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DIRECTORATE FOR SCIENCE, TECHNOLOGY AND INDUSTRY
COMMITTEE ON INDUSTRY, INNOVATION AND ENTREPRENEURSHIP
COMMITTEE FOR SCIENTIFIC AND TECHNOLOGICAL POLICY

Draft Report on the Case Studies on Demand-Side Innovation Policies

24-25 June 2010

Delegates will find attached the draft report on the case studies on demand-side innovation. Delegates are invited to discuss and comment on the summary and case studies under Item 11 of the draft agenda. Following the TIP meeting, the case studies will be revised with a view to including them in the final OECD report on demand-side innovation policies to be submitted to the October meetings of the CSTP and the CIIE.

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SECRETARIAT NOTE

One of the objectives of the *OECD Project on Demand-Side Innovation Policies*, carried out by the Working Party on Innovation and Technology Policy (TIP) in co-operation with the Committee on Industry, Innovation and Entrepreneurship aims to inform policy makers on good practices for the design and implementation of demand-side innovation policies. Given the lack of quantitative data and literature on the topic as well as the fact that demand-side innovation policies, although not new, remain a policy area under development and experimentation in many OECD countries, the TIP Steering Group on Demand-Side Innovation commissioned a number of case studies from participating countries (12 in total). This report presents the summary as well as the individual case studies in the project. The case studies had five basic objectives as follows:

1. ***Categorisation of demand-side initiatives.*** Here the aim was to identify the types of demand-side initiatives used in countries from public procurement to standards policy and consumer education.

2. ***Identifying the policy rationale for intervening with demand-side initiative.*** Here the goal was to identify the variety of rationales that have been used or that may be used as well as to highlight the dangers of demand-side initiatives stifling innovation.

3. ***Determining what types of public and private demand are amenable to demand-side initiatives.***

4. ***Identifying key challenges that demand-side initiatives create for policy makers*** – Here the goal was for countries to highlight four or five high-level challenges –which may be the same for all demand-side initiatives or to particular types of programmes.

5. ***Identifying current good practices when creating and administering demand-side initiatives.***

SUMMARY OF THE CASE STUDIES

Countries	Insight gained/lesson learned
Australia Green Car Innovation Fund	▪ Technology neutral (*i.e.* any types of technology relating to the programmes' objectives is eligible for funding) concept of the Green Car Investment Fund programme can foster innovation in broader sense. ▪ Co-funding basis of grants is conductive to share a vision and to support technology development of industry to tackle global challenges.
Victorian Smart SMEs Market Validation Programme (MVP)	▪ MVP adopted the main components of U.S. SBIR programmes but aims to avoid the some weakness of the SBIR by providing the incentives through funding and enhancing voluntary participation. ▪ MVP is a pilot programme that will be funded for 4 years. Evaluation will be important for its operation over long timeframes.
Climate ready	▪ Hybrid policy design, which incorporates a number of policy instruments, should be considered.
Creative Commons	▪ Public Sector Information (PSI) can contribute to innovation and creativity with more access to PSI.
Belgium Flanders Action plan on Public Procurement of Innovation	▪ Action Plan on Procurement of Innovation (PoI), which adopts horizontally integrated approaches, can help government to identify demand and purchase needs and enhance commitment to innovative solutions from demand side. ▪ Innovation platforms can contribute to the involvement of stakeholders and exchange of information between demand and supply side through the process of decision making, market consultation and technical dialogue. ▪ The procedures for pre-commercial R&D should consider legal view point and be kept open and transparent in order to be non-discriminatory. ▪ Use available most optimal innovation policy instruments.
Denmark Danish Program for User Driven Innovation	▪ To uncover user- needs is not automatically followed by innovation as it takes time. ▪ Involvement of top management and cooperation across different sectors and business areas are identified as the main challenges of the programme.
Finland Funding for procurement of innovations in the public sector	▪ The funding instrument can be effective tool to find new innovative solutions procured by providing incentives. ▪ The funding instrument can contribute to emphasize life-cycle value instead of short – term initial investment cost. ▪ The promotion of innovation through public procurement raises a lot of challenges which cannot be tackled solely by funding instrument (*e.g.*, lack of long-term planning, insufficient resources, Risk- adverse culture etc). ▪ In procurement phase, it takes time to develop efficient market dialogs.
France Facilitating access to public procurement for innovative SMEs	▪ Meeting between Ministry of Economy and public purchaser helps to identify challenges that buyers sometimes faces. ▪ Safeguarding competition rules has been one of the major challenges in giving preference to SMEs procurement. ▪ The measure contributes to convergence of polices and procurement strategies and to new orientation toward SMEs and Innovation.

Countries	Insight gained/lesson learned
Japan Measures for a 'Problem Solving Country', Promotion of international standardization	▪ Innovation Strategies should be based on broader level and try to link other key policies such as economic, foreign, and social policies with STI policies. ▪ Demand side innovation polices can address global and social challenges such as climate changes and aging population. ▪ In a tight public fiscal situation, government can consider utilization of demand-side instrument such as regulation and standardization, which does not rely on financial resources, to promote innovation.
Korea Strategic Procurement Policy for Innovation	▪ Target system or legal binding can be effective tool for promoting procurement of SMEs innovation, rather than unbinding recommendation. ▪ Adopting Performance Insurance system and buyer immunity clause in SMEs procurement can contribute to mitigate risk aversion behaviour by reducing the burden of responsibility of procurer. ▪ The lack of quality verification and difficulty in repair and maintenance of a purchased product is identified as the main barrier of procuring SMEs products. Performance Certification System and Performance Insurance system can be a solution to these challenges. ▪ In the case of innovation by SMEs, managing the long value chain is challenging and requires various policy instruments combined to enhance linkages (*e.g.*, pre-commercial R&D programme linked with procurement, Public Private Partnership, venture capital fund).
Spain GTC as a case for Public Procurement	▪ Public procurement includes acquisition of diverse goods and services from the state of art technologies equipment to common goods and services. ▪ Large Scientific facilities can contribute to promotion of international partnership, support of regional development, creation of a demand for new and better instrument. ▪ Government can use the public procurement of large scientific facilities as a way to promote innovation by enhancing supplier capabilities and commercialization of technologies by spin-off creation.
United Kingdom UK example: Biometrics standardisation	▪ Standardization is a way to transmit and diffuse knowledge but access by SMEs is an issue. ▪ Standardization can do significant role related activities in creating and developing emerging technologies. ▪ Standardization provides significant economic benefits in U.K. (*i.e.* contribute £2.5bn to GDP & responsible for 17% of increase in labour productivity). ▪ Even though Standards development is a market-led activity, there is a role for government in supporting the standardization process especially in coordinating and making case for standardization in government.

1. AUSTRALIA

Tricia BERMAN, Matthew Squire, Department of Innovation, Industry, Science and Research, Australia

1.1.Case Study – Green Car Innovation Fund

Programme Description

1. In the World Environment Day Ministerial Statement on [insert date] 2008, the Australian Prime Minister confirmed this Government's commitment to helping Australian families and businesses make the transition to a low-carbon economy.

2. One demand side component of the Government response to climate change involves the development of more fuel-efficient transport, through a car industry that uses frontier technologies to increase fuel efficiency and reduce greenhouse emissions. Australia wants to have a smart car industry to make motoring both affordable to working families and with less negative impact on the planet.

3. The Green Car Innovation Fund provides AUD 1.3 billion over ten years (commencing in 2009-10) to encourage the conduct of research and development and commercialisation of Australian technologies to significantly reduce fuel consumption and/or greenhouse gas emissions of passenger motor vehicles.

4. The Fund operates as a competitive grants programme. Applications must rate highly against the programme merit criteria. Innovation Australia, an independent statutory body, does technical assessment and merit ranking of applications.

5. Grants are provided at a ratio of one dollar of Government funding for every three dollars of eligible expenditure contributed by the grantee, unless otherwise agreed on an exceptions basis.

6. Applications under the Green Car Innovation Fund are also required to address a project's commercialisation potential. This may be demonstrated in part by the applicant providing a realistic estimate of market demand

How does the programme support innovation?

7. The Green Car Innovation Fund supports the following eligible activities being undertaken in Australia: research and development; proof-of-concept activities; early-stage commercialisation; and, pre-production development.

8. The Fund aims to also enhance cooperation between businesses and/or researchers through supporting collaborative projects.

9. The Fund is a key part of the Australian Government's AUD 6.2 billion *A New Car Plan for a Greener Future*. Under the Plan, the Government will assist the Australian automotive industry to be ready for a low carbon future and to make the industry sustainably competitive with, and better integrated with, global markets and supply chains.

What are the main challenges to demand side-innovation policy that this initiative seeks to address?

10. The Government aims to make motoring more affordable to working families and less costly to the planet. The Green Car Innovation Fund seeks to encourage development and commercialisation of greener automotive technologies and solutions by giving funding assistance to competitive bids and thereby speed up responses by business to provide a greener future.

11. The Fund is consistent with Australia's international trade obligations.

12. Through the development and provision of cleaner and greener products in the sector the programme will lead to using cleaner technologies, resulting in an innovation demand pull-through.

Procurement issues

13. The Green Car Innovation Fund is not a procurement programme, although future government procurement may be influenced by competitively priced green transport options.

Implementation

14. The Green Car Innovation Fund opened on 24 April 2009. Applications for assistance under the Green Car Innovation Fund are assessed against five merit criteria which, address:

- the extent of the reduction in passenger motor vehicle fuel consumption and/or greenhouse gas emissions;
- the technical merit and extent and calibre of innovation generated;
- the capacity and capability of the applicant to undertake the project;
- the commercialisation potential of the proposed project; and
- the contribution of the proposed project to a sustainable and internationally competitive Australian automotive industry, and the benefits to the broader Australian economy.

15. Payments to grantees are subject to progress being made against contractual milestones.

16. Grants are provided to successful applicants on a 1:3 co-funding basis.

Regulation issues

17. The Green Car Innovation Fund is implemented under guidelines approved by the Minister for Innovation, Industry, Science and Research.

18. Assistance under the Fund is provided in the form of grants.

Standards issues

19. Standards are not a key mechanism for the programme. The Green Car Innovation Fund is not restricted to particular technologies. Indeed, the programme is to stimulate innovative thinking and novel concepts.

Evaluation

20. It is too early for evaluation given the Green Car Innovation Fund commenced on 24 April 2009.

21. Public consultation on the proposed structure and implementation of the Fund occurred between December 2008 and February 2009. In finalising the structure of the GCIF, the Government carefully considered the feedback provided by stakeholders.

22. The Committee providing oversight to the programme recently met to consider a number of policy and administrative issues regarding the programme. The Committee considered that the programme was appropriately targeted in directing investment in innovation within the industry, and felt that the industry had a relatively clear vision of its future. In addition, the programme structure is conducive to supporting the industry in seeking to invest in more fuel-efficient internal combustion engines, alternative fuels, electrification and light weighting to keep pace with technology development and in order to remain competitive.

23. The Committee firmly believed that the programme should remain technology neutral (*i.e.* any type of technology relating to the programme's objectives should continue to be eligible) to help foster innovation in the broadest sense.

1.2. Case Study - Victorian Smart SMEs Market Validation Programme (MVP)

The Smart SMEs Market Validation Programme (MVP)

24. As part of a series of innovation initiatives coin its Innovation Statement, the *Boosting Highly Innovative SMEs* (BHIS) programme was announced in August 2008 by the Victorian State Government (Victoria is one of eight state/territory governments in Australia). The programme commits AUD 40 million over four years and is administered by the Victorian Department of Innovation, Industry and Regional Development (DIIRD).

25. There are two sub-programmes in BHIS: the *Smart SMEs Market Validation Programme (MVP)*, AUD 28 million); and the complementary *Technology Commercialisation Programme* (AUD 12 million).

26. The aim of the *Smart SMEs Market Validation Programme* is to help SMEs to commercialise new IP knowledge and develop globally competitive technology and products and services for the marketplace. This is to be done by responding to Government technology requirements in areas such as service delivery that require new and innovative solutions, especially where there is likely to be an opportunity to apply them.

27. The MVP seeks to produce R&D proposals that deliver a solution to a technology requirement of the public sector. It will engage government and business to promote innovation through R&D, and test whether R&D support in a market situation can drive the commercial and client-based application of new and innovative solutions.

28. Structurally, it is a demand-led programme. It uses a 3-stage approach, engaging two stakeholder groups – public sector entities and SMEs. It differs from a traditional "supply side" grant programme in that it invites the public sector entity to describe its technology requirement(s), thereby becoming 'the client' in the programme.

29. The MVP is broadly modelled on the long running *US Small Business Innovative Research* (SBIR) programme and shares some policy components:

- It is based on 'challenges' or solicitations based on description of the problem rather than pre-determined solution specifications. It is a tendering and contractual scheme, not a grant scheme, pursued with the aim of 'pulling through' commercialisable solutions to real problems in public sector delivery or functions.

- It gives successful contractors experience in public sector contracts and relationships − regarded as a major factor in positioning new ventures towards being 'investor ready".

- It follows a milestone funding model, along venture capital funding lines, which allows for 'fast fail' decisions and systematic evaluation.

30. The MVP is tailored to reflect a particular need in the Victorian state public sector and has some key design differences to the SBIR programme. These key differences include:

- The MVP aims to encourage participation from public sector entities by providing funding through a central and independent agency (DIIRD). The SBIR programme, mandates that participating agencies use a percentage (2.5%) of their external R&D budgets for contracts with small firms to develop new technological products and services,

- DIIRD also undertakes extensive administrative work to support the participating agencies and SMEs, meaning that, participating agencies are not required to exclusively use their own human resources to manage the programme. The SBIR programme requires SMEs to undertake administration,

- the MVP is open to over 300 public sector agencies and organisations in Victoria, while the SBIR programme has 11 participating agencies.

- The MVP is open to SMEs with less than 200 employers, whereas the SBIR programme is available to companies with less than 500 employees.

31. The MVP uses a number of demand-side policy instruments that work together:

- It seeks to correct a failure (*e.g.* a focus on lowest cost) within the public sector by stimulating demand for innovative products and solutions from within public sector entities. It achieves this by providing funding and administrative incentives to encourage participation.

- It allows the private sector to generate solutions to address this demand through *a)* the creation of the market for innovative products and services, and *b)* the procurement mechanism.

- A key component of the programme is promotion. It is actively marketed to agencies and SMEs, who receive information about the opportunities and advantages of participating. As the public sector entities create the demand, there is considerable effort to engage them in the process, to build their confidence in the programme and to encourage them to participate.

32. The programme aims to develop a more innovative procurement culture across Victorian State Government agencies, and stimulate and support local companies developing innovative solutions. It also aims to deliver more efficient and responsive Government services. These aims will take time, energy, careful nurturing, and importantly, top-down support for the programme.

Programme application process

Stage 1: Technology Requirement Specifications (TRS)

33. Victorian public sector entities identify specific technology needs that are either currently not available in, or not being satisfactorily addressed by, the marketplace, and that will address a priority

agency requirement. Apart from the specified technology requirement, applications will be assessed for evidence of experience in project management and requisite resourcing within the prospective host agency.

34. Although it is not part of the selection criteria, the programmes internal selection processes encourage cross-agency solutions, or those that can be more widely applied. The proposals selected in Stage 1 are then released to the market through a Call for Proposal, inviting SMEs to respond with a proposal to undertake a Stage 2 Feasibility Study.

Stage 2: Feasibility Study

35. Responses to the Call for Proposal need to demonstrate that the proposed solution is innovative and will lead to new Intellectual Property (IP). Responses are assessed by DIIRD in conjunction with the host entity. The responses need to provide sufficient information to enable DIIRD and the host entity to select viable proposals for the Feasibility Study.

36. The successful SME (which may include collaborative partners) then receives a grant of up to USD 100 000 (funded through DIIRD) to undertake a Feasibility Study on the proposed project, with the SME required to report back to the host entity on the outcomes. The programme may offer some scope to fund more than one feasibility study for the same TRS.

37. The Feasibility Study report aims to provide the host entity with sufficient detail to allow the host entity, in conjunction with industry experts and DIIRD, to assess the report. It will address issues such as the scope of the R&D project, the principal place of conduct of the R&D project, the resources required to undertake the project, key milestones, key personnel, cost and financing of the project in the form of a detailed budget, risks, risk management etc, further mitigating participatory risks for the agency.

38. Where proposed R&D projects are found to be feasible (against key criteria) and offer value for money, the SME may then be invited to enter into a funding agreement with the host entity for Stage 3 Proof of Concept funding.

39. The SME will retain all IP rights in relation to the Feasibility Study, with the host entity generally retaining a licence to use the IP.

Stage 3: Proof of Concept

40. The SME is supported with programme funding of up to AUD 1.5 million over two years to undertake the R&D project to Proof of Concept and involves the working up of a new idea through design and testing.

41. Successful completion of the Proof of Concept stage will lead to a working demonstration of the technology solution within the host entity. The technology will be expected to meet the specifications and capabilities required by the host entity.

42. Once the host entity has accepted the developed technology solution, the R&D obligations under the programme are complete. However, reporting and audit requirements may continue past the delivery date for the technology solution – for example, final programme audit and evaluation reports.

43. Importantly, the SME will own the IP developed under the programme, and will be free to commercialise the technology as it sees fit, including any R&D and reporting information through the Feasibility Study and Proof of Concept stages. The Victorian Government (not just the host agency) may retain a licence to use the new solution.

44. Any pre-existing IP will be detailed in a schedule to the agreements signed prior to commencement of each of the stage of the MVP.

Progress to date

45. The programme has been actively marketed to public sector entities eligible to submit a TRS. A series of information sessions for SMEs and universities were also conducted. For demand side policy purposes, this strategy fulfilled a number of aims including:

- Signal to the market the government's intention to support innovation in the public sector;
- Provide information on the rationale and scope of the programme;
- Tap into latent (unmet) demand and build existent effective (consumption) demand.

Stage 1 – Technology Requirement Specifications (TRS)

46. Seventy four TRS were submitted by 27 public sector entities from a possible 300. These were shortlisted by a selection panel of industry experts and academics to 19 TRS from 11 agencies for Stage 2.

Stage 2 – Feasibility Study

47. A total of124 responses were submitted by SMEs, which were sent to the host agencies for assessment and selection. Shortlisted SMEs made presentations to host agencies in support of their proposals and to allow feedback and questions.

48. Eighty five (or 69%) of the SMEs indicated an intention to collaborate in the development of a solution. The MVP will give the host entities the capacity to encourage SMEs to collaborate. However, it was recognised that directing firms to develop a project collaboratively may be difficult to achieve in real world situation because of IP issues, competitive pressures, etc., and so this option was not included in the first funding round.

Stage 3 – Proof of Concept

49. The next steps are negotiated between the host entity and the SME, noting the SME maintains IP, and the Victorian Government may retain a licence to use the developed technology solution. This is similar to the SBIR and the US Government's thinking around IP.

50. The pilot MVP is expected to operate for 4 years and include two funding rounds.

51. The programme is currently at the beginning of Stage 2 of the first funding round, with SMEs currently undertaking Feasibility Studies. These are expected to be finalised around end of April 2010.

Demand side participation

52. DIIRD has collected information on participating SMEs and characteristics from the programme to date (firm size, annual turnover, collaboration efforts, sectors and location) (see Appendix 1). Notable trends in these figures are the high levels of intended collaboration for the proposals (Fig 1) and the high representation of SMEs with less than 7 employees (micro SMEs) (Fig 2).

Fig 1 MVP Intended Collaboration

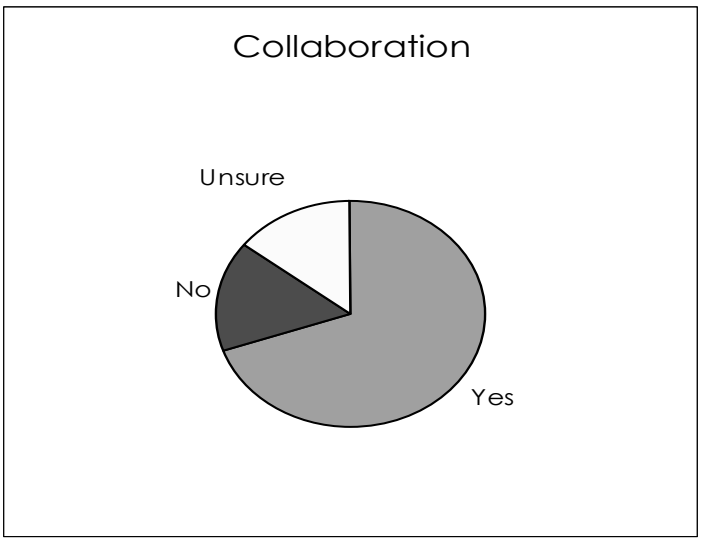
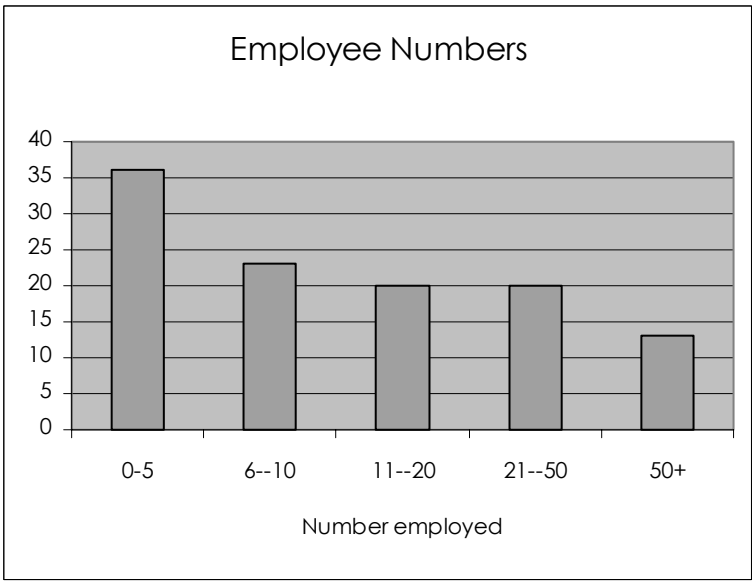
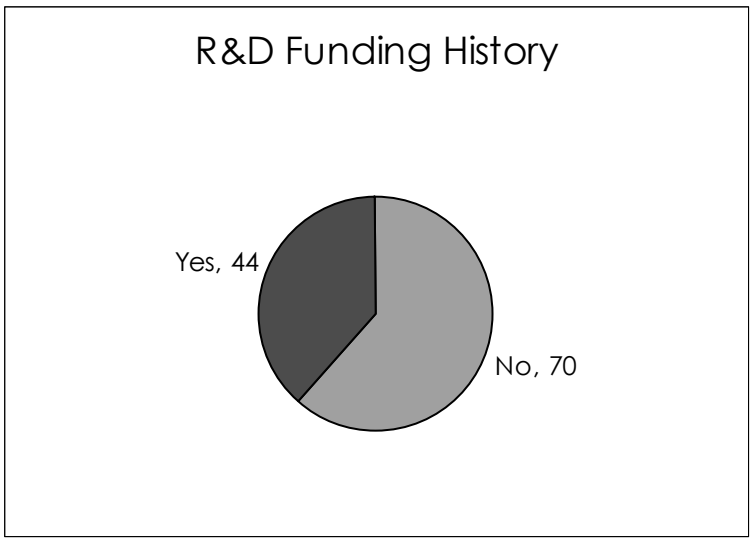


Figure 2 MVP SME Employee Numbers



53. The data also shows a relatively high number of proposals received from SMEs with no prior R&D funding history (Figure 3). This is potentially very significant, as it is important to draw 'new companies' into the innovation system. It is therefore worth exploring in the future to what extent this programme has supported the entry of "new" players.

Figure 3 MVP SME R&D Prior Funding History



54. There also appears to be a noticeable trend in participating agencies, with larger entities that have formal innovation plans and strategies being 'ahead of the pack'. They are better placed to recognise and describe their needs and so developing successful TRS. They also tend to be more open to procure outside the traditional (and lengthy) tender process. There is a risk that the programme will assist agencies that are already innovative, thereby achieving little in terms of driving cultural change or building innovative capacity in less innovative agencies.

55. The MVP has no current strategy to assist low or non-participating agencies to develop or improve their capacity to successfully participate in the programme. However, an evaluation has not yet been undertaken. Case studies developed as part of this evaluation may highlight any policy gaps including better assistance to low innovative agencies.

Promotion and administration

56. A targeted marketing campaign and information strategy was undertaken by DIIRD for SMEs, universities and government agencies, recognising that raising awareness of the programme was important to the programme's success.

57. The MVP was marketed as attractive to agencies because selected projects are fully funded, substantially mitigating risk for them. In addition, the MVP team within DIIRD does most of the administrative and support work, including providing standard contracts and general legal advice, thus minimising the administrative burdens for participating agencies. The programme also aligns with the current public sector regulations around sole (direct) sourcing and IP management.

58. For SMEs, the programme's attractive elements include: the funding is provided so that the SME's does not need to seek outside funding to develop the solution, it enhances the future ability of a successful company to attract venture capital, and all IP developed during the programme is retained by the SME

Collaboration

59. SMEs who applied to the first round of the MVP are heavily engaged in cooperative projects, with two thirds indicating collaboration with another SME, a university or other research facility (*i.e.* approximately 82 SMEs are already collaborating). Information sessions emphasised collaboration in the development of successful solutions. However, collaboration was not included as a weighted criterion within the selection process. This is also the case for the US SBIR programme, which does not require collaboration.

60. The MVP includes additional ways to encourage collaboration, including an online forum with a match-up facility. This is a message-board style online system where SMEs can call for collaborating partners.

61. In Round 1 of the MVP, the online forum was well subscribed by messages and requests from SMEs, research institutes, and others who may provide assistance to the programme's participants (*e.g.* IP legal advice, business planning and consultancy), leading to improved proposals and the creation of a collaborative network.

62. The online registration system, available through the MVP website, has collected information on over 700 SMEs for the MVP database. There is a customer relationship management system that will be useful for providing contact information, and for identifying capabilities.

63. The SBIR programme, despite the close connections between leading personnel across departments, develops very limited collaboration. The potential for generating cross-departmental topics and projects has not been followed up. That the SBIR programme has no central or standard application process, with some Departments having online applications, and others relying on hard copy and email.

Impact on government agency budgets

64. It has been suggested that some agencies submitting TRS were also generally seeking grant funding through other sources on a regular basis, and the programme is seen as an additional source for funding. While clear conclusions about this behaviour are difficult to make, policy designers seeking to integrate this type of programme with others need to emphasise the importance of additionality, and ensure public monies are spent judiciously.

65. The MVP only pays in arrears and only on successful completion of agreed milestones, helping to ensure public monies are spent judiciously.

66. Pending the completion of an evaluation, the question around sustained additionality and impact and whether agencies would have chosen to invest in these projects anyway is difficult to establish. However, given the overall high response rates from agencies, it is clear that the intent of the MVP to remove risk barriers to innovation has struck a chord with the target agencies.

Evaluation

67. The MVP is currently in the process of establishing measurable Key Performance Indicators, and criteria to evaluate success.

68. It is important to establish clear outcomes for policy initiatives around demand that recognise the inherent difficulty in striking a balance between a risk averse public sector (with the requirement to ensure public monies are spent correctly) and innovative procurement. Also important is the circulation of guides and training programmes for public sector employees.

69. Programme success will be based around the ability of the SMEs to successfully build solutions for their government clients, and also on the overall level of government agency commitment to engage in the MVP and consider innovative procurement methods.

70. A weakness of the SBIR programme, which the MVP will need to avoid, is the lack of systematic collection of SBIR project data. Although a small number of private companies undertake data collection and analysis, often for individual Departments, the Federal agency overseeing the SBIR programme relies on individual Departments to provide data for annual reports to Congress.

71. However, a number of studies exist that may provide guidance for the development of future MVP success metrics. These include:

- Joshua Lerner's (Harvard Business School) analysis showed that the SBIR SMEs created five times as many jobs as non-SBIR SMEs over the period (26 jobs per firm as compared with 5 or 6 per firm -).

- This analysis also showed, a wide variety of impacts on companies with some examples (such as Genentech) showing that one or two awards received while a business is still an SME can be quickly followed by rapid growth, financed by venture capital and an IPO.

- In other cases a stream of awards helps stimulate the slow and steady growth of niche players employing a few hundred people each. In other cases, successful companies become absorbed by larger public corporations (thus making it difficult to measure the ultimate economic impact).

- Even SBIR-funded companies that never get beyond doing R&D can provide a training ground from which more ambitious and commercially aware managers can step out to start their own firms.

- A review of 50 National Science Foundation award winners showed that additional sales of AUD 2.2 billion were directly attributable to technology developed under SBIR funded projects. Their employment had grown from 527 to 11 500.

- The fact that agencies had responsibility for topics for potential projects, application assessment, project monitoring, and take-up of the final product has meant that the projects undertaken are closely aligned with the requirements of the agency, and the final product in focussed on providing a solution to that requirement.

72. In light of its current work around demand side policy development and evaluation, the federal Department of Innovation, Industry, Science and Research (DIISR) has indicated its interest in working with DIIRD in the development of a metrics framework.

Outcomes

73. The MVP is designed to encourage the development of new technology based solutions for broad based application. Through its selection processes, the programme encourages cross-agency solutions, and it is expected that over the medium to long term, the MVP will encourage a more innovative purchasing culture among public sector agencies.

74. The public sector entity TRS and the strong response from SMEs reflect the awareness of, and willingness to produce, innovative solutions. Round one of the MVP contains a number of examples of multidisciplinary approaches including:

- Postural Biofeedback Device for lower back pain (Melbourne Health): a device that requires complementary software or technology back end system to feed information back to the host entity and an ongoing monitoring and process improvement system.

- Electronic Monitoring of High Risk Offenders (Department of Justice): to develop a technology solution to meet the demands for constant monitoring of high-risk offenders to ensure compliance with their release. Technology solutions may include biometrics, facial recognition, handwriting identification, DNA matching, GPS and behaviour recognition software

- Automated Biophony Sensor Station (Department of Primary Industries): to develop low cost automated biophony sensor stations to monitor for pests and biodiversity in forests, crops or orchards.

- Railway Crossing Warning System (VicRoads): to develop and demonstrate an innovative road railway level crossing safety system that can be cost effective and potentially deployed across the State of Victoria. This seeks a radio break-in solution that will transmit across the vehicle's radio system and potentially any other audio device *e.g.*: CD, MP3 etc to deliver a warning that a train is approaching as the vehicle nears the railway crossing.

75. At this early stage of the MVP, it is difficult to predict how many Feasibility Studies will progress to the Proof of Concept stage. As an indication, the SBIR programme progresses about 40% of Feasibility Studies to a Proof of Concept stage.

Concluding remarks

76. The MVP has been deployed to complement the Victorian *Technology Commercialisation Programme*, a traditional supply side grants programme that seeks, in part, to capture the solutions developed by SMEs for the MVP and commercialise them in the marketplace.

77. The public procurement aspect of demand-side policy is one of the least understood areas of innovation support. The evaluation of the MVP will feed into future demand-side policy initiatives, particularly within the Australian context.

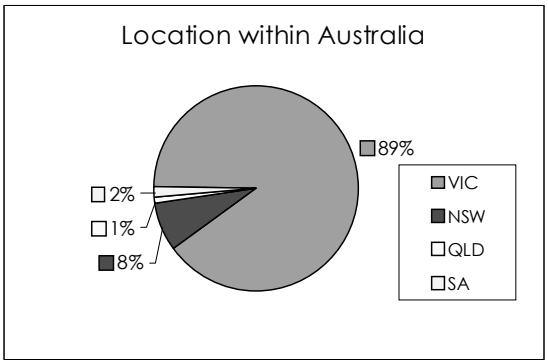
78. This programme is a pilot that will be funded for 4 years, at the conclusion of which an extensive evaluation will be conducted. A key outcome from the recent demand-side conference is that for policy to work, it must be consistent and operate over long timeframes. As such, it is important that the evaluation of the MVP (and other introduced programmes) recognise that some effects of the programme may not have been felt at the time of evaluation.

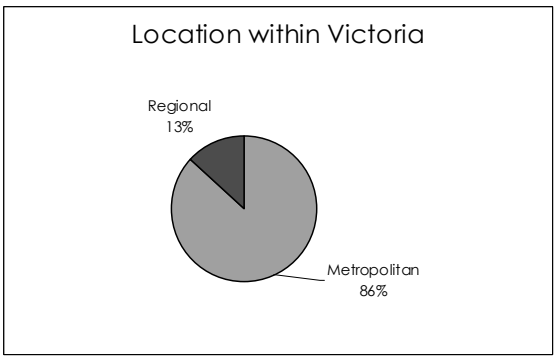
APPENDIX 1

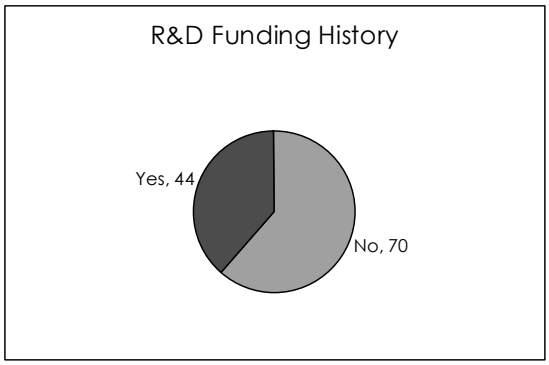
MVP ROUND ONE-KEY STATISTICS

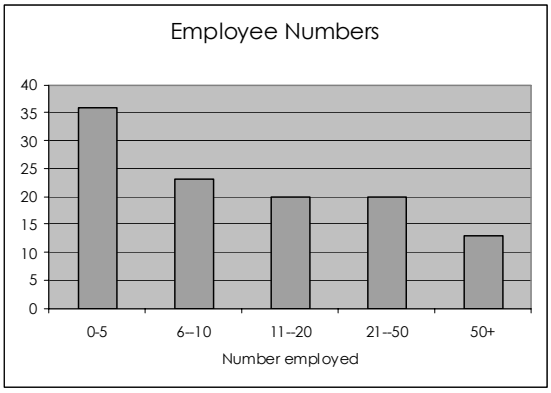
Proposals

Call for Proposal statistics - August 2009
Total Proposals Received: 124

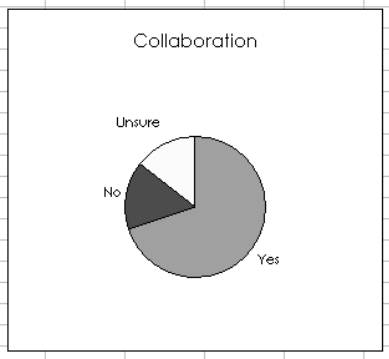


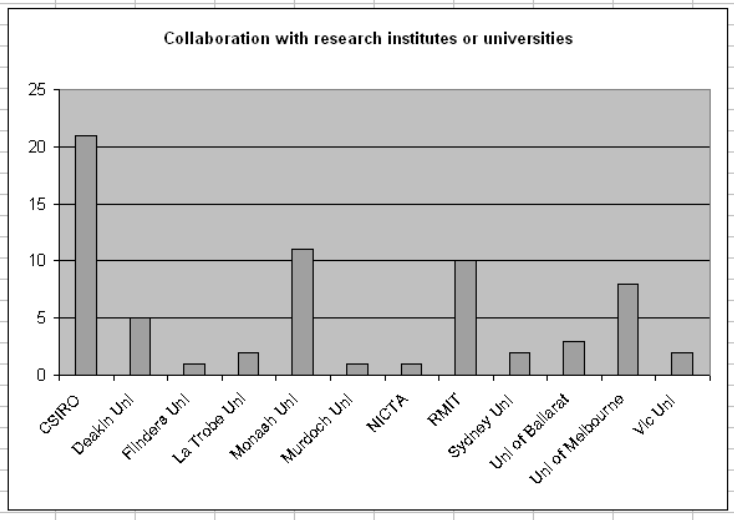




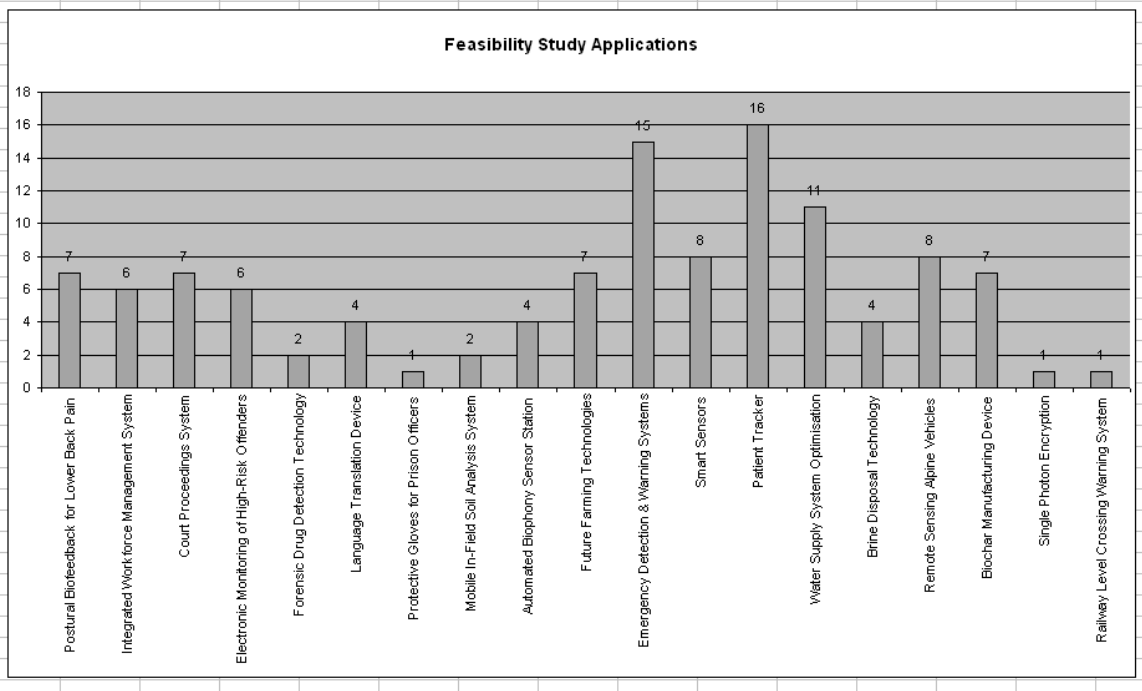


Call for Proposal statistics - August 2009
Total Proposals Received: 124

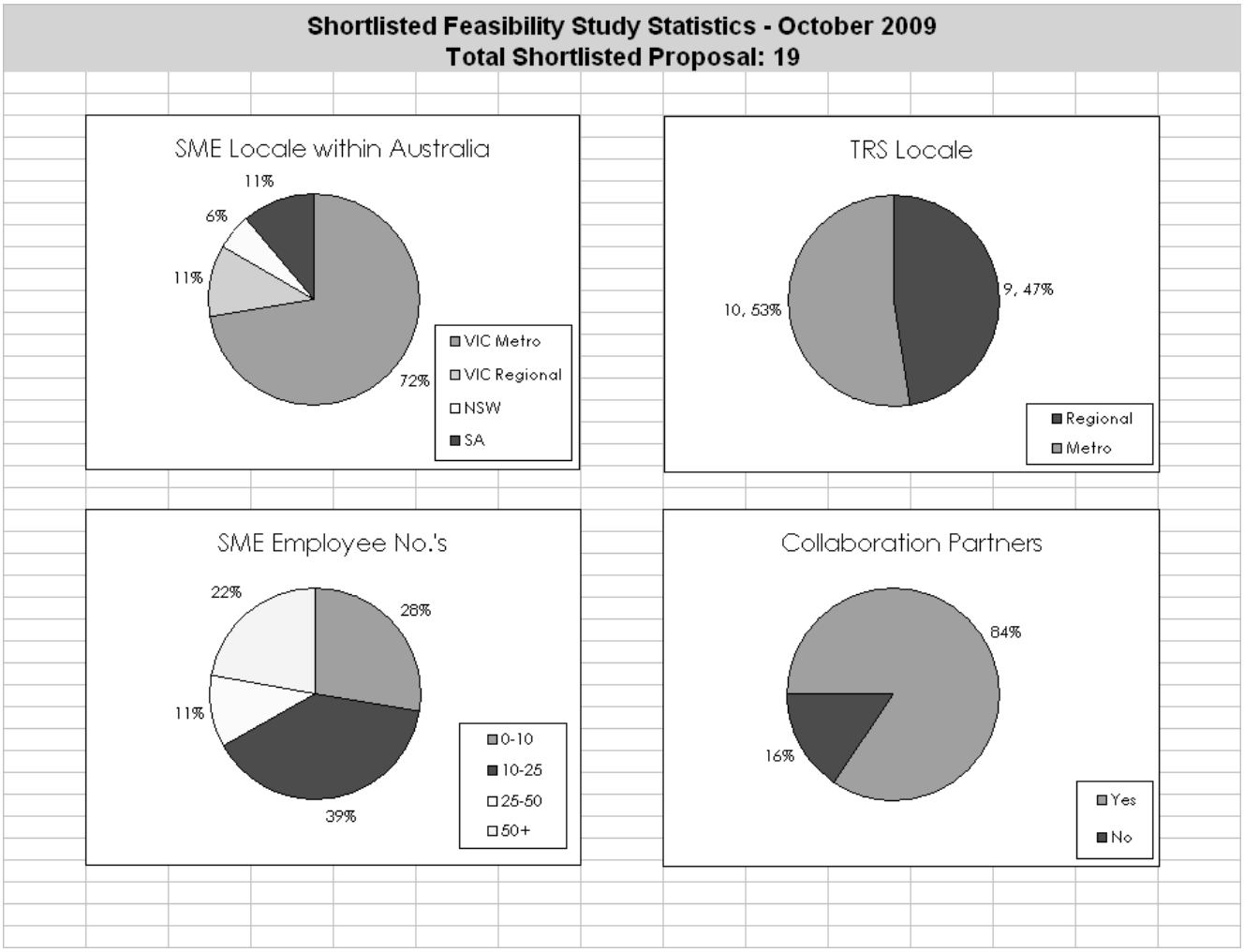




Call for Proposal statistics - August 2009



MVP Key Statistics-Shortlisted Proposals



1.3. Case Study : Climate Ready

Programme Overview

79. The Australian Climate Ready programme provides small and medium sized enterprises with support to undertake research and development (R&D), proof of concept and early stage commercialisation activities to take action to develop clean, green technologies, processes and services and respond to the effects of climate change.

80. At the strategic policy level is stimulating a market for technological and other innovative solutions to the challenge of climate change.

81. It also aims to stimulate technological solutions through partnerships with businesses, industry and research institutions.

82. It is not a 'traditional' supply side grants programme because the key policy intent is to generate demand for the development and procurement of new solutions to tackle climate change.

83. Projects that can be funded include a broad field of applications, for example, from water recycling and small scale renewable energy technologies; to products/processes/services to monitor emissions or power use; biotechnology or nanotechnology to address the effects of climate change on people and the environment; and green building materials for energy efficient homes.

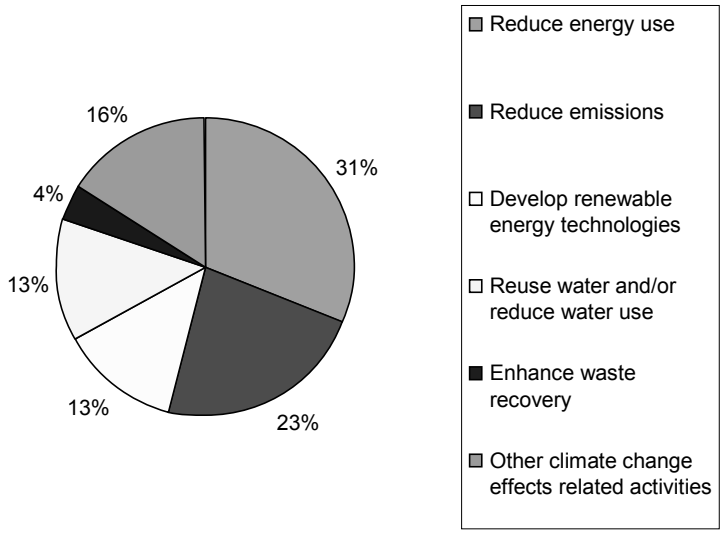
84. The programme incorporates a number of demand-side instruments to promote higher technical standards (gained through the commercialisation and diffusion into the market), and prizes (funding awards).

85. Longer term benefits from the programme are expected to be generation of a market for climate-friendly technologies, products, processes and services. The programme offers co-funding (50/50) to successful applicants, lowering the cost to organisations seeking to develop climate change solutions.

86. The programme targets small business, as well as companies controlled by universities (spin-offs) and public sector research organisations.

Results from the first application round

Content areas of successful Applications



Distribution of activities for successful applications

Type	Number of successful applications	Value (approximate)
R&D	6	AUD 7.3 million
Proof of Concept	4	AUD 1.4 million
Early Stage Commercialisation	2	AUD 3.5 million
R&D and Proof of Concept	30	AUD 22.4 million
R&D and Early Stage Commercialisation	2	AUD 1 million
R&D, Proof of Concept and Early Stage Commercialisation	53	AUD 35.9 million
Proof of Concept and Early Stage Commercialisation	5	AUD 4.6 million
TOTAL	**102**	**AUD 76 million**

Successful applications by innovation type

Type of innovation process	Number of successful applications	Value of successful applications
Product	60	AUD 35.3 million
Process	8	AUD 9.7 million
Service	1	AUD 0.4 million
Product and Process	18	AUD 17.6 million
Product and Service	4	AUD 2.6 million
Process and Service	2	AUD 4.1 million
Product, Process and Service	9	AUD 6.2 million
TOTAL	**102**	**AUD 76 million**

Climate Ready supports projects targeted at both mitigation of climate change and adaption to the effects of climate change.

Mitigation and/or Adaptation	Number of projects	Value (approximate)
Projects focused on mitigation	62	AUD 51.2 million
Projects focused on adaptation	16	AUD 6.4 million
Projects focused on both mitigation and adaptation	24	AUD 18.2 million
TOTAL	**102**	**AUD 76 million**

Climate Ready applicants represented a broad range of Australian and New Zealand Standard Industrial Classification (ANZSIC) sectors.

Division	Description	Number of successful applications	Success rate
C	Manufacturing	55	41%
M	Professional, Scientific and Technical Services	13	20%
A	Agriculture, Forestry and Fishing	9	40%
B	Mining	7	63%
D	Electricity, Gas, Water and Waste Services	6	18%
E	Construction	4	22%
F	Wholesale Trade	4	57%
I	Transport, Postal and Warehousing	1	100%
J	Information Media and Telecommunications	1	9%
L	Rental, Hiring and Real Estate Services	1	100%
S	Other Services	1	100%

87. This data represents the ANZSIC breakdown of Climate Ready applicants a breakdown of the project outcome. For example an applicant classified as a manufacturing SME may undertake a project where the end outcome (such as a monitoring system for emissions) is a service rather than a manufacturing output.

Challenges for policy makers

1. Evaluation

88. Evaluation of the programme is essential to show if the programme is having the desired effect and if (and what) changes may be required. Evaluation should focus on the impact on firms participating in the programme (*e.g.* in skills, turnover, exports, etc.) to find out the firms are benefiting from the programme. Measuring the direct success of projects and the level of innovative solutions resulting from the programme will require reporting against customer's pre-project assessment and measurable targets. Measuring the mid- and long-term environmental, economic and social outcomes of the programme is problematic, but is essential to show if the programme is having the desired effect.

2. Governance

89. Successful applicants enter into an agreement with the Australian Government to receive grant funding. Compliance requirements are set out in the agreement. Innovation Australia, an independent statutory body, undertakes the technical assessment and merit ranking of applications through one of its Committees.

3. Communicating the demand

90. Raising public awareness of both the issues around climate change problems and the need for solutions, and the existence of this and other programmes geared to help companied develop solutions.

Mechanisms

91. Climate Ready drives innovation though:

- The technical solution presented in the application being assessed against five equally weighted criteria of; management capability; commercial potential; technical strength; national benefits; and impact of funding on project outcomes. This will ensure the most innovative projects are supported that would not normally proceed without assistance.

- The programme also recognises that innovation is risky and seeks to reduce technical and commercial risks by providing co-funding.

- Finally, the programme itself signals to the market that new, innovative products and services in the climate change space are being produced.

Value of the initiative

92. The Climate Ready programme provides value through the stimulation of business action to generate new ways to reduce the effects of climate change.

Evaluation

93. Key Performance Indicators (KPIs) have been identified for Climate Ready to assess the performance of the programme against its key objective, which is, to support SMEs in the development and commercialisation of innovative products, processes and services that address the effects of climate change.

94. To assist in measuring success, targets for the KPIs have been identified.

- 70% of completed projects are technically successful.
- A measurable improvement by SMEs from their participation in the programme in a range of outcomes in areas including:
  - research and development expenditure;
  - staff developing commercialisation skills;
  - size, number of employees or turnover of SMEs;
- A measurable improvement in the innovative capability, international competitiveness and productivity of SMEs participating in the programme relative to the general industry population.

95. Assess longer term outcomes of the programme such as:

- Progress towards firms achieving project-specific targets and outcomes to address the effects of climate change.
- Increase in innovations by SMEs participating in the programme to address the effects of climate change.
- Customer service levels greater than 85% satisfaction.

96. At this time, only 3 projects have been completed, not enough for any solid conclusions around programme effectiveness to be made. All projects are scheduled for completion by 2011/12, when a more thorough evaluation will be done.

1.4.Case Study – Creative Commons (Victorian Public Sector)

Access to Public Sector Information

97. Information is a valuable resource that underpins innovation activity. Access to information can influence the availability of, and the demand for, innovation at the industry and individual level. Barriers to information can hinder the innovation process, reduce efficiencies and diminish social outcomes. Governments can assist innovation by reducing or removing any barriers to accessing information and this includes information developed through the operation of government.

98. Public Sector Information (PSI) – information generated by governments – is a valuable resource and where appropriate should be available to the public unless there is a good reason for confidentiality.

99. The 2009 *Inquiry into Improving Access to Victorian Public Sector Information and Data*[1] undertaken by the Economic Development and Infrastructure Committee of the Victorian State

[1] http://www.parliament.vic.gov.au/edic/inquiries/access_to_PSI/final_report.html

Government, found that Creative Commons licences could be applied to up to 85% of PSI. This illustrates the possible scale and significance of the contribution that governments can make to creativity and innovation.

100. The 2008 *Review of Australia's National Innovation System*[2] recommended that Australian governments adopt international standards of open publishing as far as possible, and that material released for public information by Australian governments should be released under a Creative Commons licence. The review saw benefits to making such content available and noted that there are many ways in which others could use the information. It also recommended that Australia should maximise availability of government funded information as it would benefit both Australia and other countries.

101. This view was supported in the Australian Government 2.0 Taskforce's December 2009 report, *Engage: Getting on with Government 2.0*[3]. It highlighted the need for the Australian Government to make public sector information open, accessible and freely reusable, with the administrative burden reduced through the use of the Creative Commons BY standard. The report recommended that this approach be taken at all levels of government; federal, state, territory and local.

102. Moving to improved access for those outside government to public sector information will possibly involve reforms that may pose challenges to some government agencies. This is because Australia does not have a developed tradition of government disclosure of fundamental data, and making such data freely available to the wider citizenry will require changes to the way it is managed by government agencies.

103. There are materials to assist in the process of making public sector information more available. For example, *'Open Access Policies, Practices and Licensing: A Review of the Literature in Australia and Selected Jurisdictions*[4], identifies useful findings from an extensive review of published materials dealing with policies, practices and legal issues relating to information access and reuse, with a particular focus on materials generated, held or funded by public sector bodies.

104. The Victorian State Government has committed to open access as the default position for the management of PSI and will commence development of an Information Management Framework in 2010.

105. The Victorian State Government will support the release of PSI for re-use with the objective of increased commercial activity, access of primary data to researchers in all disciplines, and increased transparency of government.

106. The Australian Government has already released some documents under a Creative Commons license, and is currently finalising a response to the Government 2.0 Taskforce report.

2 http://www.innovation.gov.au/innovationreview/Documents/NIS_review_Web3.pdf

3 http://www.finance.gov.au/publications/gov20taskforcereport/doc/Government20TaskforceReport.pdf

4 http://eprints.qut.edu.au/28026/1/c28026.pdf

2. FLANDERS ACTION PLAN ON PUBLIC PROCUREMENT OF INNOVATION

Ms. Hilde VERMEULEN, Flemish government Economy, Science and Innovation, Belgium

Rationale and policy objectives

107. Public Procurement of Innovation is defined as the purchase of innovative products, services or processes through public demand with the aim to improve the performance and functionality of public services and to solve important socio-economic challenges. This purchase might include research and development in order to prepare a future commercial purchase: this exploratory phase is called pre-commercial procurement (PCP).

108. Public Procurement of Innovation is a recent demand driven policy instrument that attempts to bring companies and government together to cooperate on innovative solutions for major societal challenges such as *e.g.* ageing, mobility, health care, digitalising, etc. Public Procurement of Innovation (PoI) is characterized by two policy dimensions: (a) **regulator role** of the government ensuring fair competition and transparency and finally resulting in cost savings and (b) the **strategic role to stimulate innovation** allowing the government to exploit core competences of Flemish firms, to boost their innovation strengths and to build up capacity to respond to the new societal challenges resulting in efficient service provisions in the market. The government is the first receiver of innovative solutions and the society can be supplied by products with *e.g.* better eco-design in some lead market areas.

109. Although a lot still needs to be unravelled in this field, the innovative procurement instrument should become a full part of a balanced innovation policy mix strategy. Procurement of Innovation serves as an additional tool next to subsidies and fiscal schemes contributing all to the 3% Barcelona target, both stimulating the innovation potential of the industry and increasing the R&D public expenditures. This way, companies are supported to provide the solutions better tailored to governmental needs. A government that acts as a first launching customer allows to facilitate market creation or take up.

The Pilot in Flanders

110. The Flemish government approved in July 2008 an **Action Plan on Procurement of Innovation (PoI)**. In this plan the government focuses on procurement of Innovation that needs a pre-commercial R&D phase. This new and unique scheme aims at horizontal integration in the innovation policy mix whereby the government buys innovation of companies and knowledge institutes across the various policy domains.

111. In order to test this integrated approach, the innovation agency IWT has been mandated to operate the pilot scheme. The budget earmarked for the pilot scheme on **pre-commercial procurement** amounts to maximum EUR **10 million** over two years for the first cases. Budgets are foreseen to be in function of share of governmental purchase budget because relative shares as target are better enablers for innovation and budgets are foreseen to be recurrent. Priority is given to projects with substantial co-financing coming from the policy domains.

112. The target groups for the innovative procurement instrument are in Flanders **13 policy domains**. Each policy domain has been allocated EUR 1 million to set up a pilot. The policy domains handed in till now 48 project proposals. 15 have been selected. Innovation platforms had been set up for the selected projects. The first recently launched pilot came from the cultural sector with a digital book platform. Four

others are in the pipeline: eye screener for young children, a leisure infrastructure and culture information system, ICT in health care and a personal development plan for citizens.

Key role of the innovation platforms

113. To make the pre-commercial R&D phase work, **innovation platforms** are established (for an indicative period of 6 months) for market consultation and technical dialogue between the procuring government services, knowledge centres and companies. These innovation platforms will play a key role in the fine-tuning of the building blocks of this new instrument. These Innovation Platforms must allow a maximal exchange of information between demand and supply side so that companies are getting acquainted with know-how from the ministries and the most optimal instruments can be used. These innovation platforms are important interfaces for alignment of strategies between public and private sector.

Starting with a master plan

114. A knowledge centre of innovative procurement has recently been established in IWT. The centre developed a methodology which is currently in the validation phase with the launch of the first innovative procurement project. In the methodology, first **a master plan** is designed: starting from the identified challenges in the policy domains, the **future desired outcome** is explored and checked against the state-of-the-art knowledge. Actual available solutions to the proposed problem are presented on the innovation platforms. The master plan serves as basic input for the innovation platform bringing both public and private stakeholder organisations together for dialogue and for the **translation into technical specifications** as well for defining the limitations of the actual solutions.

115. In a first stage, the innovation platforms assess the available instruments -either **subsidies or procurement**- on their effectiveness in view of reaching the desired outcome as expressed in the master plan. Opportunities of using the innovative procurement are benchmarked against the possible use of other instruments. The platform confirms whether the procurement is best suitable instrument to provide the innovative solution. In this process, IWT supervises and facilitates the innovation interest of the project.

Innovation trajectory

116. Afterwards, the innovation platform positions the innovative proposal in its innovation trajectory and decides on whether the procurement form should be either **pre-commercial** (when the project requires further R&D) or **commercial** and as well whether other policy instruments might be complemented (*e.g.* need of strategic basic research, R&D, additional tax measures) in order to optimise the payoff of the investment. The innovation trajectory consists of the subsequent phases: concept, feasibility, prototype, pilot, integration/adaption and diffusion. From the **integration** phase on, the **commercial procurement** procedure is applied.

117. In case of pre-commercial procurement, a **co-financing scheme** is introduced for the risk benefit sharing between government and companies. Allocation to more than one actor is possible. At the moment no co-financing rates are fixed. The pilot experiences will further provide more insight and guidance into optimal co-financing balance. **Fair competition treatment and good governance** are key principles taking into account the necessary confidentiality among the partners participating to the platform and the focus on innovative character as grant criteria.

118. A project requiring further **R&D** falls out of the scope of the law of government procurement unless the services are fully paid for by the procuring government (in case of no co-financing) and the results are fully attributed to the procuring government (full transfer of IPR). There is not yet a specific legal framework for pre-commercial procurement in Europe nor in Belgium. After the pilot of the new scheme it is envisaged to notify the new scheme in Flanders to the European Commission.

Procedure

119. In short, the government (the policy domains) identifies current and future challenges. On this basis, concrete projects are selected. For each selected project, an innovation platform joins efforts to look for an innovative solution to the challenge. In the first phase, a **project description** (1a) is provided with the **possibility to apply** (2) for participation on the innovation platform (call for participation). Publicity of the innovation platform should be **as broad as possible** to ensure openness and transparency. The results of the innovation platform serve as basis for the decision on R&D or commercial procurement procedure. The platform starts with a kick off meeting (3a), where an overview of the state of the art knowledge (3b) is given. Dialogue (3c) and public market consultation (3d) must lead to the decision on the follow up trajectory (4): in case of pre-commercial procurement (5a), different participants are selected for R&D (5b). Each of these participants builds a prototype (5c) that is delivered to the government for test purposes (5d).

120. After **completion of the research phase**, the government initiates the commercial **procurement procedure** for the implementation on large scale of the innovative project (publication, procurement documents) (6a, b). This phase is according to the current procurement rules: fixed price, fair competition treatment, procedure following the most economically advantageous tender (MEAT).

Operationalisation for innovative procurement: steps

1. Activation: Project description
    a. call for participation
2. Innovation platform
    a. kick off
    b. state of the art
    c. dialogue
    d. market consultation
    e. conclusion
3. Decision follow-up trajectory
4. Pre-commercial procurement (pre-procurement)
    a. publication
    b. selection participants
    c. R&D phase
    d. Deliverable
5. Procurement
    a. publication
    b. procuring documents

121. The first innovative procurement project has recently been launched by the Government Agency of Socio-Cultural Work. The non-profit organisation **Bibnet** established by the Flemish government (that already manages bibliotheek.be) applied for the innovative procurement tool to set up an **e-book platform in Flanders (VEP).** As they will be developing technology and infrastructure to give access to content of Flemish books through new digital media, the procuring government decided on pre-commercial procurement to make a prototype that will be worked out in cooperation with the major stakeholders: ICT

companies, libraries and editors. The ministers of Innovation and Culture invested EUR 500 000 to develop the digital platform for a permanent and secure inventory of digital editions in function of the exploitation by editors, book traders, libraries and content collectors, etc. as a partnership between the Flemish government (for the public libraries) and the commercial editors.

122. The challenge for the innovation lies in the infrastructural provision whereby import, inventory, exploitation are integrated with security issues with regard to the content as well as of process transparency and open facility (full text search,…). Different functionalities are integrated in the prototype: *i)* digital inventory of books and related metadata; *ii)* full text indexing and secure search in the inventoried content *iii)* exploiting the inventory contents (for e-commerce objectives). The platform envisages an import module to load up the digital book and also an inventory module in a sustainable and secure database, an archiving for future cultural heritage related centre, and a coding module to produce different formats.

123. The proposal fits within the goals of the Flemish government: the digital action plan to bridge the digital gap in society. Flanders' editors are not all able to digitalise their production chains. The high cost could imply that editing remains restricted to the major multinational players. The international aggregators like Amazon, Google books, Apple stores, Bertelsmann Online are offering all-in Anglo-Saxon packages where Flanders or Dutch content and services are not included. It is important to exploit the Flemish collection in the future and to create a sustainable and dynamic e-culture landscape in Flanders to respond to changing roles in a digital context: development of new applications for e-readers. The government can give impulse finance to a risk investment that public libraries or private partners cannot realise on its own. This initiative allows the government to monitor and regulate the patterns for public-private partnerships for the Flanders book production with 7 000 titles each year on a total of 24 000 Dutch-speaking titles. Eligible partners for this call should have expertise and be experienced in ICT implemented libraries. Budget varies EUR 250 to 400 000. 38 companies and 8 knowledge institutes incl. universities registered on the website for the innovation platform e-book. The government aimed at realising a technical platform that results in an operational prototype for a representative set of 2 000 titles.

Concluding considerations

124. When some technology-based solutions are selected, competition distortions might occur. Therefore, the pre-commercial R&D phase should carefully be investigated from the legal viewpoint, due to IP exchanges with the procuring government services. Procurement and subsidy cannot always clearly distinguished but nevertheless important with respect to state aid rules. To the extent the government buys as the launching costumer at a market conform price (in proportion to the transfer of IP), the price paid to the supplier company is not a subsidy, but is the simple fulfilment of a contractual obligation. As a consequence there is no state aid.

125. The legislator has to provide a juridical framework respecting fair competition rules, equal treatment and transparency: this implies participants cannot be (dis)advantaged for future subsidy applications and/or procurement procedures because of participation to the innovation platforms. It is envisaged that the upfront costs related to pre-commercial procurement can be recovered in the commercial procurement phase through efficiency gains and new functionalities that are the result of the implementation of the innovative solution.

126. Market structure (*e.g.* oligopoly) is likely to affect the legal framework setting for innovative procurement. The innovative procurement procedure is more than simply the lowest price principle and entails innovation criteria. To this end, the procedures for R&D are kept **open and transparent** in order to be non-discriminatory. IWT published the innovation criteria for the innovation platform in bulletins although platforms are not yet in procurement phase.

127. Communication requirements for Public Procurement of Innovation are higher compared to classical procurement: the government must not only consult the market in the pre-procurement phase in order to gain insight into the innovative supply but also needs to inform, sometimes years in advance, companies on the future needs so they can anticipate. The horizontal policy approach for innovation procurement encourages to better mainstream innovation policies in the different domains and can leverage activities in addressing broader societal goals.

3. OVERVIEW OF THE 2009 MIDWAY EVALUATION OF THE DANISH PROGRAMME FOR USER DRIVEN INNOVATION

Anna Mollerup, Danish Enterprise and Construction Authority, Denmark

128. The government sponsored Programme for User Driven Innovation funds development and test of user driven innovation methods in Danish companies and public institutions. It is possible for the Programme to cover costs up until the prototyping stage. Some knowledge from a project must be spread outside of the project-participants. As a general rule the Programme funds up until 50 pct of expenses (mainly salary-expenses) of a project.

129. The Programme is administration by the Danish Enterprise and Construction Authority and has call for applications 2-3 times a year. A board of 12 members from the private and public sector, who have knowledge of innovation, has been appointed.

Funded projects

130. By September 2009, 74 projects have been funded under the following themes:

Knowledge & Education: 17 projects
Sustainable energy & climate: 10 projects
Building sector: 6 projects
Food sector: 5 projects
Experience economy: 7 projects
Health care: 7 projects
Welfare solutions: 16 projects
Other areas: 6

131. The common project includes more than one company or public institution, a knowledge institution and often a union or another interest group or groups.

Selected midway evaluation conclusions:

- **72%** of the Companies participating under the programme have developed or expects to develop new services or products.
- Large amount of **private companies** participates in the programme (2/3).
- Over 50% of the participating companies have **less than 50 employees**.
- **59%** of the companies are from knowledge service and IT sectors.
- High degree of cooperation **across sectors.**
- 75 % of the projects involve **public-private innovation** partnership.

2010 Status of the Programme

132. The Danish Programme for User Driven Innovation has run 2007-2009. The budget for the programme has been EUR 13.5 million per year. The Programme was originally supposed to continue until 2011 but in the fall of 2009 the Danish government re-negotiated the whole globalization strategy that the

programme was part of and redirected the funds into a new government sponsored fund for green business development and change.

133. Projects under the 'old' programme will run for some years ahead since projects can run up to 5 years but there will be no new call for applications. User driven innovation will be part of the new fund and focus will be on spreading knowledge, methods and techniques accumulated under the programme up until now.

134. The initiatives under the programme is planned to be evaluated again.

4. CASE STUDY FINLAND: FUNDING FOR PROCUREMENT OF INNOVATIONS IN THE PUBLIC SECTOR

Kirsti Vilén, Teija Palko/ Innovation Department, Ministry of Employment and the Economy, Finland

1. Background

135. Finland's broad-based Innovation Strategy[5], adopted in 2008, emphasizes the role of public sector in developing, applying and introducing innovations. Demand and user-driven innovation policy is one of the four key development areas in the national innovation strategy and public procurement is seen as having a central role in boosting demand for innovations.

136. The annual procurement volume in Finland in the public sector is about EUR 23 billion. This purchasing power can be seen as an opportunity to promote and encourage innovation. If a few per cent amount of procurement budget would be directed to innovations, it would mean a significant increase in public funding for promoting innovations. On the other hand, the on-going drastic demographic change is creating pressure to increase productivity in the public sector and innovations are seen as a key in increasing effectiveness. However, the prevailing customs of procurement in public organisations as well as strict procedural rules set by procurement legislation do not encourage procurement of innovation. In order to exploit the potential of public procurement in stimulating innovation, other measures and incentives are needed.

137. On the basis of the national Innovation Strategy the Ministry of Employment and the Economy has prepared a proposal for an Action Plan[6] for the implementation of the demand and user-driven innovation policy. The Action Plan is expected to be adopted in May 2010. The Action Plan includes several proposals for enhancing demand for innovations through public procurement. These measures are designed to tackle the identified barriers and give incentives to encourage procurement and take up of innovations in the public sector. The actions concern *e.g.* the development of central and local government procurement procedures and methods, strengthening the role of public procurement supporting actors and examining different incentive and risk management models.

138. Other recent Government documents also address this issue. The Government public procurement strategy[7] was revised in 2009 and it includes guidelines for promoting innovation in government procurement, *e.g.* by encouraging looking for innovative solutions at the market together with the suppliers. It also recommends setting objectives for the innovative end result, *e.g.* service level targets, instead of detailed requirement specifications. Procurement procedures should enable the comparison of different alternative proposals. The strategy also obligates Government's procurement units to prepare a

5 http://www.tem.fi/index.phtml?l=en&s=2411

6 http://www.tem.fi/index.phtml?l=en&s=2382

7 http://www.vm.fi/vm/en/04_publications_and_documents/01_publications/08_other_publications/20091008Govern/name.jsp

procurement plan on a yearly basis and suggests action points for improving the organisation and the management of the procurement in general.

139. In 2009 the Government also adopted a Decision in Principle on Sustainable Public Procurement[8] which includes guidelines for taking innovation aspects into account in public procurement.

2. Challenges to be tackled in promotion of innovation through public procurement

140. Many international studies have identified various barriers and challenges in procuring innovations in the public sector. In a Finnish study[9] from year 2008 similar barriers and challenges to international findings were identified. The study carried out in Finland also emphasized, in particular, the need for financial incentives in promoting innovations through public procurement. The national innovation strategy and findings of that study formed the rationale for introducing a funding instrument for public procurement of innovation by the Finnish Funding Agency for Technology and Innovation (later Tekes). The funding instrument was launched in June 2009.

141. The promotion of innovations has not traditionally been a policy objective in the public sector. Hence the promotion of innovations through public procurement is a novelty and is by no means systematic practice. This combined with the risk-averse culture of the public sector, the lack of awareness of the potential of innovative public procurement in increasing productivity as well as lack of necessary support and incentives hinders the considering of innovative solutions.

142. To successfully promote procurement of innovations in the public sector requires strategic long-term planning and comprehensive analyses of needs, including users' needs. Furthermore, potential economical and functional risks related to procurement of new solutions together with higher costs at the early stage of the investment hinder public procurement of innovations in many cases. The decision-making in procurement process is also too much dependent on the initial investment cost instead of considering the costs over the whole life cycle of the procurement. Further, the introduction and utilization of new products and services in the public sector requires high professionalism of procurement officials as well as sufficient knowledge and experience in planning and executing more demanding procurement of innovations. Further, active support and guidance of the organisation's management to accept and manage risk is required.

3. Objectives and description of the funding instrument

143. The policy objectives of the Tekes funding instrument are to promote innovation among bidders and enhance functioning of the market as well as to promote renewal of public services. The life-cycle perspective, the emergence and the introduction of innovative solutions as well as user-driven design in the public sector are promoted in order to improve quality and productivity of services in the public sector. Enhanced cooperation and partnership between public and private sectors are seen as a way to utilize new knowledge more effectively and it helps to manage the risk related to the take up of new solutions in the public sector.

144. The main objective for public organisations in procurement of innovations is to ensure better value for money in procurement. Procurement should be a comprehensive investment utilizing innovativeness of suppliers. End-users, suppliers and procurement units should each benefit from the

8 http://www.ymparisto.fi/default.asp?contentid=323695&lan=EN

9 Innovatiiviset julkiset hankinnat, Tekesin katsaus 225/2008 Helsinki 2008 (Innovative public procurement) https://www.tekes.fi/fi/community/Julkaisut%20ja%20uutiskirjeet/333/Julkaisut/1367

innovation. In developing criteria for evaluating the tenders more attention should be paid on life-cycle costs and user experience, instead of investment cost alone.

145. The funding instrument foresees as an objective the improvement of conditions for procuring innovations. For this purpose it is essential to develop a well-functioning market dialog between procurement units and suppliers. Fruitful market dialog provides better understanding for procurement units on alternative solutions and suppliers in the market. An active interaction with the procurement units allows also suppliers to participate in the formulation of the tender documents and tender specifications which in turn prevents inappropriate requirements, encourages innovation and focuses competition among suppliers on areas of relevance *i.e.* where differentiation can happen.

146. During the first – still on-going- year of the operation of the funding instrument, Tekes has focused its promotion efforts in energy, environment, construction and health sectors. However, activities in other areas are also eligible for funding. The focus areas have been chosen since they are considered to be important as regards the future demand and societal challenges. They also coincide with the on-going Tekes national innovation programmes. However, the potential projects to be financed are identified by bottom up approach by individual public sector entities.

147. Public procurement units and public utilities both at government and local level can apply for funding for public procurement of innovations. The Tekes funding can be used both for the planning of the procurement and for the R&D&I stage as part of the procurement. As the objective of the funding instrument is to promote emergence and diffusion of innovations one criterion for funding is that solutions procured must not exist in the market or they should result in a new way of operation.

148. The funding of the *planning stage* can cover *e.g.* in-depth analyses of the long-term expectations of end-users and employees, possible new ways to meet the identified needs as well as service concept design based on functional and quality criteria. External advisors can be utilized in the planning stage, *e.g.* in legal, commercial and technological as well as user experience issues in order to support the procurement process. One part of the process is also the development of criteria for the assessment of tenders in the planning stage. The planning stage of procurement can also result in R&D&I project of a supplier. In such case, Tekes can provide funding directly for the supplier if the project meets the general requirements for innovation funding for companies.

149. In the *implementation stage* funding can be used for the development work required for the procurement, *e.g.* for development of new operating models for services.

4. Projects accepted for funding

150. During the first nine months after the launch of the funding instrument 12 projects have been accepted for funding. Projects are mainly focused in developing services, especially in social and healthcare sector, by the local authorities. Sustainable development and energy efficiency feature as objectives in couple of projects. In couple of projects cities are developing knowledge and operating models for procurement of innovations.

Decisions on project funding by March 2010:

- Power plant in Toholampi/Toholampi Energy.
- Project developing procurement of innovations/ City of Pori.
- Innovative investments/Town of Haukiputaa.

- New innovations and life-cycle targets for the operating environment in education and day care / City of Jyväskylä.
- Developing an innovative life-cycle –based procurement model/ City of Porvoo.
- New life for a city district / City of Riihimäki.
- Solutions and eco-efficiency of passive office building / Finland's environmental administration.
- Sheltered housing for seriously disabled / City of Vantaa, social and healthcare.
- Energy efficient district of residence housing , Varsinais-Suomen Asumisoikeus Oy.
- Design competition in procurement of services. Case - Competition for developing concepts to diminish homelessness / three projects by Cities of Helsinki, Espoo and Tampere.

Example: Diminishment of long-term homelessness- Design competition in procurement of services

151. Cities of Helsinki, Espoo and Tampere established a project with the objective to design service concept for social and healthcare services in order to diminish long-term homelessness. The challenge was to combine service providers' new operating models with design solutions where facilities are designed to support service process. A design competition was chosen as a method to generate ideas for innovative service concepts.

152. The design competition has not been used in Finland in this type of service procurement before which made the procurement quite challenging. Tekes funding encouraged and enabled the cities to apply a new way to arrange competitive bidding for service procurement. So far, the projects have produced valuable experience and new knowledge to be utilized in future service procurements.

Example: Outsourcing of municipal engineering in the City of Varkaus

153. The municipalities are facing challenges in building and maintaining the community infrastructure such as streets, water pipes, drains and energy supply as their economical situation is tightening. At the same time private service providers are interested in broadening their service activity to cover also municipal engineering. City of Varkaus decided to outsource its municipal engineering in 2008. The city established a project to develop and test the process for implementing the outsourcing of engineering service production. The objective of the process was to engage in market dialog, use competitive bidding and prepare agreements for the outsourcing process as well as to ensure that service level targets set by the municipality will be reached.

154. The development of the outsourcing process was funded by Tekes as a project piloting the new funding instrument. Challenge for the procurement unit was to specify the criteria for competitive bidding, to define conditions and model for contract with suppliers. A Finnish association, RAKLI, representing the interests of property and infrastructure owners, construction clients and user *organisation*s, took part in the project by arranging a market dialog with potential service providers, consultants, contractors and investors. The result of the project was a new operating model and plenty of valuable knowledge in implementing outsourcing applicable also for other cities.

5. Preliminary reflections on the implementation of the Tekes funding instrument

155. Due to the short time period these reflections concern mainly experiences related to the application stage. They have been collected on the basis of processing the applications and the discussions with the applicants.

156. The funding instrument is perceived to be necessary and useful by the applicants but interest for the funding instrument has emerged more slowly than expected. Reasons for that are probably diverse and one cannot make any definitive conclusions at this stage.

157. The criteria of the funding are seen as quite ambitious since they require that solutions procured must be truly innovative and do not exist on the market, or that the procurement results in new way of operation. The target group of the funding is also a new group of customers for Tekes services and it takes time to reach them and raise awareness of the funding instrument.

158. The problems in identifying potential project in procurement organisations are same challenges as those identified for promoting procurement of innovation in general and which cannot be tackled by a funding instrument alone (*i.e.* Lack of long term planning and comprehensive analyses of needs, risk averse culture, insufficient resources etc). Also the timing and style of decision making in the local authorities combined with the political decision making and sector-based budget planning in yearly cycles create challenges for considering innovative solutions to meet their long term needs. Furthermore, as the public sector has little experience in addressing innovations professionally in the procurement, there is lack of knowledge in innovation friendly procurement processes.

159. Once in the procurement phase, it takes time to develop efficient market dialog. Especially in social and healthcare sector "lack of common language" is perceived as a barrier for fruitful interaction among procurement units and suppliers.

5. FRENCH CASE STUDY ON DEMAND-LED INNOVATION: FACILITATING ACCESS TO PUBLIC PROCUREMENT FOR INNOVATIVE SMES

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Article 26 of the French law on modernization of the economy of August 4th, 2008 allowing public purchasers to grant preferential treatment to innovative SMEs in public procurements for High Technologies, R&D and technological studies

160. Article 26 of the French law on modernization of the economy aims at altering public purchasing behaviour towards innovative SMEs by allowing public purchasers to reserve a part of their public procurement for High Technologies, R&D and technological studies for innovative SMEs or by giving them preferential treatment for these procurements.

161. This measure has been created by the French law on modernization of the economy (LME) of **August 4th, 2008**. It has been **fully operational since March 2009** with the publication of all its implementation texts: a decree of February 18th, 2009 (definitions, SMEs' eligibility, awarding modalities, assessment) and two byelaws of February 26th, 2009 and March 16th, 2009 (CPV codes, assessment data).

162. Due to considerable **risks**, large public or private purchasers hesitate to contract with innovative SMEs.

163. Therefore, the adoption of this measure seeks to help innovative SMEs put their innovation on the market, give them a first public reference and hence make their turnover grow. It helps them find new customers, grow and innovate more.

164. The measure comprises several principles:

- It is **open exclusively to innovative SMEs** as defined by the French monetary and finance Code (I of the Article L. 214-41) : it is therefore **not discriminatory towards SMEs of other member States** that fulfil its requirements;

- It applies to 15% of the amount of all public procurements for High Technologies, R&D and technological studies below the thresholds of EU Directives on Public Procurement calculated on the average of the past three years. For example, if a public purchaser spent an average of 1 M€ on small technological procurement per year during the past three years, it could reserve the sum of EUR 150 000 for innovative SMEs.

- It will be of **experimental nature** during a five-year period and **regularly assessed**;

- It's **not mandatory**: public purchasers are not obligated to use it.

165. The sectors concerned by the measure are High Technologies, R&D and technological studies sectors. This means **supplies, services and public works that**:

166. On the one hand, appeal to state-of-the-art technologies or science and engineering knowledge and skills; On the other hand, intervene in some of the fields identified by the European common

procurement vocabulary (CPV – EC rule of November 5th, 2002) that have an important R&D expenditure in their added value. For example, pharmaceutical products or computing.

167. **The fields** identified by the CPV which the measure applies to **correspond to:**

- The fields of High Technology acknowledged by the OECD;
- The fields established within the framework of the **European Lead Markets Initiative**;
- The fields linked to environment and sustainable development.

168. Safeguarding competition rules has been **one of the major challenges** in the elaboration of the measure.

169. The measure framing has been done in compliance with Community law and the French Constitution, under which only reasons of general interest can justify affirmative action measures derogating from the principle of equal treatment of candidates and this only for a small share of procurement and clearly identified beneficiaries. The reason of general interest adopted here is the development and growth of SMEs.

170. A first assessment of the mechanism defined by the Article 26 is **expected during the first quarter of 2010**.It will be conducted by the **Economic Observatory for Public Procurement** and will initially provide volume data, as the long-term objective is to study the impact of the measure in terms of growth of innovative SMEs concerned. At this stage, the **impact of the measure on innovation is not yet known**.

171. Meetings between the Ministry of Economy and several public purchasers concerned by the measure have observed the **convergence of the measure with policies and procurement strategies** already oriented towards SMEs and innovation (French Post, for instance). These meetings also provided an opportunity to **identify challenges that buyers sometimes face** in identifying the public procurement covered. **For example,** some buyers thought the **CPV codes** on the list from the byelaw from March 16th, 2009 strictly designated areas that should not have been surpassed whereas in fact they designate categories encompassing many sub-domains.

172. To promote the measure, the Ministry of Economy will launch in the first quarter of 2010 a **major promotion campaign** to explain and publicize it. This action will consist of development and **wide dissemination of a guide for public purchasers and an information booklet for SMEs**. In addition, a diagnostic work-accompaniment will be conducted with 10 volunteers and significant public purchasers

173. **A possible evolution of the measure could be rendering it partially mandatory**, on the one hand for a few percent from the budgets of public purchasers and, on the other hand, whether for the entire community of public purchasers by the law, or a class of them, including ministries, by a Prime Minister's circular.

6. CASE STUDIES IN JAPAN: MEASURES FOR A 'PROBLEM SOLVING COUNTRY', PROMOTION OF INTERNATIONAL STANDARDIZATION

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Measures for a 'Problem Solving Country'

The New Growth Strategy:

174. The government of Japan is developing the 'New Growth Strategy' that reflects the nation's aim over the next 10 years, until 2020. The Cabinet approved its basic policy at the end of 2009and is collecting opinions on the basic policy from internal and international experts, including the OECD, and finalizing the New Growth Strategy, based on those comments, by approximately June 2010.

175. In Japan, we have experienced economic growth through public works from the post-war through the1960s and 1970s, and economic growth as a result of increased productivity on the supply side under the name of "structural reforms" in the 2000s, but the former built up a massive budget deficit, and the latter resulted in expanded economic disparity. Therefore, the Growth Strategy aims to have a problem-solving country as a third way to create new demand, generate industry and employment and improve people's lifestyles, by responding to issues such as global warming and an aging population. In order to realize the 'problem-solving country', the Growth Strategy promotes the two innovations, "Green Innovation" and "Life innovation", described as follows:

- The first area comprises global warming (energy) measures. By moving Japan towards becoming a world-leading low-carbon society, new demand will be generated across a wide range of fields including lifestyles, the transportation sector, and urban development.

- The second area comprises measures to respond to the aging of society with a low birth rate. The goal is to make Japan a healthcare superpower, so the Japanese people can raise children with peace of mind and live long lives with good physical and mental health, which are the common desires of all humanity. Finding solutions for these issues will reform society, foster new values, and consequently create employment.

- Making Japan a 'model country' that leads the world in solving problems will be directly tied to strengthening the nation's research and development capabilities and the foundations of its enterprises. Generating a virtuous cycle of demand creation and strengthened supply capacity is essential in order to break away from deflation.

- The role of the government in creating such a system is a key to the Growth Strategy. In addition to supporting human-resource development and technology development for "green innovation," "life innovation," and other areas as strategic innovation fields, government must generate demand while simultaneously moving to change the social rules from the standpoint of the users. Government must also support individuals who take on challenges in new fields. Rather than

excessive reliance on fiscal policy, we must pursue a superior combination of rule improvement and support for market creation while promoting the use of domestic and foreign financial assets.

The 4th Science and Technology Basic Plan

176. The government of Japan is studying to formulate the next (4th) Science and Technology Basic Plan, its planning period is five years from the 2011 fiscal year. The Council for Science and Technology Policy (CSTP) will decide a draft basic policy around June of this year, considering the inputs from ministries such as Ministry of Education, Culture, Sports, Science and Technology (MEXT) and the Ministry of Economy Trade and Industry (METI), and report a draft master plan to the Prime Minister by the end of this year.

177. The Science and Technology Basic Plan, based on the Science and Technology Basic Law that was enacted in 1995, has promoted comprehensive policy for science and technology for three five year periods, 15 years, but has had weak relationships with other key policies such as economic policy, foreign policy and social security policy. Therefore, the 4th basic plan has been studied on a broader level based on the New Growth Strategy and aims to show the basic direction to promote a comprehensive policy for science and technology as a five-year plan taking into consideration the next ten years

178. Under the study of the 4th basic plan, CSTP cited two innovations based on the basic policy of the New Growth Strategy as major items and proposed a new framework to promote innovation as follows:

A. Formation of the Innovation Platform (tentative name)

- Establishing the Innovation Platform (tentative name), for each of the key policy issues to be resolved as a nation, where academia, private sectors and policy makers aim to share situational awareness and vision and consider specific strategies for promoting research and development (example: the European Technology Platform).
- Delivering outcome from universities and research institutes to industry and promoting communication between industry, the public sector and academia by clarification of the needs in industry.
- Scientific assessment and evaluation from exit.
- Dialogue with citizens and NPO.

B. Strategic response to open innovation

- Utilization of venture and carve-out.
- Visualizing seeds with high risk and implementing SBIR (Small Business Innovation Research) which promote sustainability and independence.
- Strategic response to international standards.
- Promoting strategic international standardization activities from the research and development stages in collaboration with industry, academia and the public sector.
- Enhancing international standardization activities in areas such as smart grids, fuel cells and next-generation vehicles.
- Collaboration with Asian countries on technical regulations, standards and conformity assessment.
- Improvement of reliability and safety standards to demonstrate and diffuse new technology.

- Reviewing the intellectual property rights system, and utilizing and protecting intellectual property appropriately.
- Design and effective operation of the system based on the latest economic theory.

C. A new mechanism inducing innovation

- Creation of new markets by introducing new systems and regulations.
- Establishing a national laboratory to conduct leading research relaxing various regulations.
- Advancing regulatory science and making the regulations reasonable based on the theory.
- Building a PDCA (plan-do-check-act) cycle to promote innovation.

D. Promoting innovation in the region

- Promoting science and technology strategically from global perspectives utilizing regional strengths and vision.
- Promoting innovation to solve problems in regions.

Study on "Industrial Science Technology Policy to Enhance Innovation Capacity" in Ministry of Economy, Trade and Industry (METI)

179. The Subcommittee of the Industrial Science Technology Policy Committee of the Industrial Structure Council of METI has studied the "Industrial Science Technology Policy to Enhance Innovation Capacity" for planning the 4th Science and Technology Basic since December 2008.

180. The interim report compiled in August 2009 recommended that the policy priority setting should be shifted from 4 major technology oriented priority areas shown in the previous master plan to new social systems (leading low-carbon society and economy, and building a healthy and safe and secure society) based on the new concept, which converts the challenges faced by Japan such as the aging population and environmental and energy constraints, to Japan's growth potential creating advanced products and markets by using its science and technology capacity.

181. Based on these recommendations, METI has promoted the transition to a goal-oriented national technology strategy and enhanced the research and development as follows:

A. Maintaining and strengthening R&D investment

- Maintaining and expanding the private sector investment in R&D.
- Amendment of the R&D taxation.

B. Transition to a goal-oriented national technology strategy

- Reviewing the framework of R&D budget.
- Promoting an innovation programme systematically.
- Prioritization of green innovation.
- JPY 267.6 billion yen FY2010 budget.
- Evaluation of goal-oriented R&D.

- Revision of METI's guidelines on Technology (March 31st, 2009).

C. Enhancing goal-oriented R & D systems

- Goal-oriented R & D base in "Cooperative Areas": creating base camps.
- Creating Advanced and development bases (ex. Tsukuba Nanotechnology arena: JPY 18.2 billion in FY 2009 first supplementary budget and FY 2008 second supplementary budget (including MEXT budget)).
- Creating standardization strategies in specific areas (described in 2).
- Promoting R&D by new entities.
- Reforming the Act on Technology Research Consortiums (June 22, 2009, 10 entities has already established since March 7, 2010)).
- Establishing the Innovation Network Corporation of Japan (July 31, 2009 with the capital of JPY 92.0 billion).

D. Enhancing human resources, ventures and regions supporting the goal-oriented R&D system

- Enhancing and maintaining human resources in technology areas for future.
- Partnership between industry and academia on training human resources: JPY 1.07 billion in FY 2010 budget.
- Training human resources for research and technology through Innovation School at the AIST.
- Promoting regional innovation utilizing regional resources.
- R&D project to promote regional innovation: 3.44 billion yen in FY 2010 budget
- Support project to promote capabilities on R&D and commercialization in SMEs: JPY 900 million in FY 2010 budget
- Support project to train and employ next-generation high-tech human resources in SMEs: 370 million yen in FY 2010 budget

E. Enhancing a positive cycle between innovation and social needs

- Involving society needs in innovation policy.
- Innovation Policy JAM.
- Enriching R&D projects in the social experimental type.
- Project on advanced regional development for a low-carbon society: JPY 6.8 billion in FY 2009 first supplementary budget and FY 2008 first supplementary budget.
- Grant for technology demonstration to reduce CO2 emission: JPY 5.9 billion in FY 2010 budget.
- International cooperation project for diffusion of energy efficiency technologies: JPY 10.2 billion in FY 2010 budget.

182. In addition, since this interim report is in line with the orientation of a "Problem-Solving Country" described in the "New Growth Strategy (Policy)", the Subcommittee of the Industrial Science Technology Policy Committee will discuss , in depth, the way for industrial technology policy to promote problem-solving innovation efficiently and compile the final report this May or June.

Promotion of international standardization

Background

183. Innovation includes commercialization of new products/services created by new technological combinations, and dissemination and settlement of them into the society and economy broadly. However, it is said that the linkage between innovation and results of technological developments is not sufficient in Japan. Therefore, Japan has the following three challenges for promoting innovation from the view point of standardization and conformity assessment.

a) Strategic international standardization:

184. It is required to start strategic international standardization from the R&D stage with joint efforts among industry, academia and government.

b) Improvement of the conformity assessment system for social acceptability

185. It is required to improve the conformity assessment system for risks and performance which are acceptable for society:.

c) Cooperation with other countries such as Asian countries:

186. It is important to develop international standards which can tackle global challenges such as global warming, sustainable growth and safety/security issues. In order for such international standardization, it is essential to strengthen the cooperation with other countries such as Asian countries.

187. There are also some reports which mention the importance of promoting international standardization. “Interim report for future S&T policy enhancing innovation” mentions “Standardization has an important role as a collaborative infrastructure to enhance open innovation”

188. "The Basic Policy for the 4th Science and Technology Basic Plan" mentions "We will aim at making Japan the foremost global environment and energy power by advancing “green innovation” which can balance the symbiosis with nature and the development of humankind as well as the economic growth, example of this includes: the achievement of greenhouse gas mitigation target, mitigation of the impact on nature, nature conservation and restoration, and environmental adaptation. This will require not only accelerating the R&D focusing commercialization but also promoting demonstration, standardization and institutional reform which can contribute commercialization and dissemination of the result of R&D".

189. In addition, “New Growth Strategy (Basic Policy)” states “Japan can contribute to the realization of growth and the spread of the “safe and secure” approach in Asian countries. This can be achieved by working together with countries in Asia to jointly develop international standards using Japan’s technologies, regulations, and mandatory and voluntary standards related to the environmental field and product safety issues. The results can then be proposed and transmitted to the international community.”

190. Japan regards the strategic international standardization as a powerful tool to tackle the global challenges such as environmental and safety issues. It is also important to strengthen international cooperation for enhancing the standardization in the international community such as the ISO and the IEC. Furthermore, due to the accelerated technological advancement, it is required to start the standardization from the R&D stage.

The Current Situation in Japan

A. Development of Japan Industrial Standards (JIS)

191. Case of JIS established in 2009

- JIS A1450 “Test methods for raised access floor” (Raised access floor is double flooring).
- The JIS has been revised to deal with the demands of earthquake resistance standards to enable the promotion of safer products by considering standards that take into account a unified methodology for estimating resistance to vibration.
- JIS B8630 “Commercial refrigerators and freezers-Characteristics and test methods” A JIS has been established as a unified standard for comparisons estimating the annual power consumption of commercial-use refrigerators and freezers.
- JIS D 4234 “Passenger car, truck and bus tires－Methods of measuring rolling resistance－Single point test and correlation of measurement results”. An adjustment in line with ISO 28580 has been established for the promotion of the use of tires that enable better fuel efficiency.

B. METI’s international standardization programme

192. METI has the international standardization programme which harmonizes with the results of the R&D programmes.

193. METI also establishes cooperation on research and development in support of standardization with other countries. For example, AIST in Japan and NIST in the US have established the cooperation on research and development in support of standardization in the framework of "Japan-US collaboration project toward a new low carbon society" since May 2009. Currently, the following four standardizations are implemented under this cooperation.

1. Infrastructure of plug-in vehicles.
2. Nanotechnology.
3. The performance of LED lightings.
4. 3D images.

Expectations for OECD’s future work

194. There is increasing interest in the solution-led innovation policy and the demand-side innovation policy in Japan in order for response to the global and social challenges such as climate change and a low birth rate and an aging population. The tight fiscal situation influences us not only to prioritize the R&D budget based on the global and social challenges but also to utilise the smart regulation and standardization which doesn’t depend so much on the fiscal measures. Standardization, especially, is considered to give firms further incentives for R&D because standardization can spread the leading technology rapidly and broadly.

195. Japan would appreciate that the OECD develop the evaluation or assessment methods to analyze the effects of the demand-side innovation policies including standardization based on the case studies from member countries. To this purpose, it is expected that the OECD will organize a workshop on the policy instruments which can promote innovative technological developments in the area of green innovation.

7. STRATEGIC PROCUREMENT POLICY FOR INNOVATION: KOREAN CASES OF "NEW TECHNOLOGY PURCHASING ASSURANCE PROGRAMME" AND "PROCUREMENT-CONDITIONED SME R&D PROGRAMME"

By Woosung Lee[10]

1. New Technology Purchasing Assurance programme

Overview

196. As part of an effort to foster innovative SMEs, the Korean government has implemented, since 1996, the "New Technology Purchasing Assurance programme", for public procurement of SME technology products in order to stimulate more active technology development. Korean Small and Medium Business Administration (SMBA) requires public institutions to purchase SMEs' technological products that have been approved for performance by the government thereby promoting technology development of SMEs and public purchasing of SME products. The legal ground for this programme is Article 14 of "the Promotion of Small and Medium Enterprises and Encouragement of Purchase of Their Products Act". Under this programme, if the technological products of SMEs are certified as the 'goods for purchasing assurances', SMBA can recommend to all of public institutions and governmental procurement units to procure these products with higher priority.

197. However, the recommendation was not a requirement for public procurement and did not have regulatory enforcement means to ensure adequate procurements. Thus these recommendations could not require or ensure the public institutions' final procurements except the procurement of SMBA. In 2005, Major revision in the programme has been made that target system for technological product was introduced, which requires at least the 5% of total procurement in 2006 and the 10% in 2010 to be dedicated to this procurement programme. And moreover, by law and regulation, at least the 20% of 'New Excellent Product' (NEP)[6] should be purchased through this strategic procurement policy programme. Thus the problems of mere recommendation without any lawful enforcement mechanism are successfully resolved. There have been several remediation injunctions improving efficiencies of procurement procedures. These are 1) the introduction of "Performance Insurance for SMEs products," 2) the revisions of certification system into "Performance Certification," and 3) the establishment of "Committee for Procurement Promotion of SMEs' Technological Products."

Deficiency of the previous programme

198. The 'Presidential Commission on Small and Medium Business', and 'Korea Institute for Industrial Economics & Trade' (2001) stated through their report of "Improvements to Public *Organisation*s' Procurement System of SME Products" that despite the government's active recommendation, public *organisation*s, overall, have low records of procuring high quality SME technology products. The programme was mainly carried out through private contracts by public *organisation*s, but only the Public Procurement Service was doing so. Other *organisation*s have almost no procurement records or have a very low level of private contract procurement. However, they mentioned

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that most public *organisation*s offer preferential benefits for high quality technology goods by granting SMEs with Excellent Technology Product Certification additional points in their screening tests. In addition, they announced results of a survey that revealed that the low interest of public *organisation*s in procuring SME's products was the fundamental reason for the low level of procurement. The lack of quality verification and difficulty in repair and maintenance of a purchased product in case the manufacturer goes bankrupt were also among the causes. In the "Survey to Improve the Procurement of SME Products by Public *Organisation*s (August 2001)" by the Korea Institute for Industrial Economics & Trade, technology developers replied that the reasons they believed public *organisation*s were inactive in preferentially procuring technology goods of SMEs was due to the 1) lack of determination and recognition of procurement *organisation*s (49.0%), 2) lack of legal and institutional devices (29.1%) and 3) lack of product performance verification.

199. The SMBA conducted a research and pointed out that despite the rising trend in public procurement of SME products, public procurement managers continue to avoid purchasing them (the congress report to the National Assembly Commerce, Industry and Energy Committee in June, 2005). The main reasons for such unwillingness were due to a lack of confidence in the quality and performance of SME goods (21%), poor legal and institutional systems (20%), and auditing concerns (20%).

200. In a similar study of the "Industrial Review on Industrial Technology Policy (2005)", the Korea Industrial Technology Association (KOITA) (2005) indicates that the ultimate problem of the programme was the poor legal grounds that do not enforce public procurement. The programme was recommendation-based, and therefore, was not legally binding. Another problem was that the certification period of the New Excellent Technology Certification is only two to three years after technology development. This short period made it difficult for the SME to receive the benefits at the time of actual shipment of the new technology products. The third problem was that the audit system by the Board of Audit and Inspection mainly focused on whether a procurement manager follows adequate and proper procurement procedures. Therefore, in case of private contracts, rather than verifying the legitimacy of the circumstances leading to the conclusion of the contract, procurement managers preferred the open competition bidding method in order to avoid any problems that may arise in relation to the contract.

201. In light of these difficulties, KOITA stresses that due to the low procurement level by public *organisation*s, the Preferred Source System is not having much effect on the commercialization of technology development achievements.

Major revision of the programme in 2005-06

202. As the programme that was originally installed to facilitate technological innovation of SMEs continued to produce poor results due to the avoidance of public *organisation*s, the government adopted the Performance Certification System and Performance Insurance System through the revision of Promotion of Small and Medium Enterprises and Encouragement of Purchase of Their Products Act (Dec. 31, 2004), and revised Enforcement Ordinance and Regulations of the same act (Jun. 30, 2005). The minimal effect of the programme and low level of actual procurement due to a low response from government ministries have led to the undertaking of a research of the actual conditions to enhance the effectiveness of public *organisation* procurement (jointly with the Presidential Commission on Small & Medium Business) and revision of the Promotion of Small and Medium Enterprises and Encouragement of Purchase of Their Products Act (Dec. 2004), resulting in a significant improvement of the system.

203. Even when the SMBA requested the preferred procurement of SME technology goods to each public *organisation* pursuant to the programme, there was an inclination of avoiding procurement because of low confidence in SME-developed technology products, doubts on whether the SME would continue to operate in the future, and concerns of being reprimanded in case of entering into a private contract.

Therefore, by certifying the performance of SME technology products through the Performance Certification System, and adopting the Performance Insurance System which provides immunity from losses incurred due the procurement of such products, the government has managed to come up with grounds to provide immunity to the public *organisation*s that make the procurement. This does not only ensure confidence of public *organisation* buyers in SME technology products, but also reduce the burden of responsibility on procurement managers, thereby solving the problem of procurement avoidance (Presidential Commission on Small & Medium Business, 2006). The Performance Certification and Performance Insurance System are considered to be the solution to the avoidance by public *organisation*s.

Box 1. Overview of the Programme Revision (SMBA, 2005)

Period of preferred procurement support: three years from the first recommendation date.

- Preferential conditions in the procurement of performance certified products by public *organisation*s.
  - Buyers are granted immunity for losses incurred due to the procurement of performance insurance covered products.
  - SMEs manufacturing and supplying products with performance certified and covered by a performance insurance will be granted preferred qualification in limited/designated biddings.
- Ensured implementation of the programme.
  - The preferred procurement of public *organisation*s are reported and announced annually at the cabinet meeting through the SMBA.
  - Public *organisation*s notify their preferred procurement performance and reasons for non-procurement to the SMBA or related central administrative *organisation*.
- Installation of the Technology Product Procurement Promotion Committee.
  - The Committee selects and recommends technology products for the preferred procurement by public *organisation*s and deliberates ways to facilitate procurement.
  - Composition of Committee (Chairman: SMBA Administrator): No more than 20 specialists, including directors of related ministries and Korea Federation of SMEs.

204. Together with the Performance Certification System and Performance Insurance System, the programme strived to increase the effectiveness of public procurement of technology goods by adopting the SME technology product procurement goal ratio system, and adopting the mandatory system of purchasing 20% of new products. The SMBA adopted the SME technology product procurement goal ratio system so that technology certified products can occupy more than 5% of the amount of SME product procurement, along with the submission of a SME product procurement plan and performance report. Above all, the most important change was the regulation which obligates the procurement of new technology certified products (NEP: products commercialized by using new technology) to occupy more than 20% of the total procurement amount of an item. The previous programme only enabled requests and recommendations to be made to each public procurement *organisation*. The obligation for public procurement *organisation*s to procure a certain percentage of an item with new technology certified products is now binding.

Table 2. Comparison of the old and revised Programme

Category	Previous System	Revised System
Products subject to preferred procurement	Technology products developed by SMEs	Technology products and S/W quality certified products developed by SMEs
Selection and announcement of products subject to preferred procurement	Announcement of the range of products subject to preferred procurement (Article 14 Clause 2 of the Enforcement Ordinance of the same Act)	Performance certified products and other products that meet certain criteria among SME technology products are selected and announced as products subject to preferred procurement (Article 14 Clause 2 of the Act)
Technology Product Procurement Promotion Committee	N/A	The Committee is composed and operated for the selection and recommendation of products subject to preferred procurement.
Requests for preferred procurement	SMBA Administrator or head of related central administrative *organisation*s to request the preferred procurement of the above products to public *organisation*s	No change
Period applicable for preferred procurement	Two years (from day of certification and registration)	Three years (from the first day of recommendation)
Public *organisation*s	Preferred procurement or private contracts may be concluded (Article 26 National Contract Act Enforcement Ordinance)	No change
Performance Certification System	N/A but a quality certification system exists	SME technology products undergo a performance certification process for the selection of products subject to preferred procurement
Performance Insurance System	N/A	Performance insurance is provided to performance certified products
Preferred qualification in biddings	N/A	Performance insured products are granted preferred qualification in participating in limited/designated biddings
Buyer immunity clause	N/A	An immunity clause is installed for procurement managers in the procurement of performance insurance products

Source: SMBA (2005).

Programme Performance

205. During the early stage of the programme, the proportion of public procurement of SME new technology product were mere less than 3% of total public procurement of SME product. However, after the major revision of the programme with Performance Certification system was implemented in 2005, the proportion has been raised sharply to reach 9.3% of total public procurement of SME product. In 2010, the proportion is expected to rise more than 10%, which were the original target ratio in 2010 predetermined in the 2005-06 programme revision plan. The public procurement of SME technology product amounts KRW 2 078.5 billion (which is approximately USD 1.9 billion assuming KRW 1 100/dollar). The amount has been more than tripled after the 2005 programme revision from KRW 614.4 billion (which is approximately USD 0.6 billion assuming KRW 1 100/dollar).

Table 2. Programme Performances

Unit: 100m.KRW	2001	2002	2003	2004	2005	2006	2007	2008	2009
Public procurement amount of SME products (A)	126 856	145 993	138 001	150 973	158 184	190 128	193 010	242 052	224 302
Public procurement amount of SME new technology products (B)	2 736	3 276	3 957	5 251	6 144	10 744	13 705	16 808	20 785
Ratio of (B/A)	2.2%	2.2%	2.9%	3.5%	3.9%	6.9%	7.1%	6.9%	9.3%

Source: SMBA yearly announcements of SME public procurement targets and performances

2. Procurement-Conditioned SME R&D Programme

Programme Overview

206. The Small and Medium Business Administration (SMBA) will provide the cost of domestic R&D for import substitution and new technology development to small-and-medium-sized enterprises (SMEs) on the condition that they will be procured by a certain *organisation* (government, public corporation or private business). SMEs selected for this project can receive up to 750 million won in zero-interest R&D funds without collateral. If successful in the development of products, large enterprises and public *organisation*s that requested the development will purchase the products directly, providing SMEs with direct sales channels.

Support Measures

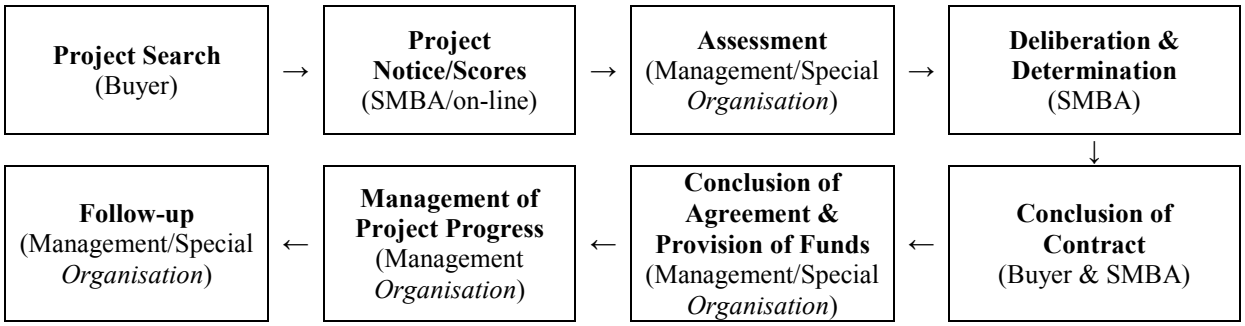
207. Small-and-medium sized manufacturing companies with a factory registration may apply for the benefits.[11] The government will provide costs up to 75% and the subject company will bear the remaining 25% of the total business cost. In case of private projects, the government will provide costs up to 55%, the procurement *organisation* 20% and the subject company 25%, and for cooperation fund projects, the government 50%, the procurement *organisation* 25% and the subject company 25%. The 'pioneering projects', which are proposed by a prospective domestic buyer, such as a large conglomerate or public corporation, willing to make the procurement and selected through a verification process, shall be subject to support of up to KRW 500 million. The development period must be no longer than two years. The 'investment-linked pioneering projects' that have high economic feasibility and large development costs will be subject to additional support in coordination with investment institutions. For the 'practical projects', in case of new products developed based on orders made by foreign buyers with favourable credit ratings (since 2009), the government will fund up to 50% of the total cost with a ceiling of KRW 150 million. The development period must be less than one year (SME to bear more than 25% of total cost).[12] In the 'Private-Public Cooperation Fund projects', government and procurement *organisation* will compose a joint fund to support a project required by the procurement *organisation* (since 2009).[13]

11 Companies with affiliated research institutions, businesses located within the Business Incubator Centre, small businesses, and software development companies with a certificate of business registration may also apply.

12 The credit rating of the importer must be higher than "C" in the investigation by the Korea Export Insurance Corporation (KEIC).

13 In the event the development is a success in the case of Pioneering and Practical projects, the government shall collect 20% of the funds provided as technology fee.

Project Procedures[14]



Progress to Date

- 2002 The SMBA Administrator and Minister of Defence concludes the "Defence Technology Development Agreement". A pilot test of the Conditional Procurement New Product Development Project is implemented.
- 2003 The Project is incorporated as a new budget item in 2003 (KRW 4 billion).
- 2004 The ceiling per project is increased (from KRW 100 million to KRW 200 million), the development period is lengthened (from one year to two years), and more public *organisation*s participate as procurement bodies (from one to eight *organisation*s).
- 2005 Large conglomerates participate as buyer *organisation*s, expanding the project scope to include the private sector (participation by seven large conglomerates).
- 2006 The lowering of burden on large conglomerates facilitates more participation from the private sector (25%→20%).
- 2006 In the event the development of a product is evaluated as a success, the procurement *organisation* must submit a procurement plan.
- 2007 The ceiling per project is increased (from KRW 200 million to KRW 300 million) and the scope of procurement *organisation*s is expanded to include middle-sized enterprises.
- 2008 The criterion for the search of new projects is strengthened (procurement amount must be five times of the government contribution)
- 2009 The ceiling per project is increased (from KRW 300 million to KRW 500 million)

Programme Funding

208. From 2002 to 2009, the government supported a funding of KRW 149.9 billion (which is approximately USD 0.14 billion assuming KRW 1 100/dollar) for a total of 889 projects.

14 Only Pioneering projects will search for potential projects. Practical projects shall be based on application.

Table 3. Annual Funding Support

Category	2002	2003	2004	2005	2006	2007	2008	2009	Total
No. of projects	13	49	40	77	133	198	179	200	889
No. of Procurement *Organisation*s (Accumulated)	1 (1)	1 (1)	8 (8)	23 (24)	35 (40)	68 (78)	88 (126)	65 (147)	147
Funds Provided (KRW 100 million)	9	40	40	100	160	300	400	450	1 499

Performance and Achievement (As of December 2008)

209. According to an analysis of 296 completed projects out of 510 projects supported between 2002 and 2007 as of the end of December 2008; the achievements were as the following: (Technological achievement) SMEs that received government support saw an improvement of technology levels and independence, and narrowing of the technology gap between advanced and domestic technologies. (Development achievements) The government funded KRW 64.9 billion of 510 projects from 2002 to 2008, out of which 266 projects were developed, recording a high development rate (89.9%). The development of a total of 214 projects (41.9%) is underway. (Economic achievements) Among the successful projects, 207 projects were procured at KRW 204.4 billion (procurement success rate 77.8%), generating an average of KRW 990 million in revenues per project (average funding amount of KRW 150 million). Given the replacement of imported goods and cost reduction, the funding effect is estimated to reach KRW 351.9 billion creating an economic effect 11.4 times that of the original funding amount KRW 30.8 billion.

Table 4. Summary of Achievements

Technological achievement (Before → After)	Technology Level	Technology Independence	Technology gap	Intellectual Property
	53.8% → 78.4%	54.9% → 86.9%	5.6 years → 3.9 years	110
Economic achievement (By project)	Procurement amount	Substitution of imported goods	Cost reduction	New jobs
	KRW 990 million	KRW 490 million	KRW 220 million	5.3 people

* Technology level: The relative technology level when the global top standard is 100.
* Technology independence rate: The relative independence level when the complete technology independence is 100.

Recent Development

210. In order to ensure better performance and wider application of the programme, SMBA has attempted various revised schemes in recent years. The new system is expected to increase the selection of projects with large economic effect. Projects in high demand are supported preferentially through the establishment and operation of the Technology Research Council. The Technology Research Council will be composed by industry or item with experts from procurement *organisation*s participating in the project and from the related fields. Technology development projects for SMEs will be selected among items that are largely imported based on the procurement structure analysis of large conglomerates and public *organisation*s, and customs data.

Table 5. Composition of Conditional Procurement Technology Research Council (Draft)

Category	Defence Industry	Green Technology	New Growth Drivers	Main Industry/Common Projects
Participating ministries	Ministry of Defence/Defence Acquisition Programme Administration (DAPA)	SMBA		
Operation *organisation*	Defence Agency for Technology and Quality (DATQ)	Large and Small Business Cooperation Foundation		
Participants	29 Large conglomerates in the defence industry	Large conglomerates (SME), public *organisation*s	Large conglomerates (SME), public *organisation*s	Large conglomerates (SME), public *organisation*s
	Academia and research	Academia and research	Academia and research	Academia and research

211. Efficient allocation of the venture funds provided will increase the number of SMEs applicable to receive the benefits. The cooperation fund and joint support funds will continue to increase. The cooperation fund for private large conglomerates and SME joint support funds for public *organisation*s will continue to increase. This will contribute to a stronger connection of supported projects to demands, and the limited resources will be able to support more SMEs. The funds will be established on a 2:1 (cooperation fund) and 1:1 (joint support fund) ratio basis for SMBA and Participating *organisation*s to provide up to 1billion KRW within 75% of a SME's total technological development costs.

Table 6. Composition of Demand-linked R&D Cooperation Fund

Category	Private	Defence industry	Public fields
Participating *organisation*s	Private large conglomerates	Large conglomerates in the defence industry	Public *organisation*s (Public corporations)
Size of Fund	KRW 10 billion	KRW 1 billion	KRW 1 billion

212. Technology and business support to SMEs will increase the results of the support system. The SME Project-Supporters is established and operated. Support in connecting the development phase to the business phase must be provided to SMEs in order to relieve difficulties caused by a lack of technology information, funds, and research experts. (Technology support) Technology experts, composed of experts in academia and government-funded research institutes, will offer technological advice for the projects. (Business support) Support will be provided for the business and commercialization of projects by utilizing retired professionals of large conglomerates and public *organisation*s. (Export support) Support will be provided for the exportation of products through export and overseas marketing experts.

213. The "Large Conglomerate-SME Technology Cooperation Centre" will be established. The Centre will provide support so that SMEs can domestically develop state-of-the-art core parts that are procured overseas and thereby achieve high added value in the industry. The Centre will incorporate information and knowledge accumulated through surveys on the demand for domestically developed technology projects and the Technology Research Council into a database, provide information and support the nurturing of experts. The Centre will construct an information DB on to-be-developed technologies to replace imported technologies. The Centre will analyze core products and parts-related-technology imported from advanced countries around the world and provides information on fields and directions on

fields that require the development of technology. The Centre will acquire information on parts developed domestically and incorporate it into a DB of specification, floor plan and pricing information to provide to SMEs. The Centre will provide support in matching large conglomerates with demand to SMEs with domestically developed technology. The Centre will conduct a survey on the demand for domestically developed technologies of large conglomerates and a survey of SMEs that possess technology that can replace imports, and provide support for the commercialization of such technology. The Centre will provide SME technology education through the operation of the "Academy for Technology to Substitute Imports". The Centre will build the "Online Technology Demand Information System" which connects the technological demand of large conglomerates and public *organisation*s to technologies possessed (developed) by SMEs.

Table 7. Role of the Large Conglomerate-SME Technology Cooperation Centre (Tentative)

Large Conglomerates	Large Conglomerate-SME Technology Cooperation Centre	Small-and-Medium Enterprises
Identify technology-based partners Joint search for development projects (Operation of the Technology Research Council)	Search for projects that develop the necessary technology (Joint) Development of projects Technological cooperation (R&D Infrastructure) Link developed products to the market Link developed products to online on-demand technology	Implement R&D projects linked to demand Building of market after development

214. More support will be provided to technology development linked with overseas buyers. Stronger support will be provided through independent budget allocation. In order to relieve the burden on SMEs by supporting technology development of many import companies, the budget specifically for this cause will be allocated separately within the project budget. In 2008 and 2009, 23 and 31 projects were supported out of a total of 184 and 169 projects, respectively. The budget for such support was only at KRW 2 billion in 2008 and KRW 5.4 billion in 2009.

Table 9. Technology Development Projects linked with Overseas Buyers

Category	'08	'09	'10 Planned
Projects applied	184	169	300
Projects supported	23	31	70
Government contribution	KRW 194 million	KRW 5.43 billion	KRW 1 billion

8. CASE STUDY: GTC AS A CASE FOR PUBLIC PROCUREMENT

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Scope

215. The Gran Telescopio Canarias (GTC), is a 10.4 m *reflecting telescope* undertaking commissioning observations at the *Roque de los Muchachos Observatory* on the island of *La Palma*, in the *Canary Islands* of *Spain*.

216. Construction of the telescope, located on a volcanic peak 2,267 meters above sea level, took seven years and cost EUR 105 million. The GTC Project is a partnership of four institutions from *Spain*, *Mexico* and the USA; namely the Instituto de Astronomía de la Universidad Nacional Autónoma de México (IA-UNAM), the Instituto Nacional de Astrofísica, Óptica y Electrónica (INAOE) , the *University of Florida* (UF), and the *Instituto de Astrofísica de Canarias* (IAC). Planning for the construction of the telescope, which started in 1987, involved more than 1 000 people from 100 companies.

217. As of 2009, it is the *world's largest single-aperture optical telescope* and is considered as an ICTS or Singular Scientific-Technological Facility by the Spanish Administration.

218. An ITCS (Infraestructura Científico-Técnica Singular) is a large facility aimed at complex scientific and technological research. It eases access to advance instrumentation to qualified scientists and technicians willing to run their experiments or to prove their technologies in the field of expertise of the facility.

219. Currently more than 50 sites have been mapped in Spain and included in the ICTS Map. The facilities are distributed along the State and address a wide number of disciplines ranging from life sciences to social ones.

220. The said ICTS map as well as the plan for new sites and further enhancement of existing ones are fully aligned with Spain's R&D Plan for 2008-2011 and the coming State's Strategy for Innovation (E2I).

The programme

Rationales

221. Back in 1987, the programme was envisaged by the IAC as an instrument to yield high quality R&D and thus satisfy the demands of the scientific community, while capitalizing on the Canary Island's natural advantages.

222. From a wider perspective, GTC's goals are similar in nature to those addressed by the ICTS initiative. In particular we may quote the following aims:

- Foster Canary Islands' economy.
- Enable the Spanish industry to compete worldwide in highly innovative projects in the field of astrophysics and astronomy.
- Ease internationalization of Spanish firms.
- Strength the scientific community capabilities in astronomy.

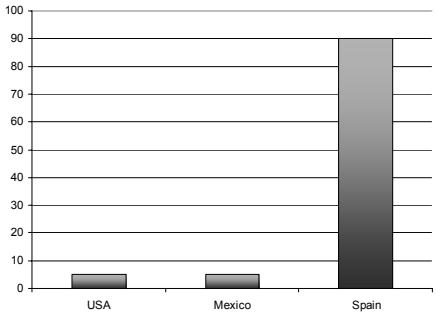
223. In addition, the very running of GTC creates a demand for above mentioned industry given that new and better instrumentation is required by the users as science and technology evolve.

Stakeholders - Management

224. Due to the wide range of targets and the significant efforts required to push forward GTC it was necessary a syndication of resources. Thus, it required international, national and regional contributions to achieve the critical mass on investments as well as on scientific and technological capacities.

225. At a national level it was needed common support from regional and national administration, mobilising EU funds for technological development (FEDER). Today the project is managed by a Joint Venture established by those administrations called GRANTECAN SA. The company's shares are broken down evenly.

226. Since its inception the programme was an international initiative. Today its major contributors are the Mexican IA-UNAM and INAOE, the University of Florida from USA, and IAC from Spain. In general terms, USA and Mexican participations account for 5% of GTC's budget each and benefit from a 5% of the telescope's observation schedule.

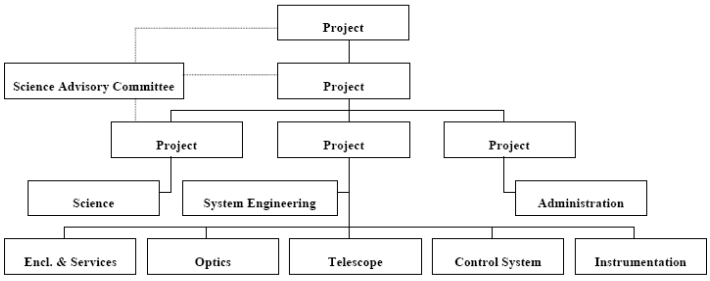


Specifications

Programme Start

227. At programme start a Scientific Advisory Committee was established to support the Scientific Programme Manager in the conception of GTC's specifications. Those were defined in close contact with the Spanish scientific community (see diagram underneath).

228. Technical specifications deriving from scientific ones were undertaking by the public enterprise GRANTECAN SA.



New Instrumentation

229. New instrumentation is proposed at the initiative of the research teams and among those GRANTECAN SA selects the preferred instrument aided by independent advisors and by either the Scientific Advisory Committee or the GTC's Users Committee. Final decision is confronted with the view of the Supervisory Committee on the Use of the Telescope.

Qualification criteria

230. Qualification criteria do not preclude non-UE firms and are based on technical specifications. Those are only driven technically and not by any further criteria.

231. Within the procurement process no particular provision are made for SME (Small Medium Enterprise), being the said process led by GRANTECAN SA.

Programme Assessment

Link innovation-procurement

232. Although there are not special provisions for innovative procurement within GRANTECAN's procurement policy, it has to be noted that the very establishment of GTC as such and the subsequent purchasing of scientific instrumentations constitute an example by itself on the use of public procurement as a tool for driving innovation as well as international partnership.

233. In addition, Spanish industries are supported in the R&D process previous to tendering by a range of supply-side measures mostly in the form of non-reimbursable funding to conduct R&D.

Regulatory framework

234. GTC procurement, either at programme start or after entry into service, is subject to the legal framework defined by EU Directive on Public Procurement of 2004 as well as by national Law 30/2007 on public sector procurement. Accordingly, the following principles rule every procurement process, namely publicity, concurrence, transparency, confidentiality, equality as well as non-discriminatory basis.

235. GRANTECAN SA places commercial contracts as defined by Law 30/2007. Those shall be awarded to the most advantageous offer economy-wise. Legal provisions for abnormal prices are not to be applied.

236. Tendering process can be either the general or the simplified one as per Law 30/2007, disregarding dialogued process. Firms participating in the definition of contract's specifications will be restraining from the bidding process.

Benefits

237. Due to the fact that an ICTS is on the cutting-edge of technological development and requires a significant investment, its procurement has a fourfold impact on innovation.

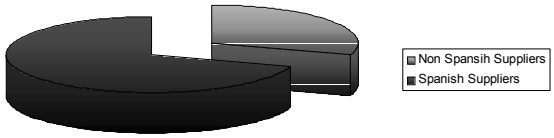
- It benefits industry and foster innovation by placing site's construction contracts as well as instrumentation development ones.
- It is instrumental in regional development and convergence by enhancing local R&T tissue as well as economy.

- Foster international partnership to secure the critical mass of investments as well as of scientists and technologists required.
- Strength research capacities in Spain while favouring the scientific community.

Statistics

238. Although no specific survey procedures neither KPIs (Key Performance Indicators) were defined to measure the impact of GTC innovation wise, a few general details are available to cast some lights on the effect of GTC as a tool to fostering innovation.

1. **Suppliers nationality.** According to GRATECAN records, 70% of contracted companies were national to Spain.
2. **Spin-off Creation.** Some SMEs are or have been created as spin-off from GTC. One example is FRACTAL a SME devoted to scientific software.



3. Business opportunities deriving from GTC. Although there are not precise figures, it has been states that a few firms have been awarded contract thank you to technologies initially developed for GTC (companies such as CESA, Empresarios Agrupados or NTE are examples).

Conclusions

239. Although GTC is in operation since less than a year, some conclusions may be drawn already with regard to the effect of such initiative on leveraging innovation.

240. Thus, we can remark the role of the facility in promoting innovation through is suppliers, as stated by the spin-offs generated and the contracts awarded to certain firms due to technologies developed for GTC.

241. Still there is some room for improving the way in which the initiative support innovation. For instance it could be beneficial to devise a methodology with measurable KPIs to attest the full impact of the facility.

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9. DEMAND-LED INNOVATION POLICIES – UK EXAMPLE: BIOMETRICS STANDARDISATION

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1. Innovation and standardisation policy in the UK

1.1 Innovation policy

242. In his report, *Race to the Top (2007),* Lord Sainsbury recognised that interaction between standards and innovation is key to stimulating research, establishing communication networks and encouraging industrial developments – all prerequisite steps to the commercialisation and widespread uptake of new technologies. He recommended greater collaboration within the UK standardisation infrastructure to better co-ordinate support for emerging industries.

243. Since the report, the Department for Business, Innovation & Skills (BIS) have provided BSI with over GBP 2.5 million in direct support for standards development in emerging technology areas.

1.2 Standardisation policy

Standardisation as support for innovation

244. Standards are a core element of the Government's approach to supporting innovation. As noted in the Swann report standardisation can "help create a strong, open and well organized technological infrastructure" to enable innovation-led growth. Standards can improve competitiveness by reducing costs in both manufacturing and service provision. They reduce uncertainty: providers of goods or services do not need to reinvent the specifications or performance criteria incorporated in the standard, and can concentrate their resources on improving product and service quality, performance and safety, to differentiate their products.

245. Both buyers and sellers benefit from the shared information conveyed by a standard. This transfer of knowledge can be useful to innovators who can then make improvements which can help them enter and create markets. Indeed standardisation, together with collaborative research, licensing and exchange of personnel, can be an effective and efficient channel of knowledge transfer. However, this channel has been neglected by many research institutions, companies and policy makers, especially research funding organisations.

246. The UK and European standards systems, together with their sponsoring Government bodies, need to increase their focus on working with the research community, both public and privately funded to provide insight into key new technologies, especially those where Europe has or wishes to have a lead innovation position thereby providing input to strategic European standardisation decisions.

Some success areas: nanotechnologies, regenerative medicine, biometrics

247. Biometrics, nanotechnology and regenerative medicine were jointly identified in 2005 by BIS' predecessors as areas insufficiently developed to work in the traditional income-generating standards model, and which would benefit from "pump priming" by the allocation of funding from BIS (and its) support for standardisation. A preliminary study of the impact and effectiveness of these key emerging technologies areas was carried out by Ernst and Young on behalf BIS. The findings of the study indicate

that this support is appropriate and beneficial and that Government should develop the model used and apply it to other emerging technologies as appropriate. By setting out ground rules, common terminology, development methods and measurement techniques standards enable the diffusion of innovation through these technologies and into the market place.

2. Biometrics standardisation

2.1 What is biometrics

248. A biometric system is a system for the automated recognition of individuals based on their behavioural and biological characteristics.

249. Fingerprints, face geometry, iris patterns and hand geometry are examples of biological characteristics, while dynamic signature recognition - the way in which a signature is written rather than the resulting graphic - is an example of a behavioural characteristic. In reality, most biometric characteristics comprise elements of both biology and behaviour.

250. Wherever there is a need to identify or verify a human being there is a potential application for biometrics. This includes entry control to buildings and secure areas including countries, as well as logical access control to resources such as bank accounts and entitlement services.

2.2 Biometrics standards development

251. Standards are important because technical standards support interchangeability and interoperability. Such standards reduce the risk for the procurer, system integrator and the end user, because they simplify integration and enable vendor substitution, technology enhancement and development.

252. BSI publications and international standards are essential for any Government or commercial biometric project procurement.

- The International *Organisation* for Standardization (ISO) and the International Electrotechnical Commission (IEC) have a joint committee for information technology standards, ISO/IEC JTC1. In 2002, ISO/IEC JTC1 established a subcommittee (SC 37), to develop biometric standards.

253. As the UK's National Standards Body, BSI (the British Standards Institution) manages a 'national mirror committee' to provide the UK input into the international biometrics subcommittee and its working groups. This committee has the designation IST/44.

254. Standards development is being undertaken in groupings covering:

- interfaces;
- data formats;
- profiles;
- testing;
- societal issues;
- vocabulary.

255. Each of these groupings has a series of standards, where some are completed or soon to be published, and others are still 'work in progress'.

256. It is important to note that the standardisation work in the area of biometrics is mostly international in origin. BSI 'adopts' the international standards published by ISO/IEC JTC 1/SC 37 as 'national standards', *i.e.* they become British Standards and related documents. However, a UK-specific Publicly Available Specification, or 'PAS', a kind of 'interim' standard is also in preparation. This will provide general guidance on the use of biometric technologies to facilitate and encourage their successful deployment. It will also address performance and security criteria and will take into consideration legal aspects, including data protection and disability rights laws

3. Public policy in biometrics

257. In the UK, aside from BIS, which has overall policy steer for the Government interest in standardisation, the main public policy interest in biometrics is via the Home Office and its Agencies, the UK Border Agency and the Identity and Passport Service. The Home Office Scientific Development Branch (HOSDB) identifies the following examples for the use of biometric technologies:

- using fingerprint technologies to register asylum seekers;
- using Iris recognition systems to facilitate travel for frequent visitors to the UK;
- introducing the new range of passports which include a digitized image of the holder's face in a secure chip.

258. The HOSDB's Biometrics Centre of Expertise supports the Home Office's programmes to provide scientifically based advice on the application of biometrics and aims to:

- align programmes and projects, for example through operation to common standards and as part of a wider identity management environment;
- support assurance activities in procurement and deployment;
- share experience and knowledge about the application of biometrics throughout Government;
- anticipate future developments in biometric technologies and system design, to ensure that solutions continue to be effective and optimal into the next decade;
- engage with academia, technology developers and system integrators to ensure a flow of information and knowledge about the use of biometrics in Government.

259. In this context, the developing international standards in the field of biometrics are seen as key to supporting this ongoing work.

260. Biometric technologies are also used in many private settings, such as those operated by banks and employers, and so it is vital that developments in all these fields are tracked.

4. Why support standardisation in this area

261. Standardisation is widely seen as a key instrument in supporting the development of biometric technologies. The UK Home Office recognises the importance of a standards programme to support its work, but also to support policy goals such as fair and open competition between vendors, and to support the need to update systems in the future.

262. BIS and BSI have worked out together a set of criteria against which standardisation programmes can be assessed to make the case for assigning public funding to them.

263. The 'traditional' standards-making model employed by BSI and its sister national standards organisations around the world will often depend on sales of standards and related products to fund ongoing work. Furthermore, BSI does not charge a membership fee for its national committees.

264. With standardisation programmes such as that for biometrics, sales of standards are relatively low. However, a significant national interest in biometrics standards has been identified, owing to the importance of biometrics systems in settings such as those operated by the UK Border Agency at points of entry to the country, and in developments in passport and identity proof technologies employed by the Identity and Passport Service. Coupled with the need to exchange and coordinate sensitive personal information with other national authorities, then the national interest is clear.

265. Against the background of low sales of standards, owing to the fact that there are relatively few companies active in the field, the impact or 'footprint' of those standards through the deployment of biometrics systems is vast, affecting millions of ordinary citizens every year, as they pass through ports of entry and departure controlled by national authorities, and in their interactions with private enterprises, such as banks, service providers and employers.

266. The Government's support of biometrics standardisation in the UK achieves several aims:

- the ability to open public procurement contracts to competitive tender through reference to standards, in turn facilitating access to smaller companies and potentially saving public money;
- confidence that the UK's view of biometrics system development is aligned to international advances in technology;
- the facility to exchange information with other national authorities;
- the ability to analyse the developing work programme.

267. The Home Office, together with its Agencies the UK Border Agency and the Identity and Passport Service, embodies the most significant Government interest in biometrics in the UK. It also operates a 'Biometrics Centre of Expertise', which seeks to support the Home Office's programmes and provide scientifically based advice on the use of biometrics. The Centre also works closely with BIS, which is the lead Government Department for standardisation.

268. A further public policy objective relating to information security and the handling and retention of biometric data has also been identified. This relates to priorities of the UK's Information Commissioner's Office, which is supportive of the development of the 'PAS' mentioned in 2.2, above.

5. Conclusions

5.1 Impacts

269. An independent review of UK Government funding of standardisation and innovation programmes in the UK during 2009 revealed the value that had been delivered by ongoing funding of the biometrics standards programme. Interviews conducted with key Identity and Passport Service staff showed the clear benefits this Agency felt it derived from supporting the standardisation programme, notably the following key findings:

- open-systems based standards had saved the UK Government considerable sums by enabling competition on identity card contracts;

- the use of standards had accelerated progress on biometrics programmes, such as that run by the Identity and Passport Service, and had future-proofed the technology;
- standards had enabled UK-based system integrators to operate in a fair and open market and had prevented domination by a small number of non-UK companies.

5.2 Benefits

270. Support for standards programmes in new areas such as biometrics has led to clear benefits, such as supporting the diffusion of the technology into the marketplace. It has also supported other key agenda items for the UK Government, such as more efficient and cost-effective procurement and has permitted all industry players, including some small- to medium-sized enterprises to compete in a fair market.

5.2 Key challenges

271. A key challenge for the future was how the volume of work in the standardisation programme had expanded, owing to both the expansion of biometric technologies and the changing global security situation. This could pose a potential dilemma in the future for public funding, notably choosing how to support the programmes in the future in a difficult public funding context (notably, reduced budgets).

272. A further challenge was the potential 'open-endedness' of funding of standardisation. By its very nature, standardisation is an ongoing, iterative process. Typical publication time for international standards is around three years (elapsed time), allowing for the necessary time taken in drafting, processing and voting/consensus-building stages. Conversely, public funding streams are often shorter-term in nature, often with difficulty in securing funding beyond twelve months. Despite the clear view of the benefits of supporting standardisation in the field of biometrics, ongoing public funding in this area was far from certain.

5.3 Next steps

273. A key opportunity and challenge would be to share the successes of supporting biometrics standardisation with other UK Government Departments and Agencies.

ANNEX 1: CASE STUDY QUESTIONNAIRE

Case Study Template for Demand-led Innovation

Objective: To identify the issues that need to be examined for each of the case studies.

Note: We will keep the number of questions to be answered as short as reasonable by mainly using common questionnaire and additional questions for specific policy instrument.

Possible issues/questions to be examined:

1. Common issues

- What is the category or type of demand-side programme under study (*e.g.*, procurement, standards, etc.)?
- When was the programme created?
- What was the rationale for introducing the programme (*e.g.*, market failure)?
- What "demand" does the programme attempt to create/strengthen/focus (*e.g.*, health technologies, specific software, etc.)?
- How is the demand identified (*e.g.*, top down, focus groups, etc.)?
- How does the programme support innovation?
- Does the programme support/require partnerships?
- How does the programme envision/support user involvement in innovation?
- Does the programme include support for supply-side issues (*e.g.*, support for R&D, technology demonstration, etc)?
- How does the programme link to other national demand-side or supply-side programmes?
- What are the main challenges to demand side-innovation policy?
- (*e.g.* concern over trade treaty obligation, governance coherence)
- How does the programme deal with foreign firms and other *organisation*s?
- If an evaluation has been conducted, what were found to be the programme's strengths and weaknesses?
- How is the programme's impact on innovation measured?
- Are there "success" stories of innovation supported through this programme?

2. Procurement issues

- Are there any procurement guidelines for innovation?
- What is the mechanism that really works in implementation?
  - Technical specification (*e.g.* energy efficiency, waste reduction)
  - Qualification and selection (*e.g.* technical excellence instead of value for money)

  - Simple Process for new entry (e-procurement)

- Is there any special scheme for SME (*e.g.* quotas, preference)?

3. Regulation issues

- What is the role of regulatory reform in introducing new service? (*e.g.* low cost carrier)?
- What types of incentives was used (*e.g.* fixed feed in tariff)?

4. Standards issues

- What are the difficulties in introducing new standards?
- How can standards help drive demand?