies and develops research themes to be pursued, and decides which partner development projects to integrate into its research environment.

### CSI's main research themes

- Theme 1: Innovations in customer and brand experiences
- Theme 2: Co-creation and open innovation process
- Theme 3: Business model innovations
- Theme 4: Infrastructure and structural innovations

### Policies and measures supporting DEMAND for innovative services

Norway has not developed a policy for supporting service innovation by demand side measures.

However the Norwegian Government has presented an action plan for reducing administrative burdens in business (red tape) called "Tid til nyskaping og produksjon" (Time for in-

novation and production). It contained over 120 suggestions on areas where regulations that affect business could be simplified. The action plan will probably especially affect service industries.

In 2008 the Government established the Agency for Public Management and eGovernment (Difi) which shall ensure capacity building and dissemination of information about public procurement. But it has no focus on market development through public procurement.

However, Norway practices strict rules for public procurement and transparency in public administration. This establishes clear and stable framework conditions for businesses that deliver services to the public sector.

At the same time however the boundary between the public and the private sector is rather fixed in Norway, which only leaves little room for public-private service innovation and cooperation.

## C. Checklist of policy measures

The below table summarises the policies identified in the previous section under the areas of the EPISIS-strategy.

Programme/policy	Promotion of service innovation by targeting new types of innovation actors, novel types of innovation activities and innovative business solutions	Promotion of service innovation related competencies and capabilities	Promotion of markets and infrastructure as a driver of service innovation
IN – Sector specific schemes	✓	✓	
IN – Financial Schemes (in general)	✓	✓	
IN – OFU/IFU programme	✓		✓
IN – Cluster Schemes	✓	✓	✓
RCN – BIA programme	✓	✓	
RCN – RENEW programme	✓	✓	✓
RCN – Skattefunn	✓		
RCN – CSI		✓	✓

IN: Innovation Norway

RCN: Research Council Norway

## D. Future developments and service innovation policy needs

There are no new up-coming service initiatives identified, beyond the one mentioned above. However the Government will present a new report to the Storting about the future development of Innovation Norway and SIVA, based on evaluations of the two institutions. The report may foster a discussion about the right balance between sector based programmes and open for all programmes, as discussed in the evaluation of Innovation Norway. The content of the report is still unknown.

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## 2.11 Appendix 11. Poland

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### A. National policy context

#### National approach to service innovation support

The service innovation support is at an early stage of development. As a result, there is no mature system giving special attention to promoting service innovation. Part of the explanation lies in the fact that Poland still has an important manufacturing sector, which requires investment for upgrading and modernisation of companies in order to operate in an increasingly competitive market. The other reason is that innovation policies date back to the early 2000s. In practice, the focus of policy thinking has been to a large extent on improving science-driven and technology-based strategies rather than introducing more systemic thinking about innovation.

As part of the EU Structural Fund interventions, the Innovative Economy Operational Programme (known also as POiG) is the main national programme (€ 10bn) in support of innovation activities. It makes an explicit reference to the Oslo Manual definition of innovation and in practice provides substantial financial assistance for the development of product- (good and services), process, marketing and organisational innovations in both productive and service sectors, which will lead to the establishment and development of innovative enterprises. In other words, the programme has neither foreseen special support for service sector nor excluded such a possibility. Henceforth, the programme logic is based on the horizontal approach, meaning that all companies are eligible for funding with few exceptions imposed by the State aid rules.

#### Service innovation in the Strategy of Innovation

The new Innovation and Effectiveness of Economy Strategy (known also as SliEG) which is technically approved and formally will be adopted by the Council of Ministers in the coming months acknowledges the importance of both the manufacturing and service sectors: “Independently from the weight of service sector in Poland’s economy, it is necessary to undertake activities to create modern industry an advantage of which will be high effectiveness and advanced R&D base, [...] Since the service sector has been, a key factor having an influ-

ence on the level of country GDP, increasing innovativeness in the service sector is also a matter of special importance”. Besides that, the SliEG mentions the subject of links between knowledge intensive services and implementation of modern technologies. With regard to the future plans (discussed more in detail in Section D) it can be expected that more emphasis will be placed especially on the development of knowledge intensive services.

#### Main stakeholders

Figure 1 is a graphical representation of the Poland’s innovation system. The most important actors from service innovation point of view are, notably the Polish Agency for Enterprise Development (PARP), the Ministry of Economy, and the National R&D Centre (NCBiR), established in 2007 to oversee the management of strategic R&D programmes.

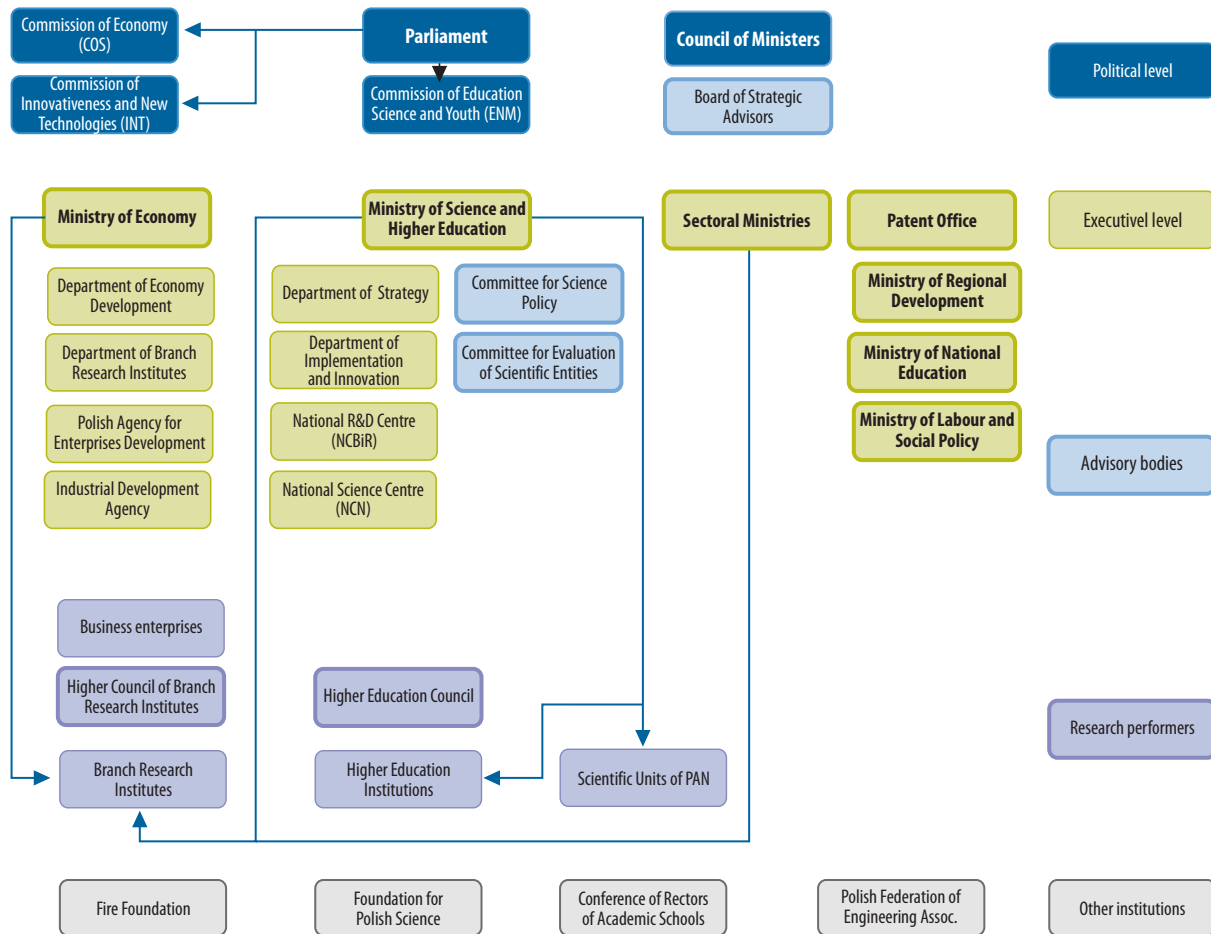
Established in 2000, **PARP** is a governmental agency overseen by the Ministry of Economy. The main objective of activities undertaken by PARP is the implementation of economic development programmes supporting innovation and R&D in SMEs, regional development, export, development of human capital, and use of new technologies. During the 2007-2013 programming period, the Agency is responsible for the implementation of three operational programmes, i.e. Innovative Economy, Human Capital and Development of Eastern Poland.

The **Ministry of Economy** is historically one of the main institutions dealing with innovation besides the Ministry of Science and Higher Education. It is responsible; among the other aspects for the competitiveness of economy, foreign economic cooperation, energy, conformity, measurement, hallmark assessment, intellectual property, innovation, business activities, promotion of the economy and cooperation with the business sector representatives.

The Ministry is also responsible for the implementation of four support measures within the POiG, notably 4.5 Support of investments of large importance to the economy, 6.2.2 Preparation of investment fields, 6.5.1 Promotion of economy on international markets, and 6.5.2 Support to the participation of enterprises in promotion programmes. Moreover, the Ministry of Economy is overseeing the implementation of two priorities of POiG, notably 3 Equity for innovation and 6 Poland’s economy on the international market.

The role of the **NCBiR** in promoting service innovation is limited and mainly concerns support of R&D activities, the aim of which is to develop new innovative products.

**Figure 1. Poland's innovation system.** Source: Adapted from Walendowski (2011) TrendChart mini country Report



### Service Sector in Poland

According to the latest available data for 2010 the industry and construction gross value added (GVA) was estimated at 25% and 10%, respectively. The remaining contribution came mainly from the service sector and not surprisingly to a large extent from trading, repairs, transport, logistics and communication (also known as market services)<sup>55</sup>.

**In terms of GVA**, the most important service industries are wholesale and retail trade, transport and storage, informa-

tion and communication, financial insurance, and real estate activities. It is important to also mention 'non market services' such as public administration and defence, compulsory social security, education, human health and social work activities.

**In terms of employment**, it is important to point that the manufacturing sector, agriculture and construction generate two-fifth of total employment. Figure 2 shows that the three main market service sectors with the highest level of employment are trade, transportation, financial and insurance activi-

<sup>55</sup> Communication of the Central Statistical Office concerning the updated estimate of GDP in 2010, 26.04.2012.

**Figure 2. Employed persons 2006–2010 (in thousands).** Source: Central Statistical Office (2011) Employment in National Economy in 2010.

Specification	2006	2007	2008	2009	2010
<b>Total</b> . . . . .	<b>13 220,0</b>	<b>13 771,1</b>	<b>14 037,2</b>	<b>13 782,3</b>	<b>14 106,9</b>
— public sector . . . . .	3 635,3	3 619,8	3 621,2	3 606,5	3 570,7
— private sector . . . . .	9 584,7	10 151,3	10 416,0	10 175,8	10 536,2
of which sections:					
A— agriculture, forestry and fishing . . . . .	2 134,6	2 138,2	2 128,3	2 124,9	2 376,1
B— mining and quarrying . . . . .	181,8	181,0	184,7	183,4	173,0
C— manufacturing . . . . .	2 499,7	2 627,5	2 591,8	2 420,6	2 436,5
D— electricity, gas, steam and air conditioning supply . . . . .	147,6	146,4	152,7	151,3	159,1
E— water supply; sewerage, waste management and remediation activities . . . . .	124,4	127,9	132,0	136,5	140,9
F— construction	731,4	824,9	877,5	882,7	865,2
G— trade; repair of motor vehicles . . . . .	2 094,5	2 210,5	2 287,2	2 179,5	2 189,1
H— transportation and storage . . . . .	669,7	701,7	733,2	693,7	701,4
I— accommodation and catering . . . . .	228,9	239,2	274,7	242,5	237,4
J— information an communication . . . . .	189,8	211,6	233,1	239,6	237,8
K— financial and insurance activities . . . . .	310,4	329,9	348,0	333,9	337,9
L— real astate activities . . . . .	179,0	185,0	192,7	193,1	196,0
M— professional, scientific and technical ac- tivities . . . . .	431,6	463,3	472,6	480,2	481,3
N— administrative and support service activities .	339,4	372,5	374,5	375,7	411,7
O— public administration and defence; compul- sary social security . . . . .	880,4	895,2	919,0	964,5 <sup>1</sup>	970,1 <sup>1</sup>
P— education . . . . .	1 044,4	1 052,3	1 058,1	1 071,9	1 079,9
Q— human health and social work activities . . . .	697,8	718,1	728,9	747,6	764,4
R— arts, entertainment and recreation . . . . .	136,2	141,9	145,8	146,3	148,4
S— other service activities . . . . .	198,4	204,0	202,4	204,4	200,7

ties. Altogether, they account for approximately about 23% of total employment. Comparatively, the public administration, education, and human health-related services account for 20% of total employment. Henceforth, there are some substantial differences in relation to the importance of service sector but also within the service sector itself, when the employment data is taken into account.

**In terms of innovativeness** it is worth pointing out to the analysis of innovativeness in the service sector<sup>56</sup> which noted that the science sector was characterised by the highest level of innovativeness (74.9%). Comparatively, such high degree of innovativeness is observed in insurance and pension funds (69.3%). The sectors which show the lowest level of innovativeness are water transport (11.4%) as well as land- and pipe transport (9.4%).

According to the 2008 analysis concerning innovation activities in the service sector commissioned by the Ministry of Economy, logistics was one of important innovation demand service sectors<sup>57</sup>. The report put also a spotlight on six innovation areas in logistics, notably the new product or service, new business model, enabling technology, operation, organisation and process.

One of the factors determining the development of service sector in Poland is foreign direct investment. According to the analysis prepared by the Ministry of Economy, during the first years of transformation foreign investors were mainly interested in the manufacturing sector, whereas in recent years they have been mainly investing in the service sector, especially in financial intermediary services, retail estate and business services<sup>58</sup>.

### **Most important industries from service innovation point of view**

Increasingly the process of assimilation of material products and services lead to blurring the borders between service and industrial sectors. The information about importance of industries in Poland from service point of view are generally scarce and the focus of existing analysis is on the role of technologies for the manufacturing sector, especially R&D capacity in the ar-

ea of ICT. In other words, the demand for services along the value chain has not been a subject of investigation.

In summary; among the most important stylised facts of most important industries from service innovation point of view are the following:

1. The manufacturing sector is especially important for the financial sector.
2. The production of different means of transport is also important for transport-related services, but also for after sales services, insurance, etc.
3. The mining, chemical, food, refinery and pharmaceutical branches of industry are in particular important for services related to design, implementation of industrial processes, distribution and marketing.
4. The energy, heating and water processing industries are of major importance to services concerning modelling and optimisation of control processes.

Nevertheless, it ought to be remembered that considering the importance of different industries from service point of view has an inherent threat of missing out the development of new business models. A concrete example could be the transfer of technology and future model developed by the Central Mining Institute (GIG).

The institute is a scientific research organisation working not only for the benefit of the mining industry, but also for enterprises representing different branches – including small and medium enterprises, state and local administration institutions and offices, and foreign partners. Currently the four basic areas of our activities constitute: mining engineering, environmental engineering, problems relating to quality, education and training. GIG is one of the most acknowledged partners in such areas of activities as waste management, raw materials recycling, energy audits as well as modernisation of energy economy of municipalities and enterprises, optimisation of water supply and sewage disposal, environmental monitoring.<sup>59</sup>

<sup>55</sup> Communication of the Central Statistical Office concerning the updated estimate of GDP in 2010, 26.04.2012.

<sup>56</sup> Beata Lubos (2007) Innovativeness in the service sector.

<sup>57</sup> Aleksandra Laskowska-Rutkowska, et al. (2008) Analysis of innovation activities in the service sector.

<sup>58</sup> Ministry of Economy (2010) Evolution of the Service Sector in Poland in years 1995–2008.

<sup>59</sup> The Central Mining Institute: <http://www.gig.eu>



The aim of the Clean Coal Technologies Centre, a €48m investment co-financed by the EU Structural Fund interventions is to create leading EU research and know-how development centre for innovative clean coal technologies commercialisation. It is expected that unique research infrastructure of the Centre will allow for R&D concerning the perspective coal use technologies. Looking into the future, GIG could not only contribute to solving problems in the region where it is based but also commercialise the newly developed technologies and know-how together with related services to coal-dependent countries. For the time being, monitoring and early-warning systems are types of services with application in mining industries.

## B. Policies promoting service innovation

### Overview of innovation policy mix

The analysis of financial allocations of innovation support measures provided in the most recent Poland's Trendchart mini country report<sup>60</sup> shows that the Priority 2 'Research and technologies' accounts for approximately two-fifths of the total budget (Figure 3). In descending order the next priority in terms of size of financial allocations was Priority 4 'Promotion and sustainability of the creation and growth of innovative enterprises' accounting for one-third of the total budget, followed by Priority 3 'Human resources' with slightly less than 15% of the total budget. The Priority 1 'Governance and horizontal research

**Figure 3. Financial allocations by main categories of research and innovation measures.** Source: Adapted from TrendChart Mini Country Report: Poland (2011) allocations of respective programmes.

Broad category of research and innovation policy measure	Approximate total annual budget for 2010 (in euro)
1. Governance & horizontal research and innovation policies	<ul style="list-style-type: none"> <li>1.2.1 Strategic Research policies (long-term research agendas)</li> <li>1.3.1 Cluster framework policies</li> <li>1.3.2 Horizontal measures in support of financing</li> <li>1.3.3 Other horizontal policies (ex. society-driven innovation)</li> </ul> 2010 budget: €110.4m (9.9% of total budget)
2. Research and Technologies	<ul style="list-style-type: none"> <li>2.1.4 Research Infrastructures</li> <li>2.2.3 R&amp;D cooperation (joint projects, PPP with research institutes)</li> <li>2.3.1 Direct support of business R&amp;D (grants and loans)</li> </ul> 2010 budget: €497.7m (44.6% of total budget)
3. Human Resources (education and skills)	<ul style="list-style-type: none"> <li>3.2.2 Career development (e.g. long-term contracts for university researchers)</li> <li>3.2.3 Mobility of researchers (e.g. brain-gain, transferability of rights)</li> <li>3.3.1 Job training (LLL) of researchers and other personnel involved in innovation</li> <li>3.3.2 Recruitment of skilled personnel in enterprises</li> </ul> 2010 budget: €161.2m (14.4% of total budget)
4. Promote and sustain the creation and growth of innovative enterprises	<ul style="list-style-type: none"> <li>4.2.1 Support to innovation management and advisory services</li> <li>4.2.3 Support to technology transfer between firms</li> <li>4.3.1 Support to innovative start-ups incl. gazelles</li> <li>4.3.2 Support to risk capital</li> </ul> 2010 budget: €341.4m (30.6% of total budget)
5. Markets and innovation culture	<ul style="list-style-type: none"> <li>5.3.2 Consultancy and financial incentives to the use of IPR</li> </ul> 2010 budget: €5.5m (0.5% of total budget)

<sup>60</sup> [http://www.proinno-europe.eu/sites/default/files/.../Poland\\_TC\\_final.pdf](http://www.proinno-europe.eu/sites/default/files/.../Poland_TC_final.pdf)

and innovation policies' was estimated at slightly less than one-tenth of the total budget, and Priority 5 'Market and innovation culture' was roughly about less than one percent.

The forthcoming Erawatch Poland's country report provides an overview of research and innovation policy mix and provides further information on types of eligible projects for funding for each of the above-mentioned priority.

The focus within **Priority 1 Governance & horizontal research and innovation policies** is on projects related to the activation of private investors and increase the investment readiness among young innovative companies, cluster initiatives, foresights, as well as the support for institutions delivering advisory services and training to companies.

With regard to the **Priority 2 'Research and technologies'** the eligible projects for funding concern strengthening the capacity of scientific research organisations, infrastructure related projects, applied research projects undertaken by the science sector, business R&D projects, IP rights, tax incentives for R&D performing organisations, commercialisation of R&D results and providing access to external sources of funding through debt financing instruments.

The main activities supported within **Priority 3 Human Resources** concern the development of qualifications of R&D personnel, life-long learning, scholarship for S&T students, mobility of researchers and incentives to participate in the IDEAS programme of the European Research Council.

The projects eligible for funding within **Priority 4 'Creation and growth of innovative enterprises'** provide support to innovative early-stage companies, and relate to other activities like the purchase and implementation of new technologies, the entry of young innovative companies on the Warsaw Stock Exchange market, the support for the creation and development of science-technology parks, other business intermediary organisations, VC funding and subsidies innovation loans.

Within **Priority 5 Markets and innovation culture**, the support includes fiscal incentives, IP rights, and raising awareness activities through the organisation of annual (national) innovation competition.

Subsequently, it deserves to make a series of important observations concerning policies promoting service innovation. Firstly, the **horizontal approach** is the main principle adopted by the POiG, which means there is no prioritisation in terms of which sector is considered of strategic importance. Secondly, the programme does not make a clear distincti-

on between the manufacturing and service sector. In a result, both groups of companies are eligible for funding.

Based on the information of projects which had received support from the POiG, the most important support measures from service industries point of view are:

#### **Measure 4.5.2 'Investment support in the sector of modern services'**

This instrument provides support the establishment and development of joint service centres (finance, accounting, human resources management, logistics, back-office support for banking and insurance, market research, ICT); IT centres (development of software, testing and managing applications, design and implementation of networks, product optimisation, managing of databases); and R&D Centres, e.g. centres of engineering services and quality centres.

*2007–2013 financial allocation: €1.02bn (includes the support for productive sector, Measure 4.5.1)*

#### **Measure 5.3 'Support to innovation centres'**

The main goal of this measure is to support the creation and development of innovation centres which should be situated in the areas with high innovative potential. The innovative centres will provide the innovative entrepreneurs and researchers with complex services supporting implementation and diffusion of new technological ideas. In particular, this measure will support the creation and development of science and technology parks.

*2007–2013 financial allocation: €189.9m*

#### **Measure 3.3.2 'Creation of the system facilitating investments in SMEs'**

The main goal of this measure is to activate the market of private investors through creating favourable conditions for initiating the cooperation of private investors with SME entrepreneurs searching for financial resources to implement their innovative undertakings. The scope of intervention includes projects related to support for training programmes addressed to private investors, including 'business angels', cross-networking activities between the networks of investors and entrepreneurship incubators and venture capital funds, and advisory services for entrepreneurs to increase their investment readiness.

*2007–2013 financial allocation: €35.4m*

## Measure 6.4 'Investment in tourism products'

The main objective of this measure is to contribute to the development of competitive and innovative products in the area of tourism. The project eligible for funding may concern agriculture products, infrastructure, and buildings of particular importance for the development of tourism sector. It is not foreseen to fund accommodation and catering infrastructure.

2007–2013 financial allocation: €138m

## Measure 8.1 'Support of business activity in the area of e-economy'

This measure aims at the development of e-service market in micro- and small enterprises. The co-financing will be granted to projects concerning the provision of e-services. Another type of project eligible for funding concern the development of digital products which are necessary for the delivery of services.

2007–2013 financial allocation: €390.6m

### Box 1. Projects of the Operational Programme 'Innovative Economy' 2007–2013 in the spotlight<sup>61</sup>

The company **Read-Gene S.A.** has obtained an investment grant for the establishment of R&D Centre of genetic analysis of cancer. The main aim of this investment is to commercialise diagnosis, prevention, and treatment methods of cancer. It is also expected that the new Centre will lead to the diversification of the company's offer concerning the provision of services related to clinical tests in the area of cancer genetics. *Project co-financed from Measure 4.5.2 'Investment support in the sector of modern services'.*

The **Innovation Centre in Gdynia** has received financial support to construct a new office space, laboratories, workshops, and a prototype area for innovative enterprises. The investment is the extension of activities of the Pomeranian Science and Technology Park (PPNT) which specialises in branches such as ICT, multimedia, biotechnology, environmental protection, and industrial design. *Project co-financed from Measure 5.3 'Support to innovation centres'.*

The company **Krynicky Recycling** has undertaken a process of preparation to enter into the Warsaw Stock Exchange market. The company, which is one of the leading European companies specialised in recycling of glass, has benefited from external advisory services concerning the preparation of documentation and several analyses including financial, economical, market and competitors as well as an assessment of risks. *Project co-financed from Measure 3.3.2 'Creation of the system facilitating investments in SMEs'.*

**Torun** has obtained financial assistance for modernisation and revitalisation of historical areas in the city. *Project co-financed from Measure 6.4 'Investment in tourism products'.*

The company **SkyCash Poland** has developed a functional mechanism allowing flexible and quick money transfer. The project aimed at the implementation of mobile financial transfer system which is compatible with 90% of mobile telephones existing on the Polish market. The system is independent from mobile service providers. It allows the purchase of public transport tickets, GSM credits, books, tickets for different types of events, etc. *Project co-financed from Measure 8.1 'Support of business activity in the area of e-economy'.*

The company **Oponeo.PI S.A.** has received financial support for the development of an electronic platform B2B, based on an advanced IT system in the form of a joint database of car aluminium joints used in international and national commerce. *Project co-financed from Measure 8.2 'Support to the implementation of e-business – type B2B'.*

**Infover**, a company specialised in software development, has designed the first in Poland prototype of eReader, known as eClicto – allowing to purchase and read books in electronic formats and other publications such as newspapers and magazines. *Project co-financed from Measure 1.4 'Support to goal-oriented projects' and 4.1 'Support to the implementation of R&D results'.*

**The National Chamber Electronics and Telecommunications (KIGEiT)** has received financial support for the development of document management system for micro-, small, and medium-size enterprises, known as SZOK. The system provides four different types of models, i.e. for manufacturing sector, services, commerce, and multi-functional. *Project co-financed from Measure 5.2 'Support to the business intermediary organisations providing innovation services'.*

<sup>61</sup> Ministry of Regional Development (2011) Innovative Poland: Projects undertaken in the framework of the Programme Innovative Economy.

### **Measure 8.2 'Support to the implementation of e-business – type B2B'**

This measure aims at the development of joint business undertakings in electronic form. In particular, the focus of this instrument is on the implementation of ICT in enterprises and development of e-services for enterprises but also among businesses, so called business-to-business: B2B).

*2007–2013 financial allocation: €460.8m*

### **Measure 1.4 'Support to goal-oriented projects' and 4.1 'Support to the implementation of R&D results'**

The main goal of this measure is to improve the innovativeness of companies through the support to applied research projects and the implementation of R&D results. The novelty of this support measure lies in a possibility of submitting a single application for both R&D and post-R&D phase.

*2007–2013 financial allocation: €390.3m and €390m respectively.*

### **Measure 5.2 'Support to the business intermediary organisations providing innovation services'**

The main goal of the measure is to make it easier for entrepreneurs and innovative companies to have an access to complex and high-quality business-services which are indispensable with respect to innovative activities. This measure is specifically targeted at the business intermediary organisations to support the preparation and development of pro-innovation services with the view of increasing the innovativeness of companies.

*2007–2013 financial allocation: €65.7m*

Subsequently, we present on the next page some concrete examples of projects which have been financed by the described above support measures.

With regard to soft type of measures, it is important to point one of the PARP activities aimed at the promotion and raising innovation awareness. The Agency is responsible for the organisation of meetings of the Club of Innovative Enterprises members. In 2011, the PARP presented a publication on Innovation in the Service Sector<sup>62</sup>, which is based on materials presented during the meetings that took place in

March, September 2010 and March 2011 across different cities in Poland.

According to our interview sources, it was confirmed that the funding provided in the framework of Measure 8.1 and 8.2 has in certain cases been used for the development of traditional service solutions rather than promoting service innovation.

The recent analysis of Poland's TrendChart mini country report<sup>63</sup> points to three important aspects. Firstly, the demand-side innovation policies are at the early-stage of development. In practice, the origins of the demand-side innovation policies, especially public procurement of innovation date back to April 2008 which marks the publication of a document "New approaches to public procurement". Secondly, it notes that the importance of public procurement is gaining in importance and is placed high on the policy agenda. Thirdly, there is a general lack of other type of demand-side innovation policies. More recently, the Ministry of Economy has been seeking in cooperation with the Public Procurement Office to undertake a pilot of pre-commercial procurement, according to our interviewee.

In relation to the framework conditions, the report notes that efforts had been undertaken to create framework conditions. It explains that this continues to be high on policy agenda due to a number of barriers, which have negative effects on business activities. This is confirmed by the interview results which confirm that the development of framework conditions conducive to innovation is on the top of policy agenda. More specifically, the newly created department at the Ministry of Economy will be responsible for improving legislative proposals which involves among other things screening the regulations with the view of identifying obsolete provisions or those that have a negative influence on the functioning of the business sector.

As noted by Beata Lubos the most important barriers hampering innovation activity of service enterprises are: "high costs of innovation activity (just like at manufacturing) and the set of barriers connected with people – both customers and lack of their openness to innovative services as well as untrained service companies staff"<sup>64</sup>.

<sup>62</sup> PARP (2011) Innovation in the Service Sector.

<sup>63</sup> [http://www.proinno-europe.eu/sites/default/files/.../Poland\\_TC\\_final.pdf](http://www.proinno-europe.eu/sites/default/files/.../Poland_TC_final.pdf)

<sup>64</sup> Beata Lubos (2008) Towards policy supporting innovation in service sector. The rationale for policy action and further steps.

According to the Polish Confederation of Private Employers, the three main barriers which block and delay the development of telecommunication and media sector relate to:

- The **provisions of the Act on Telecommunication**, which does not reflect changes taking place in new technologies in the area of communication with the user via telecommunication services.
- **Too high financial penalties** imposed by the public administration.
- Lack of education activities which would help removing the **barriers associated with unjustified concerns about the effects of electromagnetic fields** which increasingly hampers the investment processes in mobile telecommunication.

The Polish Confederation of Private Employers held a press conference on 10 April 2012 and presented the 9th edition of a list of main barriers to the development of entrepreneurship (known also as the 'Black List of Barriers'). It contains 366 specific provisions, which in the opinion of Confederation have a negative effect on the development of economy. More specifically, it is noted that the possibility to use electronic documents during the registration of new business activity, however, no progress has been made in relation to the implementation of e-governance and pointed that the possibilities of contacting the public administration via electronic means are still limited. One of the barriers in relation to the telecommunication and media sector, which have emerged in the course of 2011 was a wide use of the principle "must carry/must offer" especially in relation to Internet TV, TV in 3G network or LTE, according to the Confederation.

## C. Checklist of policy measures

The aim of this section is to organise policy actions identified in Section B under the strategic themes of the EPISIS-project.

**Table 1. Programme relevance to the thematic areas of the EPISIS-strategy.**

Programme/policy	Promotion of service innovation by targeting new types of innovation actors, novel types of innovation activities and innovative business solutions	Promotion of service innovation related competencies and capabilities	Promotion of markets and infrastructure as a driver of service innovation
Measure 4.5.2 'Investment support in the sector of modern services'			
Measure 5.3 'Support to innovation centres'	✓		
Measure 3.3.2 'Creation of the system facilitating investments in SMEs'			
Measure 6.4 'Investment in tourism products'	✓		
Measure 8.1 'Support of business activity in the area of e-economy'	✓		
Measure 8.2 'Support to the implementation of e-business – type B2B'	✓		
Measure 1.4 'Support to goal-oriented projects' and 4.1 'Support to the implementation of R&D results'	✓		
Measure 5.2 'Support to the business intermediary organisations providing innovation services'	✓		

## D. Future developments and service innovation policy needs

The challenges concerning service innovation policy are considerable. As shown in Table 1, there is a general absence of policies and measures seeking to promote service innovation related competencies and capabilities. Besides that, there are no policies and measures supporting the promotion of markets and infrastructure as a driver of service innovation. The existing support measures primarily concern promotion of services new types of innovation actors, novel types of innovation activities and innovative business solutions. However, these instruments are rather traditional mechanisms in support of service industries. In the future, new forms of support for service innovation activities will be required to ensure successful structural change in Poland.

One of the recent developments has been the preparation of new innovation strategy (known also as the SiEG). The SiEG replaces the two previous strategies for – Increasing the Innovativeness of the Economy 2007–2013 and the draft Science Strategy in Poland until 2015. The underlying difference of the newly developed strategy is that brings together different aspects; among others, related to innovativeness, research, public finances, natural resources and minerals, and internationalisation of the economy.

The three set out targets to be achieved by 2020 are the following:

- Changing the position from moderate innovators to innovation innovators (performance measured using a composite indicator of innovativeness – Innovation Union Scoreboard).
- Poland's position on the innovativeness index – Global Competitiveness Report – from the 22<sup>nd</sup> to the 15<sup>th</sup> position.
- GERD 1.7% of GDP.

More than 100 Polish regional and national stakeholders participated in a two-day seminar on Smart Specialisation (1–2 March 2012). The event was jointly organised by the Ministry of Regional Development responsible for the management of the EU Structural Fund interventions in Poland and DG Regio of the European Commission.

In summary, the purpose of the seminar was to disseminate knowledge on the concept of smart specialisation and the related conditionality for the development of ERDF financed Operational Programmes for the years 2014–2020 among national and regional decision makers, researchers, and EU Structural Funds Managing Authorities.

The Commission presented on 14 March 2012 the “Common Strategic Framework” (CSF)<sup>65</sup>. It is intended to help in setting strategic direction for the next financial planning period from 2014 to 2020 in Member States and their regions. The proposal for the Common Provisions Regulation identifies eleven thematic objectives. The public administration in Poland is slowly starting to prepare the next Operational Programmes for 2014–2020. While the need for developing alternative forms of support to subsidies and establishing a greater prioritisation in areas with the highest potential is generally recognised, the interviews we have conducted indicate that there is a growing interest in policies promoting service innovation.

Currently, the Ministry of Economy and Ministry of Science and Higher Education are working on their respective action plans, which will outline in more detail the planned priorities, actions, processes, responsibilities and dates of expected completion. It is foreseen that the draft of Programme for the Development of Enterprises which is the action plan for which the Ministry of Economy will be completed in May. Among the main planned changes are lowering the intensity of support, moving towards financial engineering schemes, improving the support mechanisms by drawing the lessons from the implementation of the 2007–2013 support instruments. It is important to mention that it is planned to introduce a system of voucher for the procurement of training services, which will give a potential beneficiary a freedom on choosing the company providing such services.

Finally, it is important to note that the Ministry of Economy is planning to launch a pilot programme based on the Tekes “Serve – Pioneers of Services Business” programme, which encourages companies to develop new types of service businesses. There are also plans to mainstream this form of support into the EU Structural Fund interventions, 2014–2020.

<sup>65</sup> [http://ec.europa.eu/regional\\_policy/what/future/index\\_en.cfm](http://ec.europa.eu/regional_policy/what/future/index_en.cfm)

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## 2.12 Appendix 12. Slovenia

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### A. National policy context

#### Positioning service innovation within national innovation system

Slovenia experienced a continuous progress in the last couple of years in its innovation performance measured by the improvement in Summary Innovation index of Innovation Union Scoreboard. R&D spending increased from 1.45% of GDP in 2007 to 2.1% of GDP in 2010 as a part of programmes to mitigate the effects of the crisis. Since 2009 Slovenia ranks among European innovation followers and reveals relative strength in human resources while major weaknesses refer to intellectual assets and economic effects of innovation activity (Innovation Union Scoreboard 2010, 2011). There seems to be a gap between country's overall inputs to innovation activity and economic effects raising the issue of the effectiveness of innovation policy. It may be expected that in the longer term increased inputs to innovation capacity in different areas will also result in improved outcomes.

It needs to be observed at the outset that the term service innovation in Slovenia is not only very rarely used in the discussions among major stakeholders, but also very poorly understood. More often non-technological innovation, organisational innovation and new business models are referred to when aspects that go beyond technological innovation are mentioned. Even if the awareness of non-technological dimensions of innovation is growing very slowly and innovation policy largely neglects service innovation the latter is taking place in the service sector and in manufacturing. Available evidence confirms that individual instruments of innovation support are increasingly used by service companies that reflects dominant share of services in Slovenian economy. In the absence of targeted instruments to promote service innovation this suggests that support to service innovation is fairly invisible.

Strategic policy documents<sup>66</sup> that deal with innovation have recognised the important contribution of innovation activity to the competitiveness and growth of national economy. As observed some years ago innovation support in Slovenia is largely based on horizontal or sector neutral approach (Stare, Bučar, 2007). Within this context, the Action plan for the implementation of Development Strategy of Slovenia proposed also some measures that could enhance services development and indirectly stimulate innovation, such as to improve the SMEs access to quality support services within a single network; establish the mechanisms to boost investment in service industries by promoting SMEs activities; encourage the use of advanced managerial techniques to manage change and develop business model for business excellence of Slovenian firms; enhance the development of specific know-how related to the process of service innovation, service marketing and international transactions; develop instruments tailored to stimulating innovation in services; support the establishment and activities of innovative groups, accelerate the outsourcing of different services from the public sector controlling for the quality of services and the maintenance of high standards, etc. The implementation of the above set of measures that could enhance service innovation was significantly delayed, partly also due to the lack of understanding and knowledge on how to design support measures should be shaped. Nevertheless, a number of respective measures were introduced as illustrated in section 2.

In 2009 the exploratory research study "The Starting Points and Guidelines for the Design of Strategy of Non-technological Innovation in Slovenia until 2020" was commissioned by the Ministry of Higher Education, Science and Technology and Slovenian Technology Agency. The results of the study<sup>67</sup> suggest that there is a need for mobilization and synergy of different actors of the innovation system (government, public research institutions, education system, public opinion makers) in order to make progress in the non-technological innovation capacity and accordingly identify a large set of support measures that need to be introduced. According to available information few recommendations were taken into account so far in the design of support measures that could have an impact on service innovation. This gap in innovati-

<sup>66</sup> Development Strategy of Slovenia (DRS) for the period 2006–2013 (2005) and the Resolution on the national research and development programme for the period 2006–2010 (2005).

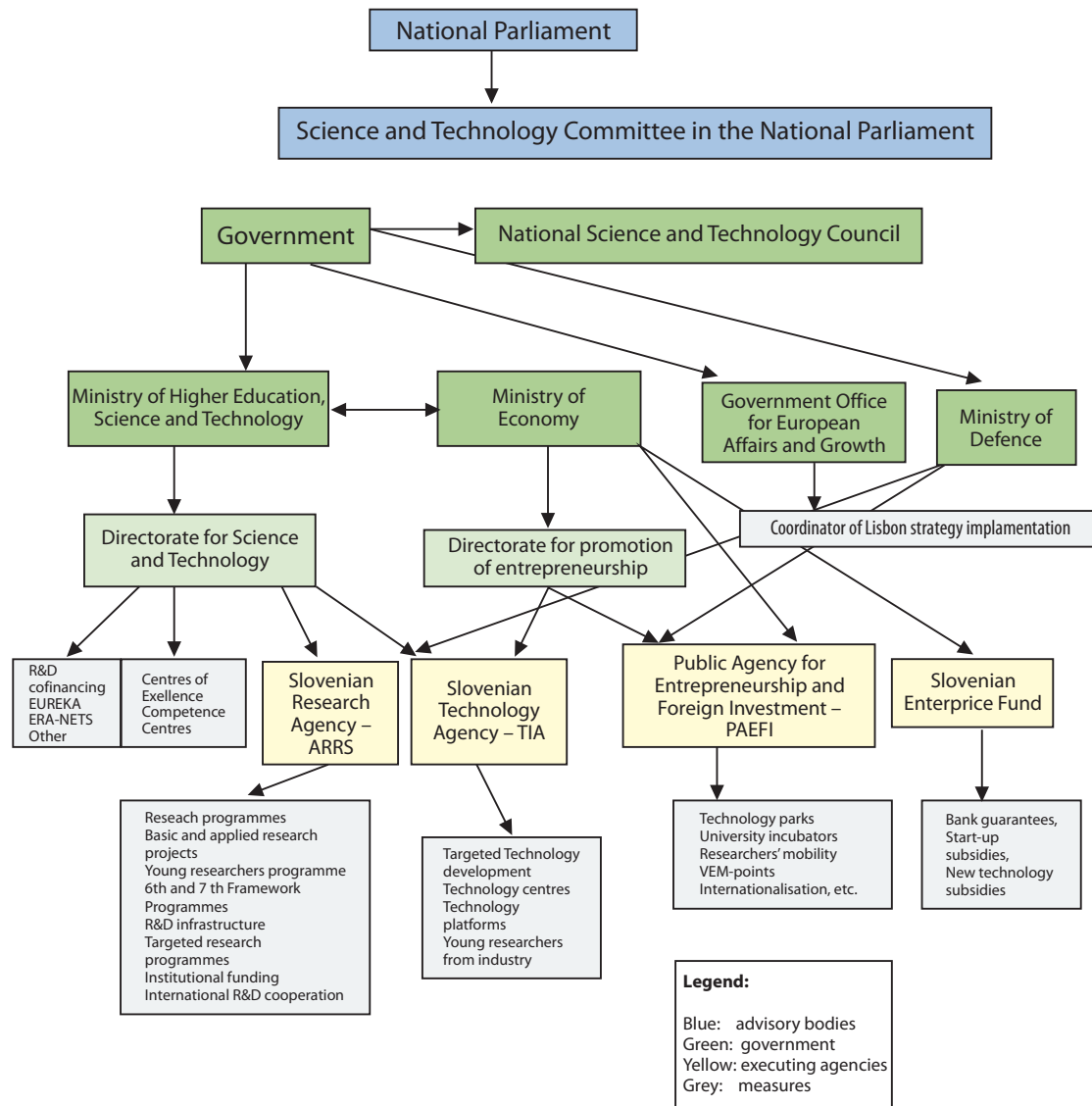
<sup>67</sup> The study was prepared by ATKEARNEY, Institute of Economic Analysis and Vibacom (2009).



on policy design is echoed in the latest OECD assessment on Slovenia where the support for non-technological innovation is seen of utmost importance in modernising Slovenia's economy (OECD, 2011).

The variety and complexity of innovation system<sup>68</sup> and its actors is displayed in Figure 1. Key role in designing innovation support measures is played by the Ministry of Economy (ME) and Ministry of Higher Education, Science and Techno-

Figure 1. Key elements of national innovation system. Source: Bučar et al., 2010.



<sup>68</sup> Complexity is increased further by frequent changes in individual support instrument name, scope and eligibility making it very difficult to assess the impact of instrument in a given period. Detailed description of the role and tasks of individual actors of the Slovene innovation system is provided in Bučar et al. (2010).

logy (MHEST)<sup>69</sup> while the measures are being executed by the agencies of two Ministries. Basic orientation of MHEST in the field of technological development and innovation is defined by the *Programme for Enhancing Technological Development and Information Society in the period 2007–2012* while ME follows the *Programme for the support of entrepreneurship and competitiveness for the period 2007–2013*. Figure 1 reflects the status of national innovation system as of December 2011 with the exception of innovation vouchers, Development Centres and Strengthening of development units, the latter replacing and merging three existing measures for the support of training and mobility. The figure does not take into account the restructuring of Ministries introduced by the new government in February 2012 (see footnote 5).

### The weight of service industries in economy

As in other EU economies services dominate the economic landscape in Slovenia. In the period 1995–2010 the share of services in value added increased from 61,0% to 67,6%. Notwithstanding the fact that market services account for almost 47% of total value added traditional services, such as distributive services and transportation, maintain the largest share. This is also reflected in Table 1 which confirms that knowledge intensive market services still have a lot of catching up ahead.

In recent years R&D investment increased substantially in Slovenia to reach 2.1% of GDP but the share of the service sector remained fairly low and accounts for approximately 14% of the total R&D expenditures. Innovation survey for Slovenia (2008)<sup>70</sup> shows that service firms lag in innovation activity behind manufacturing firms (46.1% vs. 54.6%). While it is difficult to directly compare the results of the previous periods when only technological innovation was captured in innovation surveys, it seems that the gap in innovation activity between manufacturing and services has significantly narrowed. In both sectors the majority of innovation active firms introduce technological and non-technological innovations reflecting their complementary nature and the need for a more

**Table 1. Top ten service industries\*share in value added in 2010, %**

1	Wholesale trade	5.7
2	Retail trade	5.3
3	Financial services	4.0
4	Land transport	2.8
5	Consultancy services	2.3
6	Architectural and engineering services	2.0
7	Warehousing	1.9
8	Telecommunication services	1.7
9	Computer and information services	1.6
10	Distribution of motor vehicles	1.6
	Total 1-10	28.9

\* 2 digit NACE-Rev.2.

Source: Statistical Office of the Republic of Slovenia – National accounts, 2011, <http://pxweb.stat.si/pxweb/Database/Ekonomsko/Ekonomsko.asp>

balanced combination of innovation policy measures. In addition, it needs to be observed that there is a large gap in the share of service (5.8%) and manufacturing (11.7%) companies that introduce only technological innovation. This might also point to deficiency in eligibility criteria of horizontal support measures.

Referring to the innovation activity in the service sector data for 2008 indicate the top position of two industries. Insurance, reinsurance and pension funds take the lead with 86% of innovation active enterprises, followed by computer programming and related consultancy services where 83% of firms are innovation active. Fairly behind the two leading service industries, but still highly innovation active are firms supplying information services (67%), telecommunications (65.7%), auxiliary financial services (62.8%), and publishing services (62%). The lowest innovation activity among service activities surveyed is registered in land transport (28%). Comparing the innovation record with the data from Table 1 it becomes clear that only few highly innovative service industries are ranked among the top ten service activities concerning value added. Recent analysis suggests that only 2.1% of in-

<sup>69</sup> The reorganisation of ministries was introduced by the new government in February 2012. MHEST was discontinued while tertiary level of education, science and research were moved under the single roof of Ministry of education, science, research, culture and sports. Technology field was moved to the Ministry of economy and technology; the areas of electronic communication and of information society were aligned to Ministry of infrastructure and space.

<sup>70</sup> Methodologically aligned with Community innovation survey (CIS) that takes into account technological and non-technological innovation.

novation active service firms belong to innovation leaders<sup>71</sup> while the share amounts to 7.5% in manufacturing (Likar et al., 2011). Overall, the above data illustrate that the composition of service sector in Slovenia is not conducive to higher innovation intensity and that the lack of support to service innovation may have hampered exploitation of innovation potential in services.

It appears that the structural shift of the Slovene economy towards the service sector, which has been taking place since the establishment of a sovereign state in 1991, was so far insufficiently translated into the realm of policy shaping. This could be an important obstacle for Slovenia to align with innovation leaders. Even if majority of the support measures are sector neutral and can be used by any firm innovation policy continues to focus on technological innovation, where many service firms are put at disadvantage. It is fair to admit though that some of the recently introduced measures (e.g. voucher schemes, development centres, development units in enterprises) could have a bigger impact on service innovation than other horizontal measures in the past.

## B. Policies promoting service innovation

Given the variety of measures and mechanisms for the support of research, development and innovation on a horizontal basis we focus on those that could have important effect on service innovation as well. In 2007 the mapping study on service innovation policy in Slovenia it was found out that the supply-side approach underlies the most important support mechanisms to research, development and innovation while the evidence on demand side policy is scarce (Stare, Bučar, 2007). Unfortunately, there seems to be no major changes to this imbalance since then.

### Supply-side policies

There is a wide range of horizontal instruments aimed at supporting innovative capacity of firms. They are administered and executed by the Ministry of Economy (ME) and its agencies, most notably Public Agency for Entrepreneurship and Foreign Investment (PAEFI) and Slovenian Enterprise Fund (SEF) and by the Ministry of Higher Education, Science and Technology (MHEST) via Directorate for Science and Technol-

ogy (DST), Slovenian Technology Agency (TIA) and some other actors, such as SID Bank (Slovenian Export and Development Bank). To the best of our knowledge there are at present no measures/instruments that would target service innovation directly. We refer to those support measures that in our view have a bearing on service innovation as well and, provided the evidence is available, indicate to what extent service innovation benefits from those mechanisms.

**Competence centres** are aimed at strengthening the capacity to develop and use new technologies for new competitive products, services and processes in priority technology areas. In 2010 MHEST selected seven Competence centres in modern process technologies, biomedicine, biotechnology in food and health area, cloud computing, open communication platform in ICT, systems for effective use of electricity and in sustainable construction technology. These centres focus on applied research and are founded and led by business consortiums, even though public research organisations and universities are partners in research as well. Approximately 45 million € is available for the period 2010-2013. 85% of finance will be provided by the European Fund for Regional Development and the rest (15%) by Slovenian Government. It is too early to give any assessment as to what extent could the competence centres enhance service innovation and deployment of new services.

The most recent mechanism that is to contribute to innovation capacity of Slovenia refers to **Development Centres** that were launched by the ME in 2011 and represent a novel approach to innovation support mechanisms. The difference is not only in the volume of funds available for the support measure (approx. 180 million €) and longer term effects, but more so in the shift regarding the expected outcomes. Unlike in the past when technology related R&D projects were at the core of the supporting policy instruments development centres are much more about “close to the market” research and development of new products, processes and services. The latter necessitate good management of processes along the value creation, including the marketing, besides technological excellence. With this in mind, development centres could have a bigger impact also on service innovation that occurs in all business processes and contributes to better business results. 17 Development Centres were approved

<sup>71</sup> Firms that earn 11 € in revenues per one € invested in innovation.

for co-financing in 2011 with the total value of projects exceeding 425 million €. Development Centres will be established in the following industries:

- New Materials
- Electro Industry and Electronics
- Energy
- Wood processing industry
- ICT
- Automotive
- Pharmacy and Biotechnology.

**Innovation voucher (pilot)** was introduced by PAEFI in 2009 with the objective to enhance the cooperation between companies and external suppliers of services. It provided for the co-financing of eligible costs (60%) of external providers of services or consultants that help companies to prepare and execute research or development projects<sup>72</sup>. The application criteria substantially narrowed the range of potential beneficiaries by limiting the eligibility of vouchers only to firms that intend to file a patent application. 21 micro and small enterprises (9 from the service sector) were selected with the total support amounting to 87.000 € (individual applicant could obtain between 900 to 4.200 €). After evaluating the results of the pilot the call for innovation voucher was revised in 2010 and the objectives broadened so as to encourage companies for a more active approach in marketing new products and introducing new business models. The applicants could use the voucher for activities that result in patent application, protection of intellectual property for models or brands. The number of innovation voucher recipients in 2010 increased to 59 enterprises out of which 41 were service firms that on one hand confirms their interest in innovation activity and on the other hand the need to adapt innovation support measures to special features of service innovation. The amount of funds for innovation voucher was almost doubled in public call for 2011/2012 to reach 1.5 million € for both years. In the first call in 2011 74 enterprises were eligible to obtain the voucher (70% from the service sector). In general, enterprises showed

the biggest interest in the field of brands and patent protection while intellectual property for business models was of a lesser interest.

Two additional vouchers were introduced in 2011 by PAEFI to complement the innovation voucher. The first one, **Mentorship voucher** is aimed to enhance the growth and development of young enterprises. Business mentors provide expertise and holistic assistance to young enterprises related to establishing new business links, entering new markets and in securing access to new financial resources. 600.000 € is available for mentorship voucher in 2011 and 2012. Eligible costs for the mentorship voucher apply to consultancy costs of business mentors<sup>73</sup>. In 2011 approximately 300.000€ were disbursed to 18 enterprises that qualified for the mentorship voucher, out of them 14 are service enterprises.

The objective of the **Process voucher** is to encourage continuous improvement of business processes in enterprises. It applies to co-financing of services provided by external consultants and fees for training the employees engaged in a project group for the implementation of business process improvements in enterprises with at least 20 employees. Overall, 600.000 € is available for 2011 and 2012. Individual enterprise could apply for 3.000 €–25.000 € of co-financing depending on the type of expenditure (e.g. for training, external consultancy). In the first call in 2011 process vouchers were granted to thirteen enterprises, mostly to non service companies and the total amount of funds disbursed was approximately 250.000 €.

### Fiscal and finance related measures

**R&D Tax incentives: in 2010**, the government increased the tax subsidy on corporate income tax<sup>74</sup> for investment in R&D from 20% to 40 %<sup>75</sup>. In addition to the purchase of equipment and new technology for R&D purposes, the eligible costs include also costs of labour and IPR. The evidence on the beneficiaries of tax subsidy by sector reveals that service companies do apply for this mechanism, albeit they are highly concentrated on few industries such as pharmaceu-

<sup>72</sup> Slovenia has long tradition with vouchers that were introduced in 2000 to support entrepreneurship and are still ongoing. Vouchers are aimed at providing consultancy and training to SMEs related to marketing, human resources management and internationalisation.

<sup>73</sup> Business mentor have to participate in regular joint activities with the entrepreneur at least once per week.

<sup>74</sup> It was first introduced in 2006.

<sup>75</sup> In less developed regions the incentive on corporate income tax for investment in R&D increased from 30–40% to 50–60%, depending on the lag behind average GDP/per capita in Slovenia.

ticals, automotive manufacturing and the manufacturing of computer, electronic and optical devices (IMAD, 2011). Accordingly, only 20% of firms benefiting from R&D tax incentives are service firms.

**Direct subsidies for joint development investment projects** were introduced by the ME for the period 2008–2011 (approx. 155 million € as a total amount of co-financing) with the objective to boost the introduction of new technologies as well as development of new or improved products and services. The measure also supports investments in experimental production of new products and/or services. The eligible costs apply to equipment, external expertise, labour costs. The programme is partly supported by the European Regional Development Fund (up to 85%) and partly by Slovenian Government (15%) and executed by TIA.

**Co-financing of innovative start-up SMEs** within business or university incubators or technology parks for less than 12 months that have not yet entered the market. The main objective of ME in launching the instrument (2008) was to help innovative start-ups finance further development. The eligible costs for the subsidy refer to labour costs, infrastructure, training, external expertise. The number of beneficiaries increased from 81 in 2008 to 183 start-ups in 2011. The maximum amount of subsidy disbursed by the administering agency (Slovenian Enterprise Fund – SEF) varies from 30.000€ in 2009 to 20.000€ in 2011. The results of the call in 2011 indicate that a large majority of start-ups (approx. 90%) benefiting from the measure are service enterprises, most notably those engaged in research and development activities in the field of natural sciences and technology. Start-ups from computer programming and other ICT related services are the second most represented service activities that secured subsidies.

In 2010 ME introduced the instrument **Enhancing the process of knowledge transfer** (VALOR 2010) backed by the subsidy of 1 million € to be disbursed in 2010 in 2011. The minimum subsidy amounts to 50.000 € for individual project and maximum 150.000 EUR. The instrument provides co-financing for the transfer of knowledge developed at universities and public research organizations (PRO) to research and development projects of start-ups. In addition, it promotes the employment of highly skilled personnel, growth and development of enterprises, development of new business models and transfer of intellectual property rights from universities and PRO to private enterprises. Eligible costs apply to costs of researchers and project support staff, contracted research, pa-

tents, consultancy services and other operational and administrative cost related to the project. The ratio of project co-financing ranges from 35% to 75% of total costs depending on the size of the enterprise and type of costs (industrial or experimental development, feasibility studies). 26 applications were submitted to the first call in 2010, however only 6 projects met the requirements for co-financing after two stage evaluation. The projects approved represent specific fields of ICT, biotechnology and alternative sources of energy. Almost all available funds were disbursed for those projects so no further calls were published by the administering agency (TIA) in 2011.

Slovenian Enterprise Fund (SEF) provides **guarantees for subsidized bank credits** to SMEs to improve their access to favourable debt financing. Annual calls are published for two types of guarantees; one more general to encourage SMEs to expand in crisis time or to improve their market position (58 million € in 2011); and the bigger one for innovative technology projects (126 million € in 2011). The aim of the latter is to support the commercialisation of new solutions, products or services that enter the production phase or market phase. In 2011 guarantees were given to 198 SMEs in total and while the majority of them were from different service industries it is impossible to assess the impact of guarantees on innovation in general and even less so on service innovation.

In cooperation with the MHEST Slovenian Export and Development bank (SID) provides **Credit lines** (State-aid) to enterprises **for financing technology and development projects** in the period 2011–2013, whereby the activity is carried out via commercial banks. To be entitled for the credit beneficiaries need to perform industrial research, experimental development or invest in tangibles/intangibles with the objective to foster market entry of new products, introduction of new solutions to business processes within the enterprise or entry into new markets. Eligible costs range from personal costs of research staff, research equipment, costs of external researchers, IPR and consultancy services to costs of premises.

### Support for training and mobility

**Young researchers programme** was broadened in 2001 so as to include a special window for young researchers coming **from business sector**. The programme's objective is to foster employment of highly educated people in business sector and enhance its R&D. It covers the costs of PhD studies, including the salary, tuition and mentorship costs. Until 2006 the

programme was executed by the Public Agency for Research and Development and onwards by Slovenian Technology Agency. The majority of young researchers that benefit from the programme are enrolled in S&T studies, while the proportion of postgraduate students from other disciplines (e.g. social sciences, humanities) is rather limited<sup>76</sup>. This suggests that companies interested in upgrading the knowledge of their employees to a PhD level focus on S&T studies while overlooking the potential of highly educated personnel trained in non-technological disciplines that prove to be complementary in innovation processes. The programme as such was discontinued by the end of 2011, nevertheless young researchers from business sector will be eligible to benefit from the support for PhD studies via another measure introduced by public call in 2011 by MHEST (see below Strengthening of development units in business sector).

In 2006 the ME introduced a measure to foster the **transfer of researchers from public research institutions to business R&D units**. It provides for co-financing of the salaries of the researchers who have been working for at least three years in public R&D as well as a set amount of funds for additional training abroad. The specific criteria is that the researchers eligible are those with engineering or natural science background and that they will continue working in the same area of research. The success rate of the uptake of such mobility scheme was modest notwithstanding several modifications introduced in the period 2007–2009 that allowed also for the transfer of researchers from large corporations to small and micro firms (ERAWATCH Slovenia, 2010).<sup>77</sup>

In addition the ME launched another instrument in 2008 to support the establishment of **interdisciplinary teams for technology development projects in SMEs**. The measure enables formation of research teams on a project basis. Main eligible costs apply to external expertise, labour costs and training. 57 project were granted in 2009 and 10 million € disbursed. The measure is co-financed by Structural funds and managed by PAEFI.

In 2011 MHEST and published a public call for **Strengthening of development units in enterprises** with the aim to

strengthen the capacity of research and development units or research groups (existing or new) in enterprises. The call pools together the content of three instruments mentioned earlier (Young researchers from business sector, transfer of researchers from public research institutions to business R&D units and interdisciplinary teams). The instrument should contribute to increasing the share of researchers in business sector, encourage the mobility of researchers from public to business sector and raise the number of interdisciplinary research groups in the business sector. The measure applies to:

- a. employment and training of researchers;
- b. employment of researchers from Slovenian public research organisations / researchers from public or private research organisations from abroad;
- c. employment or contract with top national or international expert and
- d. transfer of employed researchers to interdisciplinary research group.

The share of co-financing is the highest for the first category (85%) and lowest for the last category of beneficiaries (25%). The implementation of this instrument will be carried out until the end of 2014 with the funding of 20 million € (85% provided by European Social Fund). Even if four deadlines for the call application were scheduled it turned out that the interest among the companies was so huge that almost total amount was granted already at the first deadline. In addition to 20 million € of state aid the companies will contribute approximately 33 million €. It is encouraging to observe that out of 64 beneficiary companies approximately 60% are from the service sector, mainly the suppliers of ICT services, research, engineering and consulting services. The instrument could contribute to increasing the innovation capacity of selected companies and also enhance interdisciplinary approach to innovation, where non-technological innovation could to a larger extent complement technological innovation. The instrument follows the objectives of The Resolution on Research and Innovation Strategy of Slovenia (RISS) 2011–2020 adopted in June 2011.

<sup>76</sup> Out of 386 PhD candidates enrolled in the programme in the period 2007–2010 approximately 15% came from social sciences and humanities and 9% from interdisciplinary studies.

<sup>77</sup> [http://erawatch.jrc.ec.europa.eu/erawatch/opencms/information/country\\_pages/si/country?section=PolicyMix&subsection=HumanResourcesPolicies](http://erawatch.jrc.ec.europa.eu/erawatch/opencms/information/country_pages/si/country?section=PolicyMix&subsection=HumanResourcesPolicies)

## Demand-side policies

It appears that Slovenian innovation system is fairly late in complementing the supply-side measures with the demand-side support to innovation. There has been some academic discussion on public procurement and the need to have an innovation component built in as a selection criterion. Yet, public procurement is still struggling with the basic legal framework and is criticized for being overly administrative and bureaucratic. Moreover, no side finds adding innovation component in the procurement an advantage, since it is felt that in Slovenian context it could lead to additional subjectivity in selection processes (Bučar, 2011). While one can hardly identify any direct demand-side policy in the present innovation system in Slovenia, there could be some measures indirectly affecting demand for innovative services. As observed by Bučar (2011) case in place might be Competence centres where government supports the establishment of consortiums thereby strengthening the capacity of businesses to develop and use new technologies for new competitive products, services and processes in priority technology areas.

In future the Decree on Green Public Procurement enacted in December 2011 could encourage demand for innovative services in the areas covered by the decree, especially in engineering, construction and maintenance of buildings, cleaning services and bus transport.

Finally, a specific innovation enhancing mechanism in the area of tourism needs to be mentioned since it fits into both the supply and demand side innovation policy. Slovenian Tourist Board and the Directorate for Tourism at the Ministry of Economy promote innovation in tourism since 2004 by annual competition for the best innovation in tourism. Based on the initiative of the members of the selection committee for the award both institutions dedicated limited resources (approx. 20.000€) in 2006 to experiment with a different approach to promoting innovation in tourism. Bank of Tourism Potentials in Slovenia (BTPS) was established with the objective to encourage idea generation and implementation of innovative products in tourism on a continuous basis.<sup>78</sup> BTPS is a web based portal where individuals, tourist boards, public institutions and companies contribute ideas, financial resources and knowledge for tourism development and directly interact among themselves in imple-

menting the innovation. Since its establishment the BTPS developed dynamically and attracted actors from university, businesses, local tourism boards and municipalities.

BTPS presents a novel approach to spur the innovation in tourism in Slovenia in several respects. First, it provides for a permanent supply of new ideas by harnessing people's creative potential, enabling them to share and develop their ideas from the concept to the entrepreneurial undertaking. Second, it creates the demand for new tourist products not only by the government (via Directorate for Tourism), but also by enterprises and municipalities. This is exemplified via the call published in 2011 for "synergies" where, in addition to funds provided by the Ministry of Economy, funds were secured by private and public actors. The latter create demand for best ideas that could be developed into new tourist products for the respective co-financer (e.g. municipality or enterprise). Last but not least, BTPS is an example of open innovation, the concept that is not sufficiently recognized and applied among innovation stakeholders in Slovenia. Thus, successful implementation of BTPS as an open innovation platform could also be perceived from the perspective of learning of different actors and transferring good practices and knowledge to other areas of cooperation between public and private stakeholders. Not surprisingly, in 2009 BTPS was awarded by the World Tourist Organisation (UNWTO) for the best innovative achievement in the field of tourism ([www.unwto.org/edsco/index.php?op=0](http://www.unwto.org/edsco/index.php?op=0)). Almost simultaneously, BTPS was selected among good practices in the framework of the European Year 2009 – Creativity and Innovation ([www.create2009.europa.eu](http://www.create2009.europa.eu)).

## Framework conditions for service innovation

Access and use of information communication technologies is of utmost importance for service innovation. **Strategy of Information Society Development si2010** adopted in 2007 and **Strategy of Broadband Network Development** adopted in 2008 set the foundations for the uptake of advanced ICT and related services. Directorate of information society at MHEST coordinates broad spectrum of activities and programmes in various fields – from establishment of network of publicly available points, safe internet, support to e-content in Slovenian

<sup>78</sup> <http://www.btps.si/Default.aspx?lng=en>

Recent analysis of innovation activity in high-tech SMEs confirms relatively low degree of open innovation patterns (Raškovič et al., 2011).

language, introduction of e- local government to computer literacy training. In July 2011 a large public call was announced by MHEST for co-financing of development of e-services and mobile applications with 4 million € available for 2011–2013 period. The priority is to support mobile applications and new services in the following areas: efficient use of energy, green ICT, smart cities, smart buildings and networks, protection of environment and management of traffic. By the end of 2011 the call was still not published.

Among framework conditions for enhancing service innovation education and training play a crucial role as illustrated by programmes for the support of training and mobility (see section 2.1.). Activities and measures that raise the awareness on service innovation or provide relevant information may also be added to supporting framework conditions. We briefly refer to some of them below. To create favourable innovation climate and enhance innovation activity MHEST provides **Financial assistance to institutions supporting innovation activity**. Since 2006 open public call was issued annually and the instrument is administered by the Slovenian Technology Agency (TIA). The instrument provides co-financing of various activities, from innovation management and advisory services, awareness campaigns to innovation prizes. The beneficiaries are different institutions such as business associations, consultancies and other private service providers (non-profit). The budget for 2011 amounts to 1 million €. The programme as such terminated in 2011.

Due to insufficient understanding of service innovation among policy makers and other innovation stakeholders the campaigns and events that raise the awareness on these aspects of innovation could be helpful. Recently, some improvements could be observed and refer to the integration of non-technological and service innovations issues into the programme of the most prominent annual innovation event in Slovenia – The Innovation Forum. In 2010 the keynote presentation and some parallel sessions at the Forum were devoted to service innovation with the presentation of good practices of service innovation. Moreover, two additional award categories for service innovation and innovative business models were introduced at the Innovation Forum to complement product innovation award. Even if the number of applicants for the award for service innovation and for innovative business models in 2010 and 2011 was not as large as for product

innovation these changes may gradually contribute to raising the awareness on service innovation.

The website portal "**Imam idejo!**" (I've got an idea!)<sup>79</sup> was established by PAEFI in 2008 as an interactive tool for innovation stakeholders seeking financial, technical, legal and other support related to their invention and other innovation activities. The website is "a one-stop shop" for inventors and a tailor-made problem-solver with a substantial educational component. Even if the portal is focused on technological innovation issues, it also contributes towards broader understanding of innovation via its monthly editorials that have in the last two years frequently reflected upon the importance of marketing, brands, service innovation, business models innovation, user driven innovation, etc. The portal could in future be upgraded so as to provide the users more information about non-technological dimensions of innovation, particularly on those support measures that could be used for non-technological innovation.

Link to EPISIS project results and good practice in service innovation in EPISIS partner countries could serve as a useful learning platform for innovation stakeholders in Slovenia.

### C. Checklist of policy measures

In the Table 2 we summarise policy programmes and measures identified in previous sections and align them under the areas of EPISIS Strategy where we assess they could have the largest impact on service innovation. However some programmes may play a role also in other areas. Those areas concern: A) New types of innovative actors, novel types of innovative activities and innovative business solutions; B) Service innovation related competences and capabilities and C) Markets and infrastructure as a driver of service innovation.

### D. Future developments and service innovation policy needs

The overview of support measures in Slovenia that could potentially encourage and facilitate also service innovation confirms that there is no targeted approach of innovation policy towards service innovation. By and large, measures are sector neutral and often favour technological innovation. Owing to a fairly diverse set of measures, frequent introduction of new

<sup>79</sup> <http://www.imamidejo.si/>



**Table 2. Programme relevance to thematic areas of EPISIS Strategy.**

Policy programme, measure	New types of innovation actors, activities and business solutions	Service innovation related competences and capabilities	Markets and infrastructure
Competence centres	X		X
Development centres	X		
Innovation voucher	X		
Mentorship voucher	X	X	
Process voucher	X		
R&D tax incentives	X		
Direct subsidies for joint development investment projects	X		
Co-financing of start-up of innovative SMEs	X		
Subsidy for enhancing the process of knowledge transfer	X	X	
Guarantees for subsidized bank credits to SMEs	X		
Credit lines for financing technology and development projects	X		
Young researchers from business sector programme		X	
Mobility of researchers from PRI to business R&D units		X	
Interdisciplinary teams for technology development projects in SMEs		X	
Strengthening of development units in enterprises		X	
Decree on Green Public Procurement			X
Bank of Tourism Potentials of Slovenia	X	X	X

ones, and sometimes overlapping with the existing measures one finds it difficult to assess more precisely which support measures could also suit the promotion of service innovation. However, it is clear from the selection results of some support measures that service firms do benefit from them, in particular from those introduced recently and identified in section 2. This suggests that while service innovation is taking place in companies it seems to be rather invisible or not well recognized as “service innovation”. In addition, companies that introduce service innovation are much less known and their success stories less publicized compared to companies with technological innovation. This reflects the incremental and invisible nature of service innovation on one hand and bias toward favouring technological breakthroughs on the other hand. The latter is further confirmed by the introduction of new services based on technology that are usually more visible and appreciated, while the technology gets the credit for the launch of new services.

The interviews with innovation policy makers concerning service innovation support reveal that the target to invest 3%

of GDP into R&D activity as promoted by EU may have a deterring effect on innovation, in particular on non-technological innovation that to a lesser extent relies on R&D expenditure. Furthermore, it was observed that the Horizon 2020 pays too much attention to technology while the solutions to grand societal challenges can hardly be expected without social shaping of technology and related service and non-technological innovations. The drive towards 3% of GDP spending on R&D underlines innovation policy design in Slovenia as well, indirectly affecting the support for non-technological innovation. It was observed that financial incentives for innovation are still directed towards visible outcomes, such as goods, and much less towards services, processes or business models, confirming the invisibility problem.

In view of the slow recovery in Slovenia it may be expected that the new government will introduce changes in the composition and structure of innovation system<sup>80</sup>. Pre-election programmes indicated that all major political parties call for the rationalisation of public administration and dissolution or merger of some public agencies to cope both with bud-

<sup>80</sup> New government took office in February, 2012.

getary constraints and modest efficiency of administration. This could also affect ministries and agencies responsible for the design of innovation policy. The lack of coordination among innovation policy actors was repeatedly pointed out as a weakness of Slovene research and innovation system by national and international analyses (Bučar et al. 2010, OECD, 2011, IMAD, 2011). The need for improved coherence and efficiency of national innovation system is recognized and reflected in the new policy documents that were adopted by the National Assembly of the Republic of Slovenia in June 2011 – The Resolution on Research and Innovation Strategy of Slovenia (RISS) 2011–2020 and the Resolution on the National Higher Education Programme 2011–2020 (RNHEP). Here we see the improvement as RISS envisages a number of horizontal support measures that could accelerate service innovation as well. For the first time in policy documents innovation in services and non-technological innovations are explicitly mentioned. Planned measures range from support to increasing the innovation activity in services (technological and non-technological innovation), the integration of innovative services to all public procurement (particularly services referring to aging population, environment, renewable energy), support to design and marketing of new products to enhancing innovation in business models. It remains to be seen how the proposed actions will be translated into concrete measures and how efficient their implementation might be.

To conclude, stakeholders participating in the design of innovation policy should to a larger extent than before take into account the shifts in economy towards bigger role of services, of intangible investment, of emerging global trends and accordingly shape the innovation support measures. More attention needs to be paid to supporting the networks between innovation stakeholders from public, private and non-profit organisations, to demand driven instruments, to user-centric and open innovation approaches. The latter could be very instrumental in encouraging social innovation that is of utmost importance not only for coping with public budget constraints but also for providing solutions to challenges that Slovenian society is facing. Finally, systematic evaluation of innovation support programmes should become an essential part of innovation policy that would help in assessing the profile and composition of beneficiaries of support measures and in improving the efficiency of support mechanisms.

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## 2.13 Appendix 13. Sweden

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### A. The Swedish national policy context

Sweden is home to many innovative global service businesses and it has a long tradition in research on services. We can see a number of service innovations derived from political decisions and political goals, some of them originated decades ago.

Most prominent are probably the efforts to increase effectiveness in the public service sector by deregulation and privatisation of several public service sectors. The political goal was to broaden competition and allow for new actors to enter these sectors, but also to reduce cost for public services for the tax payers. As market competition was regarded as one of the best means to achieve lower costs, several public service sectors were opened up to invite alternative providers of relevant services.

These deregulations of public service sectors are probably one of the most important sources for service innovations in areas like education, public transportation, post & telecom, broadcasting & TV, electricity, health care, pharmacies, social insurances and other social services in Sweden. Still having a large public service sector (about 30% of the total service sector), there is great potential for new innovative services derived from further deregulations.

VINNOVA has announced calls on service innovations; in 2007 about Winning service work – by user-driven innovation, in 2009 on Managing and organising for innovation in service firms, and a call on business models, as well as hearings<sup>81</sup> about service innovations.

The most recent action is an initiative to strengthen the innovation capacity in SMEs; it was announced in March of 2012. It is targeting SMEs by means of innovation cheques and innovation coaches. The initiative is aimed at companies

that need new knowledge or new technology in order to develop new innovative services, goods or processes. It includes notions such as service innovation, design, business models and processes. VINNOVA is heading this action during 2012–14 with a budget of 31 M SEK.

The Swedish Agency for Economic and Regional Growth has published several reports on service innovations during 2005–2008, launched program on entrepreneurship in the service sector, emphasising women's entrepreneurship<sup>82</sup>, and initiatives on the development of health and social care.

The Swedish Agency for Growth Policy Analyses has carried out several analyses on the service sector for example in the yearly reports and a report on an innovation policy for services with international examples.

The law on freedom of choice (LOV<sup>83</sup>) from 2008<sup>84</sup> hands over the choice of provider of health and social care services to the user or patient. The LOV consists of two parts: (i) the public health and social care procurement process has to treat all bidding actors equally and in a non-discriminatory manner (i.e. equally include private companies) and (ii) the user/patient has the freedom to choose between all qualified suppliers when looking for health and social care. The freedom of choice for local community services is not compulsory to introduce for a local community but during the three years one third of the 290 local communities in Sweden has now introduced the freedom of choice system and 69 more communities have decided to do so. Konkurrensverket<sup>85</sup> has got a government assignment to follow and evaluate the local communities' system for freedom of choice.

The Government, in May 2011, established a national council for innovation and quality in the public sector (ett nationellt råd för innovation och kvalitet i offentlig verksamhet, now called *Innovationsrådet*<sup>86</sup>). The council shall support and stimulate innovation and change processes in the public sector that may result in considerable improvements for citizens and companies, as well as improving the effectiveness of existing processes.

<sup>81</sup> Tjänsteinnovationer för tillväxt (Service innovations for growth – *available only in Swedish*), by Tommy Bergkvist, VINNOVA VR 2009:15

<sup>82</sup> A new program (together with ALMI) allocating 100 mSEK will increase the knowledge and competence about women's entrepreneurship, and also increase the number of women starting, leading fulltime and employing to their business.

<sup>83</sup> Acronym for Lag om valfrihetssystem (*Law on freedom of choice*)

<sup>84</sup> Government bill 2008/09:29 and SOU 2008:15

<sup>85</sup> The Swedish Competition Authority

<sup>86</sup> <http://www.innovationsradet.se/>

Tourism is another area with a large number of service actors together adding up to an important sector with a large innovation potential. The government will allocate 20 mSEK each year during 2012–2014 to improve and develop new and existing tourist destinations, as well as counselling and business development focused on small companies within the tourism industry.

For the cultural and creative industries the government allocated 73 mSEK during 2009–2012 to create good conditions for entrepreneurs and companies to develop their business ideas and businesses and to improve the profitability. The initiative includes counselling, incubators, networks, entrepreneurship, innovation and design, leadership and management, financial needs and competence development.

A number of new initiatives based on ICT and digitalisation issues have been launched during the last decade. The political aim has been to create a whole sphere of new opportunities by focusing on framework conditions for a new digital infrastructure, and as a consequence new service innovations have been created and introduced.

The concept of e-Governance implies technology driven governance and interactions within the entire government framework. In e-Governance, the government services will be made available to the citizens in a convenient, efficient and transparent manner, often 24 hours a day – creating the 24h Authority. To strengthen the development of e-Government and create good opportunities for inter-agency coordination, a delegation for e-Government<sup>87</sup> has been being established. The delegation published a proposal for the authorities work with e-Governance in 2009<sup>88</sup>. Several sector applications have developed like the National e-health strategy<sup>89</sup>.

The digital agenda for Sweden<sup>90</sup> has been developed by the Ministry of Enterprise, Energy and Communications and published 2011. The purpose of the Digital Agenda for Sweden is to collate all on-going activities in a horizontal, cohesive strategy in order to make use of and exploit all the opportunities offered by digitisation to individuals and businesses, for example making public authorities' databases more accessible<sup>91</sup>, growth in small and medium-sized ICT companies enabling new service innovations, can boost.

Already in 2009 a broadband strategy for Sweden was presented<sup>92</sup>, including a goal for 2020 that 90% of all households and businesses in Sweden should have access to broadband with a speed of at least 100 Mbps, which probably would lead to a number of new service innovations. Just recently the VAT on so called Apps for internet services was reviewed and cleared for some double taxation effects, and hence will facilitate the development of Apps for internet services.

In 2009 VINNOVA got a government assignment with an annual budget of 30 MSEK to create a research program studying the financial markets to improve the international competitiveness of the Swedish financial markets research and its relevance for both private and public actors within the financial sector. Two calls were launched during 2010; establishing a national center for financial markets research and the introduction of industry doctoral students program focused on financial markets research.

Another broad area where a number of new service innovations have appeared as a consequence is the tax deduction for renovating and improving existing houses, mainly villas and residential buildings, launched in 2004 and called ROT<sup>93</sup>,

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<sup>87</sup> <http://en.edelegationen.se/>

<sup>88</sup> Strategi för myndigheternas arbete med e-förvaltning (A strategy for authorities work with e-Governance – *available in Swedish only*), betänkande av E-delegationen 2009.

<sup>89</sup> Nationell eHälsa – strategin för tillgänglig och säker information om vård och omsorg (National e-Health – strategy for accessible and safe information about health and social care – *in Swedish only*), Socialdepartementet 2010

<sup>90</sup> ICT for everyone – A digital agenda for Sweden, Ministry of Enterprise, Energy and Communications 2011

<sup>91</sup> <http://www.opengov.se/>

<sup>92</sup> Broadband strategy for Sweden, Ministry of Enterprise, Energy and Communication 2009

<sup>93</sup> In Swedish called ROT which is an acronym for "Reparation, Ombyggnad och Tillbyggnad", translated to Renovation, Reconstruction and Extension

created a market for new innovative building contractors and craftsmen for private homes. During 2010 there were 870 000 people ordering ROT-jobs creating 30 000 jobs in the industry during that year<sup>94</sup>.

A similar taxes deduction from 2007 for services in private households, like cleaning, baby-sitting and gardening, called RUT<sup>95</sup>, has led to a large number of new companies offering services that not have been available for private persons before. During 2010 there were 326 000 people ordering RUT-jobs creating 5 000 jobs in 12 500 companies that year<sup>96</sup>.

The newly introduced decreased VAT on restaurant and catering services is hoped to lead to new service innovations triggered by larger volumes and better economy.

Very recent initiative is to increase the financing of the incubators with another 300 MSEK during a three years period with a focus on new and growing knowledge intensive companies and internationalisation of companies with a high growth potential.

On the local level, the right to challenge the local municipality's own service operation by giving the right for any entrepreneur that likes to run the community's service operation, to propose that the existing service operation should be subcontracted or sold, is another policy measure that might lead to new innovative municipality services.

The local communities have been allocated 15 mSEK for the next three years period to improve the efficiency and coordinate different types of services with low service penetration in rural areas.

Innovation issues have traditionally been treated within the framework of research policies. The two latest government bills on research policies (2004<sup>97</sup> and 2008<sup>98</sup>) contain no explicit proposals for policy measures to support service innovation. In July 2010 there was a government service innovation strategy<sup>99</sup>, dealing with support to service innovations. The 43 pages long document is a milestone illustrating that service innovation is politically recognised.

The document gives strategic directions but is more of a program declaration on what to look deeper into to be able to promote service innovations in different ways. The process behind the document also included some innovative features, like crowd sourcing and an Internet forum, inviting the public to contribute to and discuss what should be included in the service innovation strategy.

The now on-going effort to write a new governmental innovation strategy, planned for fall 2012, follows the interactive manner from the service innovation memorandum and also includes a number of dialogues, meetings and calls for inputs from the public and the business sector and the civil society. This time a more horizontal approach is used by having the Ministry of Enterprise, Energy and Communications leading the process but involving all other Ministries, not only the Ministry of Education and Research, which has been the normal way of dealing with this matter.

A new government bill on research and innovation is on-going and will be published in 2012. The content is not yet known but will most likely address services and a wider scope on innovation.

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<sup>94</sup> According to the Swedish Tax Agency's report 2011:1 "Om RUT och ROT och VITT och SVART" (About RUT and ROT and WHITE and BLACK – available in Swedish only)

<sup>95</sup> In Swedish called RUT which is an acronym for "Rengöring, Underhåll och Tvätt", translated to "Cleaning, Maintenance and Laundry"

<sup>96</sup> According to the Swedish Tax Agency's report 2011:1 "Om RUT och ROT och VITT och SVART" (About RUT and ROT and WHITE and BLACK – available in Swedish only)

<sup>97</sup> Forskning för ett bättre liv (Research for a better life – available only in Swedish), Regeringens proposition 2004/05:80

<sup>98</sup> Ett lyft för forskning och innovation (A boost to research and innovation – available only in Swedish), Regeringens proposition 2008/09:50

<sup>99</sup> En strategi för ökad tjänsteinnovation (A strategy for increased service innovation - available only in Swedish), Promemoria Näringsdepartementet 2010-07-08

## Key actors in the national innovation system

**Table 1. Main public actors in the Swedish national innovation system<sup>100</sup>.**

A Government (ministry level)		
<i>Education &amp; Research (U)</i> <a href="http://www.sweden.gov.se/sb/d/2098">http://www.sweden.gov.se/sb/d/2098</a>	<i>Enterprise, Energy &amp; Communications (N)</i> <a href="http://www.sweden.gov.se/sb/d/2067/a/20348">http://www.sweden.gov.se/sb/d/2067/a/20348</a>	<i>Other ministries</i> (Defence, Rural, Environment)
B Governmental agencies financing research		
<i>Swedish Research Council, VR</i> (Vetenskapsrådet <a href="http://www.vr.se">www.vr.se</a> ) General financer, curiosity-driven research, competitive allocation <i>Swedish Research Council Formas</i> , <a href="http://www.formas.se">www.formas.se</a> promotes and supports basic research and need-driven research in Environment, Agricultural Sciences and Spatial Planning <i>Swedish Council for Working Life and Social Research, FAS</i> ( <a href="http://www.fas.se">www.fas.se</a> ), finances research in Social Science with focus on labour relations	<i>Energy agency</i> ( <a href="http://www.energimyndigheten.se">www.energimyndigheten.se</a> ) R&D in needs driven energy topics <i>Swedish Governmental Agency for Innovation Systems, Vinnova</i> ( <a href="http://www.vinnova.se">www.vinnova.se</a> ) Needs-driven research in several areas excluding energy <i>Swedish Space Board</i> <i>Swedish Transport Administration</i> , Trafikverket ( <a href="http://www.trafikverket.se">www.trafikverket.se</a> )	<i>Swedish Defence Material Administration, FMV</i> ( <a href="http://www.fmv.se">www.fmv.se</a> )
C Independent but public foundations with a R&D financing mission (U)		
<i>Strategiska</i> ( <a href="http://www.stratresearch.se">www.stratresearch.se</a> ) SSF <i>KK-stiftelsen</i> ( <a href="http://www.kks.se">www.kks.se</a> ) <i>Mistra</i> ( <a href="http://www.mistra.org">www.mistra.org</a> ) Health areas <i>Vårdal</i> ( <a href="http://www.vardal.se">www.vardal.se</a> )	<i>Research exchange</i> <i>STINT</i> ( <a href="http://www.stint.se">www.stint.se</a> ) <i>Intl Institute for Industrial Environmental Economics</i> <i>IIIEE</i> ( <a href="http://www.iiiee.lu.se">www.iiiee.lu.se</a> )	
D Higher education agencies (U)		
Responsible for evaluating higher education and higher education statistics <i>HSV</i> ( <a href="http://www.hsv.se">www.hsv.se</a> ) <i>VHS</i> ( <a href="http://www.vhs.se">www.vhs.se</a> ) responsible for applications	<i>Internationella programkontoret</i> (International Education Exchange Programs) <a href="http://www.programkontoret.se">www.programkontoret.se</a> <i>CSN</i> ( <a href="http://www.csn.se">www.csn.se</a> ) Responsible for student Loans	
E Higher education & public R&D performers; universities (U)		
Higher education at 28 locations, 3 cycles 24 location, 2 cycles 2 locations, single topic (cycles refers to the Bologna nomenclature)	Largest R&D performance with 57% of all R&D expenditure at universities Karolinska Med Univ Lund Univ, Uppsala Univ, Göteborg Univ, Stockholm Univ	
F Public and semi-public research institutes (N) <a href="http://www.ri.se">www.ri.se</a>		
<i>SWEREA</i> ( <a href="http://www.swerea.se">www.swerea.se</a> ) <i>SICT</i> ( <a href="http://www.sict.se">www.sict.se</a> ) <i>STFI-Packforsk</i> ( <a href="http://www.stfipackforsk.se">www.stfipackforsk.se</a> ) <i>SP</i> ( <a href="http://www.sp.se">www.sp.se</a> )	<i>FOI</i> ( <a href="http://www.foi.se">www.foi.se</a> ) Swedish Defence Research Agency <i>VTI</i> ( <a href="http://www.vti.se">www.vti.se</a> ) Road & transport research	
G Agencies and organizations supporting innovation (N)		
<i>Vinnova</i> ( <a href="http://www.vinnova.se">www.vinnova.se</a> ) <i>Energimyndigheten</i> ( <a href="http://www.energimyndigheten.se">www.energimyndigheten.se</a> )	<i>Tillväxtverket</i> ( <a href="http://www.tillvaxtverket.se">www.tillvaxtverket.se</a> ) <i>PRV</i> (Patent Authority, <a href="http://www.prv.se">www.prv.se</a> )	
H Public foundations and state-owned enterprises with a mission to provide financial and non-financial support to SME and early stages ventures (N)		
<i>Industrifonden</i> ( <a href="http://www.industrifonden.se">www.industrifonden.se</a> ) <i>Almi</i> ( <a href="http://www.almi.se">www.almi.se</a> )	<i>Innovationsbron</i> ( <a href="http://www.innovationsbron.se">www.innovationsbron.se</a> ) <i>Incubators</i> ( <a href="http://www.sisp.se">www.sisp.se</a> ) (private organization)	

<sup>100</sup> Illustration from the report "The performance and challenges of the Swedish national innovation system – a background report to OECD, Tillväxtanalys 2011:04

## Most important actors from service innovation point of view

**Ministry of Enterprise, Energy and Communication**, coordinated the work on the governmental strategy on service innovation in 2010 and leads the development work for the new innovation strategy to be published during fall 2012. <http://www.regeringen.se/sb/d/1470>

**VINNOVA** (The Swedish Governmental Agency for Innovation Systems) is Sweden's innovation agency under the Ministry of Enterprise, Energy and Communication, and the national contact agency for the EU Framework Programme for R&D. <http://www.vinnova.se/sv/>

**Tillväxtanalys** (Swedish Agency for Growth Policy Analysis) is a national authority under the direction of the Ministry of Enterprise, Energy and Communications. They conduct evaluations, analyses and statistical studies with a broad Swedish and international perspective. They have recently performed a large number of assignments regarding service innovation. <http://www.tillvaxtanalys.se/sv/>

**Tillväxtverket** (Swedish Agency for Economic and Regional Growth) is a national agency under the Ministry of Enterprise, Energy and Communication, and has the role to strengthen regional development and facilitate enterprise and entrepreneurship throughout Sweden. They are, for example, active in areas as young entrepreneurs, promoting women's entrepreneurship, tourism industry and regional development. <http://www.tillvaxtverket.se/>

**Vetenskapsrådet** (The Swedish Research Council) is a government agency that provides funding for basic research of the highest scientific quality in all disciplinary domains. <http://www.vr.se/>

**FAS** (The Swedish Council for Working Life and Social Research) initiates and support research in the areas of working life, public health and welfare. <http://www.fas.se/en/>

**Formas** (The Swedish Research Council Formas) promote and support basic research and need-driven research in the areas Environment, Agricultural Sciences and Spatial Planning. <http://www.formas.se/>

**Innovationsbron** (Innovation Bridge) is owned by the Swedish state and Industrifonden (a foundation founded by the state) and operates throughout Sweden to support business development by providing seed financing, combined with industry related business development as active owners, as well as developing incubators. [www.innovationsbron.se](http://www.innovationsbron.se)

**Almi Företagspartner** (Almi Business Partner) is owned by the state and is the mother company of 17 regional subsidiaries partly owned by the regional county boards and regions, supporting regional business development with counselling and financial support (loans and equity). <http://www.almi.se/>

**RISE**. The industry research institutes, under the ownership of RISE Research Institutes of Sweden Holding AB. RISE Holding is an owner company that partly or wholly owns industry research institutes. Under RISE is, for example, SP Technical Research Institute of Sweden that performs testing and certification. SP also in 2012 launched a service innovation institute located in Karlstad. Swedish ICT also belongs to RISE, and is a group of world class research institutes in the forefront of research in ICT (Information and Communication Technology), ranging all the way from hardware to software. <http://www.ri.se/>

**SISP – Incubators** (Swedish Incubators and Science Parks) is an industry organization for 60 incubators and science parks in Sweden of which Stockholm University Innovation is the foremost service incubator. [www.sisp.se](http://www.sisp.se)

**KK-stiftelsen** (The Knowledge Foundation) is a research financier for the 17 new universities in Sweden with the task of strengthening Sweden's competitiveness and ability to create value. <http://www.kks.se/SitePages/Startsida.aspx>

**IVA** (The Royal Swedish Academy of Engineering Sciences) is an independent organisation initiating contacts between experts and stimulating research exchanges and other projects to generate new ideas and knowledge for industrial growth in Sweden, recently launched a paper on Innovations for Growth including full scope of innovations. <http://www.iva.se/>

**Almega** (Employer and trade organisation for the Swedish service sector) offers analyses of the service sector and act as a lobby organisation for the support of the development and innovations in the service sector. <http://www.almega.se/omalmega>

**Länsstyrelserna** (The County Administrative Board) the 20 County Administrative Boards in Sweden are the representatives of the Government in the region and the coordinating body for State activities in the county, with resources to run programs, counselling and financial support to develop the business in the region including services. <http://english.skl.se/>

**Kommuner** (local communities) the 290 local communities in Sweden have a responsibility for several local services (public or private) as well as having resources to develop the business in the local community serving the local business regardless of industry or service sector. <http://english.skl.se/>

**Universities**, a majority of them, have research relevant to services, even if it is not always promoted or labelled as such. The following universities and colleges are examples of research organisations with an explicit focus in this area. The discipline of service science is young and we still miss certain research fields such as service innovation policy studies.

**Table 2. Examples of strong research environments for service based research<sup>101</sup>.**

Research environment	Research focus
<b>Karlstad University</b> <a href="http://www.kau.se/">http://www.kau.se/</a>	Consumer research Marketing
<b>Linköping University</b> <a href="http://www.liu.se/?l=sv">http://www.liu.se/?l=sv</a>	Servicification within industry
<b>Mid Sweden University</b> <a href="http://www.miun.se/">http://www.miun.se/</a>	Tourism
<b>Gothenburg University</b> <a href="http://www.gu.se/">http://www.gu.se/</a>	Service development Business Models
<b>Lund University</b> <a href="http://www.lu.se/">http://www.lu.se/</a>	Business development Leadership
<b>Luleå University of Technology</b> <a href="http://www.ltu.se/">http://www.ltu.se/</a>	Functional sales Development of soft products Digital service development Business Models Living Labs
<b>Stockholm School of Economics</b> <a href="http://www.hhs.se/se/Pages/default.aspx">http://www.hhs.se/se/Pages/default.aspx</a>	KIBS and digital service development Leadership in service operations Competence in service operations
<b>Viktorias Institute</b> <a href="http://www.viktoria.se/">http://www.viktoria.se/</a>	Transportation solutions Sustainable personal transportations

<sup>101</sup> Illustration translated to English from the report Behov av kunskap och kompetens för tjänsteinnovationer (The need for knowledge and competence for service innovations – available only in Swedish), VINNOVA report to governmental assignment 2011.



## Most important service industries

Sweden has a large public service sector counting for close to 30% of the total service sector, and including a large portion of a number of important services like, education, health care and social care, and public transportation.

**Table 3. Most important service industries ranked by GNP production values (and number of employees).**

Service Industry by industrial classification	Share of Service Industry production (GNP) %	GNP production value MSEK	Share of total number employees in service sector	Number of employees
Wholesale and retail trade	22,8	329 910	26,0	538 000
Professional scientific, technical and admin. activities	18,0	260 015	24,3	502 000
Real estate activities	17,6	255 358	3,2	66 000
Management of real estate	10,6	153 278	3,2	66 000
Information and communication	10,6	152 855	8,4	173 000
Transport and storage	10,2	147 026	11,2	232 000
Consultancy and scientific R&D	9,2	133 746	9,8	203 000
Financial services and insurances	8,4	120 947	4,6	96 000
Admin. and support services	6,7	97 430	11,4	235 000
Education and health care	6,5	94 311	10,3	214 000
Computer programming, consultancy and related services	5,3	76 483	4,7	97 000
Personal and cultural services	3,1	44 298	4,9	102 000
Publishing, motion picture, video, TV and broadcasting	3,0	43 361	2,6	54 000
Hotels and restaurants	3,0	43 052	7,0	145 000

From SCB (Statistics Sweden), all figures 2010

The total GNP production value for private services in Sweden adds up to 1 447 772 MSEK.

**Table 4. Most important service industries from own R&D point of view**

Service industry	Share of total service industry R&D in %	R&D cost for own R&D in MSEK
Research and development organisations	45,0	8 585
Information and communication companies	23,9	4 565
Trade, motor services, hotel and restaurants	11,6	2 266
Architects, technical consultants, technical analyses	4,1	779
Publishing, motion picture, video, TV and broadcasting	4,0	757
Financial services and insurance	3,3	626
Advertising and other business services	1,5	282

All figures 2009

## B. Policies promoting service innovation

From the service innovation strategy document<sup>102</sup> it is possible to find out what areas that have been prioritised:

1. Effective and efficient framework conditions for service innovation
2. Knowledge and competence for service innovation
3. Digital infrastructure for service innovation
4. Internationalisation of service innovations

It is also possible to see what kind of initiatives that might be launched within the four prioritised areas by looking into the sub headings:

1. Effective and efficient framework conditions for service innovation
  - a. The service innovation perspective within legislative work
  - b. The tax system affects incentives for entrepreneurship and innovation
  - c. Intellectual assets and rights<sup>103</sup>
  - d. Standardisation can facilitate service innovation
  - e. Freedom of movement for services within EU inner market
  - f. Access to capital for service innovations<sup>104</sup>
  - g. Public actors demand as a driving force for service innovation
  - h. Developing the public support systems and promotion structures to match needs and conditions for renewal and growth in the service economy<sup>105</sup>
  - i. Reorientation of society towards sustainable development as driving force for service innovation<sup>106</sup>

2. Knowledge and competence for service innovation
  - a. Develop knowledge and competence for service innovation in education
  - b. Develop knowledge and methods for user-driven innovation
  - c. Promote employee-driven innovation
  - d. Identify and analyse the needs for scientific knowledge development for service innovation<sup>107</sup>
  - e. Integrate service innovation aspects in industry and sector oriented initiatives
  - f. Increase knowledge on business model innovation and the importance of the business model for service innovation
  - g. Knowledge and competence in service design
  - h. Increased knowledge and competence about financing of service innovations
  - i. Identify good examples of service innovations in rural areas and countryside, and find methods for competence development for service providers and users<sup>108</sup>
  - j. Better decisions require development of measurement methods and indicators
3. Digital infrastructure for service innovation
  - a. Dialogue about the Internet of the future<sup>109</sup>
  - b. Access to broadband in all parts of the country is crucial for digital services
  - c. Digital service innovation companies
  - d. Development of digital services in other kind of companies<sup>110</sup>
  - e. Framework conditions for digital services

<sup>102</sup> En strategi för ökad tjänsteinnovation (A strategy for increased service innovation – *available only in Swedish*), Promemoria Näringsdepartementet 2010-07-08

<sup>103</sup> New assignments are on-going in this area. The patent office will start counselling (a sort of helpdesk) as a support measure.

<sup>104</sup> A report on Access to capital is to be published in April 2012.

<sup>105</sup> A handbook for service innovation support measures will be developed by VINNOVA in 2012.

<sup>106</sup> VINNOVA is continuing the efforts in challenge-driven innovation with new calls in 2012.

<sup>107</sup> VINNOVA report, Need for knowledge and competence for service innovations – *in Swedish with an English summary*, 2011-11-15

<sup>108</sup> Swedish Agency for Economic and Regional Growth has a large number of support initiatives for regional development.

<sup>109</sup> VINNOVA is responsible for a Forum for the Future Internet, a network and an arena that provides discussion for a broad set of actors in this field. The work is based on the Swedish version of the Digital agenda.

<sup>110</sup> On-going study on the use of ICT in SME, to be published 2012.

4. Internationalisation of service innovations
  - a. Increasing existing resources for internationalisation of companies and organisations
  - b. Review conditions for SMEs in areas where Sweden has comparative advantages for marketing on foreign markets
  - c. Review issues on direct investments, international co-operation on knowledge development and innovation processes, competence issues on manning of companies or organisations (conditions to attract foreign competence), etc.

By this strategy the Ministry says that the first corner stone is laid of a broad foundation for so called learning politics on innovation, growth and well-being. The strategy is the start to develop the innovation policy being able to take advantage and explore the possibilities of the service economy. The next steps will build on cooperation and a dialogue with the industry, academia and public actors.

### **Service innovation policy development activities after the service innovation strategy**

In Sweden the agencies are subordinate to the Government and responsible for implementing public policies. Every year the Government takes a decision on the preconditions for agencies' operations. This is effected through, what are known as, appropriation directions. The agencies are independent and are to a large extent free to form their own initiatives. The Government works with framework conditions on a broader, industry neutral, scale. This is one reason for there not being (many) programmes exclusively for services.

The three agencies under the Ministry of Enterprise, Energy and Communication; VINNOVA, Swedish Agency for Growth Policy Analyses and Swedish Agency for Economic and Regional Growth, all achieved appropriation directions dealing with service innovations both for the fiscal year 2010 and 2011. In the appropriation directions and the answers from the agencies we can find political ambitions for promoting service innovations.

In the appropriation directions for 2010 all three agencies achieve similar directions when it comes to the service innovation part.

VINNOVA was asked to report how the agency contributes to:

1. strengthen the conditions for increased service innovation in the Swedish economy
2. increased knowledge about what is creating service innovations
3. strengthen the exchange of knowledge and experiences between actors in academia, business and public sector within the area of service innovation

The Swedish Agency for Economic and Regional Growth was asked to report:

1. how the agency contributes to increased knowledge about what is creating service innovations
2. how the agency contributes to strengthen the conditions for increased service innovation
3. suggestions for continuous work (within the agency) to strengthen the ability for service innovation in the Swedish economy

The Swedish Agency for Growth Policy Analyses was asked to report:

1. an inventory and description of available statistics illustrating
  - a. indicators relevant to service innovations and identifying missing knowledge and development needs in existing statistics
  - b. indicators relevant to innovations in the service sector and identifying missing knowledge and development needs in existing statistics
  - c. on-going development work dealing with indicators relevant to the service economy, service innovation and the service sector on national and regional level, as well as within EU and OECD
2. the need for knowledge development to increase the understanding how growth is created in a service based economy and what role service innovation and innovations in the service sector play.

The Ministry of Enterprise, Energy and Communication emphasise that the purpose of the appropriation directions for 2010 is to contribute to a foundation for the formation of measures and initiatives for increased service innovation. From the agencies' reporting it might be possible to perceive the

foundation of some upcoming policy measures supporting service innovations.

VINNOVA prioritised seven strategic areas, and services are one of them with its own Chief Strategy Officer. Initiatives for increased service innovations will be integrated within four sectoral areas within VINNOVA; Health, Transport and Environment, Services and ICT, and Manufacturing and Working Life. Themes and challenges to focus are; the needs for increased utilisation of knowledge, needs-motivated research and increased cooperation with the business community. Also lack of knowledge about the conditions for service operations, increased service export and increased service content within manufacturing companies and emerging industries. Service in the public sector is also recognised as an important field for new initiatives. VINNOVA launched an initiative, Challenge-driven innovation, during 2011 that shift focus towards the grand challenges but in a Swedish context.

*The Swedish Agency for Economic and Regional Growth* recognised several initiatives for the service industry development:

1. Improving entrepreneurship and renewal within health care and social care following the deregulation of the earlier public monopoly.
2. Internationalisation and export of services
3. Creating service incubators
4. A new program on Young and Innovation<sup>111</sup>
5. Taking a proactive role about knowledge development in the service sector and to come up with suggestions on how policy measures can be adapted and renewed for the service sector.

The latter is a concrete initiative to start developing new policy measures for the support of service innovations.

*The Swedish Agency for Growth Policy Analyses* continued to produce knowledge on service innovation about the importance of services for growth and renewal of the Swedish economy.

In the appropriation directions for 2011, the agencies took on new government assignments on support to service innovations.

VINNOVA launched in their report<sup>112</sup> to the Ministry a number of suggested initiatives to improve knowledge and competence for service innovations:

1. A special focus on innovation procurement highlighting the collaboration between public sector, industry and research.
2. Societal challenges as a driver of specific service innovation efforts.
3. Strengthening service research to promote and facilitate coordination, networking and interdisciplinary.
4. Meeting places and collaborative arenas for exchanging knowledge which might, for example be facilitated by intermediaries.
5. Vouchers for service innovation and service design
6. Increased mobility between the practical sphere and academia in order to stimulate the process surrounding service innovations and create a better understanding between actors.
7. Innovation Labs in universities to strengthen the interaction between research, education, innovation and industry.
8. Commercialisation of service research.
9. National opportunities, including Living Labs, test beds and demonstrators with Sweden as a test market for such things as e-services, transport, health care, schooling and sustainable urban design as well as access to international test and demonstration milieus.
10. Vouchers for small and medium sized enterprises to enable the export of service innovations.

*The Swedish Agency for Economic and Regional Growth* pursues its five initiatives from last year and reports that they are still in the set up phase for most of the initiatives. During the year the agency has structured its operation in seven focus areas and all of them are said to have a renewal perspective and a certain emphasis on service innovation. They are:

1. Easier for everyone to start and develop companies; with initiatives to develop industry guides for emerging industries within the service sector.

<sup>111</sup> Ungas Innovationskraft is an initiative from VINNOVA and Tillväxtverket allocating 19 mSEK to 22 projects to support young people between 18-30 years how to realise their ideas and to get increased knowledge on idea development and commercialisation.

<sup>112</sup> Behov av kunskap och kompetens för tjänsteinnovationer (Need for knowledge and competence for service innovations - in Swedish with an English summary), VINNOVA 2011-11-15

2. Business development in SMEs; with initiatives on procurement to stimulate entrepreneurship and woman's entrepreneurship.
3. Capital sourcing and financing; with initiatives to rise capital and finance commercialisation of business ideas.
4. Local and regional growth and innovation; with initiatives to facilitate new solutions to services on locations where normal offerings are not difficult to maintain.
5. Environmental driven growth.
6. Travel and experience driven markets; with initiatives for new and small companies without established markets.
7. Entrepreneurship within health and social care; with several programs e.g. development vouchers for private companies to increase competition.

*The Swedish Agency for Growth Policy Analyses* continued to produce a number of reports on service innovation; e.g. Driving forces for service companies, Management of innovations in service companies, statistical indicators on service innovations<sup>113</sup>. The reports are all focused on knowledge development and result in useful insights and suggestions for further studies rather than new policy measures.

### Summary and classification of policies promoting service innovations

Traditionally policy initiatives are on supply-side but now increasingly on demand-side and improvements in framework conditions. Innovation agencies like VINNOVA has moved in that direction, *from mainly calls and research project financing to creation of new arenas for service innovations and other need-driven initiatives.*

*Deregulation of public service monopolies*; which probably is the most important service innovation source, initially founded to decrease cost of public services but when the market is functioning, a never ending flow of competition-driven innovations will occur.

*The law on freedom of choice for health and social care services* is also a political initiative not for service innovation in the first place, but has resulted in numerous service innovations.

*Innovation procurement* is a new initiative which probably will lead to service innovations by the large buying power in public procurement that can release such ideas. The historical way of working focuses on lowest price and proven solutions, and hence hampers innovative offers that can fulfil societal needs better, create new jobs and new export possibilities. The new initiative on 24 mSEK for 2011 and 9 mSEK for each of coming years will go to improved knowledge and changed attitudes at public actors to strengthen the demand of new and better solutions as a driving force for innovation. The initiative is well in line with the *Innovationsupphandlingsutredningen*<sup>114</sup> and VINNOVA will have the responsibility to implement the initiative, on top of its efforts on a smaller scale already going on.

*ROT – Tax reduction for renovating and improving existing houses*, has created a market for innovative suppliers.

*RUT – Tax reduction for private households, using cleaning, maintenance and laundry*, has created a number of innovative B2C suppliers in a market where only B2B suppliers could exist.

*Reduced VAT on restaurant and catering services*, is mainly a job creation policy, but might lead to new service innovations triggered by larger volumes and better economy.

Improvements in framework conditions are also increasing and we have seen a few of which several are based on the digitalization of infrastructures.

*E-Government, national e-health*, include programs for 24h Authorities and a whole new interface with its customers.

*The digital agenda for Sweden* support the exploitation of opportunities created by making public authorities' databases more accessible and hence let small and medium sized ICT companies innovate and grow business. An agenda for a greener public administration has also been launched. Within the program *Var dags IT*<sup>115</sup> a call has been launched to support entrepreneurship within the cultural and creative industries and to increase competitiveness and ability to innovate.

*Broadband strategy for Sweden*, will probably lead to a number of new service innovations by an ambitious goal for household access to broadband throughout the country.

<sup>113</sup> This assignment has been allocated 5mSEK for the next four years and continues together with Statistics Sweden and VINNOVA on developing new indicators.

<sup>114</sup> *Innovationsupphandlingsutredningen* (The innovation procurement inquiry – available in Swedish only), SOU 2010:56

<sup>115</sup> Swedish for *Every day IT*

## Evaluations of initiatives, measures and other service innovation support

There are a number of more general evaluations covering aspects of support for service innovations. In 2009 The Confederation of Swedish Enterprise, together with Almega and Teknikföretagen, carried out a mapping study<sup>116</sup> of service research and found out, among other things, that the service area is not enough scientifically studied when it comes to research that should be able to promote a service oriented policy and entrepreneurship within the service area. The study noted that this should be looked deeper into as part of the forthcoming national strategy for service research. This is still an issue on the political agenda as service research in Sweden has not been recognised as having such a quality that it should have increased public financing.

Last year a literature study<sup>117</sup> on competences supporting service innovation was carried out and published by VINNOVA. The study identifies the most central competences organisations and their collaboration partners need in order to be successful in service innovation. It is also a broad evaluation and it focuses on what the literature says about competences for service innovations.

Service innovations in the public sector have been studied as a part of VINNOVA's government assignment 2011 and the report<sup>118</sup> concludes that the knowledge level about service innovations in the public sector is low and that awareness raising efforts have to be done. New arenas have to be created and the interaction between research and practice must

be improved. Also the knowledge about how to organise innovation work in the public sector should be increased, as well as the needs of the users and what it takes to develop operations with the users in focus.

How to organise and manage the development of service operations is an underrated research area compared to similar research about the manufacturing industries. In a study of several cases<sup>119</sup>, the needs and challenges of service companies on how to organize and manage the service development was documented. Major findings including the fact that service development is more difficult to define, describe, visualize and evaluate, but also that it often occurs in practice between the employee and the customer, and hence how to utilise the innovation potential that the employees have. The evaluation also concluded that we have to learn more about how services are developed and innovated before we can increase support and design initiatives to promote service innovations.

Another broad service evaluation was published last year by VINNOVA on how service innovations are supported in their programs and calls<sup>120</sup> and found four areas that need to be developed further; 1 terminology and use of language, 2 assessment, monitoring and indicators, 3 types of initiative and 4 marketing. Many program and call texts use *language* which, above all, favours technical innovation and manufacturing (more information on this study will be found later under the heading Gaps and issues related to the emerging service innovation policy – Language and indicators).

<sup>116</sup> Kartläggning av forskning om tjänster (Mapping of service research – *available in Swedish only*), Svenskt Näringsliv 2009

<sup>117</sup> Competences supporting service innovation – a literature review, by Annika Schilling, VINNOVA VR 2011:13

<sup>118</sup> Tjänsteinnovationer i offentlig sektor (Service innovations in the public sector – *available in Swedish only*), by Karin Hovlin, Sofie Arvidsson, Mikael Hjort & Anders Ljung, VINNOVA VR 2011:12

<sup>119</sup> Utmaningar och kunskapsbehov – om innovation, ledning, och organisering i nio olika tjänsteföretag (Challenges and knowledge needs – *available in Swedish only*), by Lucia Crevani, Kristina Palm, David Sköld & Mats Engwall, VINNOVA VR 2009:10

<sup>120</sup> Tjänstebaserad innovation (Service based innovation – *available in Swedish only*), by Irene Martinsson, VINNOVA VR 2011:01

## C. Checklist of policy measures

Table 5. The table summarises the policies identified above according to the strategic themes of EPISIS.

Policy	New types of innovation actors, novel types of innovation and innovative business solutions	Service innovation related competencies and capabilities	Markets and infrastructure as a driver of service
<b>Deregulation of public service monopolies</b> Privatisation programs; e.g. for education, health and social care, public transportation, post & telecom, broadcasting & TV, electricity supply, pharmacies, social insurances and other social services			✓
<b>Research financing and calls</b> Creative industries, Challenge-driven innovation Traditional calls; e.g. Winning service work by user-driven innovation, Managing and organising for innovation in service firms, and Business Models		✓	
<b>The law on freedom of choice</b> LOV; e.g. education, health care	✓		✓
<b>Public procurement</b> Innovation procurement; e.g. precommercial procurement and catalytic procurement	✓		✓
<b>Tax incentives</b> Tax deductions; e.g. ROT & RUT VAT deductions for restaurant and catering services	✓		✓
<b>E-Government</b> Internet for delivering government information and services to the citizens; e.g. 24h Authority, e-health strategy	✓		
<b>Digital agenda</b> ICT for everyone; Digitization Commission, Re-use of Documents from Public Administration, IT for a greener public administration, Every day IT	✓		
<b>Broadband strategy</b> Broadband access; Broadband Forum, Goal for household access	✓		
<b>Innovation cheques and coaches</b> Raise the innovation capacity in SMEs	✓	✓	
<b>National Innovation Council</b> A council for innovation and quality in the public sector	✓		✓



## D. Future developments and service innovation policy needs

VINNOVA's contribution to the new research and innovation bill<sup>121</sup> has been quoted earlier in this report, and includes a number a novel service innovation support initiatives that might materialise as policy measures in the future. They are:

1. Innovation procurement
2. Strengthening service research
3. Collaborative arenas for exchanging knowledge
4. Vouchers for service innovation and service design
5. Increased mobility between the practical sphere and academia
6. Innovation Labs in universities
7. Commercialisation of service research
8. Living Labs, test beds and demonstrators with Sweden as a test market
9. Vouchers to enable the export of service innovations

Also societal challenges as a driver of specific service innovation efforts have been introduced. Challenge-driven innovation<sup>122</sup> is the new overall strategy for VINNOVA where all kinds of innovations could be addressed. This is a way to include service innovations, stand alone or embedded, in any of the identified challenges. VINNOVA has focused on four social challenges which drive the development of innovations with international potential and they are:

1. Sustainable and attractive cities
2. Health, wellbeing and medical care
3. Competitive industry
4. Information society 3.0

VINNOVA also have suggested focused initiatives in six areas, taking its point of departure from the social challenges, on how to stimulate new ways of creating growth and employment based on research, renewal of Swedish industries

and increased demand of innovative products and services. The six areas are:

1. Clear responsibility for utilization of research results at the universities
2. New cooperation programs between academia and industry
3. Infrastructure for verification, test and demonstration
4. Increased research and innovation in SMEs
5. Strategy for participation in research- and innovation programs within EU
6. Program stimulating public procurement

VINNOVA has got the assignment from the government<sup>123</sup> to lead the development of innovation procurement<sup>124</sup>, including innovation-friendly procurement and pre-commercial procurement, which will take us from focus on existing solutions in the procurements to a number of innovative services for the future.

In the policy development of The Swedish Agency for Economic and Regional Growth there are some upcoming initiatives. In the area of health and social care, development checks are being prepared to be issued. Within the cultural and creative industries there will be incubators focusing on service based offerings. Early 2012 the agency will launch a new program for regional innovation and cluster. It will be geared towards a much broader innovation scope compared to earlier initiatives and will now definitely include service development, further transformation in public operations and a strong focus on commercialisation.

Almega (the employer and trade organisation for the Swedish service sector) also recently provided suggestions<sup>125</sup> for increased value creation in the service sector as an official contribution to the coming research and innovation bill. The suggestions are:

1. Strengthening research supporting service innovation for increased growth and global competitiveness for Swedish companies

<sup>121</sup> Behov av kunskap och kompetens för tjänsteinnovationer (Need for knowledge and competence for service innovation - *in Swedish with an English summary*), VINNOVA 2011-11-15

<sup>122</sup> The call during 2011 attracted 635 applications which is a new all time high for VINNOVA for a single call.

<sup>123</sup> Government Inquiry; Innovationsupphandling (Innovation procurement – *available in Swedish with English summary*), SOU 2010:56

<sup>124</sup> Innovation i offentlig upphandling (Innovation in public procurement – *available in Swedish only*), VINNOVA VI 2011:13

<sup>125</sup> Ökat värdeskapande – för global konkurrenskraft i svenskt näringsliv (Increased value creation – for global competitiveness in Swedish industry – *available only in Swedish*), Almega 2011.



2. Raise service innovation to a strategic and cross-industry innovation platform
  - a. The platform should include program initiatives and demonstrators
  - b. The platform should create a national structure for co-operation between academia and business in service research
3. Develop the framework to support service innovation
  - a. Increase possibilities for commercialisation of service research
    - i. Go for service incubators
    - ii. Widen the scope for the innovation offices also including service innovations
    - iii. Introduce economic incentives in the resource allocation system to increase cooperation between academia and business
  - b. Reform the tax system for the service society and the globalised economy
    - i. Open up for depreciations of immaterial investments, e.g. internal company education, software and R&D
    - ii. Introduce innovation checks to SMEs to initiate co-operation with academia
    - iii. Reduce the tax wedges and the marginal effects in the tax system
  - c. Develop the market for increased service innovation
    - i. Develop the law on system of choice in the public sector to apply in more service industries
    - ii. Develop innovation procurement as a tool
    - iii. Support service export by focused initiatives towards growing service industries

IVA – The Royal Swedish Academy of Engineering Sciences has provided a contribution to the upcoming innovation bill with a report called Innovation plan for Sweden<sup>126</sup> including a vision, concrete proposals and a work process that will lead to a mobilisation around innovation. The proposal covers all kind of innovations, including service innovations, business model innovations, process innovations as well as product and technical innovations.

The suggestions are directed towards several areas:

1. Universities
  - a. provide stimulus for a fully developed knowledge triangle (education, research and innovation)
  - b. give the universities the opportunity to fully own and develop their innovation process
2. Maintaining competence
  - a. more effective matching of the education supply with the competence demand in the job market
  - b. a clearer investment perspective for education
3. Taxes
  - a. new tax deductions, e.g. venture capital and R&D deduction,
  - b. simplifying of existing tax system, as in the case of the “expert tax”
  - c. changes to regulations so that those who, in addition to capital, invest time and competence in a company are not at a disadvantage
4. Capital/competence/contacts for business
  - a. increased access to venture capital in early stages in the form of “competent capital”, i.e. investors who contribute financially and with experience, knowledge, advice, leadership, networks and coaching
  - b. stimulating research and development, particularly within SMEs
  - c. increasing innovation procurement in the public sector at the state, county and municipal levels in a way that promotes procurement of new solutions from SMEs
  - d. supporting SMEs more effectively in their internationalisation process
  - e. making it easier for businesses to employ foreign experts and researchers
  - f. guaranteeing the effectiveness of systems for intellectual property protection
  - g. increasing awareness about the significance of design
  - h. stimulating investment in leadership for innovation
5. Public administration and the public sector
  - a. measures to give agencies a more clearly-defined mandate to drive change and innovation

<sup>126</sup> Innovationsplan Sverige – underlag till en svensk innovationsstrategi (Innovation plan Sweden – foundation for a Swedish innovation strategy - in Swedish with an English summary), IVA 2011

6. Government investment in the innovation system
  - a. creation of a Prioritisation Council closely linked to ensure that the Government's prioritisation process is co-ordinated, efficient and transparent
7. The regions
  - a. analyse the competitive strength of the regional economy
  - b. introduce effect measurement for companies in cluster initiatives
  - c. create a regional innovation index
  - d. develop a model of on-going consultation between the national and regional levels that can, for example, be implemented within the framework of the Prioritisation Council's work.

### Gaps and issues related to the emerging service innovation policy

We lack a proper *language* to capture and convey the logic and characteristics of service innovations. As a consequence of the fact that our view on innovation is founded on and for a long time was characterised by what was recognized as difficult knowledge and competences at the time innovation was formulated as a concept for crucial renewal of industrial development, our language of service development is poor and contains too many concepts and expressions borrowed from the industrial paradigm and not relevant to describe and conceptualise service innovations.

We still use too many concepts from traditional industrial development to describe and evaluate service innovations,

like patents, technical innovation level, R&D-budget and R&D organisation, etc. to try to capture the service innovation process. These misconceptions can for example be found in proposals, calls, evaluations and financing of research and development in innovation for services as well as in governmental publications.

VINNOVA has evaluated how service innovations are supported in their programs and calls<sup>127</sup> and found four areas that need to be developed further; 1 terminology and use of language, 2 assessment, monitoring and indicators, 3 types of initiative and 4 marketing.

Many program and call texts use *language* which, above all, favours technical innovation and manufacturing. A broader view on innovation might attract more actors working with service based innovations. *Assessment* and *monitoring* of projects as well as *indicators* can be developed to better measure the results from service based innovations. *Initiatives* are often seen as innovation processes based on research but to better capture service based innovations, the scope should be designed to include for example open innovation initiatives. *Marketing* of calls and other initiatives are mainly focused on technically based organisations. To be able to reach actors focused on service based innovations, specific marketing activities following alternative channels has to be developed.

A proper language and relevant indicators are vital tools to be able to support service innovations by policy measures, as well as other support measures. This is one of the most basic gaps that hamper the development of service innovations.

<sup>127</sup> Tjänstebaserad innovation (Service based innovation – available in Swedish only), by Irene Martinsson, VINNOVA VR 2011:01

## 2.14 Appendix 14. The United Kingdom

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### A. National policy context

#### The National approach to service innovation support and how service innovation policy has been recognized at the innovation strategy

The UK service sector accounts for more than 75% of national economic output. The increasing importance of the service sector since the 1970s has raised a great challenge to UK's innovation policy instruments, which were developed mainly when the manufacturing sectors were seen as the source of innovation. Despite the growing concern over how the Government could promote and help innovation in services, so far there are almost no well established service innovation policies at national level. Traditionally, UK national policy makers have emphasized "sector neutrality" in formulating their innovation policy, though there have been some activities aimed at specific industries (especially the creative industries). Regional and local policy makers' cluster policies have inevitably focused on certain sectors, but overall service firms have less participation in government innovation programmes than their economic scale might lead us to expect. The public services have initiated many innovation activities of their own, and will need some special attention below.

There has been major political change in the UK over the last few years, and this study will focus on current developments. Of course, there is considerable carry-over from policies initiated in earlier years, and it is helpful to start by noting what was the last major pronouncement of the last government. In 2008, the Labour Government's White Paper *Innovation Nation*<sup>128</sup> set out the Government's aim – to make "Britain the best country in the world for innovative business and public service" (p2). The White Paper highlighted the increasing importance of "hidden innovation"<sup>129</sup> in the UK's service

sector such as knowledge intensive services (e.g. finance, business services and engineering) and creative industries. The emphasis on public service innovation was apparent throughout the report, with the ambition stated on p8 to "ensure that the UK's public services are the most innovative in the world". Alongside "growing investment in UK science..." the intention was stated to "... broaden knowledge exchange between the research base and businesses into the arts and humanities and service sectors such as the creative industries" (p7). In a number of major initiatives on p36 of the report, the Government announced that: it will champion the "Innovation Platform concept and the use of lead markets for innovative products and services [that] will address major societal challenges"; that the Knowledge Transfer Partnerships programme would be expanded and "for the first time they will cover the service sectors"; and that there will be encouragement of "the development of Innovation Voucher whereby SMEs receive a voucher that can "buy" initial engagement with a knowledge base institution such as a higher or further education institution" (of course, service sectors tend to have a higher proportion of SMEs than others). There are also several statements to the effect that the Government would also continue exploring innovation in service sectors.

The years since 2008 have seen a change in government (2010) and the worst economic crisis for decades, and deficit reduction, together with restoring economic growth, have been the Coalition Government's top priorities. The economic crisis has lent weight to calls for a "rebalancing" of the UK economy, which has been seen as too heavily dominated by financial services, with manufacturing, in particular, having been neglected.

There have been many arguments about the need for a growth strategy beyond the reduction of the deficit, and in December 2011, the new government published its *Innovation and Research Strategy for Growth*. This report is informed by the concept of an innovation (eco)system, noting that the UK has a world-leading science base and information infrastructure, with a strong supply of high-level skills and access to glo-

<sup>128</sup> See [http://www.bis.gov.uk/assets/biscore/corporate/migratedD/ec\\_group/18-08-C\\_b](http://www.bis.gov.uk/assets/biscore/corporate/migratedD/ec_group/18-08-C_b) (accessed May 28, 2012)

<sup>129</sup> Hidden innovation refers to innovation which cannot be measured by traditional indicators that measure expenditure on research and development and count production of patents and frequently occurs outside the "traditional" high-technology and manufacturing sectors. The White Paper here was very much informed by the work of NESTA, which had organised a series of studies examining various aspects of this phenomenon.

bally mobile skills; and it has a major financial sector – though this needs to be better directed to support firm growth, and strong business performance in the creation of intangible assets. In this report, the Government explicitly acknowledged that the growth of the UK economy significantly relies on innovation, that businesses are the main originators of innovation (though there are actions that government can make), and that the innovation performance of the service sector is likely to play an important role.<sup>130</sup> But there is little discussion of service innovation policy in general. High-tech, design and creative services are clearly addressed in such statements as “ world-class businesses in technology-based sectors, designers and creative industries ... are national assets that form the foundation of our future competitiveness.” (p4)

Specifically in relation to creative industries, *Innovation and Research Strategy for Growth* makes the point that “Britain’s creative industries represent the fastest growing sector of the UK’s economy with annual revenues in excess of £70 billion. Crossing many sectors (such as music, publishing, advertising and the arts), the creative industries employ many people. This is also an area in which the UK has a significant and distinctive international reputation, exporting to global markets. The creative industries bring together many of the key elements of this Strategy: new technologies (especially in the digital arena), interdisciplinary innovation (for example, between engineers and artists), the critical importance of design, the interaction between cutting-edge research and business innovation, and the challenge presented to traditional frameworks of IP, copyright and regulation. ... The Arts and Humanities Research Council will continue to promote interactions between research and business in this area, through establishing a cross-organisational centre for the understanding of Copyright and New Business Models in the Digital Age. The Research Councils and the Technology Strategy Board are also investing in four Creative Economy Hubs for Knowledge Exchange, and Digital Economy Hubs supporting collaboration between Research Councils.” (pp26-27) However, when the Catapult Centres (for technology-based sectors) are introduced, they are described as “a new elite national network to act as a bridge between academia and business and to sup-

port the commercialisation of new technologies in sectors such as high-value manufacturing, cell therapy and offshore renewable energy” (p3), two of which do not appear to give much of a role to services. Even the Cell Therapy Catapult, in which the Technology Strategy Board (TSB) will invest up to £50 million over five years, is described as focusing on “the development and commercialisation of new treatments for diseases, as well as the underpinning technologies for manufacturing, quality control, safety and efficacy challenges for these new treatments” (p27). At the time of writing of this study (June 2012), the TSB reported “fast progress in creating a network of world-leading Catapults centres to transform the UK’s capability for innovation in seven specific areas and help drive future economic growth...The seven areas are: high value manufacturing, cell therapy, offshore renewable energy, satellite applications, connected digital economy, future cities and transport systems.”<sup>131</sup> These seem to offer considerable scope for service innovation activities.

Overall, then, the UK does not have an explicit service innovation policy. There have been some policy instruments intending to promote and support service innovation but in 2007 it was reported that few of them have really achieved the objective.<sup>132</sup> The Department for Business, Innovation and Skills (BIS), which is responsible for making most innovation policies in the UK since June 2009, has recently increased its work on promoting and supporting innovation in service. Following the Government’s innovation strategy, BIS has adopted a networked/holistic policy approach to service innovation, which aims to integrate all relevant actors (e.g. regulators, policy makers and private sector) into the innovation process. There are specific policy indicatives with respect to particular types of service industry, notably creative industries (largely comprised of services), and public services (especially health services). These will be considered in more detail later.

It is important to recognise that the focus of the Government’s innovation strategy – related to infrastructure, open data/public service reform, horizontal policies and demonstrators – is important for service innovation. The main horizontal policies relate to taxation, regulation, immigration and skills, direct taxes, Employment Regulation, Audit Regulations, the

<sup>130</sup> BIS (2010), *Innovation and Research Strategy for Growth*, at <http://www.bis.gov.uk/innovatingforgrowth> (accessed May 28, 2012)

<sup>131</sup> See <http://www.innovateuk.org/deliveringinnovation/catapults.ashx> (accessed June 19, 2012).

<sup>132</sup> DTI (2007), *Innovation in Services*, at <http://www.dti.gov.uk/files/file39965.pdf> (accessed May 28, 2012)

implementation of the Bribery Act, broader issues of “red tape”, education and skills, and policies towards immigration and visas for skilled workers from non-EU countries.

### Key actors in service innovation policy

The UK has a more complex innovation system than most EU countries, not least because of the existence of separate nations (England, Wales, Northern Ireland, and Scotland) with various responsibilities, and considerable flux in the role of regional actors and government agencies. It is hard to be comprehensive or concise given this, so the text below largely based on the content of Departmental and other central government websites, will focus on highlights of the current situation.

**Parliament and Cabinet:** In general, the overall coordination and advice responsibility in the UK innovation system are assigned to the *Sub-Committee on Science and Innovation*. This is a Cabinet Sub-Committee that provides “the framework for the collective consideration of, and decisions on, major science policy issues. Its terms of reference are to consider issues relating to productivity and competitiveness, including skills, employment, science and innovation; and report as necessary to the Committee on Economic Development.”<sup>133</sup> *The Council for Science and Technology* (CST) is responsible for providing advice to the Prime Minister on strategic issues that cut across the responsibilities of individual government departments; the Prime Minister is also advised on science, engineering and technology issues by the Government Chief Scientific Adviser (to whom he has direct access).

Parliament may attempt to influence Government policies and their implementation, but has typically been preoccupied by topics other than innovation. Parliamentary processes of scrutiny and provision of information and advice in this area are largely achieved through the activities of Select Committees. The House of Commons Science and Technology Select Committee has the role of examining the expenditure, administration and policy of the Government Office for Science (GO Science) and its associated bodies; the House of Lords Select Committee on Science and Technology plays a wide role, considering areas of public policy that should be informed

by scientific research, technological challenges and opportunities faced by Government faces; and public policy towards science itself, e.g. as it affects Research Councils, schools and universities, public sector research establishments and industrial research and development.<sup>134</sup> Other relevant activities are those of the Parliamentary & Scientific Committee (P&SC) and the Parliamentary Office of Science & Technology (POST), which is the closest the UK Parliament comes to having a Technology Assessment agency.

**Government Departments:** The *Department of Business, Innovation and Skills* (BIS) (the merger of the Department for Innovation, Universities and Skills and the Department for Business, Enterprise and Regulatory Reform) is the main government actor for innovation policy. The *Services Policy Unit* (SPU) within the department is responsible for promoting innovation and growth in the broader business services sector. It is “working with the professional and business services sector, as part of the Government’s Growth Agenda, to establish the priorities for government actions to support its growth, innovation and competitiveness over the next decade”.<sup>135</sup> Retail services are handled by BIS’ Retail Unit which “helps the sector to raise its productivity and improve its competitiveness by facilitating better regulation, incentivising innovation and regional development, and encouraging good practice in areas such as skills, employment, international trade, crime prevention and environmental sustainability”.<sup>136</sup>

The *Department of Culture, Media and Sports* has been active in promoting innovation in creative industries (including advertising, the arts market, design and fashion) and telecommunications and online activities. The *Department of Health* has been a key actor in developing policy instruments for innovation in healthcare sector. The *Department for Education* is relevant to promoting service innovation both in helping determine and deliver innovation-relevant knowledge and skills, and in promoting innovation in public educational services. Some other central government departments, such as the *Department for Environment, Food and Rural Affairs* and the *Department for Transport*, also have service innovation-related activities relevant to specific sectors.

<sup>133</sup> See <http://www.vmine.net/scienceinparliament/guide-structures-g1.asp> (accessed June 10, 2012)

<sup>134</sup> Paraphrased from <http://www.vmine.net/scienceinparliament/guide-3.asp> (accessed June 10, 2012)

<sup>135</sup> See <http://www.bis.gov.uk/policies/business-sectors/services-professional-business> (accessed June 16, 2012). This page features links to pages on IT Services - which are largely being handled through the Technology Strategy Board - and postal services (largely regulatory issues).

<sup>136</sup> See <http://www.bis.gov.uk/policies/business-sectors/retail> (accessed June 16, 2012).

**Agencies:** The *Technology Strategy Board* (TSB) is the primary innovation agency in the UK's innovation system. The activities of the TSB are jointly supported and funded by BIS and other government departments, the devolved administrations, and research councils. It is responsible for R&D and innovation activities in the UK. Some of its programmes/tools have focused on service innovation. The *National Endowment for Science, Technology and the Arts* (NESTA) has become an important actor in the innovation system. It is a charitable body (funded from the National Lottery) that aims to promote innovation in the UK. It has set up several programmes to foster innovation in creative industries and public services. *The Design Council* is active in promoting demand for design in the public and private sectors, and its programmes are relevant to innovation in service sectors, and to the design services industry.

**Research Councils:** The Research Councils in the UK fund basic research, but have been increasingly concerned with the impact of their initiatives on public and private actors. In terms of service innovation, *Arts & Humanities Research Council* (AHRC), *Economic & Social Research Council* (ESRC), *Engineering & Physical Sciences Research Council* (EPSRC) and the *Medical Research Council* (MRC) can be seen as key actors in sup-

porting and funding research that can feed into innovation in service sectors such as business and professional service, creative industries, engineering services and the healthcare sector.

**Nations and Regions of the UK:** bodies with responsibilities similar to those of BIS operate in the nations of the UK. In Scotland, *Scottish Enterprise* is the main government actor for innovation policy. In Wales, the *Department of Business, Enterprise, Technology and Science* is responsible for developing the nation's innovation strategy. In Northern Ireland, the *Department of Enterprise, Trade and Investment* is the main actor in the nation's innovation system. It is hardly seen that these actors have issued any specific service sector policies related but they are active in providing support for these programmes related with service innovation in the UK. In England, the responsibility of promoting (service innovation) at regional level has been moved to these actors at the national level since the announcement of the closure of the nine Regional Development Agencies across the UK in 2010. Despite the fact that a number of Local Enterprise Partnerships have identified services as key to the local economy, they are unlikely to be main actors in promoting service innovation.

**Box 1** provides more details about these the key actors in terms of service innovation policy in the UK innovation system.

### Box 1. Key Actors in Service Innovation Policy and Their Main Activities

Overall government policy on innovation is coordinated through Sub-Committee on Science and Innovation (SCCSI – this supersedes the earlier Cabinet Committee on Science and Innovation). Its terms of reference are “to consider issues relating to science and innovation; and report as necessary to the Committee on Economic Development”.

**The Council for Science and Technology** (CST)<sup>137</sup> is the UK government's top-level advisory body on science and technology policy issues. It was established in 1983 and was reconstituted in 2011 with new terms of reference, a new membership, and a new way of working. The Council's terms of reference reflect its: UK-wide remit; responsibility for looking at issues that cut across government departments; and facility to engage in a wide range of policy areas. CST has been active

in addressing the services innovation agenda since 2003. Its 2003 report, *Knowledge intensive services and the science base* (published together with a number of supporting and background studies<sup>138</sup>), recommended that Government should take action for encouraging and supporting knowledge-based innovation in services. In 2006, CST made recommendations to the then Chancellor regarding the services sector and public procurement. It suggested that the Government should understand service company needs, and foster innovation by finding ways to connect them to the research base. The Council also suggested how Government can use public procurement to better meet its own objectives and promote innovation in business, particular smaller businesses<sup>139</sup>. In 2011 a CST report on the potential of the NHS as a driver for growth suggested

<sup>137</sup> See <http://www2.cst.gov.uk/cst/about/> (accessed June 5, 2012)

<sup>138</sup> See <http://www2.cst.gov.uk/cst/reports/#2> (accessed June 5, 2012)

<sup>139</sup> See <http://www2.cst.gov.uk/cst/cst-reports/reports-1999-2010#Procurement> (accessed June 5, 2012)

that to improve patient care and constantly reduce the costs of delivery, innovation in NHS must be done by continuous incremental improvements and realising the potential for reducing cost through disruptive innovation<sup>140</sup>.

**The Department of Business, Innovation and Skills** (BIS)<sup>141</sup> is a government department established in June 2009 (the merger of the Department for Innovation, Universities and Skills and the Department for Business, Enterprise and Regulatory Reform). It aims to make a difference by supporting sustained growth and higher skills across the economy. The key approaches for achieving this are:

- (1) Investing in skills to making markets more dynamic and reducing regulation;
- (2) Promoting trade to boosting innovation and helping people start and grow a business.

BIS is the main government actor when it comes to Innovation Policy. It aims to make the UK the most attractive place in the world to run an innovative business or service. Its report *Innovation and Research Strategy for Growth* published in December 2011 has set out the Coalition Government's strategy for achieving this<sup>142</sup>. In addition to announce how Government can facilitate an innovation ecosystem and invest in the capabilities that support innovators, the report also suggested that the Government can enable innovation by:

- (1) Opening up access to data, information and research within the public sector;
- (2) Cutting red tape to ensure that rules and regulations do not inhibit new business model;
- (3) Mobilising resources and new partnerships around big societal challenges through the use of Inducement Prizes;
- (4) Acting as a Lead Customer – as a major and early user of goods and services the public sector is a source of demand for new forms of innovation, especially in areas such as health, transport and urban development and its scale provides an early market to grow new business models, technologies and services; and
- (5) Developing, growing and diffusing innovations that deliver better and more efficient public services

The strategy has suggested a trend in combining a supply-side solutions and demand-side solution in innovation policy. Although it appears that within these solutions, there is no

specific prioritization of either services or manufacturing, the report has explicitly addressed the significance of service sectors in driving the growth of the economy and the need of promoting the development of non-technical innovations, which has informed the changing perspectives on service innovation and the nature of a “sector-neutral” policy.

To address the challenges facing the business and professional service sector, the Services Policy Unit (SPU) was set up within BIS. SPU is responsible for developing a strategy to promote innovation and growth in the broader business services sector. SPU published the Government report on *Supporting Innovation in Services* in 2008 and an interim report on *Professional and Business Services: a 2020 Vision for Growth* in March 2011.<sup>143</sup> The 2008 report suggested the convergence between manufacturing and service innovation, the development of a much more networked approach to developing new services; the innovative way in the transition to a low carbon, resource efficient economy. Based on the earlier work, the 2011 reports addressed how the Government can promote innovation in the business service sector by using policy instruments. (See above for notes on other BIS service-related activities.)

The Coalition Government has continued to position **the Technology Strategy Board (TSB)** as the prime channel for R&D and innovation.<sup>144</sup> The TSB is an executive non-departmental public body, established by the Government in 2007. As the UK's main innovation agency, the TSB targets support towards those areas of investment that will have the greatest impact on growth, and leverage additional private sector investment. The activities of the TSB are jointly supported and funded by BIS and other government departments, the devolved administrations, regional development agencies and research councils. It provides fund for Research, Development and Demonstration projects ranging from small proof-of-concept grants and feasibility studies through to large multi-partner collaborative R&D and demonstration projects. It also provides academic-business knowledge transfer opportunities, open innovation networking platforms, the route for UK businesses to access European support for innovation and technology and opportunities for innovative businesses through the growing network of Catapult centres. While most programmes/tools have been addressing technology priorities, some of them seem to have some service focus (e.g. Innovation Platform, Innovation voucher and Knowledge Transfer

<sup>140</sup> See <http://www2.cst.gov.uk/assets/cst/docs/files/cst-reports/11-1096-nhs-driver-for-growth.pdf> (accessed June 5, 2012)

<sup>141</sup> See <http://www.bis.gov.uk/about> (accessed June 5, 2012)

<sup>142</sup> See <http://www.bis.gov.uk/assets/biscore/innovation/docs/i/11-1387-innovation-and-research-strategy-for-growth.pdf> (accessed May 30, 2012)

<sup>143</sup> See <http://www.bis.gov.uk/policies/business-sectors/services-professional-business> (accessed May 28, 2012)

<sup>144</sup> See <http://www.innovateuk.org> (accessed June 5, 2012)

Networks). These service-related programmes/tools will be discussed in detail in Section B. In addition, TSB has pledged to date £15 million grant to aid research and development for creative industries based business.

Another important actor on the innovation scene is the **National Endowment for Science, Technology and the Arts** (NESTA).<sup>145</sup> It was established by Act of Parliament in 1998 and was transferred from an executive non-departmental public body to a charitable body in 2010. Funded by a £250 million endowment from the UK National Lottery, it uses the interest from that endowment to support talent, innovation and creativity in the UK, and defines its mission as being that of helping people and organisations bring great ideas to life. It does so by providing investments and grants and mobilising research, networks and skills to foster innovation and deliver radical new ideas.

In its work in **Economic Growth**, NESTA set up various practical programmes to explore how the UK can best exploit innovation for economic benefit. The most influential project is Innovation Index, which aims to make a significant improvement on existing metrics, both by making clear the contribution of innovation to productivity and growth, and by capturing hidden innovation in service sectors. Its **Public Service Lab** aims to explore and test innovative ways of delivering public services and diffuse them to scale across the country's public services. Its work in **Creative Economy** is to study these unique barriers for the growth and success of creative businesses and help the creative industries to explore their full innovative potential.

In terms of **investment**, NESTA invests in two ways: Venture Investment and Impact Investment. In Venture Investment, NESTA works directly in supporting young, innovative businesses in the sectors of health care, clean technology and ICT (hardware and software). In Impact Investment, NESTA aims to maximise the impact of social innovations by helping ventures that address major social and environmental challenges in the UK, getting them capital and development support they need to succeed and grow. Its new impact investment fund is investing in innovative ventures that address three major social needs in the UK: an ageing population, the learning, wellbeing and employability needs of children and young people, and the sustainability of communities.

Compare with these initiatives set up by TSB, NESTA's programmes are more service-related. Many of its projects have specially set up to promote innovation in creative businesses and public service sector. Its Public Services Lab "is applying ... expertise to find innovative ways of delivering our public services... trialling some of the most innovative solutions and bringing them to scale across the country's public services."<sup>146</sup>

The **Design Council**<sup>147</sup> is an independent, not-for-profit organisation incorporated by Royal Charter. It aims to promote design and the value of design to the economy by delivering transformative design coaching programmes for the public and private sectors, including *Public Services by Design*, *Innovate for Universities* and the Department's Solutions for Business product, *Designing Demand*. These programmes all have significant impact on service innovation, which will be discussed in detail in Section B.

The **Department of Culture, Media and Sports** (DCMS) is also a major player in service innovation affairs as it is responsible for creative industries (including advertising, the arts market, design and fashion) and telecoms and online (sponsor the digital content sector, including computer and video games).<sup>148</sup> The work of DCMS is to ensure that the communications, creative, media, cultural, tourism, sport and leisure economies have the framework to grow and have real impact on people's lives. It aims to create the conditions for growth by removing barriers, providing strategic direction and supporting innovation and creativity.

The **Department of Health** is responsible for making and implementing policy to improve on existing arrangements in health and social care. It has published strategies and policies on wide ranging issues that are relevant for innovation in the NHS<sup>149</sup>. It funds a considerable amount of R&D – see Table 2 in the *Annual Innovation Report 2010*.<sup>150</sup> The **Department for Education** is responsible for Education – at one time the Department of Innovation, Universities and Skills put responsibility for innovation issues into the same department, but now the Department for Education mainly focuses on innovation in this sector, and one educational and skills requirements.<sup>151</sup> Other central government departments also have service innovation-related activities, as noted above, but their expenditure on R&D is typically fairly low (with DEFRA in the lead).<sup>152</sup>

<sup>145</sup> See <http://www.nesta.org.uk> (accessed May 28, 2012)

<sup>146</sup> See [http://www.nesta.org.uk/areas\\_of\\_work/public\\_services\\_lab](http://www.nesta.org.uk/areas_of_work/public_services_lab) (accessed May 28, 2012)

<sup>147</sup> See <http://www.bis.gov.uk/policies/innovation/design-council> (accessed May 28, 2012)

<sup>148</sup> See [http://www.culture.gov.uk/what\\_we\\_do/default.aspx](http://www.culture.gov.uk/what_we_do/default.aspx) (accessed May 30, 2012)

<sup>149</sup> See <http://www.dh.gov.uk/en/index.htm> (accessed June 4, 2012)

<sup>150</sup> See <http://www.bis.gov.uk/policies/innovation/annual-innovation-report> (accessed May 28, 2012)

<sup>151</sup> See <http://www.ssda.org.uk/ssda/default.aspx?page=1> (accessed May 30, 2012)

<sup>152</sup> See Table 2 in the *Annual Innovation Report 2010* (accessed May 30, 2012)



The UK has seven **Research Councils**<sup>153</sup>, which fund research (mainly in Universities). When it comes to innovation, Research Councils are seen as playing a key role through supporting the excellent research needed to generate new knowledge, train highly-skilled people, and work in partnership with business and a wide range of users to drive successful exploitation of research outputs. As The Government's innovation strategy has been focused on integrating universities, research councils and businesses to strength national innovative capabilities, the role of research councils seem to be increasingly important in driving innovations. It is clear that there are a number of service innovation-focused activities in at least **Arts & Humanities Research Council (AHRC)**, **Economic & Social Research Council (ESRC)**, **Engineering & Physical Sciences Research Council (EPSRC)** and **Medical Research Council (MRC)**. For example, AHRC funded a unique collaboration named REACT (Research and Enterprise in Arts and Creative Technology) supporting innovative products and transformational services by bringing together creative companies and academics across South West and Wales. It has also provided expert advice to the TSB in launching the first TSB Collaborative R&D Competition 'Application of Digital Technologies' and the Knowledge Transfer Network for the for the Creative Industries<sup>154 155</sup>. ESRC has funded or part-funded a number of research centres, programmes, ventures and projects related to technology and innovation. Some of them have service focus. For example, the Innovation Research Initiative is a funding partnership between the ESRC, BIS, NESTA and TSB. As the first phase of the Initiative the UK Innovation Research Centre at Cambridge and Imperial (UK-IRC) has a focus on Services Innovation and Innovative Performance at the Sector Level – this is more to do with studying service innovation than actively promoting it.<sup>156</sup>

In Scotland, the **Scottish Government**<sup>157</sup> (previously known as Scottish Executive) is the devolved government for Scotland. It is responsible for most of the issues of day-to-day concern to the people of Scotland, including health, education, justice, rural affairs, and transport. **Scottish Enterprise**<sup>158</sup> is Scotland's main economic development agency, funded by the Scottish Government. Its mission is to help the people and businesses of Scotland succeed by providing services to stimulate economic growth, exploit low carbon opportunities, improve

Scotland's business infrastructure and support business. Scottish Enterprise is often seen to be something of a pioneer in innovation policy. The work of such a body comprises a "balancing act" between supporting individual enterprises and establishing a productive environment for innovation. Concerning services innovation, its general philosophy is that there need be no specific service sector policy, not least because of the need to pay attention to the huge heterogeneity of services activities. But several lines of work are service-related, and this orientation is expected to grow with ongoing economic and industrial development. In Wales, the **Welsh Assembly Government**<sup>159</sup> is a devolved body that decides on its priorities and allocates the funds made available to it by the UK Government. Powers devolved to the Assembly include health, education, economic development, planning and culture. Under the Government, the **Department of Business, Enterprise, Technology and Science** (successor to the Department

for the Economy and Transport) encourages the best conditions and framework to enable the private sector to grow. It is responsible for developing the nation's innovation strategy. The **Northern Ireland Assembly** is the devolved legislature for Northern Ireland. It is responsible for making laws on transferred matters in Northern Ireland and for scrutinising the work of Ministers and Government Departments. **The Department of Enterprise, Trade and Investment (DETI)** plays a crucial role in formulating and delivering economic development policy in terms of Enterprise, Social Economy, Innovation, Energy, Telecoms, and Tourism in Northern Ireland

In England, the situation is more complex. Nine **regional development agencies** (RDAs) across England had been set up by the Labour government to work with local businesses to help regional development, employment, business efficiency and skills. The RDAs were active actors in developing regional innovation policies, though there was much variability across regions. Some policies covered innovation in service sectors such as software, digital content, medical and health, and creative industry sectors. However, in 2010, the Government announced in the budget that RDAs would be replaced by **Local Enterprise Partnerships** (LEPs); accordingly RDAs were closed on 31 March 2012<sup>160</sup>. Evidence showing that the LEPs have been active in (service) innovation policies remains to be generated.

<sup>153</sup> See <http://www.rcuk.ac.uk/Pages/Home.aspx> (accessed May 30, 2012)

<sup>154</sup> See <http://www.ahrc.ac.uk/Pages/default.aspx> (accessed May 30, 2012)

<sup>155</sup> See [http://industry.bfi.org.uk/media/pdf/0/j/Arts\\_Humanities\\_Research\\_Council\\_report-Dec10.pdf](http://industry.bfi.org.uk/media/pdf/0/j/Arts_Humanities_Research_Council_report-Dec10.pdf)(accessed May 30, 2012)

<sup>156</sup> See <http://www.esrc.ac.uk/about-esrc/what-we-do/our-research/UK-IRC.aspx>(accessed May 30, 2012)

<sup>157</sup> See <http://www.scotland.gov.uk/About> (accessed May 30, 2012)

<sup>158</sup> See <http://www.scottish-enterprise.com/> (accessed May 30, 2012)

<sup>159</sup> See <http://wales.gov.uk/?lang=en>(accessed May 30, 2012)

<sup>160</sup> See <http://www.bis.gov.uk/policies/economic-development/regional-support/rda-archive>(accessed May 30, 2012)

## Key service sectors

The most important service sectors in terms of output and employment are Retail and Wholesale, Professional and Business services, Financial services and Construction (Construction contracting only). As seen from Table 1, the four sectors contributed to 39.4% of UK's Gross Value Added (GVA) and 38.1% of UK Employee Jobs in 2010.

**Table 1. Sectoral Comparisons of Output and Employment 2010**

	% of UK GVA	% UK Employee Jobs
Professional and Business Services	12.9	13.2
Manufacturing	10.0	8.9
Financial Services	8.8	3.9
Retail and Wholesale	10.7	16.3
Construction (Construction contracting only)	7.0	4.7

Source: BIS Calculations based on ONS National Accounts (2010), Employee jobs

In terms of innovation activities the head of the Business Service Policy Unit at BIS recently pointed out “the development of holistic policy approaches in four key service areas: logistics, assisted living, digital content industries and environmental services – all areas with significant innovative and growth potential”.<sup>161</sup> In the next parts of this report, we consider the creative industries, the professional and business services sector, and the public service sector including healthcare sector from the service innovation point of view.

The contribution of the creative industries to the economy is more than £50 billion every year. The industries contributed 2.9% of the UK's Gross Value Added in 2009; this is an increase from 2.8% in 2008. 1.5 million people are employed in the creative industries or in creative roles in other industries, 5.1% of the UK's employment.<sup>162</sup> The UK is generally regarded as a global leader in providing professional and business services (PBS) (including legal services, accounting, IT services, consultancy, HR and training, advertising/marketing, corpora-

te communications, architectural and engineering services). The PBS sector accounts for nearly 20% of national output and 14% of UK exports. Its gross value added is about £166 billion a year, the largest in the UK economy<sup>163</sup>. Note that there is liable to be some double counting here, in that some PBS activities are also included among the creative industries. The UK's healthcare sector is one of its strongest sectors. The National Health Service (NHS) is widely recognized as a benchmark of clinical excellence. Since its launch in 1948, the NHS has grown to become the world's largest publicly funded health service. It currently employs more than 1.7m people, which makes the NHS the fifth biggest employer in the world.

## B. Policies promoting service innovation

The European Innovation Scoreboard 2010 on the basis of statistical analysis of a range of comparative data defined the UK as an “innovation follower”. This view is not one that is popular among UK policymakers.

The Government announced in the *Innovation and Research Strategy for Growth* that despite the economic downturn, it is committed to supporting the UK knowledge base, maintaining the annual £4.6 billion budget for science and research programmes with £150 million each year supporting university-business interaction. An additional £495 million have been committed to Science Capital Investment projects since January 2011. It has sought to improve incentives to invest, providing an additional £75 million to support small business innovation including additional funding for the Smart programme, grants that support SME research and development. It will invest more in the Small Business Research Initiative helping more small businesses to win government contracts for their innovative products and services. In general, the Government is putting innovation and research at the heart of its growth agenda through greater investment and increased collaboration ensuring that the UK has a promising future. A set of measures to encourage innovation in business should have a general impact on all sectors – though in practice we can expect any policy to

<sup>161</sup> Proinno-europe (2010). Interview with the leader of EPISIS Work Package 5. at <http://www.proinno-europe.eu/episis/newsroom/interview-allan-mayo-head-uk-s-dept-business-services-policy-unit-bis-leader-episis-> (accessed June 4, 2012)

<sup>162</sup> See [http://www.culture.gov.uk/what\\_we\\_do/creative\\_industries/default.aspx#Creative](http://www.culture.gov.uk/what_we_do/creative_industries/default.aspx#Creative) (accessed June 4, 2012)

<sup>163</sup> BIS (2010). Professional and Business Services: a 2020 Vision for Growth. at <http://www.bis.gov.uk/assets/biscore/business-sectors/docs/10-798-professional-business-services-2020-vision-for-growth> (accessed May 28, 2012)

affect different types of firm in different ways, and this may have sectoral reverberations.

Unlike countries that the *European Innovation Scoreboard 2010* considered to be the innovation leaders – such as Finland and Germany – so far the UK has no specific framework for service innovation policies. BIS is currently leading on the policy agenda for service innovation by “develop(ing) a more dynamic market framework, to improving graduate skills and ensuring UK based firms have access to creative, highly skilled people, and working with counterparts in the EU and further afield to open up market opportunities for innovative service firms”.<sup>164</sup> In the 2008 report of the department that has now become BIS. “*Supporting Innovation in Services*”, it was suggested that the UK policy is to strengthen the UK’s position as a global hub of service innovation, where the nation is able to attract service oriented companies with its infrastructure, business environment, skills sets and culture which are encouraging successful innovation.<sup>165</sup> *Innovation Nation* promised that NESTA was to develop a new “innovation Index” for the UK, that would consider “hidden innovation” and innovation in sectors previously assumed to be innovation laggards. Part of the rationale for this is the point that it is rather helpful for policy formation to have an idea of just what the context for that policy is, before setting out to intervene in it. A series of studies on related topics are on the NESTA website, including studies documenting service sector, public service, and creative industry innovation, various forms of hidden innovation and framework condition for innovation, and more. A pilot Innovation Index was published in 2010<sup>166</sup> suggesting that almost 90% of innovation expenditure was not associated with traditional R&D, and that there were strong links between economic performance and innovative activity. Investment in a range of intangible assets was key. And among these, investment in training and skill development was seen as particularly critical for service innovation.

While this work is continuing, the Government’s *Plan for Growth* (2011)<sup>167</sup> outlines policies for encouraging growth across a whole range of critical economic sectors, includ-

ing notably several service sectors. Thus, alongside advanced manufacturing, the space industry, and construction, the *Plan* notes that it seeks to encourage growth in healthcare and life sciences; digital and creative industries; retail; professional and business services; and tourism (We understand that subsequently logistics has been seen as another critical sector for growth). Many of the strategies announced have little directly to do with innovation, though many of the PBS recommendations relate to framework conditions such as skills, while the creative industries are promised support for improved broadband roll-out and IPR support. It is interesting to see that some sectors are now being highlighted for growth stimulation; possibly more of an innovation focus will be forthcoming.

In this section, we will illustrate the key policies related to service innovation. It is necessary to point out that most policies discussed here are actually “sector neutral” innovation policies that have direct or indirect impact on service innovation. In general, service-relevant innovation policy mechanisms are overwhelmingly supply-side oriented, and few demand-side oriented.

## Key supply-side policies promoting service innovation

### (1) National level

As discussed previously, TSB is the UK’s national innovation agency which is responsible for offering a range of programmes and tools to stimulating and supporting business-led innovation. TSB have attempted to link technology and user in innovation. These programmes and tools related with service innovation include Collaboration Nation, Demonstrators, Engagement events, European and International Activities, Innovation and Knowledge Centres, Innovation Platform, Innovation Vouchers, Knowledge Transfer Networks (KTNs) and \_connect, Knowledge Transfer Partnerships (KTP), Missions, SBRI (Small Business Research Initiative) and Smart<sup>168</sup>. Table 2 below depicts these programmes and tools and how they are linked with service innovation. As

<sup>164</sup> Proinno-europe (2010). Interview with the leader of EPISIS Work Package 5. at <http://www.proinno-europe.eu/episis/newsroom/interview-allan-mayo-head-uk-s-dept-business-services-policy-unit-bis-leader-episis> (accessed June 4, 2012)

<sup>165</sup> BIS (2008). *Supporting Innovation in Services*. at <http://www.bis.gov.uk/files/file47440.pdf> (accessed May 29, 2012)

<sup>166</sup> See [http://www.nesta.org.uk/publications/reports/assets/documents/innovation\\_index](http://www.nesta.org.uk/publications/reports/assets/documents/innovation_index) (accessed June 19, 2012)

<sup>167</sup> HM Treasury and BIS, (2011), *The Plan for Growth*, at [http://cdn.hmtreasury.gov.uk/2011budget\\_growth.pdf](http://cdn.hmtreasury.gov.uk/2011budget_growth.pdf) (accessed June 19 2012)

<sup>168</sup> See <http://www.innovateuk.org/> (accessed June 19 2012)

suggested in Table 2, the service participation levels in Innovation Platform, Innovation voucher, KTNs and KTPs are relatively higher than other programmes/tools. See Box 2 for more information about these important policy instruments related with service innovation.

According to the discussion in Box 2, it is reasonable to argue that although there are no policies specifically for service innovation, some programmes and tools developed by TSB do give priority to such service sectors as creative industries, financial services, health care and social work.

**Table 2. TSB's Service-related Programmes/tools.**

Title of Programme/tool	Description	Linkage with service innovation
<b>Catapult</b>	A new network of physical centres designed to advance innovation in seven specific fields including high value manufacturing, cell therapy, offshore renewable energy, satellite applications, connected digital economy, future cities and transport systems. Each centre focuses on a field of technology or technology application in which the UK has particular academic and business strength.	It is mainly to promote technology innovation but some fields are related with service sectors
<b>Collaboration Nation</b>	A set of events organised by TSB every year to enable companies that have been successful in various TSB competitions for feasibility funding to share the results of their projects with others to find new partners to collaborate with and new sources of funding.	Events for 2012 are mainly for manufacture industry but some events organised previously concerned digital services.
<b>Demonstrators</b>	Demonstrators promote the introduction of new products, systems and services by enabling demonstration, testing and validation in the real world and on a large scale.	Open to all sectors but service participation levels are very low
<b>Engagement events</b>	Engagement events integrate businesses and researchers to identify opportunities, establish collaborations and develop projects. These events include annual innovation showcase and forum; consortium-building days linked to funding competitions; and events to engage the projects with the investment community.	Open to all sectors but service participation levels are very low
<b>European and international activities</b>	These activities support businesses to access EU programmes for R&D and innovation. The activities also help SME participation in Eurostars, and fund business involvement in a number of other EU programmes.	Open to all sectors but service participation levels are very low
<b>Innovation Platform</b>	It integrates industry, academia and government together to generate more innovative solutions, products and services to address major policy challenge.	Some activities are directly linked with service sectors (e.g. The Assisted Living Innovation Platform)
<b>Innovation Vouchers</b>	The programme is to stimulate knowledge exchange between innovative SMEs and knowledge providers so that firms could explore opportunities by generating new knowledge into their business to enhance their ability to develop innovative products and services	A number of these schemes have given priority to SMEs in services sectors.
<b>Knowledge Transfer Networks(KTNs) and _connect</b>	KTNs promote business innovation by enabling people to share knowledge, ideas and opportunities within and between specific sectors. The networks and a wide range of special interest groups are hosted on the TSB's online community, _connect, a powerful networking platform that facilitates open innovation, where people can network, share information and knowledge and work together securely.	Some are particular for service sectors (e.g. KTN for the creative industries and Financial Services KTN)

Title of Programme/tool	Description	Linkage with service innovation
<b>Knowledge Transfer Partnerships (KTPs)</b>	KTPs aim to stimulate business innovation by enabling companies to obtain knowledge, technology or skills which they consider to be of strategic competitive importance, from the further/higher education sector or from a research and technology organisation. The knowledge sought is embedded into the company through a project or projects undertaken by a good quality individual recruited for the purpose to work in the company.	KTPs work closely with a range of service sectors (creative industries, retail sector and financial sector).
<b>Missions</b>	Entrepreneur missions organised in conjunction with UKTI, in which a group of innovative and often early-stage UK companies travel to countries strong in innovation and enterprise, such as the USA, to make new connections and meet potential collaborators, investors, suppliers and customers.	The missions focus on UK's priority areas such as digital, healthcare or clean technology, which are linked with service sectors but service participation levels are relatively low
<b>SBRI (Small Business Research Initiative)</b>	The programme uses the power of government procurement to drive innovation. It provides opportunities for innovative companies to engage with the public sector to research and develop new products and services to address public sector challenges. It encourages public sector organisations to take the lead customer role helping to develop and de-risk innovative solutions for which it might be the potential future purchaser.	The programme has strong impact on service innovation in the public sectors.
<b>Smart (previously known as Grant for Research and Development)</b>	Smart provides pre start-ups, start-ups, micro businesses and SMEs from all sectors across the UK with access to finance in the form of grants to enable them to assess potential markets and invest in R&D and innovation.	Open to all sectors but service participation levels are very low

## Box 2. Key service innovation policy instruments

**The Assisted Living Innovation Platform (ALIP)**<sup>169</sup>: As people are living longer, there are some changes in demographics and growth in those living with chronic conditions. The Innovative approaches to financing and delivering health and social care are required as existing care models are unsustainable in terms of efficiency, effectiveness and promoting quality of life. ALIP aims to promote business innovation and developing new technology based products and services to promote independent living and improves quality of life. ALIP was launched by TSB in November 2007 with joint funding from TSB and the National Institute for Health Research, the Engineering and Physical Science Research Council, the Economic and Social Research Council and the Ambient Assisted Living Association. New projects are funded until 2012, which will then run for up to three years to deliver an impact for many years beyond. Sin-

ce 2007, a total of six competitions have been launched, with more than 120 organisations taking part in 38 projects worth £47.1m. £24.7m of this was invested by TSB and its partners. ALIP's priorities include the need to: (1) promote knowledge transfer and sharing between different industry sectors, health and care sectors, and organisations/agencies representing users and their carers, (2) tailor assisted living technologies and services to individual, (3) develop technologies and services that are desirable, affordable and interoperable. Its current programme activities include:

- Independence Matters
- DALLAS: Delivering Assisted Living Lifestyles at Scale
- Standards and technical interoperability
- Knowledge Transfer – join the official group on \_connect
- Ambient Assisted Living (AAL) European Programme

<sup>169</sup> See <http://www.innovateuk.org/ourstrategy/innovationplatforms/assistedliving.ashx> (accessed May 28, 2012)

**Innovation Vouchers**<sup>170</sup>: The programme provides support to SMEs to set up collaboration with knowledge providers across the public or private sectors. Recent programmes run in several regions in the UK have showed positive impact on SMEs. Innovation vouchers have promoted: (1) first contact between SMEs and the knowledge base;(2) the introduction of the innovation processes into businesses; (3) acknowledgment within SMEs of the services the knowledge base can provide; (4) continuing partnership with the knowledge base beyond the expiry of the voucher, encouraged by satisfaction with project outcomes. In the past, a number of schemes were set up for service sectors. For example, the priority sectors at the NWDA scheme in the North West of England include financial and professional services and digital and creative businesses and the AWM scheme in the West Midlands includes digital media amongst its priorities<sup>171</sup>. NESTA's B2B Creative Credits scheme in Manchester, aimed at stimulating knowledge exchange between innovative creative services businesses and SMEs (mainly consulting and professional services). It has proved to be very popular with both creative businesses and SMEs. A total of 300 eligible creative businesses from Manchester City Region applied to service credits on the Gallery and more than 670 SMEs applied to receive credits. Most projects involved development of SMEs' websites, marketing and video production activities, which suggests the relative strengths of Manchester's digital media industries<sup>172</sup>. In 2011, the Government announced that a new innovation voucher programme in 2012–13 will be implemented to support SMEs in working with external knowledge providers. The programme will initially focus on geographical areas and sectors which to date have had relatively low levels of private sector innovation and growth. It can be expected that some of them will address service sectors<sup>173</sup>.

**KTNs**<sup>174</sup>: A KTN is a single over-arching national network in a specific field of business which connects people from businesses, universities, research, finance and technology organisations to promote innovation through knowledge transfer.

The aims of a KTN include:

- To deliver enhanced industrial performance through innovation and new collaborations by driving the flow of people, knowledge and experience between different communities;
- To promote knowledge transfer between the supply and demand sides of technology-enabled markets through a high quality, easy to use service;
- To smooth the progress of innovation and knowledge transfer by providing UK businesses with the opportunity to connect with individuals and organisations, both domestically and internationally;
- To offer a forum for a consistent business voice to suggest government of its needs and about issues related regulation, which are enhancing or inhibiting innovation in the UK.

The programme is moving from R&D to include more to service innovation. The Financial Services KTN (FSKTN) connects financial services experts, academics and technologists related with the full range of financial services sectors (including banking, capital markets, insurance/reinsurance and buy side) as well as related sub-sectors. Through its events, website, newsletters, publications and industry consultation the FSKTN seeks to define the key challenges facing the financial services industry and foster innovative solutions through the development and exchange of knowledge<sup>175</sup>. The Creative Industries KTN stimulates and encourages innovation in the creative industries. So far it has set up 14 projects to deal with the big challenges for the creative industries. Each one has identified the key innovation and business needs that will enable organisations to turn these ideas into successes for the UK. The KTNs present a broad range of opportunities for innovators within the creative industries. It organises Creative Industries KTN-led events showcasing the best of technology and innovation in the sector, as well as promoting and supporting other creative industries events<sup>176</sup>. The Government has announced to provide over £15 million in 2011–12 for 15 KTNs with more than 38,000 members through the Connect web platform, which include the FSKTN and the Creative Industries KTN<sup>177</sup>.

<sup>170</sup> See <http://www.bis.gov.uk/assets/biscore/innovation/docs/i/11-1387-innovation-and-research-strategy-for-growth.pdf> (accessed May 28, 2012)

<sup>171</sup> See [http://www.bis.gov.uk/assets/biscore/corporate/migratedd/publications/2/213.90%20air%20report%20aw%20v4%20chptr\\_7.pdf](http://www.bis.gov.uk/assets/biscore/corporate/migratedd/publications/2/213.90%20air%20report%20aw%20v4%20chptr_7.pdf)(accessed May 28, 2012)

<sup>172</sup> See [http://www.nesta.org.uk/library/documents/Creating\\_Innovation\\_in\\_SMEs\\_v13.pdf](http://www.nesta.org.uk/library/documents/Creating_Innovation_in_SMEs_v13.pdf) (accessed May 30, 2012)

<sup>173</sup> See <http://www.bis.gov.uk/assets/biscore/innovation/docs/i/11-1387-innovation-and-research-strategy-for-growth.pdf> (accessed May 28, 2012)

<sup>174</sup> See <http://www.innovateuk.org/deliveringinnovation/knowledgetransfernetworks.ashx> (accessed May 30, 2012)

<sup>175</sup> See <https://connect.innovateuk.org/web/financialservicesktn> (accessed May 30, 2012)

<sup>176</sup> See <https://connect.innovateuk.org/web/creativektn> (accessed May 30, 2012)

<sup>177</sup> See <http://www.bis.gov.uk/assets/biscore/innovation/docs/i/11-1387-innovation-and-research-strategy-for-growth.pdf> (accessed May 30, 2012)

**KTPs**<sup>178</sup>: The programme seeks to facilitate companies to obtain knowledge, technology and skills from within the UK's knowledge base (universities, colleges or research organisations). Each partnership recruits one associate or more to work in a company on a project of strategic importance to the business, while also being supervised by the Knowledge Base Partner. KTPs aim to:

- Help the transfer of knowledge through projects undertaken by recently qualified people under joint supervision from a company and an academic institution
- Offer company-based training for recently qualified people to improve their business and specialist skills
- Promote and improve business-relevant training and research undertaken by the academic institutions
- Encourage the interaction between businesses and academic institutions, and awareness of the contribution academia can make to business development and growth

KTPs were effectively launched in 1975 under the Teaching Companies Scheme (TCS). In 2003 KTPs replaced TCS. The programme has been managed by the TSB since 2007. It is currently funded by the TSB with 12 other funding organisations. Each project is part-funded by Government with the balance of the costs coming from the company partner. The Government has invested more than £30 million in 2011–12 to promote innovation by facilitating the transfer of knowledge and the diffusion of technical and business skills through 1000 live projects per annum<sup>179</sup>. KTPs work with a range of creative organisations, including design, fashion, music and video games businesses and have funded many projects to help the growth and profitability in the creative businesses. The programme helps the creative industries access funding, innovative ideas and academic expertise and aims to enhance the industry's creativity, effectiveness and productivity. The ESRC-funded KTNs encourage applications from the retail and financial services sector<sup>180</sup>.

**NESTA** accomplishes its mission of making the UK more innovative by providing investments and grants and mobilising research, networks and skills. Its latest projects, which include the Innovation in Giving Fund, Creative Councils, People Powered Health and Reboot Britain, are part of NESTA's Public Service Lad. Giving the current challenges facing the public service sector, the Public Service Lad is to apply NESTA's expertise to find more efficient and cost effective methods of delivery, without compromising on quality. It is testing some of the most innovative solutions and bringing them to scale across the country's public services.

*Innovation in Giving Fund* This program aims to promote innovative ideas that will lead to a step-change in the giving and exchange of time, assets, skills, resources and money and which can be self-sustaining in the longer term. It runs over two years. In September 2011, NESTA launched the first round of the Fund, and received over 440 applications. A total of 32 innovative ideas have been funded with over £2.5m. Based on the success of the first round, in April 2012, NESTA and the Office for Civil Society launched *Open Innovation Programme*

which aims to encourage medium to large charities scale up existing innovations in giving. The programme responds to the voice from established charities about the need for practical and financial support to help develop new partnerships around innovations in giving. It aims to help a group of charities with national reach and who want to use their expertise, networks, assets and capabilities to find new and more powerful ways of maximising donations, engaging with more people in giving their time or unlocking idle and under-used resources and assets for social goals. It applies the successful approaches to open innovation that are increasingly popular in commercial organisations to speed up the pace and scale of impact of innovations in giving. A small group of charities and the innovators that they choose to collaborate with will benefit from £1.5m in funding and practical support such as expert support for design and run an open innovation process; connections to innovators and potential partners and opportunities for collaboration and peer support<sup>181</sup>. In May 2012 NESTA announced a second open call for ideas focused on game-changing innovations to the £10m Innovation in Giving Fund<sup>182</sup>.

<sup>178</sup> See <http://www.ktponline.org.uk/faqs/> (accessed May 30, 2012)

<sup>179</sup> See <http://www.bis.gov.uk/assets/biscore/innovation/docs/i/11-1387-innovation-and-research-strategy-for-growth.pdf> (accessed May 28, 2012)

<sup>180</sup> See <http://www.ktponline.org.uk/ktp-and-the-creative-industries> (accessed June 8, 2012)

<sup>181</sup> See [http://www.nesta.org.uk/areas\\_of\\_work/public\\_services\\_lab/giving/assets/features/open\\_innovation\\_programme](http://www.nesta.org.uk/areas_of_work/public_services_lab/giving/assets/features/open_innovation_programme) (accessed June 4, 2012)

<sup>182</sup> See [http://www.nesta.org.uk/areas\\_of\\_work/public\\_services\\_lab/giving/assets/features/second\\_call\\_for\\_ideas](http://www.nesta.org.uk/areas_of_work/public_services_lab/giving/assets/features/second_call_for_ideas) (accessed June 4, 2012)

*People Powered Health* NESTA works with the Innovation Unit to support the design and delivery of innovative services for people that are living with long term health conditions. The focus of the programme is on co-production that people works with professionals to get things done. As a radical approach to public services, the programme is built around six characteristics:

- Acknowledging people as assets
- Developing people's capabilities
- Supporting mutuality and reciprocity
- Developing peer support networks
- Removing barriers between professionals and users
- Facilitating rather than delivering.

In general, the programme exploits the capacities and assets of health professionals, patients and the wider community. It challenges existing professionally led health and social care systems. Also, it recognises the significance of the experience of people with long term conditions alongside the professional expertise of health professionals<sup>183</sup>.

*Reboot Britain* The programme seeks to test and understand whether collaborative technologies and the behaviours that surround them, can transform the approach public services are delivered to achieve better results, using fewer resources. In July 2009, 10 practical projects was launched which received funding to work in partnership with a public service partner to build up a new approach to public service delivery that utilised collaborative technologies. These projects suggest that collaborative technologies can be used to support and enhance public services and deliver by

- Helping eliminate aspects of services which are not serving users and
- Supporting access and unlock spare capacity that exists within services, local communities and individuals; and
- Joint technologies support earlier interventions that are more effective in supporting users and will reduce demand on more critical and expensive services.

In addition, the outputs from Reboot Britain are aimed at helping public service professionals to explore digital innovation in public services. Those that is willing to support this change

and use the new tools and ways of working they offer, bring in the opportunity of developing new models of service delivery.

*Creative Councils*<sup>184</sup> Working with the Local Government Association, NESTA provides support to innovators in local government across England and Wales to build up and implement radical innovations that address their long-term challenge. The programme aims to:

- Help a small number of innovations to come to life and achieve real impact
- Promote the diffusion of those innovations into other areas, learning about how local government can get better at reproduction and adjustment of great ideas
- Enhance the level and quality of the debate about innovation in local government
- Support the development of innovation skills across local government

The programme was launched in April 2011 with an open call for proposals from councils that wanted to reconsidering the role of local government. Over one-third (137) of all local authorities in England and Wales applied for the programme, covering a wide range of ideas from how to support an ageing population to finding new ways to promote economic growth. In July 2011 seventeen councils were selected to receive financial and non-financial support to develop and test their innovations – all seventeen are known as Creative Councils 2012. From May 2012 NESTA is working with six councils to "bring their innovative ideas to life".

**Design for Innovation**<sup>185</sup>: The 2011 report on *Innovation and Research Strategy for Growth* suggested attention to "Design for Innovation". NESTA's Innovation Index suggests that design investment amounts to £20 billion per year in the UK, compared with £14 billion on business spending on R&D. Design has long been recognised by UK policy-makers as a means by which UK business can compete in global markets.

Design is increasingly promoted by the Design Council as a route to delivery of more effective public services too, through the distribution of best practice guides, networking activities and expert advice. It has begun to pay attention to promoting Service Design and its application to service and pub-

<sup>183</sup> See [http://www.nesta.org.uk/areas\\_of\\_work/public\\_services\\_lab/people\\_powered\\_health](http://www.nesta.org.uk/areas_of_work/public_services_lab/people_powered_health) (accessed June 4, 2012)

<sup>184</sup> See [http://www.nesta.org.uk/areas\\_of\\_work/public\\_services\\_lab/creative\\_councils](http://www.nesta.org.uk/areas_of_work/public_services_lab/creative_councils) (accessed June 4, 2012)

<sup>185</sup> See <http://www.bis.gov.uk/assets/biscore/innovation/docs/i/11-1387-innovation-and-research-strategy-for-growth.pdf> (accessed June 4, 2012)



lic service activities.<sup>186</sup> *Public Services by Design* builds on ideas in the 2008 *Innovation Nation* white paper, to develop this design-led innovation programme for practitioners in the public sector: through a mixture of expert mentoring and peer learning. The programme sets out to help managers and frontline staff develop and apply design capabilities to improve services.<sup>187</sup> In this programme, design mentors are used to transfer valuable skills, bring fresh insight and draw upon a collection of design tools to develop innovative solutions to solve complex public service issues. Working with BIS and the Cabinet Office, the Design Council is developing a design-led commissioning toolkit for government departments and the rest of the public sector. It is also developing a design coaching programme for senior civil servants.

The Design Council is also delivering *Designing Demand*, a BIS funded mentoring programme for small and medium sized enterprises (SMEs). It aims to help SMEs build greater design capability by leading management teams through a practical-based process to understand the significant role of design in improving business growth potential and success. The resulting design projects often deliver new or improved products, services, systems and/or brands. It has been estimated that over £12 GVA has been returned for every £1 of public funding invested in *Designing Demand*. Encouraged by the success, the Government has decided to increase its funding of *Designing Demand* to £1.3 million per annum. A new programme called *Business Coaching for Growth* has been also set up help up to 10,000 SMEs a year to overcome the barriers they face in achieving high-growth potential. The programme aims to help the targets to commercially exploit innovation, build a culture of innovation within the business, and identify and protect intellectual property and copyright<sup>188</sup>.

## (2) Scotland, Wales, Northern Ireland

There are no readily identifiable generic service innovation related policies in the three principalities of Scotland, Wales or

Northern Ireland. The Welsh Government has provided funding to support up to five creative industries KTPs<sup>189</sup>. DETINI's report on Regional Innovation Strategy for North Ireland (Action Plan: 2008–2011)<sup>190</sup> did set up a set of policies to enhance North Ireland's participation in the UK, all-island, European, and global innovation arenas. Some of them are relevant to service innovation, such as *Innovation Platform* for Northern Ireland.

## (3) Regional level

Since the announcement of the closure of RDAs in 2010, the role of the RDAs in terms of developing regional innovation policies has been dismissed. Regional innovation policies have largely been combined with the national level policies, though there remain some city-level and similar activities (many of them affected adversely by the economic downturn).

### Key demand-side policies promoting service innovation

The 2011 report *Innovation and Research Strategy for Growth* suggested that user-led innovation has been increasingly important to the national innovation system. Despite the fact that demand-side policies have become critical, so far there is no evidence showing the demand-side procurement policies are specifically conducted with relation to services innovation.<sup>191</sup> However, it is likely that specific procurement initiatives have a major bearing on particular classes of services – some of these front-office public services, some of them back-office service process activities. For instance, the Government has in the past sought to upgrade the level and quality of software engineering by insisting upon particular quality standards and tools in computer services acquired for government use.

In addition, the Government has recognised that Government-led innovation can have particular impact in such very large sectors such as health, transport and urban develop-

<sup>186</sup> See <http://www.designcouncil.org.uk/about-design/types-of-design/service-design/> (accessed June 4, 2012)

<sup>187</sup> See <http://www.designcouncil.org.uk/psbd> (accessed June 4, 2012)

<sup>188</sup> See <http://www.bis.gov.uk/assets/biscore/innovation/docs/i/11-1387-innovation-and-research-strategy-for-growth.pdf> (accessed May 28, 2012)

<sup>189</sup> See <http://business.wales.gov.uk/bdotg/action/detail?itemId=5001940465&site=230&type=ONEOFFPAGE> (accessed June 4, 2012)

<sup>190</sup> See [http://www.detini.gov.uk/regional\\_innovation\\_strategic\\_action\\_plan\\_2008-2011.pdf](http://www.detini.gov.uk/regional_innovation_strategic_action_plan_2008-2011.pdf) (accessed June 4, 2012)

<sup>191</sup> We know that investigation of this topic is being undertaken at MIOIR, Manchester University, as part of the UNDERPPIN project - see preliminary results "Challenges for the public procurement of innovative services: from hardware to managed print services" at <http://underpinn.portals.mbs.ac.uk>

ment. BIS is leading The Government's work to develop a public procurement culture to stimulate innovation in the economy<sup>192</sup>. As the public sector can be a lead user for innovation, the Government is using models such as the Small Business Research Initiative (SBRI) where the Government will be investing more to support the growth of technology based SMEs whilst purchasing innovative solutions for public sector challenges. The Government committed £20 million to SBRI at Budget 2011. The Government is also using Forward Commitment Procurement Model (FCPM) to stimulate the market to develop new technologies and provide innovative solutions to both public and private services.

In an extensive review of the 'private service industry' Julius (2008)<sup>193</sup> portrays the UK as being in the vanguard of attempts to establish new ways of using private firms and non-profit bodies to supply public services. The US, with its much larger economy overall, has by far the largest private service industry market in terms of the absolute size. The UK's market, while only about a fifth of the US one, is still substantially larger than that of the other OECD countries. Julius (2008) mentions such examples as private sector prisons, NHS referrals to private health care providers, training of military pilots, private and third sector childcare or services to the Government itself (examples cited are: IT and payroll services, consultancy services such as research and policy advice, catering and cleaning services, property management services). Julius (2008) cites research suggesting that some 44 per cent of the PSI is accounted for by 'Managed Services' – services provided directly to users, ranging from extremely knowledge-intensive activities to much more basic operational services.

Much of this activity may be simple outsourcing designed to reduce costs, but policymakers have argued to us that there is increasingly strategic use of the private service industry to provide innovative solutions to social problems, and to seek to achieve more at lower costs in this way. We also see incentivisation of local authorities and social enterprises through Social Impact Bonds.<sup>194</sup>

## C. Checklist of policy measures

In this section, the policy instruments discussed in Section B will be presented under the strategic themes of the EPISIS-project, which includes policies/ measures to promote service innovation by targeting new types of innovation actors, novel types of innovation activities and innovative business solutions; service innovation related competencies and capabilities; markets and infrastructure as a driver of service innovation.

### New types of innovation actors, novel types of innovation activities and innovative business solutions

It is reasonable to argue that all policy instruments discussed in Section B aim to promote service innovation – alongside other types of innovation – by targeting new types of innovation actors, novel types of innovation activities and innovative business solutions to a different extent. The most important ones are the *Innovation Platform*, *Innovation Voucher*, *KTNs*, *Innovation in Giving Fund*, *People Powered Health* and *Reboot Britain*.

The *Assisted Living Innovation Platform* seeks to find innovative approaches to financing and delivering health and social care. The *Innovation Voucher* promotes novel types of innovation activities between universities and SMEs. The Creative Industries *KTN* and the Financial Services *KTN* both help firms to identify innovative solutions to deal with the big challenges in their businesses. *Innovation in Giving Fund* encourages innovative ideas in the giving and exchange of time, assets, skills, resources and money. The *People Powered Health* programme explores new types of innovative activities in healthcare by set up corporation between people and professionals. *Reboot Britain* seeks to enhance the efficiency and effectiveness of public service by engaging with a public service partner and utilising collaborative technologies. The programme *Creative Councils* offers financial and non-financial support innovators in local government across England and Wales to develop and implement innovations that address a long-term challenge facing them.

<sup>192</sup> See <http://www.bis.gov.uk/policies/innovation/procurement> (accessed June 5, 2012)

<sup>193</sup> Julius, D. (2008) Public Services Industry Review - Understanding the Public Services Industry: How big, how good, where next? London, HMSO (BERR - Department for Business Enterprise & Regulatory Reform). at <http://www.bis.gov.uk/files/file46965.pdf> (accessed 19 June, 2012)

<sup>194</sup> See, for example, <http://www.socialfinance.org.uk/work/sibs> (accessed 19 June, 2012)

### Service innovation related competencies and capabilities

The policy instruments seeking to promote service innovation related competences and capabilities are these which promote knowledge exchange or knowledge transfer, skill development as well as research co-operation. Important programmes in this perspective are *Innovation Vouchers*, *KTNs*, *KTPs*, *Public Services* and *Designing Demand*. The *Innovation Vouchers* promotes the knowledge exchange between universities and private sector knowledge providers and SMEs (e.g. financial and professional services and digital and creative businesses). *KTNs* have driven the flow of knowledge within, in and out of specific communities to stimulate innovation (e.g. creative industries). *KTPs* facilitate the transfer of knowledge and the spread of technical and business skills across sectors to enhance firms' creativity, effectiveness and productivity. The *Public Services* programme helps public sector professionals develop innovative solutions by using design mentors to transfer valuable skills, bring fresh insight

and draw upon a collection of design tools to them. Likewise, *Designing Demand* helps SMEs build greater design capability by leading management teams through a practical-based process in design.

### Markets and infrastructure as a driver of service innovation

The SBRI (Small Business Research Initiative) to some extent promotes the market as a driver for service innovation at SMEs. The FCPM (Forward Commitment Procurement model) is also a tool to stimulate the market for service innovation for both public and private sector. The programme *Designing Demand* focuses on the creation of markets for design by offering mentoring services to SMEs. Some programmes, such as *Open Data* and the Intellectual Property Office's (IPO) *Ipsum* service, promotes markets and infrastructure for innovation – what impact it has on service innovation needs further attention. Table 3 summarises these programmes under the thematic areas of the EPISIS-strategy.

**Table 3. Programme Relevance to the Thematic Areas of the EPISIS-strategy.**

Programme/policy	Promotion of service innovation by targeting new types of innovation actors, novel types of innovation activities and innovative business solution	Promotion of service innovation related competences and capabilities	Promotion of markets and infrastructure as a driver of service innovation
Innovation Platform	✓		
Innovation Vouchers	✓	✓	
KTNs	✓	✓	
KTPs	✓	✓	
Innovation in Giving Fund	✓		
People Powered Health	✓		
Reboot Britain	✓		
Creative Councils	✓		
Public Services	✓	✓	
Designing Demand	✓	✓	✓
SBRI	✓		✓
FCPM	✓		✓

## D. Future developments and service innovation policy needs

The Government has addressed the strategic role it should play in order to build on the UK's valuable assets for innovation (e.g. the strength of UK universities and the wider knowledge base) and leverage the innovative potential of the economy.<sup>195</sup> The Government has already made clear commitment to the UK knowledge base by maintaining the annual £4.6 billion budget for science and research programmes, with £150 million each year supporting university-business interaction which in turn benefits clusters, through Higher Education Innovation Funding. It will work with the grain of the market by getting rid of unnecessary red tape, making public sector data more accessible and establishing a fund to run inducement prizes in areas where innovation is needed. These initiatives will have a general impact on all sectors.

So far, there is no overall innovation policy relating to the services sector in the UK, and one does not seem to be on the cards in the near future. The diversity of service industries is part of the explanation for this, alongside aversion to "picking winners" and concerns about "rebalancing" the UK economy. Few innovation policies not give a particular role to service innovation (though some policies are directed at specific industries or technologies). Service firms have only limited participation in the Government's innovation programmes and are less likely than manufacturing firms to receive public funding. However, the 2011 report on *Innovation and Research Strategy for Growth* indicated that the Government has put some effort into ensuring that the promotion of innovation in services is duly acknowledged in innovation policies. It should foster greater experimentation in developing demand-driven R&D programmes and promote the introduction of advanced education and training in public procurement for civil servants belonging to contracting authorities.

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<sup>195</sup> See <http://www.bis.gov.uk/assets/biscore/innovation/docs/e/11-1386-economics-innovation-and-research-strategy-for-growth.pdf> (accessed May 28, 2012)

## 2.15 Appendix 15. The United States

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### A. National policy context

#### Overview

The United States lacks an integrated national service innovation policy or service innovation strategy. At best, the United States has a set of indirect policies that support sectoral innovation in certain services industries. In September 2009, the National Economic Council, Council of Economic Advisors, and Office of Science and Technology Policy (OSTP) introduced *A Strategy for American Innovation*; an updated version of the strategy was released in February 2011.<sup>196</sup> While the *Strategy for American Innovation* does include policies to support innovation in at least four specific services sectors of the U.S. economy—notably in health care, education, government, and wireless and other information and communications technologies (ICTs)—it does not articulate specific policies or instruments to support private-sector service innovation broadly.

Rather, the *Strategy* focuses primarily on policies improving framework conditions (e.g. more generous research and development tax credits, better patent and intellectual property policies, better digital and physical infrastructure, improving STEM education, etc.) to support innovation. Moreover, to the extent the *Strategy* focuses on specific sectors, it actually focuses more on product sectors—including advanced manufacturing, biotechnology, nanotechnology, and space applications—than on services sectors. Further, while the Administration in February 2012 did articulate *A National Strate-*

*gic Plan for Advanced Manufacturing*,<sup>197</sup> it has not promulgated a similar strategy for services. All that said, as described in more detail below, the *Strategy* does promote a number of policies to support innovation in at least four key services sectors: health care, education, government, and ICTs. Moreover, the *Strategy for American Innovation* does comprehensively discuss how effective government policy can promote innovation through enlightened demand-side and procurement programs such as the use of prizes and innovation challenges—with these types of tools being used increasingly effectively across the federal government—although they equally target challenges across both services and manufacturing industries.

However, it should also be noted that the United States has unfortunately recently pulled back from several services innovation-focused efforts. For one, Sec. 1005 of the America COMPETES Act of 2007 noted that it was the Sense of Congress that the National Academy of Sciences conducts a study and report to Congress on how the federal government could support through research, education, and training the emerging management and learning discipline known as services science.<sup>198</sup> Although Congress authorized funds for such a study of services sciences, those funds were never appropriated, and thus the study never formally conducted; the updated America COMPETES Act of 2011 did not pick up this provision. More recently, and although more related to services quality than services innovation, the Obama Administration's FY 2012 budget eliminated funding for the Baldrige National Quality Award, which had played an important role in promoting service quality in the United States.<sup>199</sup> Moreover, while the United States operates the Manufacturing Extension Partnership (MEP) and agricultural extension partnerships, to support innovation in manufacturing and agricultural SMEs, respectively, it operates no similar program for services firms.

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- <sup>196</sup> National Economic Council, Council of Economic Advisors, and Office of Science and Technology Policy, *A Strategy for American Innovation: Securing Our Economic Growth and Prosperity*, February 2011, <http://www.whitehouse.gov/sites/default/files/uploads/InnovationStrategy.pdf>.
- <sup>197</sup> Executive Office of the President, National Science and Technology Council, *A National Strategic Plan for Advanced Manufacturing*, February 2012, 4, [http://www.whitehouse.gov/sites/default/files/microsites/ostp/iam\\_advancedmanufacturing\\_strategicplan\\_2012.pdf](http://www.whitehouse.gov/sites/default/files/microsites/ostp/iam_advancedmanufacturing_strategicplan_2012.pdf).
- <sup>198</sup> One Hundred Tenth Congress of the United States of America, "H.R. 2272: The America COMPETES Act," 6, August 4, 2007, <http://www.gpo.gov/fdsys/pkg/BILLS-110hr2272enr/pdf/BILLS-110hr2272enr.pdf>.
- <sup>199</sup> Richard McCormack, "Bye-Bye Baldrige: U.S. Decides Quality Is Not Worth \$9 Million," *Manufacturing & Technology News*, Volume 19, No. 1, January 23, 2012 <http://www.manufacturingnews.com/news/12/0123/baldrige.html>.

## Key Government Agencies and Policies Supporting Services Innovation

From an institutional perspective, various government agencies play a role in fostering service innovation in the United States, even if their activities are not crystallized into an overarching policy framework. As the U.S. INNO-Policy TrendChart reports, “Within the federal government, agencies directly administer and deliver programs and also provide extra-mural funding to others to deliver innovation activities and services.”<sup>200</sup> These are some of the federal agencies most heavily involved in supporting services innovation:

- **The National Science Foundation (NSF)** supports a grant program on Systems Engineering and Design (SED) that includes funding for Service Enterprise Systems (SES) research. The SES program supports research on strategic decision making, design, planning, and operation of commercial, non-profit, and institutional service enterprises with the goal of improving their overall effectiveness and cost reduction. The program has a particular focus on health care and other similar public service institutions, and emphasizes research topics leading to more effective systems modeling and analysis as a means to improved planning, resource allocation, and policy development. This grant program is probably the closest the federal government comes to supporting services innovation research. However, even here it should be noted that this program is operated out of NSF’s Civil, Mechanical, and Manufacturing (CMMI) division.<sup>201</sup>
- **The National Science Foundation** is the U.S. agency primarily responsible for collecting data on the rates of innovation and R&D activity and expenditure being conducted by U.S. services firms. NSF now collects data on the rates of service innovation (e.g. extent of innovation in services industries) in the United States through the Business R&D and Innovation Survey (BRDIS), which was launched in 2008. One

of the most interesting findings from the first BRDIS survey, which was released in October 2010, was that U.S. manufacturing firms reported almost three times greater rates of innovation than U.S. services firms.<sup>202</sup> Specifically, 22 percent of U.S. manufacturing establishments reported product or process innovations, whereas only 8 percent of U.S. services firms reported product or process innovations. Moreover, the European Union’s Sixth Community Innovation Survey (essentially, Europe’s counterpart study to America’s BRDIS) finds that 52 percent of EU-27 enterprises reported innovation activity between 2006 and 2008, an innovation rate 2.4 times higher than that reported by U.S. firms.<sup>203</sup> The OECD’s National Experts on Science and Technology (NES-TI) working party is looking to coordinate, across countries, the questions asked on innovation surveys and to identify what accounts for such high differences in reported rates of innovation between countries.

- **The Office of Science and Technology Policy**, located with the Executive Office of the President, has been instrumental in launching several projects to spur innovation, many related to innovation in government agencies, particularly through the use of open government principles. For example, OSTP has been a strong proponent of federal agencies creating digital data using interoperable standards, such as shareable and reusable extensible mark-up language (XML).<sup>204</sup> OSTP’s Big Data Initiative is an effort to coordinate federal government programs that address the challenges of, and tap the opportunities afforded by, the big data revolution to advance agency missions and further scientific discovery and innovation.<sup>205</sup> These “big data efforts” aim to develop analytical tools and methods that will be highly applicable to service sector industries, whether IT services firms or other services firms that are analyzing patterns in markets, etc.

<sup>200</sup> European Commission Enterprise Directorate-General, “INNO-Policy TrendChart – Innovation Policy Progress Report: USA,” 2009, 18, [http://proinfo.intrasoft.be/extranet/upload/countryreports/Country\\_Report\\_USA\\_2009.pdf](http://proinfo.intrasoft.be/extranet/upload/countryreports/Country_Report_USA_2009.pdf).

<sup>201</sup> National Science Foundation, “Service Enterprise Systems (SES),” [http://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=13343&org=CMMI](http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=13343&org=CMMI).

<sup>202</sup> Mark Boroush, “NSF Releases New Statistics on Business Innovation,” National Science Foundation, October 2010, <http://www.nsf.gov/statistics/infbrief/nsf11300/nsf11300.pdf>.

<sup>203</sup> Eurostat, “More Than Half of EU27 Enterprises Are Innovative,” November 10, 2010, [http://epp.eurostat.ec.europa.eu/cache/ITY\\_PUBLIC/9-10112010-AP/EN/9-10112010-AP-EN.PDF](http://epp.eurostat.ec.europa.eu/cache/ITY_PUBLIC/9-10112010-AP/EN/9-10112010-AP-EN.PDF).

<sup>204</sup> Robert D. Atkinson et al., “Innovation Policy on a Budget: Driving Innovation in a Time of Fiscal Constraint,” (Washington, DC: ITIF, September 2010), <http://www.itif.org/files/2010-innovation-budget.pdf>.

<sup>205</sup> Executive Office of the President, Office of Science and Technology Policy, “Fact Sheet: Big Data Across the Federal Government,” March 29, 2012, [http://www.whitehouse.gov/sites/default/files/microsites/ostp/big\\_data\\_fact\\_sheet\\_final.pdf](http://www.whitehouse.gov/sites/default/files/microsites/ostp/big_data_fact_sheet_final.pdf).

OSTP has also been a strong proponent for the use of prizes and innovation challenges in spurring innovation. For example, Challenge.gov is a one-stop shop where entrepreneurs and citizen solvers can find and compete for public-sector prizes. In its first four months alone, Challenge.gov featured nearly sixty challenges from more than twenty-five agencies across the Executive Branch.<sup>206</sup> Such access initiatives and challenges/competitions aim to engage non-traditional players in innovation, breaking down the barriers that traditionally kept much innovative work in the manufacturing sector and engaging users (i.e., in the services sector) and entrepreneurs and small business who have traditionally often lacked access to government-funded scientific information and data.

- **The Small Business Innovation Research (SBIR)** program, run by the U.S. Small Business Administration, allocates 2.5 percent—about \$2.25 billion—of the research budgets of twelve federal agency research budgets to small business innovation research projects. SBIR grants have supported innovation in many services firms.
- **The Department of Health and Human Services (HHS)** operates a number of programs fostering innovation in health care. For example, HHS's Health Data Initiative (HDI) brings public and private sector organizations together to find innovative ways to extract HHS data and to share that data online with technology companies, researchers, health advocates, the media, and others.<sup>207</sup> HHS's open government initiative continues to publish a growing array of health care data sets online, making them freely available. The Department has also played an important role in promoting the adoption and use of health IT systems, such as by promoting the adoption and use of electronic health records (EHRs). The federal government is funding specific research in health IT, using procurement policies to stimulate adoption (e.g., by providing incentive payments for doctors that use EHRs), establishing standards (e.g. certification criteria and test procedures for

EHRs), and engaging in training & education (e.g., new programs for health IT workers and outreach programs to care provider organizations).

- **The Department of Education** has proposed investing \$90 million to create an Advanced Research Projects Agency-Education (ARPA-ED) modelled on the famed Defence Advanced Research Projects Agency (DARPA) which would aggressively pursue technological breakthroughs that have the potential to transform teaching and learning in the same way the Internet, GPS, and robotics have transformed commerce, travel, and production.<sup>208</sup> ARPA-ED would further the National Education Technology Plan (NETP), a five-year action plan for using technology to improve student learning through the better use of data and ICTs.<sup>209</sup>
- **The Department of Commerce's National Institute of Standards and Technology (NIST)** is leading the Smart Grid Investment Grant and Demonstration program, a \$4.2 billion project that will modernize the U.S. energy grid by accelerating the development and deployment of an advanced electric grid with digital communications technologies and by piloting grid-scale energy storage projects.<sup>210</sup>
- **NIST's Manufacturing Extension Partnership**, though it focuses primarily on SME manufacturers, is a U.S. government agency that explicitly helps private-sector firms develop innovation skills, methods, and capabilities. Specifically, MEP's *Innovation Engineering Management System (IEMS)* includes a digital toolset, online collaborative workspace, and formal curriculum to help U.S. manufacturers learn innovation and new product development skills and build confidence in their ability to commercialize new technologies. MEP is also helping SMEs connect to broader innovation networks. A key tool in facilitating this has become the *USA National Innovation Marketplace (NIM)*, which allows SMEs to post their innovative products and technologies online in a concise, easily comprehensible format so the SME can: (a) highlight and promote its capabilities to make supply chain connections; (b) reach a

<sup>206</sup> National Economic Council, *A Strategy for American Innovation*, 12.

<sup>207</sup> Nicole Lewis, "The Challenge: Exploit Health Data, Create Innovative Apps," *InformationWeek*, June 13, 2011, [http://www.informationweek.com/news/health\\_care/leadership/230600076](http://www.informationweek.com/news/health_care/leadership/230600076).

<sup>208</sup> U.S. Department of Education, "Winning the Future: The Role of ARPA-Ed," 1, March 8, 2011, <http://www.ed.gov/sites/default/files/arpa-ed-background.pdf>.

<sup>209</sup> National Economic Council, *A Strategy for American Innovation*, 68.

<sup>210</sup> National Economic Council, *A Strategy for American Innovation*, 38.

wider audience of potential buyers or investors; (c) search for expert help or assistance; and (d) search for innovation-driven business opportunities.<sup>211</sup>

- **The Federal Communications Commission (FCC)** was instrumental in authoring a National Broadband Plan, published in March 2010, which proposed a number of policies to increase the broadband deployment and adoption that spurs so much of ICT-enabled service innovation.<sup>212</sup> More recently, the Obama Administration's Wireless Initiative seeks to help businesses reach 98 percent of Americans with high-speed wireless access within five years in order to accelerate wireless innovations in health, education, transportation, and other application areas.<sup>213</sup>
- **The National Aeronautics and Space Administration (NASA)** has launched an Open Innovation Service Providers (OISP) program, a problem-solving approach that publicizes technical and engineering challenges the agency wants solved via the Internet as a way to seek innovative solutions and to attract public collaboration.<sup>214</sup>

### Key Private or Public-Private Partnerships Supporting Services Innovation

- IBM's Service Science Engineering, Management, and Design (SSMED) initiative has taken the lead in promoting service sciences research, education, and its establishment as a formal academic discipline in the United States. Over 130 U.S. universities (and over 500 universities worldwide) now offer SSMED courses and several (like Berkeley) even offer SSMED degrees.<sup>215</sup>
- The Services Research and Innovation Institute (SRII) is an industry consortium that promotes research and innovation in IT-enabled services to produce a better world.<sup>216</sup> SRII promotes leveraging information technology to spur inno-

vation in service industry verticals such as health care, finance, energy, education, government, telecommunications, and transportation. SRII also focuses on horizontal (e.g. cross-cutting) service domains, including the use of IT tools, technologies, and platforms (such as cloud computing), information management, service business processes and models, service operation marketing, human factor engineering, etc.

### Services Industries in the U.S. Economy

Private services-producing industries account for 68.1 percent of U.S. GDP (72.7 percent if ICT-producing industries are included).<sup>217</sup> Government (a purely services "sector") accounts for an additional 13.2 percent of GDP (4.4 percent federal and 8.8 percent state and local). Among private services sectors, the largest are: Professional and business services (12.6 percent of U.S. GDP); finance and insurance (8.3 percent); health care and social service (7.6 percent); retail trade (6.1 percent); wholesale trade (5.6 percent), and information, including software and entertainment industries (4.4 percent).<sup>218</sup>

While all services sectors are or can be targets of a nation's service innovation policy, clearly the most important sectors in which service innovation is most sorely needed in the United States are: education, health care, government, and transportation. Regarding education, as McKinsey's 2009 *The Economic Impact of the Achievement Gap in America's Schools* report finds, the educational achievement gap between the United States and its competitors amounts to "the economic equivalent of a permanent national recession." McKinsey notes that if the United States boosted its educational achievement levels to equal those of world leaders such as Finland or South Korea, the annual boost to the U.S. economy would be greater

<sup>211</sup> Stephen Ezell and Robert D. Atkinson, "International Benchmarking of Countries' Policies and Programs Supporting SME Manufacturers," (Washington, DC: ITIF, September 2011), 18, <http://www.itif.org/files/2011-sme-manufacturing-tech-programss-new.pdf>.

<sup>212</sup> Blair Levin, "National Broadband Plan: National Purposes," (presentation, Washington, DC: ITIF, March 11, 2010), <http://www.itif.org/files/2010-national-broadband-plan.pdf>.

<sup>213</sup> National Economic Council, *A Strategy for American Innovation*, 2.

<sup>214</sup> The White House, "Open Innovation Service Providers," <http://www.whitehouse.gov/open/innovations/OISP>.

<sup>215</sup> IBM, "Learn About Service Science," April 11, 2011, [https://www.ibm.com/developerworks/mydeveloperworks/wikis/home/wiki/We2324b49e6c0\\_406d\\_8107\\_5b36d9b7cc47/page/Learn%20about%20Service%20Science?lang=en](https://www.ibm.com/developerworks/mydeveloperworks/wikis/home/wiki/We2324b49e6c0_406d_8107_5b36d9b7cc47/page/Learn%20about%20Service%20Science?lang=en).

<sup>216</sup> Kris Singh, "SRII Overview," (presentation, San Jose, CA, 2011), [http://www.thesrii.org/index.php/component/docman/doc\\_download/77-srii-nov-overview-2011](http://www.thesrii.org/index.php/component/docman/doc_download/77-srii-nov-overview-2011).

<sup>217</sup> U.S. Bureau of Economic Analysis, "Value Added by Industry as a Percentage of Gross Domestic Product," (accessed April 26, 2012).

<sup>218</sup> Ibid.



than \$1.3 trillion, and as high as \$2.3 trillion.<sup>219</sup> Regarding health care, slow productivity growth in health care means that (relative to its size) the U.S. health care sector costs \$400 to \$500 billion more than it would in other OECD economies. Regarding government, McKinsey finds that if productivity growth in U.S. federal and state governments had matched productivity improvements in the U.S. private sector over the past decade, there would be no federal budget deficit. Transportation is another services sector in which the United States trails Asian and some European competitors in the deployment of advanced intelligent transportation systems (ITS).<sup>220</sup> Ironically, these findings suggest that public policies to promote service innovation may actually be best trained on services sectors in which the government itself is heavily involved.

That said, policies designed explicitly to promote and to support services innovation in private services sectors are also needed. For example, one of the private U.S. services sectors in most dire need of service innovation is the construction industry, where industry productivity has actually declined by 0.6 percent per year over the past decade.<sup>221</sup> Indeed, the construction industry is the only major U.S. industry to suffer negative productivity growth over the past decade. As industry expert Barry LePatner explains in his book *Broken Buildings, Busted Budgets*, the U.S. construction industry is highly fragmented and the reason for the industry's market fragmentation is that the buyers aren't very sophisticated, usually buying construction services only occasionally.<sup>73</sup> As a result, they have limited ability to demand quality and price efficiency. Likewise, in the case of health care, fragmentation arises because an underdeveloped and not fully competitive marketplace results in inadequate price and quality signals for buyers. In both cases, the natural forces of innovation—market pressures leading to consolidation and scale, with more sophisticated suppliers adopting more technology—are underdevel-

oped. In such cases, the marketplace alone will underperform unless government intelligently intervenes to spur competition, to be a smart buyer, or to support the development and adoption of shared technology platforms.

## B. Policies promoting service innovation

### Supply-side policies promoting service innovation

The National Science Foundation supports at least one research program—in Service Enterprise Systems (SES)—focused on generating new knowledge pertaining to service enterprise systems development and management. However, as noted subsequently, the United States should focus more heavily on service systems/services engineering research in the NSF's Engineering Research Center (ERC) and Industry/University Cooperative Research Center (I/UCRC) programs.

The U.S. National Institute of Standards also plays an important role in setting standards for a number of critical services systems, such as the smart energy grid.

### Demand-side policies promoting service innovation

Many countries seek to spur innovation by making it an explicit criterion within the government's procurement process. Through technological leadership in its purchases, governments can play an important role in spurring markets and proving concepts.<sup>222</sup> When practical, government should be an early adopter of new technology rather than solely relying on industry to lead the way. Unfortunately, for the most part, as a report by the European Union notes, "the United States has a strategic orientation in its public procurement as well, but not primarily connected to innovation."<sup>223</sup>

However, in pockets, the U.S. government is beginning to recognize the power that enlightened demand in govern-

<sup>219</sup> McKinsey & Company, *The Economic Impact of the Achievement Gap in America's Schools*, 5, April 2009, <http://www.partnersinschools.org/resources/McKinsey%20&%20Co.%20Report.pdf>.

<sup>220</sup> Stephen Ezell, "Explaining International Leadership in Intelligent Transportation Systems," (Washington, DC: ITIF, January 2010), [http://www.itif.org/files/2010-1-27-ITS\\_Leadership.pdf](http://www.itif.org/files/2010-1-27-ITS_Leadership.pdf).

<sup>221</sup> Dr. S. Shyam Sunder, "Bricks and Bits: Transforming the Construction Industry Through Innovation," Information Technology, Construction Innovation, and NIST, January 18, 2012, <http://www.itif.org/files/2011-sunder-itif.pdf>.

<sup>222</sup> Stephen Ezell and Robert D. Atkinson, *The Good, the Bad, and the Ugly (and the Self-Destructive) of Innovation Policy: A Policymaker's Guide to Crafting Effective Innovation Policy* (Washington, DC: ITIF, 2010), <http://www.itif.org/files/2010-good-bad-ugly.pdf>.

<sup>223</sup> Fraunhofer Institute, "Innovation and Public Procurement: Review of Issues at Stake," Fraunhofer Institute Systems and Innovation Research, 2005, [http://cordis.europa.eu/innovation-policy/studies/full\\_study.pdf](http://cordis.europa.eu/innovation-policy/studies/full_study.pdf).

ment procurement can have in spurring service innovation. Indeed, demonstration funding and government procurement can encourage the creation and deployment of next generation technologies, bringing private innovation incentives closer to the social interest.<sup>224</sup> As the single largest energy consumer in the U.S. economy, government procurement provides an important mechanism to catalyze demand for innovative energy technologies. As Bob Peck, formerly the public-buildings commissioner for the U.S. General Services Administration, noted, "We're so huge, we make markets. We'll be the proving ground for innovation in the building industry."<sup>225</sup> The U.S. government is purchasing leading-edge vehicles (like plug-in hybrids) for its vehicle fleet and taking the lead in adopting energy-efficient green building practices. Also, several federal government agencies have pushed green ICT initiatives in part by establishing telework policies and creating telework best practices.

Government can also spur widespread digital transformation of the economy, not only by transforming its own operations, but also by requiring that organizations interacting with it do so digitally. For example, the U.S. government is increasingly requiring that organizations it interacts with provide information in digital, interoperable formats. For example, the American Recovery and Reinvestment Act (ARRA) requires health organizations to submit data electronically to the federal government by 2015 or pay a penalty. Government should also promote digital signatures for e-government applications.<sup>226</sup>

### **Policies improving framework conditions for service innovation**

The vast majority of U.S. innovation policy is focused on improving framework conditions for innovation. The Strategy for American Innovation actually included a number of propos-

als to improve innovation framework conditions in the United States, particularly around overhauling the U.S. intellectual property and patent system, facilitating technology transfer and commercialization efforts, better supporting entrepreneurs, promoting regional innovation clusters, and improving accounting for intangibles. Following is a brief overview of measures recently introduced in the United States to support framework conditions for innovation:

In September 2011, President Obama signed into law the American Invents Act (AIA), which overhauled the U.S. patent system.<sup>227</sup> The legislation moves America to a first-to-file as opposed to the previous first-to-invent system, helping to harmonize the American patent process with that of the rest of the world. The AIA seeks to increase patent quality by improving training for patent examiners and by clarifying and tightening standards for the issuance of patents. The American Invents Act also enacted measures to speed patent processing and decrease patent pendency, which had reached such a point that by February 2010 the United States had a backlog of over 750,000 patent applications and a three-year pendency period. By May 2012, these measures contributed in part to decreasing the patent backlog to 650,000 unexamined patents.<sup>228</sup> AIA also introduced a fast-track option to process SMEs' patent applications within twelve months.

Several U.S. states have moved to facilitate commercialization by introducing cooperative university-industry technology licensing agreements. For example, North Carolina and Ohio have developed standard university-firm technology licensing agreements in an effort to streamline and facilitate technology transfer from academia to industry. The federal government is also working on developing standardized agreements. For example, the National Institutes of Health Office of Technology Transfer has developed new agreements for start-up companies to obtain licenses for early-stage biomedical inventions de-

<sup>224</sup> National Economic Council, *A Strategy for American Innovation*, 11.

<sup>225</sup> Michael Grunwald, "How the Stimulus is Changing America," *Time*, August 26, 2010, <http://www.time.com/time/nation/article/0,8599,2013683,00.html>.

<sup>226</sup> For additional related proposals see: Daniel Castro and Robert Atkinson, "Ten Ideas for Policymakers to Drive Digital Progress," *IEEE Internet Computing*, Vol. 13, No. 2, March/April 2009, <http://www.itif.org/files/IC-TenIdeas.pdf>; Daniel Castro and Robert Atkinson, "The Next Wave of E-Government," *StateTech Magazine*, 2010, <http://statetechmag.com/events/updates/the-next-wave-of-e-government.html>.

<sup>227</sup> The White House, "President Obama Signs America Invents Act, Overhauling the Patent System to Stimulate Economic Growth, and Announces New Steps to Help Entrepreneurs Create Jobs," September 16, 2011, <http://www.whitehouse.gov/the-press-office/2011/09/16/president-obama-signs-america-invents-act-overhauling-patent-system-stim>.

<sup>228</sup> Dennis Crouch, "Addressing the USPTO Backlog," *Patentlyo*, March 8, 2012, <http://www.patentlyo.com/patent/2012/03/backlog-down-and-up.html>.

veloped by intramural researchers at NIH or FDA. The federal government has also announced prizes to facilitate technology commercialization. For instance, NSF launched a \$400,000 university commercialization prize competition that will be used to identify and promote incentives to adopt best practices that improve university commercialization efforts.

Promoting entrepreneurship was a key component of the *Strategy for American Innovation*. The Small Business Jobs Act (SBJA), signed by President Obama on September 27, 2010, provided an additional \$14 billion more in lending support via the Small Business Administration and more than \$30 billion in capital support for small business lending via the Treasury, as well as \$12 billion in tax relief to small businesses. The U.S. Department of Agriculture's (USDA) Business and Industry Guaranteed Lending Program also provides \$1 billion annually and, on account of the Recovery Act, was able to deliver \$3 billion in FY 2010 to support the financing of rural businesses (including services businesses).<sup>229</sup> Also, the recently passed JOBS Act will make it easier for start-ups and small businesses to raise funds, especially through online crowdfunding.<sup>230</sup>

The Obama Administration's *Startup America* campaign seeks to celebrate, inspire, and accelerate high-growth entrepreneurship throughout the United States. It represents a coordinated public/private effort to bring together an alliance of the country's most innovative entrepreneurs, corporations, universities, foundations, and other leaders, working in concert with a wide range of federal agencies to increase the success of American entrepreneurs. *Startup America's* core goals are to increase the number of new high-growth firms that are creating innovation and quality jobs; celebrate and honour entrepreneurship as a core American value and source of competitive advantage; and inspire and empower an ever-greater diversity of communities and individuals to build successful American companies. To achieve these goals, a broad set of federal agencies have launched a coordinated set of

policies that ensure high-growth start-ups have unimpeded access to capital, expanded access to quality mentorship, an improved regulatory environment, and a rapid path to commercialization of federally-funded research.<sup>231</sup>

While not always directly related to service innovation, the Obama Administration has placed a heavy focus on regional innovation, recognizing that regional clusters can be significant sources of entrepreneurship, innovation, and quality jobs, as well as the root of new industries. The Administration has made substantial investments to promote regional innovation clusters that draw together industry, university, and government resources. For example, the Small Business Administration's Regional Cluster Initiative and the Department of Energy's Energy Efficient Building Systems Innovation Cluster both seek to spur regional innovation engines in major technology sectors. The Economic Development Administration's *i6 Challenge* is a multiagency competition which funds regional collaborations to bring innovative, ground-breaking ideas from the lab to the marketplace, creating new start-ups and jobs across the country.<sup>232</sup> Finally, the Departments of Labor and Education are aligning Workforce Investment Act training and employment programs and career and technical education with regional innovation clusters to ensure that clusters have the skilled workforce necessary to grow and prosper and to connect American workers with good career opportunities.<sup>233</sup>

The United States is making efforts to better improve accounting for intangibles in the national accounts, as their importance to the economy has become increasingly clear. In 1996, U.S. gross business fixed investment in intangibles exceeded investment in tangibles, and U.S. corporations' investments in intangibles has remained greater than in tangibles in every year since.<sup>234</sup> Hulten found that 54 percent of Microsoft's real value-added growth from 1988–2006 was due to intangible capital and that 87 percent of Microsoft's emplo-

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<sup>229</sup> National Economic Council, *A Strategy for American Innovation*, 22.

<sup>230</sup> Heather R. Huhman, "JOBS Act To Jumpstart The Job Market," *Forbes*, April 5, 2012, <http://www.forbes.com/sites/work-in-progress/2012/04/05/jobs-act-to-jumpstart-the-job-market/print/>.

<sup>231</sup> National Economic Council, *A Strategy for American Innovation*, 22-23.

<sup>232</sup> U.S. Department of Commerce, "Commerce's Office of Innovation and Entrepreneurship Invests in the Jobs and Industries of the Future," April 19, 2012, <http://www.commerce.gov/blog/2012/04/19/commerce%E2%80%99s-office-innovation-and-entrepreneurship-invests-jobs-and-industries-future>.

<sup>233</sup> National Economic Council, *A Strategy for American Innovation*, 23-24.

<sup>234</sup> Corrado and Hulten, "How Do You Measure Technological Revolution?," *American Economic Review*, May 2010.

yees are engaged in research, design, and marketing.<sup>235</sup> One recent policy change has been to allow the expensing of research and development in the national accounts. These efforts recognize that business innovation involves investment in a broad range of intangible capital, and that a full accounting of a nation's R&D stock should include more than just scientific R&D investment, but also include intangibles such as product design, brand equity, and organizational capability via worker training and matching, management systems, and strategic planning.

## C. Checklist of policy measures

### U.S. policies promoting dynamic markets as a driver of innovative services include

- Public procurement as an incentive.
- Open public sector data (e.g. making data available through XML formats).
- Systemic innovation as solutions to grand challenges (e.g. in energy, health care, and education).
- Collaboration with industry in the establishment of consensus, voluntary, industry-led standards with government acting as a technical partner.

One area U.S. policy can be a strong driver of service innovation and productivity growth is by resisting and overturning barriers that restrict business use of self-service technologies. In fact, if self-service technology were more widely deployed, the U.S. economy would be approximately \$130 billion larger annually, the equivalent of an additional \$1,100 in annual income for every household.<sup>236</sup> But, unfortunately, the list of barriers to the use of self-service technology in the United States is long and troubling. Car

dealers have succeeded in getting laws passed in all fifty states making it illegal for automobile manufacturers to sell vehicles directly to the consumer, including over the Internet.<sup>237</sup> Optometrists helped pass state legislation making it hard for consumers to fulfil their prescriptions online, purportedly to protect consumers from suffering eye damage.<sup>238</sup> Travel agents sought to enlist the U.S. Justice Department against the airlines' formation of the online travel site Orbitz, claiming to "act as the public's representatives and help keep prices low."<sup>239</sup> Policymakers should resist attempts to constrain Internet or digital-technology based self-service innovation, and the Federal Trade Commission (FTC) should be vigilant in monitoring federal and state rules and regulations that limit (or fail to encourage) self-service usage in the private sector.<sup>240</sup>

### Leveraging the full potential of innovative service and solutions businesses

- Several U.S. government agencies (e.g. HHS and NASA) have embraced open innovation principles acknowledging the open, co-creative, and rapid nature of innovation.
- When it comes to optimal technology utilization, U.S. policy has sought to improve the technology commercialization and diffusion process to get technology developed by federally funded research at universities or national laboratories into the private sectors' hands.
- Regarding user and employee driven innovation, a number of countries create competition amongst agencies, with the best applications being publicly showcased by the government. For example, Singapore incentivizes the best public sector employees to share their ideas through their Knowledge Management Experimentation Program (KMEP), which gives technologically savvy bureaucrats a platform to share e-government proposals, with the best innovators

<sup>235</sup> Charles Hulten, "Decoding Microsoft," NBER Working Paper 15799, 2010.

<sup>236</sup> Daniel Castro, Robert D. Atkinson, and Stephen Ezell, *Embracing the Self-Service Economy* (Washington, DC: ITIF, 2010), 4, <http://www.itif.org/files/2010-self-service-economy.pdf>.

<sup>237</sup> Robert D. Atkinson and Mark Cooper, "A Cure by Way of the Consumer," *Washington Times*, December 17, 2008, <http://www.washingtontimes.com/news/2008/dec/17/ailing-auto-industry/>.

<sup>238</sup> Robert D. Atkinson, "Public Versus Private Restraints on the Online Distribution of Contact Lenses," (Washington, DC: ITIF, July 10, 2006), <http://www.itif.org/files/contactlens.pdf>.

<sup>239</sup> Elizabeth Wasserman, "Stuck in the Middle," *Industry Standard*, March 6, 2000, [http://www.dlc.org/ppi/ppi\\_ci.cfm?knlgArealD=140&subsecID=900055&contentID=251531](http://www.dlc.org/ppi/ppi_ci.cfm?knlgArealD=140&subsecID=900055&contentID=251531).

<sup>240</sup> Castro et al., *Embracing the Self-Service Economy*, 36.

given funding to pursue their concepts (and often prizes and promotions).<sup>241</sup> Unfortunately, the U.S. government does not do this in a structured way.

### Investing in multi-disciplinary competences, capabilities and knowledge creation

The United States does less in developing multi-disciplinary competencies, capabilities, and knowledge creation when it comes to service innovation/service design. U.S. innovation policy has little to say about “methods for client insight” or “service design.”

## D. Future developments and service innovation policy needs

This section identifies gaps in terms of service innovation policy support in the United States. In the main, it proposes new policy recommendations the United States could implement to better support services innovation. Europe currently “has a wider and more multidimensional approach to service research than the United States.”<sup>242</sup> The United States should work to close this gap.

### Undertake a services sector competitiveness assessment

In January 2012, the Obama Administration released a study called *The Competitiveness and Innovative Capacity of the United States*.<sup>243</sup> The report assessed the competitiveness of the traded sectors of the U.S. economy, which, while this included some traded services sectors (such as software, engineering services, and entertainment content like music, movies, and video games), focused primarily on traded manufacturing (e.g. product) sectors of the economy. Therefore, the United States’ Department of Commerce should undertake a study assessing the relative competitiveness of the services sector of the U.S. economy (including both traded and non-traded services sectors)

and recommending measures to improve the productivity and innovation potential of these services sectors. Such an analysis should include an assessment of factor inputs/framework conditions; sector analysis; functions (e.g. automation); tool development (e.g. robotics/sensors); platform development (e.g. mobile payment systems or intelligent transportation systems); and firms’ and organizations’ adoptions of these functions, tools, and platforms. Essentially, the United States needs to articulate a *National Strategic Plan for Advanced Services Innovation* as it has done for manufacturing (e.g. *The National Strategic Plan for Advanced Manufacturing*).

### Create ERCs and I/UCRCs focused on services science/service engineering

The National Science Foundation’s Engineering Research Centers (ERCs) are a group of interdisciplinary centers located at universities across the United States providing an environment in which academia and industry can collaborate in pursuing strategic advances in complex engineered systems and systems-level technologies that have the potential to spawn whole new industries or to radically transform the product lines, processing technologies, or service delivery methodologies of current industries.<sup>244</sup> Likewise, the Industry/University Cooperative Research Centers (I/UCRC) program forges partnerships between universities and industry, featuring high-quality, industrially relevant fundamental research, strong industrial support of and collaboration in research and education, and direct transfer of university-developed ideas, research results, and technology to U.S. industry to improve its competitive posture in global markets.<sup>245</sup>

While there are several ERCs and I/UCRCs focused on information technology, none are focused on services, services systems, or the role of design. In contrast, one of Germany’s 59 Fraunhofer Institutes is focused on Service Engineering and Management and several others are focused on information

<sup>241</sup> Organization for Economic Co-operation and Development, “Rethinking e-Government Services: User-Centered Approaches,” OECD e-Government Studies, 2009.

<sup>242</sup> Henri Lahtinen, “Interview of Ms. Tiina Tanninen-Ahonen, the Chairperson of the European Service Innovation Think Tank,” February 15, 2011.

<sup>243</sup> U.S. Department of Commerce, *The Competitiveness and Innovative Capacity of the United States*, January 2012, [http://www.commerce.gov/sites/default/files/documents/2012/january/competes\\_010511\\_0.pdf](http://www.commerce.gov/sites/default/files/documents/2012/january/competes_010511_0.pdf)

<sup>244</sup> Engineering Research Centers Association, “About the ERCs,” <http://www.erc-assoc.org/>.

<sup>245</sup> National Science Foundation, “I/UCRC Model Partnerships,” <http://www.nsf.gov/eng/iip/iucrc/program.jsp>.

and communications technology.<sup>246</sup> The United States should create at least one ERC and several I/UCRCs focused on service systems research or on service engineering and management. The United States should also create an I/UCRC focused specifically on design.

### **Government agencies should do better at spurring innovation in the sectors they cover**

In general, U.S. government agencies need to think about how they can do a better job spurring innovation in the sectors for which they are responsible. The Department of Housing and Urban Development (HUD) needs to focus more on boosting innovation in and raising the productivity of the U.S. construction industry. The Office of Management and Budget (OMB) in the executive branch should promote innovation in the delivery of government services. Treasury and the Securities and Exchange Commission (SEC) should focus on financial services innovation. The Department of Transportation (DOT) should promote innovation in public transit and private transportation. And the Department of Health and Human Services (HHS) should focus more on promoting innovation in health care and the Department of Education on promoting innovation in education.

### **Make research on service innovation policy a focus of SciSIP**

The National Science Foundation's Science of Science & Innovation Policy (SciSIP) program supports research designed to advance the scientific basis of science and innovation policy.<sup>247</sup> Research funded by the program develops, improves and expands models, analytical tools, data and metrics that can be applied in the science policy decision making process. To date, research interests of the SciSIP program include:

- The evaluation of the tangible and intangible returns from investments in science and from investments in research and development;
- The study of structures and processes that facilitate the development of usable knowledge, theories of creative pro-

cesses and their transformation into social and economic outcomes;

- The collection, analysis, and visualization of new data describing the scientific and engineering enterprise.

Service innovation policy should also be made an explicit focus of the SciSIP program.

### **Improve the U.S. tax code to better support services firms**

The United States needs to offer a far more globally competitive tax environment. There are several policies the United States could implement to make the country a more competitive environment for services firms in particular. For one, Congress should broaden the scope of the U.S. R&D tax credit to make it clear that process R&D (R&D to develop better ways of making things) qualifies for the tax incentive. What constitutes R&D in services firms is often less clear than what constitutes product R&D. Should Google's expenditures in researching and developing a new search algorithm, for example, qualify for the R&D tax credit? (Some countries, such as Australia and Finland, have answered that question affirmatively). Expanding the U.S. R&D tax credit to explicitly permit process R&D would make the credit more meaningful and useful to services firms.

Another improvement to the U.S. tax code that would benefit services firms would be transforming the R&D tax credit into a knowledge tax credit by making workforce development expenditures eligible for the R&D credit. Training and on-going education are critical components of robust productivity growth and rising worker incomes, and a key way workers get skills is through training provided on the job by employers. Unfortunately, U.S. companies are investing about half the amount in training today as a share of GDP compared to a decade ago, in part because the payoffs increasingly flow to other firms as workers switch jobs more frequently and because companies are under increasing pressures for short-term profits.<sup>248</sup> To spur greater workforce training whi-

<sup>246</sup> Fraunhofer Institute, "Institutes and Research Establishments," <http://www.fraunhofer.de/en/institutes-research-establishments>.

<sup>247</sup> National Science Foundation, "Science of Science and Innovation Policy (SciSIP)," [http://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=501084](http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=501084)

<sup>248</sup> ITIF analysis based on data from Andrew Paradise, "2008 State of the Industry Report," (Washington, DC: American Society for Training and Development, 2008).

le at the same time lowering the effective corporate tax rate, Congress should expand the R&D credit to allow expenditures on employee training to become qualified expenditures.

Eight nations—China, Belgium, France, Ireland, Luxembourg, Spain, Switzerland, and the United Kingdom—have implemented “patent boxes” that tax corporate income from the sale of patented products at a lower rate than other income.<sup>249</sup> A patent box that significantly reduces the corporate tax rate on revenue from qualifying IP, based in part on the extent to which corresponding R&D and production is conducted domestically, would provide firms with a much stronger incentive to innovate and produce in the United States. Senator Dianne Feinstein will soon introduce legislation in the U.S. Senate to enact patent boxes in the United States, a measure that Congress should adopt and the President should sign into law.

### Enhance U.S. trade policy towards services

Ensuring the open and uninhibited trade of services should be a larger focus of U.S. trade policy. This includes particularly working to remove non-tariff barriers (NTBs) to trade in services. Innovation and trade go hand-in-hand: Innovation creates technological advantage, which, together with differences in factor endowments, are the sources of comparative advantage, which in turn drives trade. Likewise, open markets benefit innovative firms, leading to an increase in the size of the market over which the firm can leverage its innovation (e.g. economies of scale). As services account for an increasing share of economies’ GDP and economic growth, it’s important that trade in services be as liberalized as trade in products.<sup>250</sup> But across many nations, restrictions remain with regard to services trade in key sectors such as financial services, telecommunication services, transportation services, and professional services including law, accounting, consulting, engineering, and medicine. An important way U.S. policy can drive services innovation, not just in the United States but also glob-

ally, is to make services trade liberalization a focal point of U.S. trade policy. Indeed, services trade liberalization will provide an important foundation for the global economic recovery.<sup>251</sup>

### Use public policy to promote adoption of next-generation technologies

The United States lags world leaders in the deployment of many next-generation, services-oriented IT systems such as intelligent transportation systems, contactless near-field communications (NFC) mobile payment systems, the smart energy grid, and health IT. Smarter procurement policies and allocation of federal dollars could promote faster adoption and diffusion of these technologies. One key to driving innovation through procurement is to support open standards architectures. By adopting technologies that are interoperable with non-federal applications, federal procurement can help drive widespread adoption. For example, requiring transit agencies to deploy contactless fare payment systems that are interoperable with those of other transit agencies around the country would allow passengers to easily pay for ridership in different public transportation systems across the country with a single smart card.<sup>252</sup> Likewise, government agencies, both at the federal and state level, should commit to deploying contactless payments infrastructure, including NFC-enabled POS (point-of-sale) readers and NFC-capable mobile phones.

### Tie federal funding to performance and innovation

The federal government should explicitly use the power of the purse strings to drive innovation among the recipients of those funds and allocate money on the basis of having recipient agencies, departments, or benefactors implement innovative policies or approaches. For example, the Department of Education’s *Race to the Top* program is offering \$4 billion in grants to states committed to reforming their education systems. States unwilling to leverage data and accountability

<sup>249</sup> Robert D. Atkinson and Scott Andes, “Patent Boxes: Innovation in Tax Policy and Tax Policy for Innovation,” (Washington, DC: ITIF, October 2011), <http://www.itif.org/files/2011-patent-box-final.pdf>.

<sup>250</sup> Robert D. Atkinson et al., *Innovation, Trade, and Technology Policies in Asia-Pacific Economies: A Scorecard*, (Washington, DC: US Agency for International Development and ITIF, December 2011), 23-24, <http://www.itif.org/publications/innovation-trade-and-technology-policies-asia-pacific-economies-scorecard>.

<sup>251</sup> Edward Gresser, “Services Trade Liberalization as a Foundation of Global Recovery,” (Washington, DC: Progressive Economy Project, Global Works Foundation, February 24, 2012), <http://uscisi.org/images/files/press-releases/Gresser%20White%20Paper%20FINAL.pdf>.

<sup>252</sup> Stephen Ezell, *Explaining International Leadership in Contactless Mobile Payments* (Washington, DC: ITIF, November 2009), <http://www.itif.org/files/2009-Mobile-Payments.pdf>.

systems to improve measurable performance outcomes, that have legislation preventing the development or expansion of innovative school approaches, or that cannot demonstrate effective alliances with local teachers' unions on performance accountability are not eligible to apply for funds.<sup>253</sup> Congress should significantly increase its practice of tying federal funding to performance and innovation. For example, Congress could repurpose transportation funds to intelligent transportation systems, in part by tying federal surface transportation funding to states' actual improvements in transportation system performance.

### Leverage cloud computing to support innovation

Cloud computing represents a new model of computing that delivers information technology as a service, whether software as a service (SAAS), platforms as a service (PAAS), or infrastructure as a service (IAAS). Cloud computing is expected to account for approximately \$42 billion of worldwide IT budgets in 2012. In digital policy, the United States (and other countries) should strive to create "cloud-neutral" policies that neither favour nor disfavour cloud computing.<sup>254</sup> Likewise, policymakers should work to ensure that cloud computing does not become balkanized because of nationalist legal restrictions imposed by other countries. U.S. trade policy regarding cloud computing should resist when countries impose geographic restrictions on where providers can store data, when they use data security or privacy laws to disadvantage foreign firms, or when they impose green data center requirements that unfairly favour domestic firms over foreign competitors.<sup>255</sup>

### Promote innovation in education

Early innovation surveys support the notion that innovation in services is dependent on highly skilled workers and suggest that fluency in information and data analysis will become more important as skills in service sectors.<sup>256</sup> Unfortunately, as

ITIF notes in its report, *Refuelling the U.S. Innovation Economy: Fresh Approaches to Science, Technology, Engineering and Mathematics (STEM) Education*, the United States has fallen significantly behind peer countries (and its own historical norms) in STEM education and needs to introduce a range of policies to enhance STEM education.<sup>257</sup> For example, Congress should allocate \$200 million a year for ten years to the Department of Education, to be supplemented by states and local school districts and industry, with the goal of quintupling the number of STEM high schools to 500 and enrolment to around 235,000 by 2015. At the same time, states should establish "NewSchools" organizations designed to facilitate the development of new kinds of middle and high schools, including those focused on STE M education.

At the same time, the Department of Education can promote radical innovation within school design at the university level. Traditional universities, taught and administrated by traditional staff, rarely deviate from conventional methods of teaching. Yet as the needs of the modern workforce become focused on broad skill sets such as logic, writing, and thinking and less on learning specific facts, such teaching methods have become anachronistic. Instead, governments, foundations, and wealthy individuals ought to fund completely new schools based on the needs of the current workforce.

A good model of such a new university is the Olin College of Engineering in Massachusetts, which reimagined engineering education and curriculum to prepare students "to become exemplary engineering innovators who recognize needs, design solutions, and engage in creative enterprises for the good of the world." On a per-student-graduated basis, Olin graduates start more new businesses than even MIT graduates. Olin is a good model for how the United States can transform its colleges into entrepreneurial factories and how the United States can encourage the development of completely new schools based on the needs of the current workforce.<sup>258</sup>

<sup>253</sup> Saul Kaplan, "Government as Innovation Catalyst," *BusinessWeek*, May 19 2010, [http://www.businessweek.com/print/innovate/content/may2010/id20100517\\_512312.htm](http://www.businessweek.com/print/innovate/content/may2010/id20100517_512312.htm).

<sup>254</sup> Daniel Castro, "Cloud Computing Requires National Policy Leadership," (Washington, DC: ITIF, August 2010), 4, <http://www.itif.org/files/2010-cloud-computing.pdf>.

<sup>255</sup> *Ibid.*, 5.

<sup>256</sup> Interview with Jerry Sheehan, U.S National Institutes of Health, May 16, 2012.

<sup>257</sup> Robert D. Atkinson and Merrilea Mayo, *Refueling the U.S. Innovation Economy: Fresh Approaches to Science, Technology, Engineering and Mathematics (STEM) Education* (Washington, DC: ITIF, 2010), <http://www.itif.org/files/2010-refueling-innovation-economy.pdf>.

<sup>258</sup> *Ibid.*, 101-105.



The United States should also create stronger university entrepreneurship metrics, which could be achieved in several ways. First, the United States could collect better data on faculty new business starts and spin-offs of new companies from universities. Congress could direct the National Science Foundation to develop a metric by which universities report that information annually. NSF could use this data to reward universities that do a better job; such as giving bonus points on research grant proposals they receive. Applicants from universities that successfully promote entrepreneurial spinoffs/start-ups would be more likely to have their private investigator grants funded. Alternatively, the Department of Commerce could use data available through the ES-202 form (Unemployment Insurance Tax Records), which tracks how many employees an establishment has every quarter. The form could also be made to note the university that the founder of the organization attended, and then that information could be combined, anonymously, to find out which colleges and universities have graduates that are founding and running the most high-growth businesses.

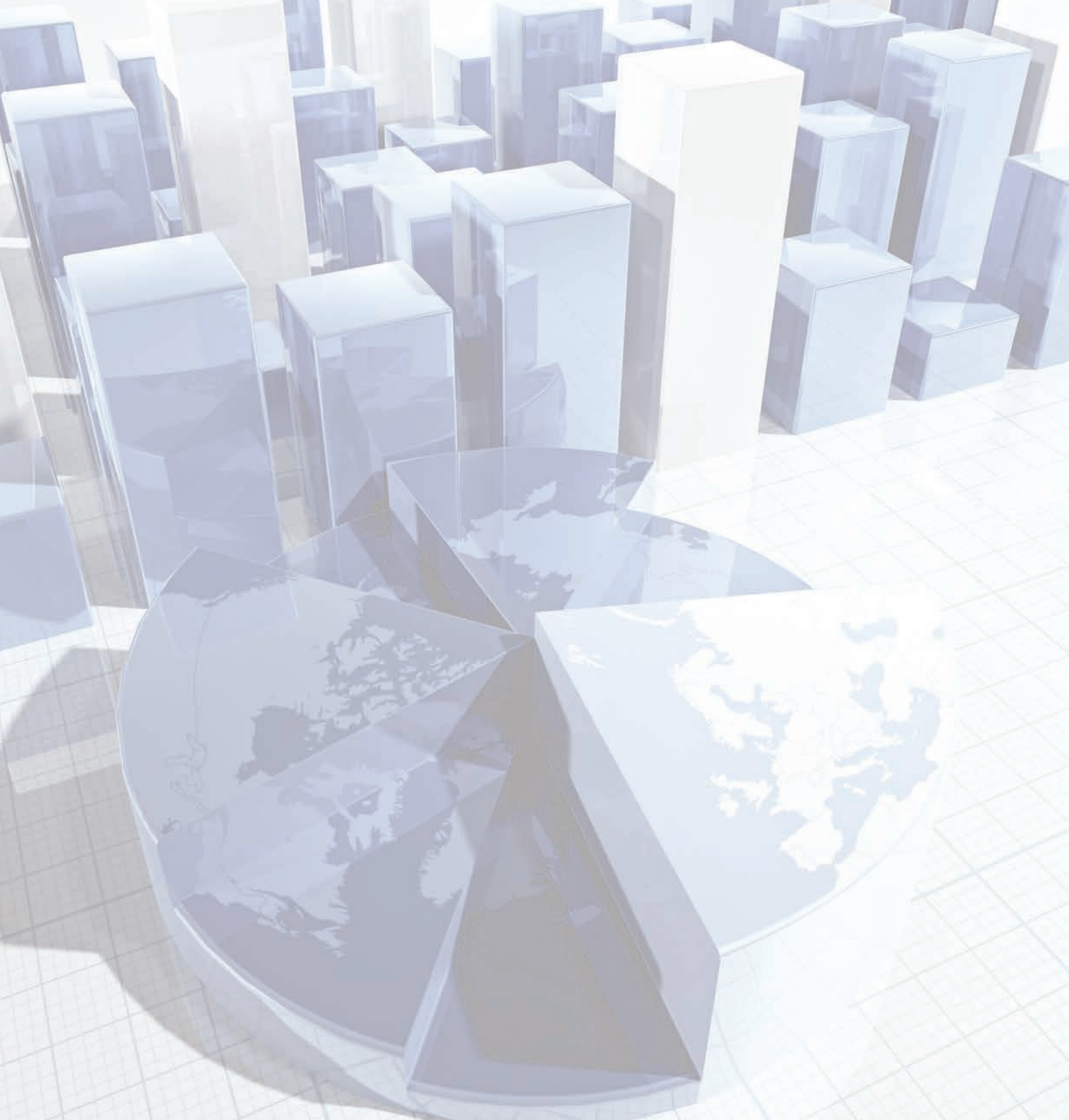
Finally, to incentivize universities to place greater focus on research activities more likely to lead to practical or commercializable products or services that benefit society and/or spur economic growth, the federal government should designate a small share of research funds to be allocated to universities based on their demonstrated prior success in both achieving technology commercialization and attracting industry R&D funds. Other countries have implemented similar policies. In Sweden, for example, 10 percent of regular research funds allocated by the national government to universities and university colleges are distributed using performance indicators. The United States should pursue a similar model to incentive universities to be more focused on ensuring that the technologies they help develop get translated into innovations that meet the marketplace.



# 3

## Appendix: Members of European Service Innovation Think Tank

Organisation	Country	Name
<b>EPISIS Partners</b>		
Danish Agency for Science, Technology and Innovation	Denmark	Thomas Alslev Christensen
Department of Business, Innovation and Skills	The UK	Allan Mayo
Finnish Funding Agency for Technology and Innovation	Finland	Anna-Maija Sunnanmark
Finnish Funding Agency for Technology and Innovation	Finland	Tiina Tanninen-Ahonen
Project Management Agency of German Aerospace Center	Germany	Thorsten Eggert
Vinnova	Sweden	Irene Martinsson (09/2009 -12/2011)
Vinnova	Sweden	Erik Borälv (01/2012-08/2013)
<b>Think Tank members</b>		
Austrian Research Promotion Agency/FFG	Austria	Marianna Karepova (09/2009 – 02/2010)
Austrian Research Promotion Agency/FFG	Austria	Annamaria Andres (03/2010 – 08/2012)
Enterprise Ireland	Ireland	Donald Black
Ministry of Education and Research (BMBF)	Germany	Ursula Zahn-Elliott (09/2009 – 08/2010)
Ministry of Employment and the Economy	Finland	Mikko Martikainen
Ministry of Industry, Energy and Communications	Sweden	Petra Thunegard Graberg (09/2009 -08/2010)
Ministry of Industry, Energy and Communications	Sweden	Lina Kager (09/2010 – 08/2012)
Ministry of Trade and Industry	Norway	Øystein Jørgensen
NL Agency/SenterNovem	The Netherlands	Wilbert Schaap
OSEO	France	Jacques Gautray
Public Agency for Technology	Slovenia	Metka Stare
<b>European Commission</b>		
DG Enterprise & Industry		Mette Quinn (09/2009 -05/2011)
DG Enterprise & Industry		Lisbeth Bahl Poulsen (06/2011 -08/2012)



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 **Tekes**