



Good Governance for Digital Policies: How to Get the Most Out of ICT

THE CASE OF SPAIN'S PLAN AVANZA



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Foreword

OECD economies increasingly depend on digital knowledge and information to stay ahead in the global economy. Countries that are good at creating, diffusing and exploiting information for economic gain often find themselves at the forefront of new market opportunities and sources of growth. Underpinned by Information and Communication Technologies (ICTs), these knowledge economies are growing more productive, innovative, and sustainable.

The economic crisis has further propelled the use of ICTs, which are regarded as agents of economic growth and as catalysts for structural economic change. Plan Avanza, Spain's national strategy for the advancement of the Information Society, is a concerted policy response to the role played by ICTs in achieving the dual dividend of economic recovery and long-term growth. At a time of growing fiscal constraints and when the cost-effectiveness of policies is under close scrutiny, getting the most out of ICTs is of paramount importance to ensure an efficient use of public resources.

In addition to assessing the results of Plan Avanza, this Review analyses the Plan's governance mechanisms, including the institutional and public management tools that are the driving forces behind its various programmes. A strong information society also requires a supportive legal and regulatory framework, and Plan Avanza has helped to promote key pieces of legislation that have encouraged digital inclusion and the creation of digital public services.

The insights provided in the report are particularly useful as they come at a time when Spain is preparing to launch Plan Avanza 2 (2010-2015). To further maximize its impact, this new phase would benefit from further exploitation of ICTs' transformative potential, a greater balance between supply and demand-side policies, and improved alignment of policy instruments to improve cost-effectiveness.

This Review is the result of multidisciplinary and cross-sectoral analysis. It is a strong reminder that governments in all countries need a good understanding of governance, technology and regulatory policies as inter-dependent forces driving the Information Society.

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Acronyms and key terms

Broadband	There is no standard definition of the threshold speed for broadband. In this report, depending on the source, different thresholds may apply. For instance, the European Commission's Communications Committee (COCOM) and EuroStat define broadband as telecommunication lines or connections are defined as those transporting data at high speeds, with a speed of data transfer for uploading and downloading data (also called capacity) equal to or higher than 144 kbit/s. The technologies most widely used for broadband access to the Internet are digital subscriber lines (DSL or xDSL) or cable modems. On the other hand, ITU's broadband indicator is called "Total fixed (wideband and) broadband Internet subscribers" and defined at speeds equal to, or greater than 256 kbit/s, in one or both directions.
CATSI	<i>Consejo Asesor de Telecomunicaciones y la Sociedad de la Información.</i> The consultative body that helps set Plan Avanza's high-level priorities and objectives. CATSI consists of representatives from government, regions and municipalities, ICT/user associations, etc., organised into several working groups.
Digital divide	The term "digital divide" refers to the gap between individuals, households, businesses and geographic areas at different socio-economic levels with regard to both their opportunities to access information and communication technologies (ICTs) and to their use of the Internet for a wide variety of activities. The digital divide reflects various differences among and within countries.
DLR	Digital learning resources. This report broadly defines DLR as any digital resources actually used by teachers and learners for the purpose of learning. The term refers not only to learning resources that have been designed from the very outset as digital materials, but also other resources that have been digitised. It covers resources produced by commercial publishers, governments or public agencies, such as public broadcasting companies or libraries.
E-government	The term "e-government" focuses on the use of new information and communication technologies (ICTs) by governments as applied to the full range of government functions. In particular, the networking functionalities offered by the Internet and related technologies have the potential to transform the structures and operation of government.

Electronic commerce	Electronic commerce refers to commercial transactions occurring over open networks, such as the Internet. Both business-to-business and business-to-consumer transactions are included.
E-prescribing	There is no internationally agreed-upon definition for e-prescribing. However this report refers to this term as: the electronic transfer of a prescription to a dispensing pharmacist/pharmacy.
EHR	Electronic health record. An electronic record of health-related information on an individual that conforms to nationally recognized interoperability standards and that can be created, managed, and consulted by authorized clinicians and staff across more than one health care organization.
End-users	The targeted beneficiaries of a policy. For instance, in a programme designed to extend broadband to schools, the end-users would include educators, education administrators, students, parents, etc. In a programme designed to promote the design of websites in small and medium-sized enterprises (SMEs), the end-users of such a programme would be the SMEs.
ICTs	Information and communication technologies. ICT technologies are intended either to fulfil the function of information processing and communication by electronic means, including transmission and display, or to use electronic processing to detect, measure and/or record physical phenomena, or to control a physical process.
INE	<i>Instituto Nacional de Estadística</i> . Spain's National Statistics Office.
Internet	A global system of linked computer networks that allows data communication services such as remote log in, file transfer, electronic mail, bulletin boards and news groups. The Internet is also the foundation for the World Wide Web (WWW).
IS	Information society. Synonymous with what is meant by "new ICT". Since the beginning of the 1990s, new ICT have been booming. The universal use of electronic exchanges of information, convergence towards digital technologies, the exponential growth of the Internet and the opening up of telecommunications markets are all signs of this change. The OECD's Guide to Measuring the Information Society, sets forth, in statistical terms, some of the main components which encompass the widely agreed elements of ICT supply, ICT demand, ICT infrastructure, ICT products and 'content'.
IS strategies	Information society strategies/policies. Over the years, a growing number of OECD member countries have been widening the scope of their information and communication technology (ICT) policies to encompass wider social and economic dimensions. These objectives now include promoting sustainable economic growth, boosting productivity, providing employment opportunities, encouraging

innovation, and improving the effectiveness of public services and citizens' quality of life. In short, many ICT policies have become information society (IS) strategies. These strategies are largely horizontal, working across policy areas/sectors of government to achieve their aims.

MITT	<i>Ministerio de Industria, Turismo y Comercio</i> . Spain's Ministry of Industry, Tourism and Trade. The central government organisation responsible for leading IS and telecommunications policy.
ONTSI	<i>Observatorio Nacional de Telecomunicaciones y la Sociedad de la Información</i> . Spain's National Observatory for Telecommunications and the Information Society, an organisation within the STIS responsible for measuring, collecting, analysing and distributing information (data, statistics, methodologies, etc.) on IS policy in Spain and abroad.
SMEs	Small and medium-sized enterprises. Non-subsidiary, independent firms employing less than a given number of employees. The most frequent upper limit designating an SME is 250 employees, as in the European Union. However, some countries set the limit at 200 employees, while the United States considers SMEs to include firms with fewer than 500 employees. Small firms are generally those with fewer than 50 employees, while micro-enterprises have at most 10, or in some cases 5, workers. The report utilises the European Union's definition. Financial assets are also used to define SMEs. In the European Union, a new definition came into force on 1 January 2005 applying to all community acts and funding programmes as well as in the field of state aid where SMEs can be granted higher intensity of national and regional aid than large companies. The new definition provides for an increase in the financial ceilings: the turnover of medium-sized enterprises (50-249 employees) should not exceed EUR 50 million; that of small enterprises (10-49 employees) should not exceed EUR 10 million while that of micro firms (less than 10 employees) should not exceed EUR 2 million. Alternatively, balance sheets for medium, small and micro enterprises should not exceed EUR 43 million, EUR 10 million and EUR 2 million, respectively.
STIS	<i>Secretaría de Estado de Telecomunicaciones y para la Sociedad de la Información</i> . Secretariat of Telecommunications and the Information Society. Organisation within the MITT responsible for leading and implementing Plan Avanza projects in Spain.

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Core messages of the review

Some of the key achievements made under Plan Avanza in information and communications technology (ICT) diffusion and public sector modernisation are highlighted in this peer review. Additionally, the review identifies areas on which future work could focus in order to sustain – and magnify – the important progress made thus far. In particular, the government of Spain could **consider prioritising the following three lines of action**, aimed at strengthening the role, responsiveness and performance of information society (IS) policy in Spain:

Plan Avanza as a strong contributor to economic recovery and long-term objectives for green growth and innovation.

- Given the potential of ICTs and the ICT sector to contribute to societal and economic-wide goals for greater growth, innovation, sustainability, equity, and citizens' welfare – the strategy could better reinforce cross-sectoral synergies and existing partnerships to **contribute more strongly to the country's policy agenda for economic recovery and long-term objectives for structural reform**. The current macroeconomic and political climate in Spain is ripe for Plan Avanza to consolidate itself as a key policy agenda for achieving this “dual-dividend”, and policy makers should seize this opportunity to utilise ICTs' transformative power to create greater public and economic value.
- Towards this end, Plan Avanza policy makers should consider **broadening their efforts to support a “whole-of-government” approach to green growth and innovation** by more proactively exploiting synergies with other relevant policy domains. Specifically, closer co-operation at the ministerial level is needed to promote innovation in SMEs and increase energy efficiency by scaling-up efforts to develop and roll-out “green ICTs” for use in “smart-grids”, buildings, transport and throughout the entire economy. Likewise, **developing and implementing targeted IS policies for groups and sectors particularly affected by the crisis** will be important for the strategy at this critical juncture. As a horizontal sector and catalyst for systemic innovation, helping the Spanish ICT sector **grasp potential market opportunities – at home and abroad** – will be key.

Plan Avanza as a demand-driven, user-centred strategy that delivers visible results to society.

- Much of the progress made since the launch of Plan Avanza has been in terms of increasing the availability of essential ICT infrastructure upon which continued development relies. However, leveraging the investments made thus far will depend on reaching a greater equilibrium between supply and demand-side policies in order to maximise the value of these infrastructures for the economy and to enhance benefits for society.

Core messages of the review *(continued)*

- The government of Spain should consider **scaling-up efforts to further develop ICT skills**, not only in terms of basic skills in the general population but also specific ICT-enabled competencies in particular groups (civil servants, managers, unemployed people and entrepreneurs, among others). Furthermore, Plan Avanza should **re-orient its communications strategy** to support ongoing e-government marketing strategies to promote take-up and **support a movement towards more demand-driven public services**, such as in the health sector for example. Finally, future IS strategies in Spain could further increase their cost-effectiveness by shifting from broad-based ICT diffusion policies to **more precise, targeted infrastructure investments**, reflecting some remaining digital divides in certain socio-economic/demographic groups, territories or sectors.

Plan Avanza as a high-performing policy that maximises impact and makes optimal use of resources.

- An effective governance framework has been created for the design and implementation of the plan but more could be done to optimise resources and maximise the impacts, especially in times of fiscal tightening.
- For example, at the sub-national level, the **plan could create a roadmap for municipalities and promote horizontal co-ordination** amongst sub-national governments to maximise economies of scale and attain greater buy-in. The State Secretariat for Telecommunications and the Information Society (SSTIS) could also consider **co-developing a change management strategy** with regional governments to further secure the sustainability of investments. At the national level, **the distribution formula of Plan Avanza funds could be revisited** to more strongly contribute to closing digital divides, and the Plan's **monitoring and evaluation framework could be improved** by increasing oversight over programmes implemented by external stakeholders, standardising programme indicators across regions, and reinforcing linkages between existing input and output data with analyses aimed at evaluating cost-effectiveness and guiding policy decisions.

Assessments and proposals for action

Plan Avanza (“the Plan”) has arguably been Spain’s most comprehensive policy to date aimed at furthering the development of the country’s information society, a significant accomplishment in and of itself when considering the challenges involved in launching a new initiative of such a large, cross-sectoral scope and complexity. Whereas previous information society (IS) policies were implemented in isolation by different ministries, under Plan Avanza there has been greater policy coherence in terms of sequencing and responding to national and sub-national priorities. Streamlining and scaling-up these policies under the Plan, as well as increasing co-ordination with regional and local governments, has yielded important results: under the auspices of Plan Avanza, Spain’s information society is approaching an important turning point wherein the progress made in ICT diffusion has reached a threshold of critical mass. Indeed, the principal challenge for policy makers now is to bridge these technologies with their intended purposes – productivity gains, facilitating innovation, increasing growth and public sector efficiency, and generating benefits for citizens.

Nearly five years after its initial launch in 2006, and at the request of the Spanish government, this report examines some of the key advancements made recently in integrating citizens, businesses and the public administration into the information society, and identifies areas on which future work could focus in order for Spain to continue converging with EU and OECD member countries and – in some areas – position itself amongst leaders in ICT access and usage, in the growth of the ICT sector and in the development of e-government services. Second, with a view to helping Spain improve the cost-effectiveness and efficiency of Plan Avanza’s policies, the review examines the strategy’s governance framework, recognising the importance of institutional and implementation mechanisms as key factors. Certainly, experiences from other OECD member countries suggest that the success of IS strategies often depends on taking into consideration a number of the governance factors which will be examined in this report: developing a coherent, cross-sectoral policy portfolio; strategic priority-setting and policy sequencing; ensuring the involvement of critical stake-holders; adequate funding and incentive structures between and across levels of government; adapting regulatory and legislative frameworks to support objectives; and applying strong evaluation and oversight measures.

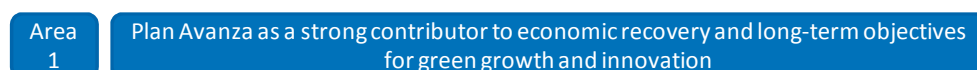
Insights gained from the peer review exercise are particularly relevant at this time, as the information society policy agenda finds itself at a critical juncture in Spain. The EU’s Digital Agenda was released this year and the next Spanish IS strategy (Plan Avanza 2) will be implemented in parallel, with the advantage of building on achievements and learning from the strengths and weaknesses of its predecessor. Moreover, lessons learnt from the review become more imperative for Spain and other OECD member countries, as future IS strategies enter into force in the midst of a complex political, social and economic context which, though not unique to Spain, will no doubt influence the next strategy in the short term. For recommendations to be both valuable and implementable, it is important to recognise how these current issues and trends will play a role in dictating

the next strategy's objectives, priorities and governance approach. These issues present both important challenges and opportunities and include:

- **Ongoing economic recovery:** OECD member countries are now on the path to recovery from one of the most severe global financial turned economic recessions experienced in decades. In this context of still uncertain growth rates and volatility, policy makers and citizens judge large-scale policies and investments on their capacity to contribute to objectives for growth and the creation of employment opportunities. In the short- to medium-term, policies – including the information society agenda – must be able to demonstrate that they are contributing positively to these important goals.
- **Growing prevalence of ICTs:** while ICTs certainly have a role in contributing to recovery from the crisis, at the same time, an additional challenge for OECD member countries is maintaining a long-term vision of how the transformative power of these technologies can be used to contribute to objectives for structural reform. OECD member countries are entering an era where ICTs are by and large considered general purpose technologies: technologies which have become irrevocably embedded in peoples' daily lives, in business operations, and in the ways governments interact with citizens and deliver services. As ubiquitous technologies, governments cannot afford to omit ICTs from their decisions and policies for innovation, growth and inclusion, or they risk being left unable to compete in a global economy that increasingly relies on knowledge-based transactions facilitated by technology.
- **Increasing fiscal constraints:** the crisis has also exacerbated levels of sovereign debt, to the point where in 2010 the OECD fiscal deficit is projected to stabilise at 7.8% of GDP (OECD, 2010a). As a result, policy makers (including regional and local governments) are under growing pressure to maximise results in times of recovery while also optimising resources. As key contributors to growth, information society strategies operating in a more stringent fiscal environment will need to find innovative solutions to deliver stronger results and increase cost-effectiveness.
- **High expectations of citizens:** finally, in the current macroeconomic and political climate, governments are also under pressure to enhance tangible results for citizens with perceivable effects on their welfare and lives. In the wake of the crisis, after tax payers have financed stimulus packages and contributed to cushion against public sector default, there is a growing demand from the electorate for government investments and initiatives to translate into direct benefits for end-users and deliver greater public value (OECD, 2009a).

The severity of the last recession and immediacy of the (above) issues for citizens signify that any current ambitious, large-scale policy operating at this time must be able to adapt to this current context, demonstrating that it is **responsive to needs, contributing value to society and that it uses its resources efficiently**. The following section highlights the review's key findings and main conclusions, setting out proposed areas of action that the government of Spain – in the context of the aforementioned trends and contributing to long-term goals – could consider implementing under the next IS strategy. The proposed areas of action can be summed up under the following three pillars.

Overview of proposed areas of action



Key assessment one

Given the potential of ICTs and the ICT sector to contribute to socio-economic objectives, the strategy could further maximise cross-sectoral synergies and the partnerships it has built thus far with (both government and non-governmental) stakeholders in order to more strongly contribute to the country's policy agenda for economic recovery and long-term objectives for structural reform.

Important advances in information society policy have been made under Plan Avanza namely elevating these policies on the political agenda and attaining buy-in from key stakeholders about its importance for the country's future competitiveness...

Strong centralised leadership on the part of the Secretariat of State for Telecommunications and the Information Society (SSTIS), as well as the adoption of a co-implementation model which relies heavily on mutually beneficial partnerships with stakeholders, have been two critical factors that have helped promote IS policy (and Plan Avanza) on the national agenda as a tool for modernisation, supporting e-government initiatives and contributing to economic development. The approach adopted by Plan Avanza has led to critical buy-in from key stakeholders, the mobilisation of greater resources and – ultimately – a wider impact on citizens, businesses, and the public administration itself. In turn, the increasing prioritisation of IS policy in Spain is reflected by the rising number of regional and local stakeholders more ambitiously pursuing ICT policies and their increasing involvement in the design and implementation of Plan Avanza programmes. The growing appreciation of the importance of a strong information society is not merely a case of stakeholders' implementing top-down initiatives, as they too are expected to co-finance Plan Avanza programmes, invest their own additional human and organisational resources, and adapt procedures and service delivery models to incorporate – and exploit – the benefits of ICTs. Rather, this review has found that the trend represents a growing recognition of the important role of information – and access to it – as a backbone to a competitive and inclusive knowledge economy, and a response to national and international pressure to continue converging with European and OECD member countries in key IS dimensions (access, availability and usage). For example,

survey results from this peer review highlight this changing mentality in Spain, which is perhaps the principal achievement of Plan Avanza: today, 69% of Plan Avanza stakeholders report that IS policy is a “high priority” for their organisation, and 78% report that IS policy is “very important” for economic recovery; an impressive backing that – according to interviews with long-time proponents of IS policy in Spain – was uncommon in Spain a decade ago.

...but the crisis has highlighted the fact that more is needed for information society development to contribute to sustainable growth.

However, while Plan Avanza has certainly adopted a cross-sectoral and collaborative approach throughout its design and implementation, the strategy could leverage its strong political mandate to strengthen the “whole-of-government” approach to the IS agenda. This would also allow for the strategy to further increase its scope, including the potential of IS initiatives to more directly contribute to economic recovery and long-term goals for structural reform (e.g. “the dual dividend”). One challenge towards continuing this cross-sectoral approach could be encountering some potential policy duplication and fragmentation, especially because of some shared objectives and targeted beneficiaries. Policy makers across the government could reduce this risk by working to further exploit synergies in promoting the adoption of ICTs across the economy, in the development of the ICT sector and ICT clusters, or in the development of human capital for the ICT sector. Additionally, the Plan could also work more closely with other areas of government to align policies targeting SMEs.

Nearly two years after the peak of the crisis in 2008, some key policy gaps remain, and Plan Avanza could have been further contributing to efforts for recovery. Indeed, broadband services are to be included under universal service obligations, and this initiative is being included in post-crisis recovery policies such the **draft Law for the Sustainable Economy**, Spain’s key piece of legislation for green growth. However, although high-speed broadband is a critical platform for promoting systemic innovation and productivity gains, there are a multitude of additional key linkages between IS policy and recovery objectives beyond broadband deployment that could be broached by Plan Avanza and which remain relatively unexploited or nascent at this time. For example, in comparison with other OECD member countries, Spain has placed less emphasis on ICTs as enabling technologies for green growth, e.g. in the areas of smart energy, transport and buildings. Additionally, Plan Avanza could contribute to easing unemployment and “re-skilling” the workforce by helping to build ICT skills/capacities; however, resources dedicated to this important area have been relatively low and do not specifically target the unemployed at this time. Lastly, although socio-economic divides can be aggravated by economic downturns, this is an important digital divide where the Plan has not focused strongly, emphasising rather age, gender and rural/urban disparities in ICT access and use.

Spain’s ICT sector has demonstrated that it is – and will remain – an important driver of the continual development of Spain’s information society.

Finally, the Spanish ICT sector, and in particular the services sector, demonstrates promise as a driver of growth; the sector has increased revenues and employment and held up relatively well during the economic crisis. Nevertheless, innovation indicators for Spanish ICT firms remain relatively low overall, and the share of ICT specialists in the Spanish economy remains low compared to other OECD member countries. Challenges

remain with regards to matching skills with existing jobs, especially since the telecommunications sector has released many employees in recent years. Indeed, untapped opportunities remain for the Plan to support this sector as a horizontal catalyst across the economy for spurring growth and a shift towards more value-added economic activities.

Proposed action area 1: Plan Avanza as a strong contributor to economic recovery and long-term objectives for green growth and innovation.

1. **Supporting a “whole-of-government” approach to green growth and innovation.** Plan Avanza policy makers should consider broadening their efforts to support a “whole-of-government” approach to green growth and innovation by more proactively exploiting synergies with other relevant policy domains. Specifically, closer co-operation at the ministerial level is needed to promote innovation in SMEs and scale-up efforts to develop and roll-out “green ICTs” for greater energy efficiency in buildings, transport and throughout the economy.
 - First, greater horizontal co-ordination would help Plan Avanza materialise its intentions to foster the development and application of “green ICTs” in transport, supply chains, buildings and ICT equipment. While the Plan has proposed a new line of work in this area, policy makers could make specific initiatives more concrete by developing a specific “green ICT” strategy and/or working group under the auspices of the Plan or CATSI (Spain’s Telecommunications and Information Society Advisory Board). Some areas of immediate action on this front could include:
 - greater support for the development of green ICTs through venture capital, pilot projects, and R&D investment;
 - support for initiatives that promote smart grids, as these networks rely heavily on IT solutions;
 - co-ordination with local governments on the application of green ICTs in transport to lower emissions in urban areas;
 - support for initiatives for “greening” IT in the public sector by co-developing and implementing measures for reducing the energy consumption of public sector IT systems. These measures could include additional guidelines for green procurement or introducing cloud-computing models;
 - joint standard-setting: together, government agencies can create powerful incentives to stimulate the market for green ICTs by setting (even non-obligatory) energy efficiency standards for buildings, cars, in industrial supply-chains, etc.;
 - joint dissemination of information to sub-national governments and stakeholders about ongoing initiatives and new technologies available (for instance by creating a green ICT catalogue by sector or disseminating best practices);
 - public-private co-operation: inter-ministerial co-operation could also take the form of sharing and strengthening established green ICT networks with the private sector;

- joint projects: Plan Avanza could establish synergies with initiatives under the 2009-2012 National Plan for Housing and Rehabilitation (*Plan Estatal de Vivienda y Rehabilitación 2009-2012*), as this strategy includes measures to improve the energy efficiency of homes. Plan Avanza's linkages with the ICT sector and lessons learnt from pilot projects such as *Hogar Digital* (Digital Home) could contribute to goals for rehabilitating homes or participating in pilot programmes for the development of electric cars.
 - Second, Plan Avanza could benefit from greater consolidation of innovation efforts to ensure greater policy coherence and impact. In particular, a more concerted effort is needed regarding common strategic target groups (SMEs, start-ups, ICT sector). In addition to a monitoring system (SISE) which the Ministry of Industry, Tourism and Trade and the Ministry of Science and Innovation participate in, more operational governance tools may be needed to exploit synergies and avoid duplication. For instance, the government could consider strengthening the participation of the Ministry of Science and Innovation in Spain's Telecommunications and Information Society Advisory Board (CATSI) and/or other consultation and policy design processes. Some areas of collaborative work could entail:
 - consolidating funding schemes under joined “one-stop windows” in order to simplify access and reduce duplication/fragmentation;
 - joint communications campaigns;
 - joint venture capital schemes for ICT start-ups;
 - co-operating in the promotion of ICT clusters, especially since Plan Avanza is beginning to work with universities to build human capital in the digital contents sector.
2. **Strengthening efforts to internationalise and consolidate the Spanish ICT sector.** As a horizontal sector and catalyst for systemic innovation across the economy, helping the Spanish ICT sector grasp unexploited market opportunities – at home and abroad – will be key. Towards this end, Plan Avanza could consider:
- Further expanding the export potential of ICT services firms. Plan Avanza has had a pronounced international dimension and the ICT services sector has greatly exploited international exports opportunities in recent years. Providers of emerging ICT services, *e.g.* cloud computing and “green” data centre hosting, are catering to the increasing international demand for data computing and storage. This is likely to remain an area of strong growth for the ICT sector. Additionally, there is greater scope for the Plan to support the internationalisation of the digital contents sector, especially in countries with large Spanish-speaking populations.
 - At the same time, Spain could potentially consider policy options for reducing the strong trade deficit in ICT manufacturing. Future ICT-enabled ICT infrastructures, *e.g.* smart grids and transport systems, will require large IT hardware investments. Additionally, with a large aging population, funding for the development of ICTs in the health sector could be considered.
 - Finally, the Plan could strengthen efforts to satisfy skills needs of a growing ICT industry. ICT employment data indicated that further efforts are required in ICT-related education and professional development programmes. The need for

ICT specialists and ICT-skilled employees is likely to increase as large-scale ICT projects are planned or underway in areas such as public administration, healthcare, energy, and transport. Spanish ICT services firms have shown that they can cater to domestic and global demand for ICT products. However, they will need a sufficiently large ICT-skilled workforce in order to guarantee further expansion.

3. **Developing specific IS strategies for particularly affected groups.** Furthermore, in the wake of the crisis, there are additional groups which should receive targeted support from Plan Avanza. For instance, **unemployed workers** and **young people** should also be specifically targeted by e-skills initiatives, as a means of “re-skilling” the labour force and opening additional job opportunities in more knowledge-intensive sectors of the economy. Plan Avanza could work closely with existing telecentres and other ministries to scale-up existing training programmes in ICT skills for the unemployed. For example, Plan Avanza could establish synergies with other external projects like *teletrabaja.es*. Likewise, the Plan could support initiatives such as the *redtrabaja.es* portal as a platform to provide online classes on basic ICT skills. Second, there are particular sectors of the economy where SMEs could use additional support in integrating ICTs into their business operations and expand/seek new markets (through e-commerce for instance). These sub-sectors will require specifically targeted policies. Lastly, as the crisis can aggravate socio-economic digital divides, means-based criteria could be applied to 0% loans for citizens to help those most at risk of exclusion.

Area
2

Plan Avanza as a demand-driven, user-centred strategy which maximises the value of ICTs for society

Key assessment two

Leveraging the achievements made thus far will depend on reaching a greater equilibrium between supply and demand-side policies in order to maximise the value of these investments for the economy, and – very importantly – to produce more perceivable, user-centred benefits to society.

Much of the progress made since the launch of Plan Avanza has been in terms of increasing the availability of, and access to, key ICT infrastructure upon which future development relies.

The review will show that the most marked contributions of Plan Avanza have been in terms of increasing the “e-readiness” of Spain’s information society (ICT diffusion and availability), with a more moderate impact on increasing ICT usage and the take-up of e-government services (e.g. “e-intensity”). This policy sequencing has been deliberate, since the continued development of ICT goods and digital services depends firstly on the presence of this foundation. Specifically, amongst citizens, businesses and the public sector, the review has found the following:

- **Education:** this is perhaps the most advanced sector relative to the others analysed in this study due in part to early support from the Ministry of Education. The majority of schools in Spain have access to broadband, though connectivity issues (reliability, speed) could be improved in rural areas. The ratio of

computers per student has risen; however, computer-use by students in school remains below the OECD average. Additionally, as in other OECD member countries, ICT use by both students and teachers for educational purposes remains relatively low according to the latest PISA data. New initiatives such as the *Escuela 2.0* Programme (Schools 2.0) continue to increase the number of computers per student, particularly by means of adopting 1:1 strategies, as is already the case in a number of autonomous communities. However, to maximise ICTs' contributions to educational outcomes (*e.g.* improving student performance, closing digital divides, and promoting 21st century skills), policies should place a greater focus on: *i*) promoting ICT use and take-up for purposes of teaching and learning; *ii*) increasing the availability and use of digital learning resources (DLRs); and *iii*) improving teachers' ICT skills (including their ability to integrate ICTs into their teaching methods).

- Health:** under Plan Avanza, important advances have been made in participating regions in providing hospitals with essential ICT equipment, creating electronic health records (EHRs), rolling out an e-prescriptions programme, and developing services such as soliciting appointments online. The Plan has also worked to link hospitals to regional nodes, and subsequently, to a secure centralised node managed by the National Health System, in order to allow patients and doctors to access clinical records from different locations. In particular, the e-prescriptions and EHR Programmes have the potential to increase patient safety and convenience, as well as to promote systemic innovation throughout the whole of the health sector (*e.g.* by enabling different GPs and/or specialists to integrate their records for a single patient and provide more “holistic” care by facilitating the consultation of specialists from a distance, or by joining up services, such as health and social services, etc.). However, as of yet, these remain future objectives, as not all regions have access to the centralised node. Perhaps a more immediate obstacle to realising gains from these achievements is increasing take-up; although health practitioners are increasingly utilising these new functionalities, the latest data suggests that those using e-prescriptions and taking advantage of EHRs are still the minority. The same is true for online appointments, where a small percentage of these are booked online. As in the education sector, the main barriers to take-up by health practitioners (and patients) include raising awareness about the benefits of these new tools and the possibilities in service delivery they could facilitate, building confidence in the utility and security of the systems, and improving ICT skills. Finally, the challenge for IS policy in the health sector is not only making the shift to the e-intensity phase of the S-curve but, since the scope for ICTs in this sector is so large, beginning to exploit ICTs to also enable new modes of care, such as, for instance, telemedicine and taking next steps to realise efficiency gains in the health system. This will also require continued attention to ICT diffusion simultaneously.
- Justice:** the Plan's activities in this sector have centred on civil registries, rather than the courts system, in particular in digitising civil records. As these records contain critical information on citizens and their life events, efforts to integrate civil registries' information systems, as well as other public sector agencies, is nascent, but key to creating wide-spread effects throughout the public sector in terms of increasing efficiency and supporting a “whole-of-government” model to service delivery.

- **Citizens:** to date, 99% of the country's population has access to broadband (albeit through different technologies, some more reliable than others in terms of connectivity and speed). However, households' broadband adoption remains lower on average than in EU and OECD member countries, with some Spanish regions remaining considerably lower than the national average. Broadband penetration and uptake should increase if citizens enhance their perception of the utility derived from ICTs. High broadband prices (partly due to the impossibility of purchasing a stand-alone broadband service) and ineffective competition in the market have been identified among the factors limiting broadband uptake. Despite these challenges, progress has also been made in boosting internet use amongst citizens; rates of growth are highest for older people although young people are still much more likely to use the Internet.
- **SMEs:** in 2009, over 90% of Spanish enterprises with over 10 employees reported having broadband Internet access, and close to 60% of Spanish companies now have a website. Shares of large and medium-sized enterprises have practically converged with EU averages in this regard. Nevertheless, further efforts are needed for small and micro enterprises that are less likely to incorporate ICTs into their business operations due to the additional obstacles they face in doing so. This remains a significant challenge for Spain, as the share of SMEs is considerably higher than in most OECD member countries, particularly in some industries where ICT uptake can be very challenging (tourism, construction). As in other OECD member countries, increasing e-commerce revenues, the use of e-invoicing, and the integration of ERM and customer relationship management (CRM) are additional challenges to helping close the "productivity gap" between the EU-United States, and increase the competitiveness of the digital economy.

However, the challenge now is utilising these technologies to create public and economic value...

When looking at the results for citizens, businesses and the public administration, two important trends become evident, suggesting that a movement towards more demand-side oriented policies is necessary to leverage the investments already made by Plan Avanza. Firstly, findings suggest that efforts to increase ICT access and develop e-government services must be complemented by capacity building, the necessary organisational and procedural changes, the managerial practices – as well as the capacities – needed to exploit the potential of these technologies for attaining such outcomes as boosting productivity and innovation, generating welfare, and increasing public sector efficiency and transparency. For example, the perceived impacts of these initiatives on modernisation **outcomes** for the public sector (*e.g.* greater public transparency, faster processing, and cost reductions) could be further increased according to survey results. Likewise, revenues from e-commerce and levels of productivity remain below OECD and EU averages. As in other OECD member countries, take-up of e-government services remains low in comparison with their growing availability, ultimately affecting whether citizens benefit from utilising the digital channel in their interactions with government. Lastly, resources dedicated to capacity building and training for SMEs and citizens over the period 2006-2009 would need to be increased to help achieve these goals, as they have represented a relatively smaller percentage of the Plan Avanza budget.

...as well as to increase the responsiveness of e-government services to users' needs and enhance benefits for citizens.

Second, survey results indicate that while improvements in the back-office have been perceived, **opportunities to bring ICTs' potential benefits in service delivery to citizens and SMEs could be further maximised.** Indeed, 46% of respondents reported that the Plan has had “a considerable, positive impact” in the public sector; with regards to its impact on citizens and SMEs, rates were 24% and 19% respectively. As the users of ICTs and e-government services, it is citizens and SMEs which can determine the value that is created by infrastructure investments. However, to date, a relatively smaller portion of Plan Avanza funds mobilised have been destined to citizens via the digital citizenships scheme (which includes 0% loans for ICT equipment and broadband services or training initiatives).

Local governments in particular report facing greater challenges for implementing information society policies and yet they are key to improving aggregate results.

The review has also found that local governments face greater challenges in becoming involved in the design and implementation of Plan Avanza programmes. While they are less likely to pursue e-government and IS initiatives due to lack of staff and funding, as well as know-how, local authorities nonetheless can and should be key players in IS policy. Often they are the first points of contact for citizens, especially in rural areas in Spain where there are over 8 000 municipalities. However, in interviews, and as reflected as well in the survey, local governments call for greater support from Plan Avanza. Although proposals for Plan Avanza 2 reflect this important demand, so far only approximately 4% of the Plan Avanza budget has been dedicated to local governments, and this also includes some co-financing from municipalities. Additionally, programmes such as Avanza Local have been mainly focused on providing tailored IT applications for the back-office, but the potential to reach citizens and end-users through greater emphasis on demand-side policies is especially great at the local level and could be further exploited.

The Plan has reached a turning point where greater balance between demand and supply-side policies is necessary.

These two conclusions point to the readiness for Plan Avanza 2 to balance priorities and the shift towards a user-centred philosophy. This perspective is important, as previously mentioned, because of the high expectations of citizens at this time, but also importantly because some future gains in IS development rely on citizens using ICTs. Indeed, under Plan Avanza, Spain's information society is approaching an important turning point wherein initiatives for ICT diffusion should now be complemented, replaced, or followed up with “pull” strategies that will in turn create a virtuous cycle necessary to sustain future investments in network infrastructure. This may be challenging since – until now – some regional governments and ministries have utilised Plan Avanza as an extension of their ICT infrastructure budget, but this evolution is necessary for continued progress.

Proposed action area 2: Plan Avanza as a demand-driven, user-centred strategy that delivers visible results to society.

1. **Scaling up efforts to increase e-skills and ICT-enabled competencies.** Plan Avanza could consider significantly scaling up efforts to develop e-skills in Spain, in the sense of not only: *i*) increasing basic ICT skills to improve digital literacy in the general population; but also in terms of *ii*) supporting the development of highly skilled ICT practitioners; and *iii*) increasing e-business skills, that is, the capabilities needed to exploit opportunities provided by ICTs to improve performance in the workplace. Indeed, as the prevalence of ICTs increases throughout society and the economy, improving levels of e-skills and competencies will be an essential key to strengthening Spain's knowledge economy, increasing productivity, supporting the growth of the ICT sector, and leveraging investments made in ICT equipment and infrastructure. Furthermore, business managers and entrepreneurs are important sources of innovation, and increasing their "e-business" skills could support this goal. It is important to note that e-skills are not only acquired in schools, but result from constant upgrading and updating. Therefore, life-long learning, on-line training and on-the-job re-skilling and up-skilling should be an explicit component of Plan Avanza in the future. Additionally, the Plan could consider:
 - Following suit behind countries like Denmark, in benchmarking and monitoring ICT skills; Denmark's IT Barometer guides policy makers in directing e-skills initiatives to beneficiaries/territories most in need.
 - Scaling up online training.
 - Plan Avanza could contribute to strengthening capacity-building initiatives targeting civil servants. Thus far under the Plan, these activities have been project-specific, but in the future could also be more broad-based in collaboration with regional governments, or for example the Ministry of the Presidency and/or the National Institute of Public Administration (INAP, in Spanish). Incorporating ICT training/e-skills targets in civil servants' performance evaluations could help incentivise the take-up of ICTs. For educators, for instance, this could include ICT training in teachers' university curricula and incorporating ICT-related tasks in student and teacher's examinations and increasing permanent training.
 - Because such efforts will require strong and continuous co-operation between stakeholders, the Plan could strengthen partnerships with firms, professional associations, chambers of commerce, NGOs, public libraries, universities, telecentres and schools.
2. **Supporting a re-orientation towards more demand-driven and user-centred initiatives.** Public sector reform and the increasing use and take-up of ICTs will not be effective without creating a strong demand from users. In response, Plan Avanza could consider pursuing initiatives that are more responsive to end-users' needs and demands. ICT take-up will increase when users are convinced about their utility and safety and when they experience the benefits first-hand. There are several opportunities for doing so:
 - Local governments have a "direct line" with citizens. Their proximity allows them to better understand users' specific needs, and they are often the first points of contact with society. Therefore, future IS initiatives should prioritise local governments, especially municipalities, and offer further financial and technical

support. Additionally, e-government efforts have been focused on the back-office, but future Avanza Local programmes could increase applications and activities that interface with citizens and SMEs (training, information sessions, e-inclusion initiatives, social services, teleworking, culture, traffic, etc.).

- The same approach could be applied to the health and education sectors. For example, in the health sector – in a country with large aging and rural populations – Plan Avanza could provide stronger support to initiatives for telemedicine and assisted living. In education, the Plan should continue to promote the further alignment of digital content with teaching/curricular objectives so that it is more useful for teachers. Additionally, the Plan could promote user-generated content; reinforcing existing collaboration with private sector publishers will be key for this, as will be helping to generate a marketplace in which both commercial products and teacher-created resources are available.
 - The Plan could consider strengthening efforts for increasing trust in the public sector through the use of ICTs. For instance, using “Open Government” initiatives to promote transparency and the re-use of public data, and by making more systematic use of Web 2.0 technologies.
3. **Further aligning Plan Avanza’s communication strategy to promote take-up of e-government services.** The challenge for future communication initiatives implemented under the Plan is to provide greater support to strategies for promoting the take-up of digital public services, targeting, in particular, citizens and firms. Until now, the communication strategies have centred on raising the awareness of available programmes through events and information sessions as well as upcoming changes (*e.g.* the transition to digital terrestrial television – DTT), and this should continue to be one pillar of the approach. However, Plan Avanza could consider jointly developing and implementing marketing strategies to raise awareness about the: *i*) availability of new digital public services; and *ii*) the benefits of using the “digital channel” as a means for interacting with government. The latter could include initiatives (rewards, faster turn-over, etc.) to encourage the use of the digital channel as a means of interacting with government. Proposals for Plan Avanza 2 suggest that such an approach will be launched to promote the use and to maximise the benefits of eID cards, but efforts could be extended to other major e-government initiatives as well. Working with other areas of government and increasing consultation will be critical to understanding the barriers to take-up of online public services in Spain, and helping to understand which public services are most in demand and prioritised by citizens and SMEs.
 4. **Refining the focus on remaining challenges in e-readiness and connectivity.** Future attention to e-readiness and connectivity can benefit from a narrower focus, *e.g.* on lagging sectors, demographic groups or geographic regions. Instead of general diffusion policies, higher returns can in some instances be achieved through programmes that specifically target under-served groups. The travel/tourism sector, for instance, is one where ICT uptake is relatively low, and some regions remain behind national averages in broadband adoption. As for next generation (NGN) communications infrastructure, fibre deployment is only nascent in Spain. A sound regulatory framework for NGN fibre deployment is critical to fostering future investments in ultra high-speed broadband infrastructure.

Area
3

Plan Avanza as a high-performing policy that maximises impact and makes optimal use of resources

Key assessment three

A strong governance framework has been created for the design and implementation of Plan Avanza initiatives; however, more could be done to optimise resources and maximise performance. For example, the potential of existing governance tools has not been fully exploited, and could be further leveraged to avoid duplication, improve cost effectiveness and realise greater efficiency gains. Furthermore, policy instruments could be better aligned with objectives for inter-regional convergence and closing digital divides.

The Plan's co-implementation model draws on the strengths of its different stakeholders to deliver better results, but the lack of a change management strategy threatens the sustainability of investments.

Plan Avanza's co-implementation model has been key to the Plan's achievements – not only in terms of bringing regional governments “on board” of the information society agenda – but also in terms of making the implementation process more effective and efficient. The SSTIS' use of an implementing agency, *red.es*, to partner with regional governments throughout the planning and implementation process of key Plan Avanza programmes in the health and education sectors has been a success as it has helped the strategy exploit economies of scale, provide essential technical assistance and support to regional governments, and act as an “equalizer” across regions – taking lessons from leading IS regions and transferring best practices and know-how to other regions. The latter has been a key factor in ensuring that regional governments continue to engage in IS policy, and critical in contributing to the Plan's high-level objective of promoting inter-regional convergence. However, co-developing and implementing a change management strategy will be necessary if these benefits are to be sustained in the long-term. Currently, regional governments report that they encounter significant difficulties in: *i*) maintaining ICT infrastructure and equipment; *ii*) financing programmes once contracts with the public enterprise have expired; and *iii*) integrating ICTs into their back-office operations in ways that maximise efficiency gains. These obstacles in turn threaten the cost effectiveness of the investments and efforts made by both the SSTIS and the regions. The planning processes and project contracts between *red.es* and regional governments could better reflect this important aspect of project management.

The Plan's financing strategy could also be adapted to better help close digital divides and increase cost effectiveness...

Because of the important territorial dimension involved in IS development in Spain (*e.g.* rural/urban divides and remaining differences in IS development between regions), the choice of policy instruments, the strategy for the distribution of funding, and the channels used to disperse funds could be better tailored to objectives for inter-regional convergence and closing digital divides. For instance, in the case of programmes targeting citizens, currently the conditionalities attached to these schemes may not ensure that those most in need: *i*) know of their eligibility to receive funding; and *ii*) are given preference in receiving support. This is important for optimising resources since, due to

diminishing returns, broad-based, large-scale policies become less cost effective over time, signalling a need to specify priorities and subsequently adapt the approaches used. Indeed, examining the case of broadband adoption rates over the past five years indicates that broad-based policies for promoting ICT adoption in households could be refined (via funding distribution schemes) to target the most marginalised demographic groups and increase the cost effectiveness of digital citizenship schemes. In the case of SMEs, stakeholders have noted that soliciting funds is administratively complex.

... and monitoring and evaluation mechanisms could be strengthened to measure performance.

One of the keys to helping policy makers improve planning and increase the impact of policies is through monitoring and evaluating performance. Plan Avanza's current approach, however, does not strongly emphasise measures for linking inputs such as expenditures and resources with outputs and outcomes in order to assess cost effectiveness and guide policy making: currently Plan Avanza input measures for some pillars focus on budget execution rather than analysing the public value achieved. This challenge is certainly not unique to Plan Avanza, but nonetheless it is a worthy exercise in terms of establishing a "business case" for certain initiatives, guiding priorities, policy making, and policy sequencing.

In times of fiscal tightening, greater horizontal co-ordination is key for optimising resources.

Lastly, there is scope for greater horizontal co-ordination (that is, co-ordination amongst governments of the same tier) under Plan Avanza. At the central level, greater inter-ministerial co-ordination could help close policy gaps with regards to the contribution of IS policy to innovation and green growth. At the regional and local levels, compared to other tools for horizontal co-ordination, pooled procurement, information and resource-sharing and joint monitoring and evaluation are relatively less used despite their potential to maximise economies of scale and scope and increase the sustainability of programmes once ownership is transferred to them from the national level.

Proposed action area 3: Plan Avanza as a high-performing policy that maximises results and makes optimal use of resources.

1. **Leveraging existing co-ordination tools to improve performance and sustain results.** Plan Avanza could consider strengthening existing governance tools to improve co-ordination and, in turn, improve the performance of the strategy.
 - In particular, **CATSI** – and its working groups – should be reinvigorated to further contribute to the continuous evaluation of Plan Avanza policies, provide greater input into the their design, and proactively promote a whole-of-government approach to information society policy by reaching out to stakeholders whom are not currently involved in the Plan. Additionally, CATSI could help Plan Avanza put forward more specific strategies, for example green ICTs and "greening" the public sector, local governments or certain sub-sectors of SMEs. Indeed, OECD member countries such as Finland and Japan utilise advisory groups to develop specific proposals for action. For instance, Finland's Economic and Industrial Policy Working Group helps to integrate IS and innovation policy, and the u-Japan Strategy has helped regions develop territorial strategies for revitalising regional economies through ICTs as indicated in its

2008 White Paper and Survey on Regional Economic Growth carried out by the Ubiquitous Network.

- **Towards a *red.es* 2.0.** The review has found that the public enterprise *red.es* has been central to the Plan's success. Indeed, the Plan's public sector initiatives which are co-implemented by *red.es* were amongst the most highly rated in the survey. However, to continue to maximise its role as motivator, manager and multiplier across sectors and levels of government, the SSTIS should consider developing, alongside regional governments, sector-specific strategies for change management that would increase the sustainability of *red.es*-implemented programmes and which include measures to promote usage (e.g. communications, training, etc.). Such strategies could be more financially viable for *red.es* if they were complemented by new measures for generating revenue for the public enterprise. Plan Avanza policy makers could consider conducting further analysis of potential business-cases for introducing or reinforcing measures such as outsourcing regions' telecentres, procurement or maintenance of ICT equipment in schools, and for support for new, specific programmes currently under development in ministries and departments of the Spanish government. SSTIS co-ordination for these actions would again prove valuable under the framework and experience of Plan Avanza.
2. **Aligning policy instruments with goals for closing digital divides.** In order to ensure that funds are best aligned with goals for inter-regional convergence and digital inclusion, as well as to ensure that they are distributed in the most cost-effective manner, Plan Avanza could consider the following options, or a combination thereof:
 - **A more redistributive funding formula:** Through the co-financing mechanism, Plan Avanza contributes a higher percentage of financial support to regions most in need of support for furthering IS goals. With respect to programmes targeting citizens and SMEs, the philosophy behind this approach could be extended to a wider range of initiatives, continuing support for inter-regional convergence. For instance, the Plan could attach (socio-economic, territorial, or other) conditionalities meant to more strongly pursue convergence and digital inclusion goals of the most marginalised groups or lagging regions/sectors.
 - **Co-developing Plan Avanza financing strategies with regional governments.** Plan Avanza could work closer with regional governments (e.g. co-signers of high-level *convenio marco* agreements) to ensure that, within regions, a higher share of funds are directed towards the most relevant issues and needs. Plan Avanza policy makers could also work more closely with the most prioritised regions in the development of project proposals, and territorialised strategies for IS development.
 - **Improving access to funding for prioritised beneficiaries.** The Plan could consider revisiting its distribution channels to ensure that those (citizens) most in need of Plan Avanza support have access. Telecentres, municipalities, civil society groups, libraries, and social services agencies could be considered as additional partners.
 3. **Serving as a platform for greater horizontal co-ordination.** Horizontal co-ordination at the sub-national level can be reinforced to maximise synergies and improve results: sharing experiences, best practices, technological solutions, pooled

procurement and shared resources. This kind of collaboration is especially important, not only to maximise synergies but also to avoid unnecessary duplication and optimise resources. Sub-national governments, especially at the local level, who report a lack of resources in implementing IS policy could stand to benefit from closer horizontal collaboration. For instance, Plan Avanza could support such activities, perhaps through Web 2.0 tools or sharepoints, and promote the sharing of resources (such as technical specifications and plans for enterprise architectures, etc.). Additionally, platforms such as FEMP and CATSI, among others, could also help host or promote these kinds of networks. However, regional and local governments also need to be more proactive in fostering these relationships from the bottom up. Other OECD member countries for example host annual IS summits with regional, local and central government organisations to promote continued dialogue and opportunities to establish relationships. Finally, policy makers could consider working with regional governments to standardise the monitoring and evaluation of Plan Avanza and IS policies across different regions as input into the overall evaluation of the strategy.

4. **Strengthening monitoring and evaluation mechanisms.** Finally, the Plan's monitoring and evaluation framework could be improved by increasing oversight over programmes implemented by external stakeholders, standardising programme indicators across regions, and reinforcing linkages between existing input and output data with analyses aimed at evaluating cost effectiveness and guiding policy decisions. Indeed, Plan Avanza has instituted a systematic monitoring and evaluation framework which, for some programmes, sets forward a set of indicators and measures for use across regions. However, this framework could be increasingly utilised for measuring performance and cost effectiveness (*e.g.* linking inputs, outputs and outcomes), especially with regards to the pillars for digital citizenship and digital economy. Performance indicators should be developed that assess whether these funds are having the greatest impact in the regions/beneficiaries that are considered strategic by the Plan.

Prólogo

A medida que la economía global va dependiendo cada vez más de las transacciones basadas en el conocimiento y la omnipresencia de la tecnología se hace más patente, los países con una sociedad de la información sólida – es decir, una sociedad activa en la creación, difusión y explotación de la información, con sus consecuentes beneficios sociales y económicos – se colocan en primera línea de las oportunidades de mercado emergentes y se convierten en pioneros de la creación de bienestar social para los ciudadanos.

Con objeto de aprovechar todo el potencial de las TIC (tecnologías de la información y la comunicación) para contribuir a estas importantes metas, los gobiernos de los países miembros de la OCDE dedican de manera progresiva recursos y esfuerzos a la implantación de estrategias de sociedad de la información, siendo éstas cada vez más ambiciosas y exhaustivas. No obstante, al tratarse de iniciativas complejas y multisectoriales, su implementación eficaz puede suponer un reto para los países.

Los *Informes de Sociedad de la Información de la OCDE* pretenden ayudar a los gobiernos a aumentar la eficiencia y capacidad de respuesta de estas estrategias de sociedad de la información para maximizar así su impacto, e identificar las fortalezas y debilidades en el diseño y la implementación de las políticas públicas asociadas.

A petición del gobierno de España, específicamente de la Secretaría de Estado de Telecomunicaciones y para la Sociedad de la Información (SETSI), la OCDE ha llevado a cabo esta “*peer review*” o “Revisión de Pares” del Plan Avanza (“el Plan”), la estrategia nacional para el desarrollo de la sociedad de la información. Los objetivos de la Revisión tienen una doble finalidad:

- Analizar los principales logros del Plan Avanza, en concreto, en lo que se refiere a los resultados generados en los ciudadanos, empresas y administración pública española.
- Evaluar el rendimiento de la estrategia de sociedad de información en términos de capacidad de respuesta a las necesidades de los diferentes agentes implicados, efectividad de las herramientas de gobernanza utilizadas para la coordinación vertical y horizontal de los actores gubernamentales, y alineación de los instrumentos políticos con los objetivos principales y las prioridades estratégicas perseguidas.

El estudio de estos temas se ha basado en:

- la investigación y evaluación comparativa de indicadores clave de la sociedad de la información a nivel nacional e internacional;
- entrevistas con funcionarios del gobierno y altos responsables de distintos ministerios, administraciones autonómicas y locales, y representantes del sector privado y de la sociedad civil;

- una encuesta realizada a los principales agentes implicados en la implementación del Plan Avanza desde los diferentes sectores y niveles de la administración pública.

El presente documento ha sido elaborado como complemento al informe final sobre el Plan Avanza y en él se destacan las principales evaluaciones y propuestas para la acción en distintas áreas del Plan, identificadas en la Revisión como claves, para que sean consideradas por parte del gobierno de España. Las propuestas recogidas en este documento pretenden fomentar el diálogo y el debate entre los principales responsables de las políticas de sociedad de la información en España y el resto de los actores implicados en el desarrollo de la sociedad del conocimiento.

Principales mensajes del informe Plan Avanza revisión de pares

En esta Revisión de Pares se subrayan algunos de los logros más importantes en cuanto a diseminación de las TIC y modernización del sector público conseguidos con el Plan Avanza. Además, se identifican áreas en las que centrar los esfuerzos futuros para mantener y magnificar el importante progreso alcanzado hasta ahora. En particular, en este informe se indican tres posibles líneas de acción que el gobierno de España podría **considerar priorizar**, para reforzar el papel, la capacidad de respuesta y el rendimiento de las políticas de la sociedad de la información (SI) en España:

El Plan Avanza como importante facilitador de la recuperación económica y la consecución de objetivos a largo plazo, enfocados a la innovación y el crecimiento sostenible.

- Dado el gran potencial de las TIC y su sector para facilitar la consecución de objetivos de ámbito social y económico dirigidos a mejorar el crecimiento, la innovación, la sostenibilidad, la equidad y el bienestar ciudadano, la estrategia de promoción de sociedad de la información podría reforzar las sinergias intersectoriales y las colaboraciones existentes, contribuyendo de manera decisiva a la **consecución de objetivos de la agenda política del país centrada, en el corto plazo en la recuperación económica, y, en el largo plazo, en la consecución de una reforma estructural profunda**. El actual clima macroeconómico y político de España es el oportuno para que el Plan Avanza se consolide como estrategia política clave en la consecución de esta “doble meta”, y los responsables políticos deben aprovechar la oportunidad utilizando el potencial transformador de las TIC para crear un mayor valor, tanto en la modernización del sector público como en la renovación estructural del ámbito económico.
- Con este objetivo, los responsables institucionales del Plan Avanza deberían considerar **ampliar su ámbito de acción para dar soporte a un enfoque cada vez más amplio e inclusivo de la política SI**, enfocándola hacia un nuevo modelo integrador basado en la Innovación y en el Crecimiento sostenible (“*green growth*”) que amplíe su efecto en las diferentes áreas de gobierno. **La ampliación de la estrategia SI debería plantearse con una visión global (*whole-of-government*) enfocada a promover la innovación y el crecimiento sostenible integrado y, de manera proactiva**, explotar las sinergias con otras áreas de acción política relevantes. Para lograr esta meta, se hace necesaria una cooperación cada vez más estrecha a nivel ministerial para promover de manera horizontal objetivos comunes como son: la innovación en las pymes, incrementar los esfuerzos dirigidos al desarrollo y despliegue de “TIC verdes”, fomentar una mayor eficiencia energética a través de redes inteligentes o “smart-grids”, la promoción de edificios inteligentes o el transporte sostenible. En definitiva, lograr de forma integrada un cambio de modelo con efectos en toda la estructura económica. Igualmente, el desarrollo e implantación de políticas de la sociedad de la información de carácter amplio **deben enfocarse en el apoyo a los grupos y sectores particularmente afectados por la crisis**. Esta orientación resultará clave en una coyuntura tan crítica para la estrategia como la actual. También será crucial apoyar al sector TIC español, como sector horizontal y catalizador de la innovación sistémica, **a sacar partido de las oportunidades de mercado – tanto a nivel interior como exterior**.

El Plan Avanza como estrategia regida por la demanda y orientada al usuario que proporciona resultados visibles a la sociedad.

- Gran parte del progreso conseguido desde el lanzamiento del Plan Avanza podría enmarcarse en el aumento de la disponibilidad de infraestructuras TIC claves para sostener un desarrollo continuo. No obstante, el nivel de aprovechamiento de las inversiones realizadas hasta el momento dependerá de la obtención de un mayor equilibrio entre las políticas orientadas al suministro y aquellas orientadas a la demanda, con objeto de maximizar el valor de estas infraestructuras para la economía y, en definitiva, aumentar los beneficios para la sociedad.
- Por tanto, el gobierno español deberá orientar los nuevos pasos de la estrategia SI a incrementar esfuerzos con medidas que pongan en valor el uso de las TIC desplegadas. Por ejemplo, será necesario redoblar los esfuerzos para desarrollar y fomentar las competencias y capacidades en TIC de la sociedad. El fomento de la e-capacitación debe orientarse no sólo en términos de competencias básicas de la población en general, sino también de competencias específicas TIC en grupos con necesidades de formación particulares como funcionarios, directivos, emprendedores o parados entre otros. Además, el Plan Avanza debería reorientar **la estrategia de comunicación destinada a la promoción del e-government para fomentar el uso de los servicios públicos digitales por parte de los ciudadanos y, así, enfocarlos en mayor medida a la demanda**, como por ejemplo, difundiendo lo que se ha hecho en el sector sanitario. Por último, las estrategias de SI futuras en España deberán ser cada vez más precisas y focalizadas para maximizar sus resultados (*cost-effective approach*), e iniciar una transición desde las políticas generales de disseminación de las TIC hacia **inversiones más concretas y precisas en infraestructuras**, centradas en la superación de brechas digitales que todavía permanecen en ciertos sectores, territorios o grupos socioeconómicos y demográficos concretos.

El Plan Avanza como estrategia de alto rendimiento que maximiza el impacto y favorece un uso óptimo de los recursos.

- Se ha creado un marco de gobernanza efectivo para la creación e implantación del Plan, pero todavía podría hacerse más en términos de optimización de recursos y maximización de impactos, especialmente en tiempos de restricción presupuestaria.
- Entre las estrategias que se proponen para optimizar las estructuras de gobernanza, sería recomendable, a nivel subnacional, que **el Plan elaborase un mapa de ruta para los municipios y promoviese la coordinación horizontal** entre las administraciones de este nivel, para maximizar las economías de escala y conseguir una mayor acogida. Por otro lado, la Secretaría de Estado de Telecomunicaciones y para la Sociedad de la Información (SETSI) podría considerar **desarrollar una estrategia de gestión del cambio conjuntamente** con los gobiernos autonómicos, para conseguir garantizar la sostenibilidad de las inversiones realizadas. A nivel nacional, **la fórmula de distribución de fondos del Plan Avanza debería revisarse** para contribuir en mayor medida al cierre de las brechas digitales existentes. Por último, **el marco de evaluación y seguimiento del plan debería seguir mejorándose** aumentando la supervisión de los programas implementados por parte de agentes externos, estandarizando un programa de indicadores para las diferentes comunidades autónomas y fortaleciendo los vínculos entre la generación de datos y los análisis enfocados a evaluar los resultados, para poder orientar de forma más efectiva las decisiones políticas.

Principales hallazgos y propuestas de acción

Podría decirse que el Plan Avanza (“el Plan”) constituye la política más completa hasta la fecha orientada al desarrollo de la sociedad del conocimiento en el país y que ha alcanzado importantes logros, teniendo en cuenta los retos que supone el lanzamiento de una iniciativa de tal magnitud y complejidad intersectorial. Mientras que anteriormente las políticas de SI se implantaban de manera aislada por distintos ministerios, con el Plan Avanza se ha conseguido una mayor coherencia política en términos de secuenciación y respuesta a las prioridades de nivel nacional y subnacional. La racionalización y escalamiento de estas políticas en el Plan, así como la mayor coordinación con los gobiernos autonómicos y locales se ha traducido en importantes resultados: bajo los auspicios del Plan Avanza, la sociedad de la información en España se está acercando al momento decisivo en el que el avance de la diseminación de las TIC ha alcanzado su umbral de masa crítica. De hecho, el principal reto para los diseñadores de políticas ahora es establecer puentes entre estas tecnologías y sus fines pretendidos: incrementar la productividad, facilitar la innovación, aumentar el crecimiento y la eficiencia del sector público y generar beneficios para los ciudadanos.

En estos momentos, a unos cinco años desde su comienzo en 2006 y a petición del gobierno español, este informe se ha centrado en examinar algunos de los avances claves conseguidos recientemente en la integración de los ciudadanos, las empresas y la administración pública en la sociedad del conocimiento, así como en identificar áreas a las que dirigir los esfuerzos futuros para que España siga convergiendo con los países de la UE y la OCDE, e incluso posicionarse entre los líderes de algunas áreas como el acceso o uso de las TIC, el crecimiento del sector TIC y el desarrollo de los servicios de la administración electrónica. En segundo lugar, con vistas a contribuir a la mejora de la rentabilidad y la eficiencia de las políticas del Plan Avanza, en esta revisión se ha estudiado el marco de gobernanza del Plan Avanza, y se ha reconocido la relevancia de mecanismos institucionales y de implementación como factores claves que pueden influir en última instancia en el impacto y los resultados de estas políticas. Ciertamente, las experiencias de otros países miembros de la OCDE sugieren que el éxito de las estrategias de SI dependen a menudo de la consideración de una serie de factores de gobernanza, que se han estudiado en esta revisión: desarrollo de una cartera de políticas coherente e intersectorial, establecimiento de prioridades estratégicas y secuenciación de políticas, aseguramiento de la participación de los agentes implicados, financiación adecuada y estructuras de incentivos entre y en todos los niveles de la administración, adaptación de los marcos regulatorios y legislativos para dar soporte a los objetivos, y aplicación de sólidas medidas de evaluación y supervisión.

Los conocimientos adquiridos mediante este ejercicio de revisión de pares son de particular importancia en estos momentos en los que la agenda política de la sociedad de la información en España se encuentra en una coyuntura crítica. Dado que la Agenda Digital de la UE se ha publicado este mismo año y que la próxima estrategia de SI española se implantará en paralelo, se cuenta con la ventaja de poder ir construyendo sobre los logros y aprendiendo de las fortalezas y debilidades del modelo predecesor.

Pero, además, las lecciones extraídas de la revisión son quizás de mayor imperativo para España y otros países miembros de la OCDE, ya que las futuras estrategias de SI entrarán en vigor en medio de un contexto político, social y económico complicado, aunque no exclusivo de España, algo que sin duda influirá en las próximas estrategias a corto plazo. Para que las recomendaciones sean tanto valiosas como factibles, es importante reconocer la influencia que tendrán las dificultades y tendencias coyunturales, a la hora de determinar los objetivos, prioridades y enfoque de gobernanza de la próxima estrategia. La coyuntura actual presenta tanto retos como oportunidades significativas, entre los que se incluyen:

- **Recuperación económica continua:** los países miembros de la OCDE se encuentran en el camino de recuperación de una de las recesiones, primero financiera y luego económica, más severas y globales sufridas en las últimas décadas. En este contexto, de todavía falta de certeza en cuanto a tasas de crecimiento y volatilidad, los legisladores y los ciudadanos han de juzgar las políticas e inversiones a gran escala por su capacidad de contribuir a los objetivos de desarrollo y la creación de oportunidades de empleo. A corto o medio plazo, estas políticas – incluyendo la Agenda de la Sociedad de la Información – deberán ser capaces de demostrar su contribución positiva a estas importantes metas.
- **Creciente prevalencia de las TIC:** aunque la contribución de las TIC a la recuperación de la crisis es innegable, los países miembros de la OCDE cuentan con el reto adicional de mantener una visión a largo plazo de cómo utilizar el poder transformador de estas tecnologías para contribuir a los objetivos de reforma estructural. De hecho, los países miembros de la OCDE están entrando en una era en que las TIC se consideran tecnologías de uso generalista, tecnologías integradas irrevocablemente en la vida diaria de las personas, en las operaciones comerciales, en la interacción de los gobiernos y los ciudadanos y en la prestación de servicios. Como tecnologías ubicuas, los gobiernos no pueden permitirse dejar a las TIC fuera de sus decisiones y políticas de innovación, crecimiento e inclusión.
- **Aumento de restricciones presupuestarias:** la crisis también ha exacerbado los niveles de deuda pública hasta el punto que, para 2010, el déficit fiscal de la OCDE se espera se establezca en un 7.8% del PIB (OCDE, 2010a). Como resultado, los encargados del diseño de políticas (incluyendo gobiernos autonómicos y locales) se encuentran sometidos a la presión cada vez mayor de maximizar los resultados en estos tiempos de recuperación, a la vez que optimizar los recursos. Como potenciadoras del crecimiento, las estrategias de la sociedad de la información han de encontrar, en estos momentos de altos recortes económicos, soluciones innovadoras para conseguir resultados más sólidos y aumentar el impacto dentro de una lógica de coste-efecto.
- **Altas expectativas de los ciudadanos:** por último, los gobiernos se encuentran más que nunca sometidos a la presión de tener que producir resultados reales y perceptibles para los ciudadanos. Como consecuencia de la crisis y dado que los contribuyentes han financiado los paquetes de estímulo económico y contribuido a amortiguar la morosidad del sector público, existe una creciente demanda por parte del electorado de que se produzcan inversiones e iniciativas que puedan traducirse en beneficios directos para los usuarios finales y proporcionen mayor valor público (OCDE, 2009a).

La severidad de esta recesión y la inmediatez de los problemas mencionados arriba para los ciudadanos, significa que cualquier política ambiciosa a gran escala que se instaure en estos momentos ha de ser capaz de adaptarse al contexto y demostrar su **capacidad de respuesta ante las necesidades, contribución a la creación de valor para la sociedad y uso eficiente de los recursos**. En la siguiente sección se destacan los hallazgos más significativos del estudio y sus principales conclusiones, estableciendo propuestas de áreas de acción que el gobierno español – en el contexto explicado anteriormente y contribuyendo a alcanzar las metas a largo plazo – podría tener en cuenta a la hora de implantar su próxima estrategia de SI. Las áreas de acción que se proponen podrían resumirse en tres áreas principales:

Resumen de las áreas de acción propuestas

Reforzar el papel, la capacidad de respuesta y el rendimiento de las políticas de la Sociedad de la Información en España:

Área
1

El Plan Avanza como importante facilitador de la recuperación económica y la consecución de objetivos a largo plazo, enfocados a la innovación y el crecimiento sostenible.

Área
2

El Plan Avanza como estrategia regida por la demanda y orientada al usuario que maximiza el valor de las TIC para la sociedad.

Área
3

El Plan Avanza como estrategia de alto rendimiento que maximiza el impacto y favorece un uso óptimo de los recursos.

Área
1

El Plan Avanza como importante facilitador de la recuperación económica y la consecución de objetivos a largo plazo, enfocados a la innovación y el crecimiento sostenible.

Evaluación clave número uno

Dado el gran potencial de las TIC y el sector TIC para facilitar la consecución de objetivos socioeconómicos, la estrategia podría centrarse en explotar más las sinergias intersectoriales y las colaboraciones existentes (gubernamentales y no gubernamentales), realizando así una mayor aportación a la agenda política del país para la recuperación económica y la consecución de objetivos a largo plazo de reforma estructural.

Bajo el Plan Avanza se han realizado importantes avances como elevar la prioridad de estas políticas dentro de la agenda política del país y obtener el reconocimiento por parte de los principales agentes implicados de la importancia de las mismas para la competitividad futura del país...

El importante liderazgo centralizado de la Secretaría de Estado de Telecomunicaciones y para la Sociedad de la Información (SETSI), así como la adopción de un modelo de implantación conjunta basado sólidamente en colaboraciones de mutuo beneficio con los agentes implicados, han sido dos factores críticos que han ayudado a

eleva la prioridad de estas políticas (y del Plan Avanza) dentro de la agenda política del país, como herramienta de modernización, dando soporte a su vez a las iniciativas de administración electrónica y contribuyendo al desarrollo económico. El enfoque adoptado por el Plan Avanza ha conseguido una gran acogida por parte de los principales agentes implicados, la movilización de cuantiosos recursos y, en última instancia, un importante impacto en los ciudadanos, empresas y la propia administración pública. A su vez, la cada vez mayor priorización de las políticas de SI en España se refleja en el creciente número de participantes autonómicos y locales que se interesan en la adopción de políticas TIC y se involucran cada vez más en el diseño e implantación de los programas del Plan Avanza. Esta creciente apreciación de la importancia de contar con una sociedad de la información robusta no sólo se observa en la implantación de iniciativas de arriba abajo por parte de los interesados, sino que además se espera de ellos que cofinancien los programas del Plan Avanza, inviertan sus propios recursos humanos y organizativos adicionales y adapten sus procedimientos y modelos de prestación de servicios para incorporar y explotar las ventajas de las TIC. En esta Revisión se ha concluido que esta tendencia representa el creciente reconocimiento de la importancia de la información – y el acceso a la misma – como columna vertebral para erigir una economía del conocimiento competitiva e inclusiva, y responder a las presiones nacionales e internacionales para continuar convergiendo con los países de la UE y la OCDE en las dimensiones de la SI más significativas (acceso, disponibilidad y uso). Los resultados de la encuesta de esta Revisión de Pares, reflejan, entre otras cosas este cambio de mentalidad en España, lo que quizás sea el principal logro del Plan Avanza: a día de hoy, el 69% de los agentes implicados en el Plan Avanza declaran que la políticas de SI son de “alta prioridad” en sus entidades, y el 78% las consideran “muy importantes” para la recuperación económica, un respaldo impresionante que, según los proponentes de políticas de SI entrevistados, era poco común en España hace sólo una década.

...pero la crisis ha hecho patente que es necesario continuar trabajando en el desarrollo de la sociedad de la información para que contribuya además a un crecimiento sostenible.

No obstante, aunque sin duda el Plan Avanza ha adoptado un enfoque intersectorial y colaborativo en su diseño e implantación, la estrategia podría hacer un mejor uso del liderazgo y mandato político para reforzar el enfoque de “gobierno total” de la Agenda de SI y aumentar su alcance, incluyendo el potencial de las iniciativas de SI para contribuir de manera más directa a la recuperación económica y a la consecución de los objetivos de reforma estructural a largo plazo (la mencionada “doble meta”). Un reto todavía persiste en este enfoque intersectorial, que es la potencial duplicación y fragmentación de políticas públicas, especialmente en aquellas políticas que comparten objetivos y grupos beneficiarios. Los responsables políticos de los diferentes niveles de gobierno podrían reducir este riesgo trabajando de manera conjunta para explotar sinergias en la promoción de la adopción de las TIC en la economía, en el desarrollo del sector TIC, en el apoyo a la creación de clusters tecnológicos, o desarrollando capital humano para el sector TIC. Además, el Plan podría también trabajar más estrechamente con otras áreas gubernamentales para alinear políticas destinadas a las pymes.

Por otro lado, se ha hallado en esta Revisión que casi dos años después del momento álgido de la crisis en otoño de 2008, todavía quedan algunas lagunas políticas y el Plan Avanza podría contribuir en mayor medida a la recuperación. De hecho, los servicios de banda ancha han de incluirse en las obligaciones de servicio universal, y esta iniciativa ya se ha incluido en políticas de recuperación post-crisis como el Proyecto de Ley de

Economía Sostenible, medida legislativa clave para el crecimiento sostenible en España. A pesar de que la banda ancha de alta velocidad es un principio básico para la promoción de la innovación sistémica y el aumento de la productividad, más allá del despliegue de la banda ancha, existen multitud de vínculos entre las políticas de SI y los importantes objetivos de recuperación, que el Plan Avanza podría contemplar y que todavía están infraexplotados o son muy incipientes. Por ejemplo, en comparación con otros países miembros de la OCDE, España ha puesto menos énfasis en las TIC como tecnologías facilitadoras del crecimiento sostenible, en las áreas de la energía, el transporte y los edificios inteligentes (tecnologías “smart”), entre otros. Además, el Plan Avanza podría contribuir a la reducción del desempleo a través de la “re-educación” de los trabajadores, ayudándoles a adquirir nuevas destrezas/capacidades TIC. Sin embargo, los recursos destinados a este importante propósito han sido relativamente bajos y no se centran específicamente en los desempleados. Por último, a pesar de que la brecha de carácter socioeconómico podría agravarse por la recesión económica, ésta es una importante brecha digital en la que el Plan no se ha centrado especialmente, enfatizando otras brechas como las basadas en la edad, el género y las disparidades en el uso y acceso a las TIC en zonas rurales/urbanas.

El sector TIC español ha demostrado que es, y seguirá siendo, un importante motor para el desarrollo continuo de la sociedad de la información en España.

El sector TIC español, en particular el sector de servicios, ha demostrado ser un prometedor motor para el crecimiento. Este sector ha aumentado sus ingresos y su empleo, y se ha mantenido relativamente estable durante la crisis económica. No obstante, los indicadores de innovación de las empresas TIC españolas continúan siendo relativamente bajos en general, y la proporción de especialistas en TIC en la economía española continúa siendo baja en comparación con otros países miembros de la OCDE. Continúan existiendo retos relacionados con la alineación de aptitudes y puestos de trabajo, especialmente desde que el sector de las telecomunicaciones comenzó a prescindir de empleados en los últimos años. De hecho, existen oportunidades todavía por explotar en el Plan para apoyar al sector como catalizador horizontal en toda la economía, alentando el crecimiento, y para evolucionar hacia actividades económicas de mayor valor añadido.

Propuestas de acción área 1: el Plan Avanza como importante facilitador de la recuperación económica y la consecución de objetivos a largo plazo, enfocados a la innovación y el crecimiento sostenible.

1. **Dar soporte a un enfoque de “gobierno total” (*whole-of-government*) enfocado a la innovación y el crecimiento sostenible.** Los diseñadores de políticas del Plan Avanza deberían considerar ampliar sus esfuerzos para dar soporte a un enfoque de “gobierno total” (*whole-of-government*) enfocado a la innovación y el crecimiento sostenible, explotando las sinergias con otros dominios políticos relevantes de manera más proactiva. Concretamente, se hace necesaria una cooperación más estrecha a nivel ministerial para promover la innovación en las pymes e incrementar los esfuerzos dirigidos al desarrollo y despliegue de “TIC verdes” para una mayor eficiencia energética en edificios, transporte y en toda la economía en general.
 - En primer lugar, una mayor coordinación horizontal ayudaría al Plan Avanza a materializar sus intenciones de fomento del desarrollo y la aplicación de “TIC

verdes” en transporte, cadenas de suministro, edificios y equipamiento TIC. A pesar de que el Plan ha propuesto una nueva línea de acción en esta dirección, los diseñadores de políticas deberían concretar iniciativas más específicas y desarrollar una estrategia y/o grupo de trabajo exclusivo para las “TIC verdes” bajo los auspicios del Plan o del CATSI (Consejo Asesor de Telecomunicaciones y la Sociedad de la Información). Algunas áreas de acción inmediata en este frente podrían ser:

- mayor empuje del desarrollo de TIC verdes mediante capital riesgo, proyectos pilotos e inversiones en I+D;
 - apoyo a iniciativas de fomento de las “*smart grids*”, ya que estas redes se basan sobre todo en soluciones de TI;
 - coordinación con gobiernos locales en la aplicación de TIC verdes en el transporte para reducir las emisiones en las zonas urbanas;
 - promoción de iniciativas para una TI “más verde” en el sector público desarrollando e implementando medidas conjuntamente para reducir el consumo energético de los sistemas de TI en el sector público. Estas medidas podrían incluir directrices complementarias de adquisición “verde” o sostenible o introducción de modelos de computación en nube (“*cloud computing*”);
 - creación consensuada de normas: trabajando conjuntamente, las agencias del gobierno pueden crear poderosos incentivos para estimular el mercado de las TIC verdes, estableciendo normas (que pueden ser o no obligatorias) de eficiencia energética en edificios, automóviles, cadenas de suministro industriales, etc.;
 - difusión conjunta de información a los agentes y gobiernos subnacionales sobre las iniciativas en marcha y las nuevas tecnologías disponibles (por ejemplo, mediante la creación de un catálogo de TIC verdes por sectores o la difusión de mejores prácticas);
 - cooperación pública-privada: la cooperación interministerial podría reflejarse también en el intercambio y en el refuerzo de las redes TIC verdes establecidas junto con el sector privado;
 - proyectos conjuntos: el Plan Avanza podría establecer sinergias con las iniciativas del Plan Estatal de Vivienda y Rehabilitación 2009-2012, ya que en esta estrategia existen medidas de mejora de la eficiencia energética de los hogares. Los lazos del Plan Avanza con el sector TIC y las lecciones aprendidas de los proyectos pilotos como Hogar Digital podrían contribuir a los objetivos de rehabilitación de vivienda o participación en programas pilotos de desarrollo de vehículos eléctricos.
- En segundo lugar, el Plan Avanza podría beneficiarse de una mayor consolidación de los esfuerzos de innovación para garantizar mayor coherencia e impacto político. En particular, se requiere un esfuerzo más coordinado en relación con los grupos objetivo estratégicos comunes (pymes, nuevos emprendedores, sector TIC). Además del Sistema Integral de Seguimiento y Evaluación (SISE), que utilizan tanto el Ministerio de Industria, Turismo y Comercio como el de Ciencia e Innovación, quizás sean necesarias otras

herramientas administrativas más operativas para explotar sinergias y evitar duplicaciones. Por ejemplo, el gobierno podría considerar reforzar la participación del Ministerio de Ciencia e Innovación en el Consejo Asesor de Telecomunicaciones y la Sociedad de la Información (CATSI) y en otros procesos de consulta y diseño de políticas. Algunas áreas de trabajo colaborativo podrían ser:

- consolidar esquemas de financiación mediante “ventanillas únicas” comunes para simplificar el acceso y reducir la duplicación/fragmentación;
- campañas de comunicación conjuntas;
- esquemas de capital riesgo conjuntos para emprendedores tecnológicos;
- cooperación en la promoción de clusters TIC, especialmente desde que el Plan Avanza está comenzando a trabajar con Universidades para formar capital humano en el sector de los contenidos digitales.

2. **Incrementar los esfuerzos para internacionalizar y consolidar el sector TIC español.** De especial importancia es ayudar al sector TIC español, como sector horizontal y catalizador de la innovación sistémica, a aprovechar las oportunidades de mercado – tanto a nivel interior como exterior – que todavía están infraexplotadas. Para ello, el Plan Avanza podría considerar:

- Expandir todavía más el potencial de exportación de las empresas de servicios TIC. El Plan Avanza ha tenido una pronunciada dimensión internacional y el sector de servicios TIC ha sabido explotar bien las oportunidades de exportación internacional en los últimos años. Los proveedores de servicios TIC emergentes, como la computación en nube y el alojamiento de centros de datos “verdes”, se están encargando de aumentar la demanda internacional de informatización y almacenamiento de datos. Probablemente, ésta continúe siendo un área de fuerte crecimiento para el sector TIC. Además, el Plan dispone del alcance necesario para apoyar la internacionalización del sector de los contenidos digitales, especialmente en países de habla hispana.
- Del mismo modo, España podría considerar opciones políticas para la reducción del déficit del comercio en la producción TIC. Las futuras infraestructuras basadas en TIC como “*smart grids*” o redes inteligentes y sistemas de transporte, requerirán grandes inversiones en hardware de TI. Además, dado el gran sector de población en edades avanzadas, debería sopesarse la financiación del desarrollo de TIC en el sector de la salud/sanidad.
- Por último, el Plan podría reforzar sus esfuerzos para satisfacer las necesidades de personal altamente cualificado para trabajar en la creciente industria TIC. Los datos de empleo de este sector sugieren que se requieren mayores esfuerzos en las áreas de formación TIC y programas de desarrollo profesional. La necesidad de especialistas en estas nuevas tecnologías y empleados con capacidades TIC irá aumentando probablemente a medida que se planeen o ejecuten nuevos proyectos TIC a gran escala en áreas como la administración pública, la sanidad, la energía o el transporte. Las empresas españolas de servicios TIC han demostrado ser capaces de satisfacer la demanda nacional y global de productos tecnológicos. No obstante, necesitarán una fuerza de trabajo lo suficientemente grande y formada en capacidades TIC para garantizar su futura expansión.

3. **Desarrollar estrategias de SI para grupos especialmente afectados.** Debido a la crisis, existen grupos especialmente afectados que deberían recibir una atención personalizada del Plan Avanza. Por ejemplo, los **desempleados** y los **jóvenes** deberían ser atendidos de manera específica mediante iniciativas de capacitación tecnológica para “re-educar” a la fuerza de trabajo y crear nuevas oportunidades de empleo en sectores de la economía más relacionados con la sociedad del conocimiento. El Plan Avanza podría trabajar más estrechamente con los telecentros existentes y otros ministerios para ampliar los programas de formación TIC existentes para desempleados. Por ejemplo, el portal **redtrabaja.es** podría ser utilizado por el Plan como plataforma para impartir clases en línea en materia de destrezas TIC básicas. En segundo lugar, existen particulares sectores de la economía en los que las pymes podrían obtener una ayuda adicional para la integración de las TIC en sus operaciones comerciales y expandirse o buscar nuevos mercados (mediante el comercio electrónico por ejemplo). Estos subsectores requerirán políticas especiales y concretas. Por último, dado que la crisis puede agravar las brechas digitales socioeconómicas, deberán aplicarse criterios de adjudicación de los préstamos al 0% basados en las rentas de los beneficiarios para ayudar a aquellos que tienen mayor riesgo de exclusión.

Área
2

El Plan Avanza como estrategia regida por la demanda y orientada al usuario que maximiza el valor de las TIC para la sociedad.

Evaluación clave número dos

El aprovechamiento de los logros conseguidos hasta el momento dependerá de la obtención de un mayor equilibrio entre las políticas orientadas al suministro y aquellas orientadas a la demanda, con objeto de maximizar el valor de las inversiones para la economía y, en gran medida, producir beneficios para la sociedad más notorios y orientados al usuario.

Gran parte del progreso conseguido desde el lanzamiento del Plan Avanza podría enmarcarse en el aumento de la disponibilidad y el acceso a las infraestructuras TIC claves para sostener el desarrollo futuro.

La revisión ha mostrado que las contribuciones más importantes del Plan Avanza se han producido en términos de incremento de la preparación (“e-readiness”) de la sociedad de la información en España (difusión y disponibilidad de las TIC) y, en menor grado, en términos de aumento de uso de las TIC y acogida de los servicios de administración electrónica (“e-intensity”). Esta secuencia de políticas ha sido deliberada, ya que el continuo desarrollo de los bienes TIC y los servicios digitales dependen en primer lugar de la existencia de estos cimientos. Asimismo, la Revisión indica que los agentes implicados perciben que las ganancias más significativas se han producido en el sector público – específicamente en los sectores de la educación y la sanidad – donde el Plan Avanza ha proporcionado un soporte crítico para la provisión e instalación de los principales equipamientos e infraestructuras TIC, incluyendo el desarrollo de aplicaciones hechas a medida para dar soporte a servicios online. No obstante, el nivel de progreso ha variado entre estos tres grupos objetivo: ciudadanos, empresas y sector público.

- Educación:** éste es quizás el sector más avanzado en comparación con los demás analizados en este estudio, debido, en parte, al temprano apoyo recibido desde el Ministerio de Educación. La mayoría de los colegios en España tienen acceso a banda ancha, aunque se podría avanzar más en temas de conectividad (fiabilidad, velocidad) en zonas rurales. La proporción de ordenadores por estudiante ha aumentado, sin embargo, el uso de los ordenadores por los estudiantes en los colegios permanece por debajo de la media de la OCDE. Además, al igual que en otros países miembros de la OCDE, el uso de las TIC por estudiantes y profesores para fines educativos continua relativamente bajo según los últimos datos del PISA. Nuevas iniciativas como el programa Escuela 2.0 continúan trabajando no sólo en incrementar el número de ordenadores por estudiante, particularmente en lo que se refiere a la adopción de estrategias 1:1 (un ordenador por alumno), como ocurre ya en diversas comunidades autónomas, sino también cumplimentando el despliegue de infraestructuras con otro tipo de estrategias complementarias destinadas a la formación del profesorado en TIC y la generación de contenidos educativos digitales. Para maximizar la contribución de las TIC a los resultados educativos (por ejemplo, mejorar la preparación de los estudiantes, reducir la brecha digital y promover las destrezas del siglo XXI) es necesario que las políticas sigan evolucionando desde la provisión exclusiva de acceso a las infraestructuras a centrarse en: *i)* promover el uso y acogida de las TIC en el ámbito de la enseñanza y el aprendizaje; *ii)* incrementar la disponibilidad y el uso de los recursos digitales para el aprendizaje (*digital learning resources* – DLRs); y *iii)* mejorar las habilidades TIC de los educadores (incluyendo su capacidad para integrar las TIC en sus métodos en enseñanza).
- Sanidad:** con el Plan Avanza se han llevado a cabo importantes avances en las comunidades autónomas participantes en cuanto a equipamiento básico TIC para hospitales, creación de historiales clínicos digitales, ampliación del programa de receta electrónica y desarrollo de servicios como la solicitud de cita electrónica. El Plan también se ha centrado en conectar los hospitales con los nodos regionales y, consecuentemente, a un nodo centralizado y seguro, gestionado por el Sistema Nacional de Salud (SNS), con el objetivo de permitir a pacientes y médicos el acceso a los historiales clínicos desde distintas ubicaciones geográficas. En particular, los programas de receta electrónica e historia clínica electrónica tienen el potencial de incrementar la seguridad y comodidad del paciente, así como promover la innovación sistemática de todo el sector sanitario (por ejemplo, permitiendo que diferentes médicos de cabecera y/o especialistas puedan integrar sus anotaciones de un mismo paciente y proporcionar un “cuidado integral”, facilitando la consulta de especialistas a distancia o uniendo servicios, como los servicios sanitarios y los servicios sociales, etc.). Sin embargo, todavía quedan objetivos para el futuro, ya que no todas las comunidades autónomas tienen acceso al nodo central. Quizás, un reto más inmediato para conseguir beneficios a partir de estos logros es el aumento de su adopción; aunque los médicos utilizan cada vez más estas nuevas funcionalidades, los últimos datos sugieren que aquéllos que utilizan la receta electrónica y se benefician de la historia clínica electrónica todavía son una minoría. Lo mismo ocurre en el caso de la cita online, donde un pequeño porcentaje de las mismas se realiza por este medio. Como ocurre en el sector educativo, las principales barreras para los profesionales sanitarios y los pacientes incluyen el incremento de la concienciación sobre los beneficios de estas nuevas herramientas y las posibilidades que la prestación del servicio les

puede ofrecer, el aumento de la confianza en la utilidad – y la seguridad – de los sistemas y la mejora de las habilidades TIC. Finalmente, el reto de las políticas de sociedad de la información en el sector sanitario no sólo consiste en enfocar la lógica del modelo “S curve” a la intensidad (“*e-intensity*”) sino también, dado que el alcance de las TIC en este sector es tan importante, comenzar a explotar las TIC para permitir nuevos modelos de atención sanitaria – como, por ejemplo, la telemedicina – y dar los pasos siguientes necesarios para obtener mayor rendimiento y eficiencia en el sistema sanitario. Esto también requerirá, simultáneamente, continuar atendiendo a la difusión de las TIC (“*e-readiness*”).

- **Justicia:** las actividades del Plan en este sector se han centrado en los registros civiles más que en el sistema de juzgados y tribunales, en particular, digitalizando archivos de los registros civiles. Como esos archivos contienen información crítica de los ciudadanos y de acontecimientos relacionados con su vida, se están haciendo grandes esfuerzos para integrar los sistemas de información de los registros civiles, así como otras agencias del sector público. Pero es vital generalizar los efectos a todo el sector público en el sentido de aumentar la eficiencia y reforzar el modelo de “gobierno total” dirigido a la prestación de servicios.
- **Ciudadanos:** hasta la fecha, el 99% de la población tiene acceso a banda ancha (aunque a través de diversas tecnologías, algunas más fiables que otras en términos de conectividad y velocidad). Sin embargo, la adopción media por parte de los hogares es menor que en los países de la UE y la OCDE, con algunas regiones que se mantienen considerablemente por debajo de la media nacional, y la penetración y asimilación de la banda ancha podrían incrementarse si los ciudadanos mejoraran la percepción de utilidad que tienen de las TIC. Entre los factores que limitan el acceso a la banda ancha se han identificado los altos precios (en parte debidos a la imposibilidad de adquirir un servicio exclusivo de banda ancha y la necesidad de una mayor competencia en el mercado. A pesar de esos retos, se ha progresado también en cuanto a impulso del uso de Internet por los ciudadanos. Las tasas de crecimiento son más altas en el caso de las personas mayores, aunque la gente joven es más propensa a usar Internet.
- **PYMES:** en 2009, más del 90% de las empresas españolas con más de 10 empleados dicen tener acceso a Internet de banda ancha, y cerca del 60% de las empresas españolas tienen actualmente un sitio web. Las cuotas de las grandes y medianas empresas han convergido prácticamente con las medias de la UE en este respecto. No obstante, es necesario dedicar más esfuerzos a las microempresas y pequeñas empresas, que son menos propensas a incorporar las TIC en sus procesos de negocio, debido a los obstáculos adicionales que encuentran para hacerlo. Esto representa un reto significativo para España, puesto que la proporción de pymes es considerablemente mayor que en la mayoría de los países miembros de la OCDE, particularmente en algunas industrias donde la adopción de las TIC puede ser de extrema importancia (turismo, construcción). Al igual que en otros países miembros de la OCDE, incrementar los beneficios del comercio electrónico, el uso de la factura electrónica y la integración de herramientas ERP y CRM son retos adicionales para reducir la “brecha productiva” entre la UE y los Estados Unidos, e incrementar la competitividad de la economía digital.

Sin embargo, el reto ahora es utilizar estas tecnologías para crear valor...

Mirando los resultados en ciudadanos, empresas y administración pública, se hacen evidentes dos importantes tendencias que sugieren la necesidad de un desplazamiento hacia políticas más orientadas al lado de la demanda, para aprovechar las inversiones ya hechas por el Plan Avanza. En primer lugar, los hallazgos sugieren que los esfuerzos realizados para incrementar el acceso a las TIC y el desarrollo de los servicios de administración electrónica deben ser complementados con medidas que fomenten la capacitación en el uso de las TIC. También es necesaria la promoción de los cambios organizacionales y procedimentales, y las prácticas – así como capacidades – directivas, necesarios para explotar el potencial de estas tecnologías y lograr los resultados esperados de mejora de la productividad y la innovación, aumento de la calidad de vida, e incremento de la eficiencia y transparencia del sector público. Por ejemplo, el impacto percibido de estas iniciativas sobre los **resultados** de modernización del sector público (como mayor transparencia pública, procesamiento más rápido y reducciones de costes) permanece siendo limitado en general, según los resultados de la encuesta. Asimismo, los ingresos procedentes del comercio electrónico y los niveles de productividad permanecen por debajo de la media de la OCDE y de la UE. Al igual que en otros países miembros de la OCDE, la adopción de los servicios de administración electrónica sigue siendo lenta en comparación con su creciente disponibilidad, afectando, en última instancia, a los beneficios que los ciudadanos pueden obtener utilizando la vía digital en sus interacciones con la administración. Por último, los recursos dedicados a la capacitación en TIC de pymes y ciudadanos durante el período 2006-2009, debería ser incrementado para ayudar a lograr estos resultados, ya que estos los destinados a la e-capacitación han representado un porcentaje relativamente pequeño dentro del global del presupuesto del Plan Avanza.

... así como mejorar la capacidad de respuesta de los servicios de administración electrónica a las necesidades de los usuarios y generar beneficios para los ciudadanos.

En segundo lugar, mientras que los funcionarios observan mejoras en sus procesos internos, los ciudadanos y las pymes perciben en menor medida los resultados del Plan Avanza, ya que los esfuerzos de modernización en el sector público sólo están comenzando a producir efectos en términos de mejora del servicio de entrega. De manera global, los entrevistados y quienes han cumplimentado la encuesta comparten la visión de que la prioridad del Plan es el desarrollo del sector TIC y el logro de los objetivos de eficiencia del sector público. De hecho, los datos y los resultados de la encuesta sugieren un progreso muy notable en el sector público: el 46% de los encuestados manifiestan que el Plan ha tenido “un considerable impacto positivo” en el sector público; con respecto a su impacto en ciudadanos y pymes, los porcentajes son de 24% y 19% respectivamente. Como usuarios de las TIC y de los servicios de administración electrónica, éstos son los que determinarán el valor creado por las inversiones en infraestructura. Sin embargo, hasta la fecha, alrededor del 8% de los fondos movilizados por el Plan Avanza se han destinado a los ciudadanos, a través del eje de actuación de Ciudadanía Digital (que incluye préstamos al 0% para equipamiento TIC y servicios de banda ancha o iniciativas de formación).

Los gobiernos locales, en particular, declaran que la implantación de políticas de la sociedad de la información les ha supuesto un gran reto, pese a que su contribución a los resultados agregados es importante.

La Revisión ha mostrado también que los gobiernos locales han tenido que enfrentarse a grandes dificultades a la hora de involucrarse en el diseño e implantación de los programas del Plan Avanza. A pesar de ser menos propensos a las iniciativas de sociedad de la información y administración electrónica, debido a su falta de personal y presupuesto, así como de fuentes de conocimiento, las autoridades locales pueden y deben ser agentes principales en las políticas de sociedad de la información. A menudo, son los primeros puntos de contacto para los ciudadanos, especialmente en las áreas rurales de España, que cuenta con más de 8 000 municipios. En las entrevistas – y como también ha reflejado la encuesta – los gobiernos locales piden más apoyo al Plan Avanza. Aunque las propuestas del Plan Avanza 2 reflejan esta importante petición, a día de hoy, aproximadamente el 4% del presupuesto del Plan Avanza se ha dedicado a gobiernos locales, incluyendo cierta cofinanciación de los municipios. Asimismo, programas como Avanza Local se han centrado principalmente en ofrecer aplicaciones de TI a medida para procesos internos, pero el potencial para llegar a los ciudadanos y usuarios finales haciendo énfasis en las políticas orientadas a la demanda es especialmente importante a nivel local y podría ser más explotado.

El Plan ha alcanzado un punto decisivo en el que se requiere un mayor equilibrio entre políticas orientadas a la demanda y políticas orientadas a la oferta.

Esas dos conclusiones indican que, para la elaboración del Plan Avanza 2, es necesario evaluar prioridades y evolucionar hacia una filosofía centrada en el usuario. Esta perspectiva es importante, como se ha mencionado en la introducción, debido a la altas expectativas que tienen los ciudadanos, pero también porque todos los avances futuros dependen del uso que los ciudadanos y usuarios hagan de las TIC. De hecho, con el Plan Avanza, la sociedad de la información en España se está aproximando a un punto muy decisivo donde las iniciativas para difusión de las TIC deben ser complementadas, reemplazadas o reforzadas mediante estrategias “palanca” que, a su vez, creen el “círculo virtuoso” necesario para sostener las futuras inversiones en infraestructuras de red. Esto podría plantear dificultades si los gobiernos autonómicos y los ministerios continuaran utilizando el Plan Avanza como extensión de su presupuesto en infraestructuras TIC, aunque es necesario para un progreso continuo.

Propuestas de acción área 2: el Plan Avanza como estrategia regida por la demanda y orientada al usuario que proporciona resultados visibles a la sociedad.

1. **Aumentar esfuerzos para impulsar las capacidades tecnológicas y las competencias relacionadas con las TIC.** El Plan Avanza podría considerar seriamente aumentar los esfuerzos para desarrollar las capacidades tecnológicas en España, en el sentido no sólo de: i) incrementar las capacidades tecnológicas básicas para mejorar el alfabetismo digital de la población en general, sino también en términos de: ii) impulsar el desarrollo de los usuarios TIC altamente capacitados; y iii) aumentar las capacidades de negocio electrónico, es decir, las capacidades necesarias para explotar las oportunidades que proporcionan las TIC para mejorar el

rendimiento en el lugar de trabajo. De hecho, según aumenta el predominio de las TIC en la sociedad y en la economía, los crecientes requisitos de capacidades y competencias electrónicas serán esenciales para el fortalecimiento de la economía del conocimiento en España, el incremento de la productividad, el impulso del crecimiento del sector TIC, y el apalancamiento de las inversiones en equipamiento e infraestructura TIC. Además, los directivos y emprendedores son importantes fuentes de innovación e incrementar sus “capacidades de negocio electrónico” podría apoyar este objetivo. Es importante destacar que las capacidades electrónicas no sólo se adquieren en las escuelas, sino que son el resultado de una formación y actualización constantes. Por ello, la enseñanza continua, la formación online y la formación en el trabajo para aprender nuevas capacidades electrónicas actualizadas debería ser un componente explícito del Plan Avanza en el futuro. Además, el Plan podría considerar:

- Adoptar buenas prácticas de países como Dinamarca, de evaluación comparativa y monitorización de las capacidades TIC. El Barómetro de TI de Dinamarca sirve de guía a los diseñadores de políticas para dirigir las iniciativas de capacitación electrónica hacia los beneficiarios/territorios más necesitados.
 - Ampliar la formación online.
 - El Plan Avanza podría contribuir a reforzar las iniciativas de creación de capacidades dirigidas a los funcionarios. De este modo, bajo el Plan, estas actividades han sido hasta ahora para proyectos específicos, pero en el futuro podrían ser más generales, en colaboración con el Ministerio de la Presidencia y el Instituto Nacional de la Administración Pública (INAP). La incorporación de formación en materia TIC/capacidades electrónicas en las evaluaciones de rendimiento de los funcionarios públicos podría ayudar a incentivar la adopción de las TIC. Para educadores, por ejemplo, esto podría incluir formación TIC en los currículos universitarios e incorporación de tareas relacionadas con las TIC en exámenes y formación (tanto de estudiantes como de profesores).
 - Como tales esfuerzos requerirán una cooperación estrecha y continua entre los agentes implicados, con respecto a esta línea de trabajo, el Plan puede fortalecer sus alianzas con empresas, asociaciones profesionales, cámaras de comercio, ONG, bibliotecas públicas, universidades, telecentros y colegios.
2. **Reorientación hacia iniciativas centradas en la demanda y en el usuario.** La reforma del sector público y la evolución hacia un mayor uso y acceso a las TIC no serán efectivas si no se crea una fuerte demanda entre los usuarios. En respuesta a esto, el Plan Avanza podría considerar promover iniciativas con mayor capacidad de respuesta a las necesidades y demandas de los usuarios finales. El acceso a las TIC se incrementará cuando los usuarios estén convencidos de su utilidad, seguridad y experimenten los beneficios que proporcionan. Hay diversas vías para conseguir esto:
- Los gobiernos locales tienen una “línea directa” con los ciudadanos. Su proximidad les permite entender mejor las necesidades específicas de los usuarios y son frecuentemente los primeros puntos de contacto de la sociedad. Por ello, las futuras iniciativas de sociedad de la información podrían dar prioridad a los gobiernos locales, especialmente en los municipios, y ofrecer mayor apoyo (financiero y técnico). Además, los esfuerzos de administración electrónica se han centrado en la gestión interna, pero los programas del futuro

Avanza Local podrían incrementar el número de aplicaciones y actividades que implican interacción con ciudadanos y pymes (formación, sesiones informativas, iniciativas de inclusión electrónica, servicios sociales, teletrabajo, cultura, tráfico, etc.).

- La misma aproximación podría aplicarse a los sectores de sanidad y educación. Por ejemplo, en el sector sanitario – y en un país con una población envejecida y rural – el Plan Avanza podría proporcionar mayor soporte a iniciativas de telemedicina y “vida asistida”. En educación, el Plan necesita seguir promoviendo el alineamiento de los contenidos digitales y los objetivos de enseñanza/curriculares, de manera que sean más útiles para los docentes. Adicionalmente, el Plan podría promover los contenidos generados por el usuario, para lo que sería clave una mayor colaboración con los editores del sector privado, que ayudaría a generar un entorno de mercado en el que ambos (productos comerciales y fuentes de información creadas por docentes) estén disponibles.
 - El Plan podría considerar ampliar sus esfuerzos enfocados al aumento de la confianza en el sector público a través del uso de las TIC. Por ejemplo, a través de iniciativas de “gobierno abierto” para promover la transparencia y reutilización de la información en el sector público, e incrementar el uso sistemático de las tecnologías Web 2.0.
3. **Adaptar la estrategia de comunicación del Plan Avanza para promover el uso de los servicios de administración electrónica.** El reto para las futuras iniciativas de comunicación implantadas bajo el Plan es proporcionar mayor apoyo a las estrategias de promoción del uso a los servicios públicos digitales, centrándose, en particular, en ciudadanos y empresas. Hasta ahora, la estrategia de comunicación se ha centrado en aumentar el conocimiento de los programas disponibles a través de eventos y sesiones informativas, y de los próximos cambios (por ejemplo, la transición a la TDT), algo que debería continuar hasta convertirse en uno de los pilares del enfoque. Sin embargo, el Plan Avanza podría considerar desarrollar e implantar conjuntamente estrategias de marketing para aumentar el conocimiento sobre: *i)* la disponibilidad de los nuevos servicios públicos digitales; y *ii)* los beneficios del uso del “canal digital”, como medio para interactuar con la administración. El último, podría incluir iniciativas (remuneraciones, facturaciones más rápidas, etc.) para incentivar el canal digital como medio de interacción con la administración. Las propuestas del Plan Avanza 2 sugieren que tal enfoque se utilizará para promover el uso del DNIE, pero los esfuerzos podrían extenderse también a otras iniciativas de administración electrónica importantes. Trabajar con otras áreas de la administración e incrementar la consulta, sería crítico para entender las barreras para la adopción de los servicios públicos online en España y ayudaría a entender qué servicios públicos se demandan más y la prioridad de los mismos por ciudadanos y pymes.
 4. **Redefinir el enfoque de superación de los retos existentes en cuanto a preparación (“e-readiness”) y conectividad.** Un enfoque más estrecho podría aportar beneficios a la futura atención a la preparación (“e-readiness”) y la conectividad, por ejemplo, centrarse en los sectores, grupos demográficos y comunidades autónomas menos desarrolladas. En lugar de una difusión general de las políticas, se podrían conseguir, en algunos casos, altos rendimientos a través de programas dirigidos específicamente a grupos menos favorecidos. El sector turístico,

por ejemplo, es uno en los que la adopción de las TIC es relativamente lenta, y algunas regiones siguen detrás de la media nacional en adopción de banda ancha. En cuanto a las infraestructuras de comunicación de nueva generación (redes de nueva generación NGN), el desarrollo de la fibra todavía es incipiente en España. Un sólido marco regulatorio para los desarrollos de redes de fibra de nueva generación es crítico para promover futuras inversiones en infraestructuras de banda ancha de velocidad ultra rápida.

Área
3

El Plan Avanza como estrategia de alto rendimiento que maximiza el impacto y favorece un uso óptimo de los recursos.

Evaluación clave número tres

Se ha creado un fuerte marco de gobernanza para el diseño e implantación de las iniciativas del Plan Avanza, pero todavía podría hacerse más en términos de optimización de recursos y maximización del rendimiento. Por ejemplo, las herramientas de gobierno existentes están infrutilizadas y podrían aprovecharse mucho más, evitando duplicaciones, aumentando la rentabilidad y materializando mejoras de efectividad. Es más, los instrumentos políticos podrían alinearse mejor con los objetivos para conseguir convergencia entre las distintas comunidades autónomas y cerrar brechas digitales.

El modelo de implantación conjunta del Plan aprovecha las fortalezas de los diferentes agentes implicados, contribuyendo a la obtención de mejores resultados, pero la ausencia de una estrategia de gestión del cambio podría amenazar la sostenibilidad de las inversiones.

El modelo de implantación conjunta del Plan Avanza ha sido clave para los logros del Plan, no sólo por conseguir que los gobiernos autonómicos se adhieran a la Agenda de SI, sino también por conseguir que los procesos de implantación sean más efectivos y eficientes. El uso por parte de la SETSI de la entidad *red.es*, para que actúe como “implantadora” y trabaje de la mano con los gobiernos autonómicos en todos los procesos de planificación e implantación de programas clave del Plan Avanza en los sectores de la educación o la sanidad, ha sido todo un éxito y ha contribuido a la estrategia de explotación de las economías de escala, provisión de asistencia técnica esencial y soporte a los gobiernos autonómicos, y actuación como “agente equilibrador” entre comunidades autónomas, aprendiendo lecciones de las que son líderes en SI y transfiriendo conocimientos y mejores prácticas a otras. Esto último ha constituido un factor significativo para garantizar que los gobiernos autonómicos continúen comprometiéndose con la política de SI, y ha contribuido de manera crítica a la consecución del objetivo de alto nivel del Plan de promover la convergencia interregional. Sin embargo, es necesario desarrollar una estrategia de gestión del cambio si se quiere mantener estos beneficios a largo plazo. Actualmente, las administraciones autonómicas han declarado encontrar dificultades significativas en: *i)* el mantenimiento de infraestructuras y equipamiento TIC; *ii)* la financiación de programas una vez que los contratos con *red.es* acaban; *iii)* la integración de las TIC en sus operaciones de *back-office* de forma que promuevan eficiencia. Estos obstáculos amenazan a su vez la rentabilidad de la inversión y los esfuerzos realizados tanto por la SETSI como por las comunidades autónomas. Por el momento, ni los procesos de planificación ni los contratos entre la entidad pública

empresarial *red.es* y los gobiernos autonómicos parecen reflejar este importante aspecto de la gestión de proyectos.

La estrategia de financiación del Plan también podría adaptarse para contribuir al cierre de brechas digitales e incrementar la rentabilidad...

Dada la importante dimensión territorial del desarrollo de la sociedad de la información en España (por ejemplo las importantes brechas entre zonas rurales/urbanas y las diferencias de la SI en las diferentes CC. AA.), la elección de instrumentos políticos, la estrategia de distribución de fondos y los canales utilizados para la adjudicación de los mismos, deberían alinearse mejor con los objetivos para conseguir la convergencia interregional y cerrar las brechas digitales. Es más, debido a la disminución de los rendimientos, las políticas extensas y a gran escala pierden rentabilidad con el paso del tiempo, lo que denota que es necesario especificar prioridades y adaptar los enfoques utilizados en consecuencia. Actualmente, gran parte de los fondos destinados a pymes y ciudadanos (programas de Economía y Ciudadanía Digital) podrían basarse en una lógica que ayudase a incrementar el impacto y los resultados de los programas. En el caso de los programas dirigidos a los ciudadanos, actualmente las condiciones de estos programas no garantizan en algunos casos que los potenciales beneficiarios más necesitados: *i)* sean conscientes de que pueden solicitar las ayudas; o *ii)* reciban preferencia a la hora de obtenerlas. De hecho, examinando las tasas de adopción de banda ancha de los últimos cinco años se observa que las políticas basadas en la banda ancha para la promoción de la adopción de las TIC en hogares podrían refinarse (mediante esquemas de distribución de la financiación) para focalizarse en los grupos demográficos más marginados y aumentar la rentabilidad de los programas de ciudadanía digital. En el caso de las pymes, los agentes implicados han declarado que la burocracia para la solicitud de ayudas es compleja a nivel administrativo.

... y los mecanismos de evaluación y seguimiento podrían fortalecerse para medir el rendimiento.

Una de las claves para ayudar a los diseñadores de políticas a mejorar la planificación e incrementar el impacto del Plan es mediante el seguimiento y, notablemente, mediante la evaluación del rendimiento. Sin embargo, el enfoque actual del Plan Avanza no hace hincapié en el aspecto de vincular la generación de datos de gastos y recursos, por ejemplo, con los análisis enfocados a evaluar los resultados, para poder analizar el impacto y orientar de forma más efectiva las decisiones políticas. Por supuesto éste no es un reto exclusivo del Plan Avanza, pero, realmente, es un ejercicio que merece la pena para establecer “casos de estudio” para ciertas iniciativas, dictar prioridades y orientar la elaboración y secuenciación de políticas. Sin embargo, los diseñadores de políticas podrían omitir estas importantes señales si no se paran a recapacitar sobre los rendimientos, como por ejemplo la disminución de rendimientos de las políticas de amplio alcance orientadas a la oferta. De hecho, las actuales mediciones de datos del Plan Avanza para algunos pilares se centran en la ejecución de los presupuestos, y no tanto en el análisis de los resultados.

En tiempos de recortes presupuestarios, es muy necesaria una mayor coordinación horizontal para optimizar el uso de los recursos.

Finalmente, existe espacio para una mayor coordinación horizontal (es decir, coordinación entre administraciones del mismo nivel) enfocada a la optimización de recursos. A nivel central, una mayor coordinación interministerial ayudaría a tapar lagunas políticas en relación con la contribución de las políticas de SI a la innovación y el crecimiento sostenible. A nivel autonómico y local, y en comparación con otras herramientas de coordinación horizontal, la adquisición conjunta, el intercambio de información y de recursos, y los procesos de seguimiento y evaluación comunes están infrautilizados, a pesar de su potencial para maximizar las economías de escala y aumentar la sostenibilidad de los programas, una vez transferida la propiedad del nivel nacional a los niveles subnacionales.

Propuestas de acción área 3: el Plan Avanza como estrategia de alto rendimiento que maximiza el impacto y favorece un uso óptimo de los recursos.

1. **Aprovechar las herramientas de coordinación existentes para mejorar el rendimiento y mantener los resultados.** El Plan Avanza podría plantearse reforzar las herramientas de gobernanza existentes para mejorar la coordinación y, a su vez, aumentar el rendimiento de la estrategia.
 - En particular, el **CATSI** y sus grupos de trabajo, deberían adquirir protagonismo para contribuir en mayor medida a la evaluación continua de las políticas del Plan Avanza, aumentar sus aportaciones en la fase diseño y promover proactivamente un enfoque de “gobierno total” de la sociedad de la información llegando a todos los agentes relevantes todavía no implicados en el Plan. Además, el CATSI podría ayudar a que el Plan Avanza impulse estrategias más específicas enfocadas, por ejemplo, a las TIC verdes y a hacer “más verde” el sector público, los gobiernos locales o ciertos subsectores de las pymes. De hecho, otros países miembros de la OCDE como Finlandia y Japón se valen de grupos de asesores para desarrollar propuestas de acciones específicas. El Grupo de Trabajo Finlandés de Economía e Industria ha ayudado a integrar SI y política de innovación, y la estrategia japonesa “u-Japan” ha ayudado a las regiones a desarrollar estrategias territoriales para revitalizar las economías regionales a través de las TIC, con su Libro Blanco y su Encuesta sobre Crecimiento Económico Regional inducido por las Redes de Trabajo Ubicuas de 2008.
 - **Red.es versión 2.0.** En la Revisión se ha determinado que el papel de la entidad pública empresarial red.es ha sido clave para el éxito del Plan. De hecho, las iniciativas del sector público del Plan implantadas conjuntamente por red.es se encuentran entre las mejor valoradas en la encuesta. No obstante, para que red.es continúe maximizando su papel como motivadora, gestora y multiplicadora en los diferentes niveles de la administración, la Secretaría de Estado de Telecomunicaciones y para la Sociedad de la Información debería considerar desarrollar, junto con los gobiernos autonómicos, estrategias específicas sectoriales para la gestión del cambio, que aumentarían la sostenibilidad de los programas implantados por red.es, que incluyesen además medidas para el fomento de uso (por ejemplo, comunicación, formación, etc.). Dichas estrategias podrían ser más viables económicamente para red.es si se complementasen con

medidas de generación de ingresos para la empresa pública. Los diseñadores de políticas del Plan Avanza podrían plantearse llevar a cabo un análisis del potencial de los estudios de caso para introducir nuevas medidas, como, por ejemplo, de mantenimiento de los telecentros en las comunidades autónomas o los equipos TIC en los colegios.

2. **Alinear los instrumentos políticos con las metas, para cerrar brechas digitales.** Para asegurar que los fondos están óptimamente alineados con las metas de convergencia inter-regional y e-inclusión, así como para garantizar que se distribuyen de la manera más rentable posible, en el Plan Avanza se podrían considerar las siguientes reformas:
 - **Una fórmula de financiación más repartida:** en el mecanismo de financiación conjunta, el Plan Avanza contribuye en un porcentaje mayor en la financiación de las ayudas a las comunidades autónomas que más lo necesitan, para desarrollar sus objetivos de SI. En relación con los programas dirigidos a los ciudadanos y las pymes, el enfoque podría extenderse a un mayor rango de iniciativas para continuar apoyando la convergencia interregional. Adicionalmente, especialmente para el programa de Ciudadanía Digital, el Plan podría tener en cuenta las condiciones socioeconómicas y territoriales para perseguir más de cerca los objetivos de e-inclusión de los grupos más marginados de la sociedad.
 - **Desarrollar estrategias de financiación conjuntamente con los gobiernos autonómicos:** el Plan Avanza podría trabajar más estrechamente con los gobiernos autonómicos (cosignatarios de los convenios marco de alto nivel) para garantizar que, dentro de las comunidades autónomas, se dedica una mayor proporción de fondos a los asuntos y necesidades más relevantes. Los diseñadores de políticas del Plan Avanza podría trabajar también de manera más cercana con las comunidades autónomas prioritarias para el desarrollo de propuestas de proyectos y estrategias territorializadas para el desarrollo de la SI.
 - **Mejorar el acceso de los beneficiarios prioritarios a la financiación:** el Plan podría considerar revisar los canales de distribución para garantizar que aquellos colectivos más necesitados de ayudas tengan acceso al Plan Avanza. Podría considerarse como socios adicionales a telecentros, municipios, grupos de la sociedad civil, bibliotecas y agencias de servicios sociales.
3. **Servir como plataforma para una mayor coordinación horizontal.** La coordinación horizontal a nivel subnacional puede reforzarse para maximizar las sinergias y mejorar los resultados: intercambio de experiencias, mejores prácticas, soluciones tecnológicas, adquisición conjunta y recursos compartidos. Este tipo de colaboración es especialmente importante, no sólo para maximizar sinergias, sino también para evitar duplicaciones innecesarias y optimizar los recursos. Los gobiernos de nivel subnacional, que han declarado falta de recursos para la implantación de las políticas de SI, podrían beneficiarse de una colaboración horizontal más estrecha. Por ejemplo, el Plan Avanza podría actuar en la promoción de tales actividades, quizás a través de herramientas Web 2.0 o *sharepoints*, y fomentar el intercambio de recursos (como especificaciones técnicas y planes de arquitectura empresarial, etc.). Adicionalmente, organizaciones como FEMP y CATSI podrían ayudar en el alojamiento o promoción de este tipo de redes, aunque los gobiernos autonómicos y locales también deberían ser más proactivos en alentar estas relaciones de abajo arriba. Otros países miembros de la OCDE celebran

cumbres anuales de la sociedad de la información con organizaciones gubernamentales regionales, locales y centrales para promover el diálogo continuo y las oportunidades de establecimiento de relaciones. Finalmente, los responsables institucionales podrían considerar trabajar con los gobiernos autonómicos para estandarizar el seguimiento y evaluación del Plan Avanza y las políticas de SI en las diferentes comunidades autónomas para generar datos que utilizar en la evaluación global de la estrategia.

4. **Fortalecer los mecanismos de seguimiento y evaluación.** Por último, **el marco de evaluación y seguimiento** del plan debería seguir optimizándose aumentando la supervisión de los programas por parte de agentes externos, estandarizando los indicadores de los programas en las diferentes comunidades autónomas y fortaleciendo los vínculos entre la generación de datos y los análisis enfocados a evaluar los resultados, para poder orientar de forma más efectiva las decisiones políticas. De hecho, el Plan Avanza ha instituido un marco sistemático de seguimiento y evaluación, el cual – en el caso de algunos programas – establece una serie de indicadores y medidas aplicables a las distintas comunidades autónomas. Sin embargo, este marco podría utilizarse en mayor grado para medir el rendimiento y los resultados (por ejemplo vinculando datos y evaluando resultados). Especialmente, en relación con los pilares de Ciudadanía y Economía Digital, estos mecanismos podrían estar infrautilizados, y deberían desarrollarse indicadores para evaluar si los fondos están teniendo un mayor impacto en las comunidades autónomas/beneficiarios considerados más estratégicos por el Plan.

Introduction

Over the years, a growing number of OECD member countries have been widening the scope of their information and communication technology (ICT) policies. While initially focused on the deployment of ICT infrastructure and development of the ICT sector, mandates have progressively broadened to encompass wider social and economic dimensions. These objectives now include promoting sustainable economic growth, boosting productivity, providing employment opportunities, encouraging innovation, and improving the effectiveness of public services and citizens' quality of life. In short, many ICT policies have become information society (IS) strategies, policies and initiatives that aim to realise the transformative potential of ICTs, and generate positive impacts on individuals, the economy, and in government.

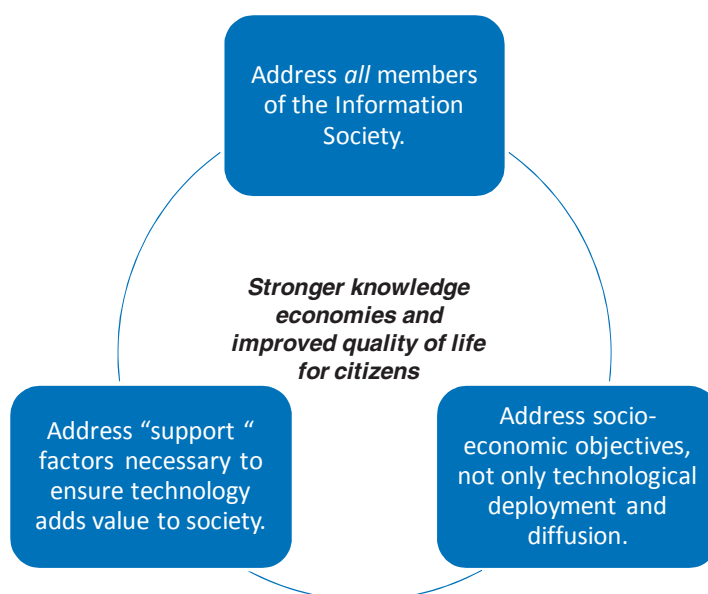
More and more, these strategies are increasingly regarded by policy makers and stakeholders as powerful instruments for societal change, and for the building of competitive, equitable and sustainable knowledge societies. OECD member country governments are therefore dedicating a growing amount of effort and resources to information society strategies. Information society strategies in OECD member countries have included efforts to extend broadband coverage and quality, increase ICT take-up among citizens and businesses, integrate ICTs for innovation in the delivery of public services, and utilise ICT applications to raise energy efficiency. The Spanish government is no exception, having recognised the importance of ICTs and the role they play in achieving the “dual dividend” of economic recovery from the recent crisis and long-term growth. Plan Avanza, the national strategy for the advancement of the information society, is the concerted policy response to this important challenge.

Governments have understood over time that heavy investments in technological infrastructure and promoting an innovative domestic ICT sector are not enough, and need to be accompanied by measures to ensure new technologies contribute to wider socio-economic policy objectives and generate benefits for society at large. Greater broadband penetration, for instance, will not help reduce social inequalities if continuing “digital divides” hamper access and use of the Internet by disadvantaged individuals; nor can e-commerce flourish if consumers have privacy concerns, or if businesses do not have the required skills to incorporate ICTs in their business models and increase competitiveness in international markets. Citizens, teachers, doctors and civil servants may not maximise the potential of ICTs if the knowledge and incentives for doing so are missing. Finally, digital channels to access public services will only be successful if e-government services are oriented towards the needs of the end user. Indeed, despite growing availability of public services online, take-up has plateaued in recent years (OECD, 2009a), and some e-government services have remained under-appreciated and under-used.

Information society strategies then are not only about making ICTs available, but about getting the most of ICTs. They go beyond technological diffusion to include initiatives for technical assistance, training, communication, organisational change,

inter-operability, awareness-building, and regulation. While this makes information society strategies more likely to be successful, it also makes them more complex to design and implement. Getting the most out of ICTs requires good governance: strategic policy sequencing, consultation, multi-level co-ordination, and performance evaluation. This report is the first OECD study which assesses the results of Plan Avanza as well as the effectiveness of its governance apparatus – *i.e.* the institutional and governance mechanisms driving its programmes. In time of fiscal constraints, when the cost-effectiveness of policies is under close scrutiny, getting the governance element right is of paramount importance to ensure the efficient and effective use of public resources, to strongly align policy instruments with high-level objectives and strategic priorities; and to maintain strong accountability to stakeholders.

Figure I.1. Characteristics of information society strategies



Source: OECD elaboration.

The OECD Peer Review of Spain’s Plan Avanza has three objectives: *i)* to analyse and understand the origins, principles, and objectives of Plan Avanza; *ii)* to identify major governance challenges and critical factors of success in the design and implementation of the Plan; and *iii)* to assess the impact of the Plan’s initiatives on citizens, businesses and government. This report is divided as follows: it opens with the study’s principal assessments and recommendations. These present the main findings of the report alongside potential areas of improvement for the next strategy – Plan Avanza 2. Chapter 1 introduces the main objectives and beneficiaries of the Plan Avanza strategy. Chapter 2 examines in greater detail the governance mechanisms behind the strategy’s design and implementation. Chapter 3 presents the results of the survey of Plan Avanza stakeholders regarding the effectiveness of inter-institutional co-ordination in the implementation of key Plan Avanza initiatives. Finally, Chapter 4 examines progress made since 2005 on ICT diffusion and utilisation in the sectors of education, health and justice, as well as in SMEs. The chapter also includes a section on the development of Spain’s ICT sector and telecommunications infrastructure.

Chapter 1

Plan Avanza: an important step forward for information society policy in Spain

This chapter discusses the main characteristics of information society strategies and lays out Plan Avanza's ("the Plan's") main objectives and policies, which have been designed to respond to the country's particular challenges in advancing its information society: an aging population, a high percentage of rural territory with either mountainous terrain and/or dispersed populations, traditionally lower levels of economic activity in the ICT (information and communications technology) sector, and a high percentage of SMEs/micro-enterprises which face additional barriers to adopting ICTs. An overview of the Plan's main beneficiaries is provided, along with data on the distribution of resources, reflecting the Plan's priorities from 2006 through 2009. Finally, the main tenants of the proposed Plan Avanza 2 strategy are briefly illustrated; this next phase of the Plan, which will be in effect through to 2015.

Box 1.1. In this chapter

The Plan Avanza strategy was launched in 2006 with the overarching goal of advancing Spain's information society (IS) and converging with European and OECD member countries in access and use of ICTs (information and communication technologies). The challenge for policy makers at the time was two-fold: *i*) designing and implementing a cross-sectoral strategy with a large scope and of high technological complexity, with policies aimed at reaching citizens, businesses and the public administration; and *ii*) making certain that progress was equitable, by promoting digital inclusion and inter-regional convergence amongst Spain's 17 regions and 2 autonomous cities. This publication examines the principal achievements made thus far in the development of Spain's information society, and also looks at the governance apparatus put in place to broach these two important goals. Chapter 1 in particular provides an overview of Plan Avanza's main objectives and initiatives.

Key findings

- Information society (IS) strategies encompass a multitude of policies aimed at exploiting the potential of ICTs to contribute to societal and economic-wide objectives for growth, innovation, sustainability, quality of life and equity. These strategies are increasingly regarded by policy makers and stakeholders alike as powerful policy instruments for promoting social and economic change. Indeed, in a globalised world that increasingly depends on knowledge-based transactions, where ICTs facilitate access to new markets and ideas, and where equal access to information can help “level the playing field” for socially excluded groups, governments are understanding that societies that are good at creating, diffusing and exploiting information for social and economic gain will find themselves at the forefront of new economic opportunities and pioneering ways for generating welfare for citizens.
- Plan Avanza (“the Plan”) is Spain's information society policy which was launched by the Ministry of Industry, Tourism and Trade (MITT) in 2006, and has formed a key component of national modernisation, e-government and innovation agendas. As a catalyst for innovation and ICT-diffusion across society and the Spanish economy, supporting the development of the ICT sector has also been one area of action for IS policy makers. Additionally, e-government initiatives in the justice and health sectors, amongst others, have received backing from Plan Avanza programmes. Finally, the Plan has targeted citizens most at risk of digital exclusion, as well as small and medium-sized enterprises (SMEs) – the fibre of the Spanish economy.
- The proposal for Plan Avanza 2, the next phase of the strategy, reflects some changing priorities, with a greater emphasis on “demand-side” policies to incentivise take-up of ICTs and digital services. However, it remains unclear how the distribution of resources under Plan Avanza 2 will be adapted to fit new objectives. At this important turning point for the strategy, this report examines the progress made thus far, and proposes how the next phase of the Plan can best serve Spain's information society goals.

Introduction

This chapter discusses the main characteristics of information society strategies and lays out Plan Avanza's ("the Plan's") main objectives and policies, which have been designed to respond to the country's particular challenges in advancing its information society: an aging population, a high percentage of rural territory with either mountainous terrain and/or dispersed populations, traditionally lower levels of economic activity in the ICT (information and communications technology) sector, and a high percentage of SMEs/micro-enterprises which face additional barriers to adopting ICTs. An overview of the Plan's main beneficiaries is provided, along with data on the distribution of resources, reflecting the Plan's priorities from 2006 through 2009. Finally, the main tenants of the proposed Plan Avanza 2 strategy are briefly illustrated; this next phase of the Plan, will be in effect through 2015.

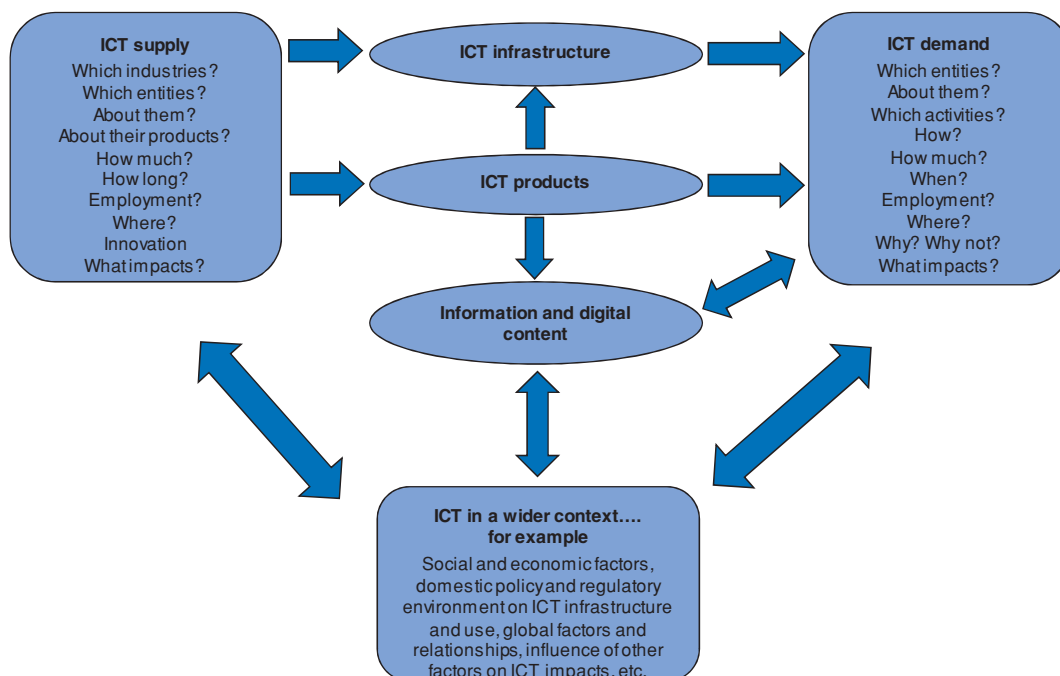
1.1. Information society strategies

While initially focused on the deployment of ICT infrastructure and the development of the ICT sector, mandates for ICT policies have progressively broadened to encompass wider social and economic dimensions, with the aim of exploiting the potential of ICTs to contribute to social and economic gain. Specifically, these objectives can now include promoting sustainable economic growth, boosting productivity, providing employment opportunities, encouraging innovation, improving the effectiveness and responsiveness of public services, generating welfare for citizens and promoting social inclusion. In short, many ICT policies have become incorporated into more streamlined and comprehensive **information society** (IS) strategies, and are increasingly regarded by policy makers and stakeholders as powerful instruments for societal change, and for building competitive, equitable and sustainable knowledge economies.

The OECD provides a conceptual framework in order to define the key components of an information society, which can be viewed in terms of two dimensions (OECD, 2009b):

- **The economic dimension:** ICTs have significant economic implications. Businesses and government utilise ICTs in daily operations to deliver services, to innovate, to exchange ideas and to access markets. As a result of ICTs such as mobile phones and the Internet, people are modifying consumption and spending patterns. Additionally, the ICT sector – as a leading sector in innovation and growth in recent years – has directly impacted aggregate growth and productivity (OECD, 2009b).
- **The social dimension:** ICTs are general purpose technologies which now interface with nearly every facet of daily life. Not only have ICTs revolutionised communications, they also have wide-spread potential for improving quality of life and generating welfare benefits. Additionally, access to information creates opportunities, and can help equalise benefits for socially excluded groups (OECD, 2009b).

Figure 1.1. OECD Information Society Conceptual Model



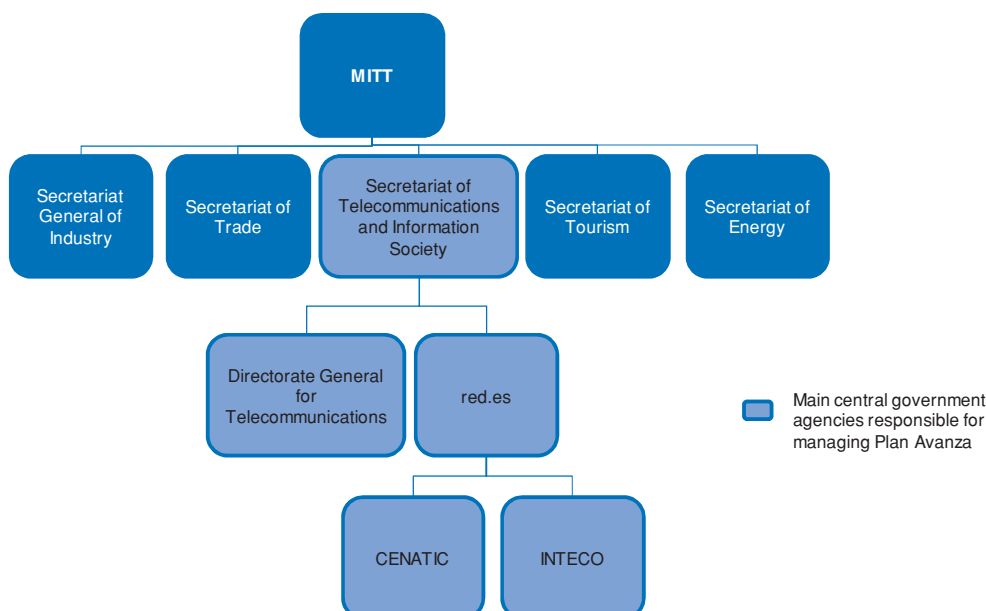
Source: OECD (2009), "Guide to Measuring the Information Society", OECD, Paris.

Achieving these wider societal and economic benefits requires action to exploit the potential benefits of ICTs. Another relevant feature of IS strategies, then, is that they attempt to bridge technology with their potential outcomes, providing the often intangible "support" factors needed to maximise the value-contribution of ICTs. Indeed, experience in OECD member countries has shown that the availability of ICTs does not necessarily translate into positive outcomes; other key catalysts are essential to capitalise on their potential benefits. For instance, recent research suggests that ICT diffusion is only the first step: while ICT capital presented one factor for the "productivity gap" between the United States and continental Europe over the period of 1995-2005, a portion of the gap can also be accounted for by differing organisational capacities (*e.g.* different management practices, in particular better "people management", and skills) (Van Reenen *et al.*, 2010). Greater returns from ICTs then rely on complementing ICTs with the transition to demand-side policies: fostering use and training; exchanging practices; supporting organisational changes and procedural adaptation; providing technical support; ensuring interoperability, security and affordability; and increasing communication, awareness and knowledge-sharing. To cite another example, despite the growing availability of public services online, take-up has plateaued in recent years (OECD, 2009a), and some ICT tools have remained under-appreciated and under-used due to a lack of a combination of the aforementioned factors. Plan Avanza, like other OECD IS strategies, pursues these objectives as well.

1.2. The Plan Avanza Strategy

Plan Avanza is Spain's umbrella strategy for the advancement of its information society (IS). The Plan was approved in 2005 by the government and launched early in the following year with its first 2006-2009 Action Plan. The strategy operates under the direct authority of the Ministry of Industry, Tourism and Trade (MITT), specifically under the State Secretariat for Telecommunications and the Information Society (SSTIS). Implementation responsibilities are shared by the SSTIS and *red.es*, a public enterprise also charged with managing two key departments which directly contribute to the Plan's objectives: CENATIC (the National Centre for the Application of ICTs Based in Open Source) and INTECO (the National Communications Technology Institute).

Figure 1.2. **Organisational chart of MITT and agencies responsible for Plan Avanza**



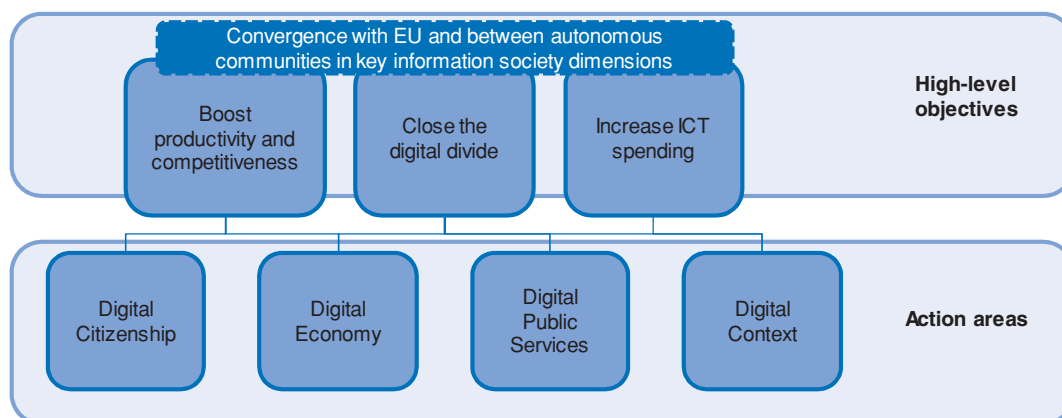
Source: Observatory for Telecommunications and the Information Society (ONTSI), based on interviews with the State Secretariat for Telecommunications and the Information Society (SSTIS) and the Ministry of Industry, Tourism and Trade (MITT).

Plan Avanza objectives and activities

While Plan Avanza's high-level objectives were inherited from those of the European Commission's *i2010 Strategy: A European Information Society for Growth and Employment*, these were adapted to fit the specific challenges and needs of the Spanish context. These aims in turn have translated into four pillars of activity, or action areas, including (Ministry of Industry, Tourism and Trade – MITT, 2005a):

- **Digital Citizenship:** policies under this strategic pillar have been designed to increase the adoption of ICTs by citizens, improve ICT skills (or “e-skills”) in the general population, and promote the utilisation of digital services. This action area also provides citizens with opportunities to acquire ICT equipment and Internet access for their homes, and includes communication initiatives to raise awareness of the benefits and applications of ICTs for social and economic gain.

Figure 1.3. Plan Avanza's four strategic pillars



Note: OECD elaboration drawn from the Ministry of Industry, Tourism and Trade (MITT) and the State Secretariat for Telecommunications and the Information Society (SSTIS).

- **Digital Economy:** across the whole of the Spanish economy, this pillar has aimed to promote the incorporation of ICTs in firms' operations and business models. For instance, it includes programmes designed to increase the use of enterprise resource planning (ERP), customer relationship management (CRM) applications and e-invoicing, to name a few of the tools that have been shown to contribute to greater productivity. Additionally, the Plan has worked to encourage firms to create websites and pursue e-commerce. In the ICT sector, policies have aimed to promote growth and foster innovation by providing support for the development of new ICT products/services and support the internationalisation of Spanish ICT firms. Lastly, initiatives under the digital economy pillar have been working to increase the availability of specialised human capital for the needs of the ICT sector.
- **Digital Public Services:** Plan Avanza has supported the integration of ICTs in the production and delivery of public services across several areas of government (health, justice, education, etc.) as well as in all tiers – from central to regional and local. The goal has been to contribute to national strategies for the modernisation of the public administration, as well as to assist government organisations to increase digital interaction with citizens, thereby improving the responsiveness of services and raising back-office effectiveness and efficiency.
- **Digital Context:** of Plan Avanza's four action areas, the digital context pillar is the broadest in scope. In order to meet the goal of universal accessibility to key ICT infrastructures, Plan Avanza has implemented large-scale projects to increase the coverage of mobile telephony networks, broadband Internet and digital terrestrial television. Additionally, this area of activity has aimed to improve the quality, speed and accessibility of these key ICT infrastructures. Developing quality digital contents throughout the public and private sector has been a third challenge for this pillar. Finally, initiatives belonging to the digital context objective have worked to increase users' security and confidence online.

Strategic alignment with international and national policies

Strategically linking the Plan's policy objectives to those of other high-level European and national strategies has played an important role in paving the way for the materialisation of Plan Avanza, as this has helped policy makers to: *i*) better capture synergies across government in the pursuit of shared objectives; *ii*) increase buy-in from the many stakeholders implicated in IS policy; and *iii*) avoid the duplication of policies across government, reducing costs and policy fragmentation. In particular, tying the Plan to such strategies as *i2010* and the *National Reform Programme* has been key.

Figure 1.4. Synchronicity between Plan Avanza, European and national strategies



Source: State Secretariat for Telecommunications and the Information Society (SSTIS).

Plan Avanza and i2010

Plan Avanza is modelled after the European Commission's *i2010* strategy and adapted to fit the particularities of the Spanish context. The presence of a supranational IS strategy has exerted top-down pressure for Spain to converge with other European countries in key IS dimensions, thereby validating the rationale for the strategy and instilling a sense of urgency amongst national stakeholders for the need to foster the knowledge economy in Spain and increase the competitiveness of the Spanish economy. Additionally, the synchronicity between *i2010* and Plan Avanza (both were designed and launched in the same years) helped increase awareness amongst Spanish policy makers and stakeholders of the importance of building a strong information society, building consensus and helping the Plan mobilise resources.

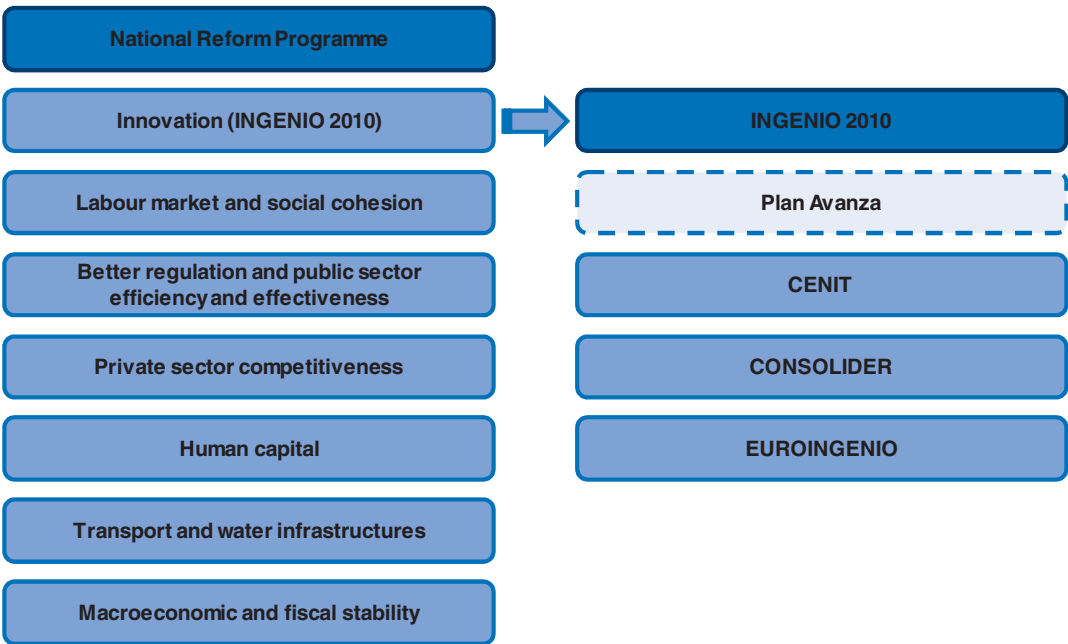
Plan Avanza and Spain's National Reform Programme (NRP)

Plan Avanza is a transversal strategy with objectives spanning multiple policy domains, beneficiaries and levels of government. It is important for the strategy, then, to be well-aligned with relevant national strategies in order to maximise its contribution in the areas where implicated. As a component of both INGENIO and the National Reform Programme (NRP), Plan Avanza is expected to contribute to objectives ranging from boosting innovation and competitiveness, to creating employment opportunities, increasing human capital and modernising the public sector. As is the case with *i2010*, alignment to INGENIO and the NRP's high-profile reforms in the areas of modernisation, e-government, innovation and economic development has worked in favour of the Plan in terms of acquiring the resources to carry out its mandate and boosting awareness among

policy makers for the role of ICTs in each of these areas. Additionally, synergies realised from a “whole-of-government” approach increase the impact.

One example of how this has been accomplished in Spain is the case of the e-government strategy, a key pillar of the NRP’s modernisation plan. Because of the integral role of ICTs in e-government reforms, Plan Avanza works closely with the Ministry of the Presidency, the principal government ministry responsible for developing digital public services for the public administration. Under the umbrella of the NRP, policy roles have become more clearly defined: the ministry develops services and is responsible for the accompanying modernisation reforms in procedures and operations, while Plan Avanza provides ICT equipment, in some cases developing and customizing ICT tools and software, as well as training public servants to utilise ICTs effectively. Therefore initiatives are not duplicated but rather, through better alignment, they are designed to complement each other and address both the demand and supply dimensions needed for value creation.

Figure 1.5. Interfaces between NRP, INGENIO and Plan Avanza



Source: State Secretariat for Telecommunications and the Information Society (SSTIS).

1.3. Targeted beneficiaries: addressing Spain’s key information society challenges

As a large-scale, horizontal strategy, Plan Avanza initiatives target all areas of society including: citizens, businesses and the public sector. This section discusses the rationales and challenges behind decisions to prioritise certain beneficiaries. The impact of Plan Avanza initiatives on these groups is discussed in Chapter 4.

Citizens

Addressing inequalities in ICT access and use is imperative for achieving the Plan’s high-level objectives for social inclusion, as “digital divides” are both a form of and a cause of social and economic exclusion (Cullen *et al.*, 2007), along with the important

repercussions these may have. Some of the key linkages between social outcomes and ICTs include:

- **ICTs, skills and employment:** because of the growing prevalence of ICTs in the workplace, those with low digital literacy risk fewer job opportunities and lower wages (FreshMinds Research, 2008).
- **ICTs and citizens' welfare:** the Internet is increasingly becoming an important mode of citizen and government interaction, with more and more public services becoming available through the digital channel. This form of contact with government authorities not only increases convenience, saving time and money, but also allows citizens greater access to services (*e.g.* anything from pension information to making medical appointments, etc.). Additionally, ICTs are also being used to enable new modes of service delivery (*e.g.* assisted living, telemedicine), and supporting efforts to deliver “joined-up” or bundled services better suited to citizens' needs.
- **ICTs, civic participation and transparency:** Web 2.0 and social networking technologies (OECD, 2007a) have played roles in increasing the transparency and accountability of governments, helping to increase citizens' trust in the public sector. Namely, ICTs can play roles in: *i)* facilitating collective action – as groups can more easily reach a critical mass and individuals can more easily establish links with those who share similar interests; and *ii)* allowing a greater degree of consultation in policy making, as they facilitate communication between government and citizens. In some countries, ICTs have even been utilised for online voting, drafting legislation and the circulation of petitions.

With these issues in mind, Plan Avanza policies aimed at citizens have dedicated efforts to promoting digital inclusion in Spain, seeking to address: *i)* the geographic divide, that is, differences in ICT access use between rural and urban areas; *ii)* the age divide, between younger and older persons; as well as *iii)* gender divides.

Rural regions: approximately 92.7% of the Spanish territory qualifies as rural, accounting for some 42% of the country's population. Rural areas are at a high risk of digital exclusion since, historically, they demonstrate higher levels of unemployment and lower levels of economic growth (OCED, 2009c). Citizens living in rural areas, for instance, find it more difficult to access public services, and firms in these areas are less likely to attract investment and may have more difficulties in accessing new business opportunities. Plan Avanza specifically targeted these areas recognising the role that ICTs can play to help increase regional convergence (*e.g.* through facilitating access to information and services, supporting local industries, enhancing long-distance learning; and promoting the use of e-commerce in rural SMEs). The National Broadband Extension Plan (Box 1.2) is one example of a programme specifically targeting rural regions. Additionally, Plan Avanza has supported a rural telecentres programme. Specifically, the telecentres initiative creates public Internet hubs to reduce the urban-rural digital divide. These centres provide access to computers, printers, broadband and other basic ICT equipment, and are also centres for ICT training and informative sessions. The project was co-financed by *red.es* and the Ministry of Agriculture and Municipalities for a total of EUR 50 million, and has been implemented with support from the Spanish Federation of Local Governments and Municipalities.

Box 1.2. The National Broadband Extension Plan (PEBA)

One Plan Avanza programme specifically tailored to rural areas is the PEBA project (the National Programme for Broadband Deployment in Rural and Isolated Areas), which was implemented between 2005 and 2008. Two calls for proposals were launched (2005 and 2007), resulting in 29 smaller projects implemented by 2 operators (27 from Telefónica and 2 from Telecable). The aim was to ensure broadband affordability and the availability of certain key service requirements without distorting competition (Ministry of Industry, Tourism and Trade, 2005):

- minimum bandwidth: 256/128 Kbps;
- price caps: 39 (one-off sign-up fee) plus 39 (monthly fee) during the first 36 months;
- technical characteristics comparable to commercial broadband services;
- technology neutrality (any technology could in principle be deployed, subject to assessment of the Evaluation Committee);
- deployed infrastructures should be open to third parties for at least three years (*e.g.* DSL wholesale obligations, on conditions fixed by the telecoms regulator);
- deployment objectives were defined and a list of eligible population centres was included in the calls for proposal.

The total budget for the programme was EUR 90 million, of which the MITT provided EUR 18 million in zero-interest loans and EUR 8.4 million in grants to the European Regional Development Fund (ERDF) objective 1 regions. ADSL (86.3%), WIMAX (5.1%), satellite (8.4%) and HFC (0.2%) technologies were used, depending on the most adequate technology solution for the region in question. Only three autonomous communities did not participate in the Plan.

The main outcome of the Plan is that 99% of the population has broadband coverage, taking all available technologies into account. Indeed, over 8 million people gained broadband coverage under the programme. Operators are now offering download speeds of around 3 Mbps (for DSL technology), in line with commercial offers, well above the initial 256 Kbps requirement. Currently in Spain, the majority of fixed broadband subscriptions (47.2% of the 9.8 million subscribers) have a speed of between 4 and 10 Mbps. The PEBA is to be continued under Plan Avanza 2 (Infrastructure Sub-programme), focused on providing the remaining uncovered population with broadband availability.

Source: OECD derived from interviews with MITT, SSTIS, and *red.es* officials. Ministry of Industry, Tourism and Trade (2005), *Boletín Oficial del Estado (Official State Gazette)*, N° 69, 22 March, Madrid, www.boe.es/boe/dias/2005/03/22/pdfs/A10067-10076.pdf.

A second rationale for targeting these regions is the lack of incentives for the private sector to deploy key infrastructures. Many rural areas are sparsely populated and it is not always profitable for the private sector to invest in these regions. Rural areas in mountainous terrains are particularly costly for large-scale infrastructure deployment. This is a significant challenge considering that 24% of the country has an elevation of over 1 000 meters (OECD, 2009c: 40). Universal coverage of key ICT infrastructures would not be possible without public sector intervention on the part of Plan Avanza to incentivise ICT investments from the private sector.

Older persons: Spain has a large and fast-growing aging population. Approximately 17% of the Spanish population is above the age of 65, while the OECD average is 14.4%. Plan Avanza specifically targets the elderly as they are the most at risk of digital exclusion, which can in turn limit their access to key public services. Actions targeting this group include increasing awareness of the benefits of ICT and strengthening skills to increase access and use.

Women: women are also prioritised by the Plan as they are, on average, less likely than men to utilise ICTs: for instance, 63.4% of men between the ages of 16 and 74 years are Internet users while only 56.2% of women are regularly online (Instituto Nacional de Estadística – INE, 2009). This “digital gender gap” can aggravate already existing disparities between men and women in the Spanish labour market, where ICT skills are becoming increasingly important. For instance, in Spain, women only make up 42% of the labour force (Eurostat, 2007), as only 51% of women were actively employed or looking for employment in the last quarter of 2008 (compared to 69% of men). The Programme for Gender Equality in the Information Society is a Plan Avanza initiative which provides NGOs with funding to carry out projects aimed at teaching women ICT skills and increasing their employment opportunities.

Businesses

Because of the roles that ICTs can play in increasing the competitiveness of the Spanish economy, the Plan has prioritised namely SMEs and the ICT sector. Indeed, the ICT sector and ICTs can impact economic performance both directly and indirectly. Directly, the ICT-producing sector can contribute to economic growth as it shows resilience in face of the economic crisis and expands at relatively higher rates. In OECD member countries, it accounts for on average 8% of GDP and 6% of employment (OECD, forthcoming). Indirectly, ICTs and ICT investment can contribute to economic performance in the following ways:

- **ICTs and productivity:** ICT-intensive sectors have been demonstrated to be amongst the most innovative and productive, and there are good reasons for this phenomenon. ICTs can boost both multi-factor (MFP) and labour productivity. Furthermore, ICTs may help strengthen value-chain links, reducing transaction costs and providing further efficiency gains.
- **ICTs and innovation:** by facilitating knowledge-sharing and co-creation, ICTs help in the formulation and sharing of ideas, which can in turn lead to the development of new products, services or organisational improvements. ICTs also facilitate wider innovation, *e.g.* in healthcare, education, environmental protection.

SMEs. Small and medium-sized enterprises are the backbone of the Spanish economy, making up around 97% of all businesses. Accounting for approximately 82.2% of employment, they represent about 68.5% (Directorate General of SMEs – DGPYME, 2009) of value-added to the Spanish economy. Compared to larger firms, SMEs may be disadvantaged in the adoption of ICTs as they face additional barriers in terms of higher costs or elevated risk. Indeed, due to the lack of economies of scale, SMEs may face disproportionately higher costs when integrating new equipment or software. With fewer staff, back and front-office procedural changes resulting from new technologies may incur more risks to the stability of daily operations. Box 1.3 highlights an example of one Plan Avanza programme designed for SMEs.

Box 1.3. The NEW Programme for SMEs

Plan Avanza's NEW Programme (an acronym for "no enterprise without web") was one such initiative aimed specifically at SMEs. The project had two components: the first consisted of information sessions to boost awareness regarding the productivity and competitiveness benefits of having an online presence and taking advantage of e-commerce opportunities. The second component included the integration of a package of web applications, offered at special rates thanks to strategic partnerships between developers and *red.es*. Technical assistance was also provided by *red.es* to facilitate their adoption.

The programme was implemented in two phases (September 2007-March 2008 and October 2008-June 2009) by *red.es*, with a budget of EUR 3.5 million. Thus far, 58 000 SMEs have assimilated the web solutions.

Source: OECD, derived from interviews with the Ministry of Industry, Tourism and Trade, the State Secretariat for Telecommunications and the Information Society, and *red.es* officials.

ICT sector. Activities targeting these firms in particular are dedicated to promoting growth, supporting innovation initiatives and developing more specialised human capital in the digital contents sector to increase the available talent pool. Within the ICT sector, the digital contents sector is of particular interest to the Plan Avanza strategy since it is a promising emerging economic sector in Spain and globally (OECD, 2008a).

Public sector

Between 2006 and 2009, the Plan's policies in the public sector focused primarily on the modernisation of public services with a high potential to impact the quality of life of citizens. Also, government organisations undergoing large-scale e-government initiatives (such as justice institutions and local governments) received support from Plan Avanza programmes in the form of ICT equipment, IT solutions, technical assistance and training for staff.

- **Ministries of Education and Health.** The Plan sought to support efforts to incorporate ICTs into classrooms and universities and help integrate ICTs into teachers' pedagogical methodology. For example, the Internet in the Classroom Programme impacted close to 10 000 schools and 2 700 000 students. eHealth initiatives sought to modernise hospitals and primary health centres by implementing programmes for generating and integrating electronic health records and processing prescriptions electronically.
- **Ministries of Justice, the Presidency and the Interior.** These ministries underwent considerable e-government reforms, and the Plan's contribution to these focused on ensuring that: *i*) reforms were implemented in an effective, homogenous and timely manner in order to comply with new e-government legislation; *ii*) issues of interoperability were addressed from inception; and *iii*) specialised technical expertise was made available where it was lacking.
- **Local administrations.** Plan Avanza also supported the modernisation of local governments, specifically municipalities. The rationale being that local governments may not have the technical resources needed to implement and sustain ICT projects. Furthermore, the lack of economies of scale may prevent

smaller city councils from pursuing these initiatives as they are too costly. For instance, a survey of local administrations in Spain performed by the National Observatory for the Information Society revealed that smaller municipalities spent, on average, less on ICT initiatives and equipment, had less digital content available, and fewer staff (Table 3.6). The analysis in Chapter 3 of multi-level governance demonstrates some additional barriers faced by local administrations.

Table 1.1. **Overview of Plan Avanza beneficiaries and specific target groups**

Beneficiaries	Specific objectives	Specifically targeted groups
Citizens	(i) Increasing the inclusion of citizens in the information society through greater accessibility and adoption of ICTs (ii) Increasing awareness and take-up of digital services (iii) Building and improving ICT skills (iv) Building confidence in ICTs (e.g. protection of sensitive data and privacy)	Older people, disabled persons, women, persons living in rural areas, university students in ICT-related areas of study
Businesses	(i) Promoting the adoption of ICTs in business operations (CRMs, ERPs, e-invoicing) and e-commerce (ii) Promoting the development and internationalisation of the ICT sector (iii) Building and improving ICT skills, including ICT practitioners skills and e-business skills (iv) Building confidence in ICTs and raising awareness about their benefits (v) Supporting the development of digital content	Small and medium-sized enterprises, micro-enterprises, firms in the ICT sector, specifically the digital contents sector
Public administration	(i) Supporting the implementation of projects for the development of digital public services (ii) Supporting ICT-enabled modernisation through the provision of ICT equipment and training (iii) Supporting the development of digital public services	Education (schools and universities); health (hospitals and primary health centres); and justice (civil registries and local courts) sectors. Additionally, support to the Ministry of Interior for the national eID Cards Programme and local governments (town halls)

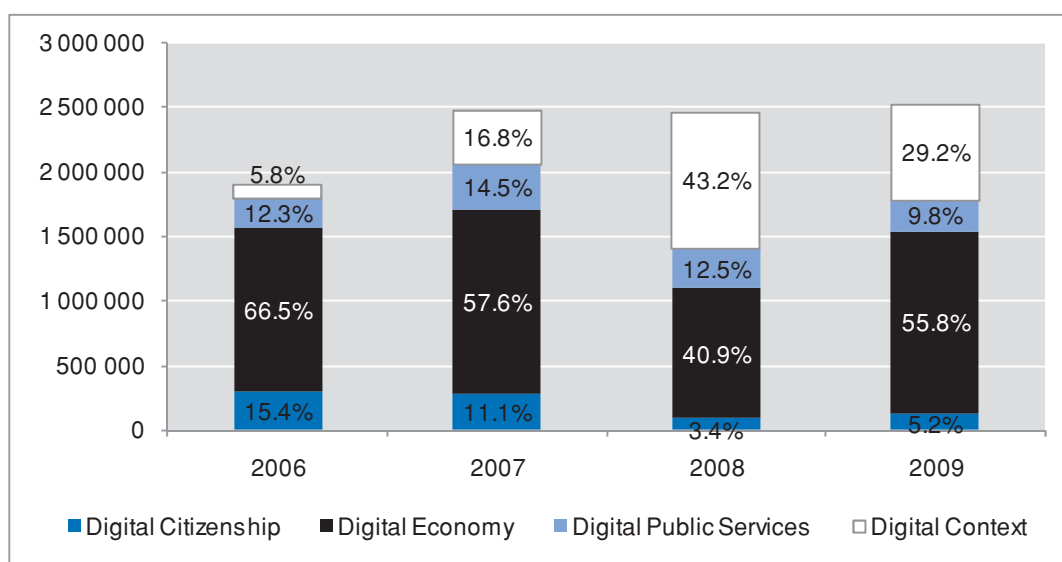
Note: Information gathered from interviews with Plan Avanza senior officials and project managers.

1.4. Distribution of budget resources: one indicator of information society priorities

Throughout its first action plan, Plan Avanza had a relatively stable budget, indicating sustained dedication by national, sub-national and non-governmental stakeholders to promoting the role of ICTs in the Spanish society. The average annual budget was EUR 2.3 billion, with a 4-year peak of EUR 2.5 billion in 2009. Between 2006-2009, the total budget mobilised by all stakeholders was EUR 9.4 billion.

In terms of specific activities, initiatives under the Digital Economy pillar were in the lead in terms of total budget allocations from 2006 to 2009. Promoting innovation in the ICT sector, support to SMEs in the integration of ICTs, and investments in the digital contents sector topped the spending list under the first Plan. Spending for capacity-building and ICT skills as well as support to digital inclusion initiatives for citizens was lower in comparison.

Figure 1.6. Evolution of Plan Avanza budget allocations per pillar
(funds mobilised, thousands EUR)

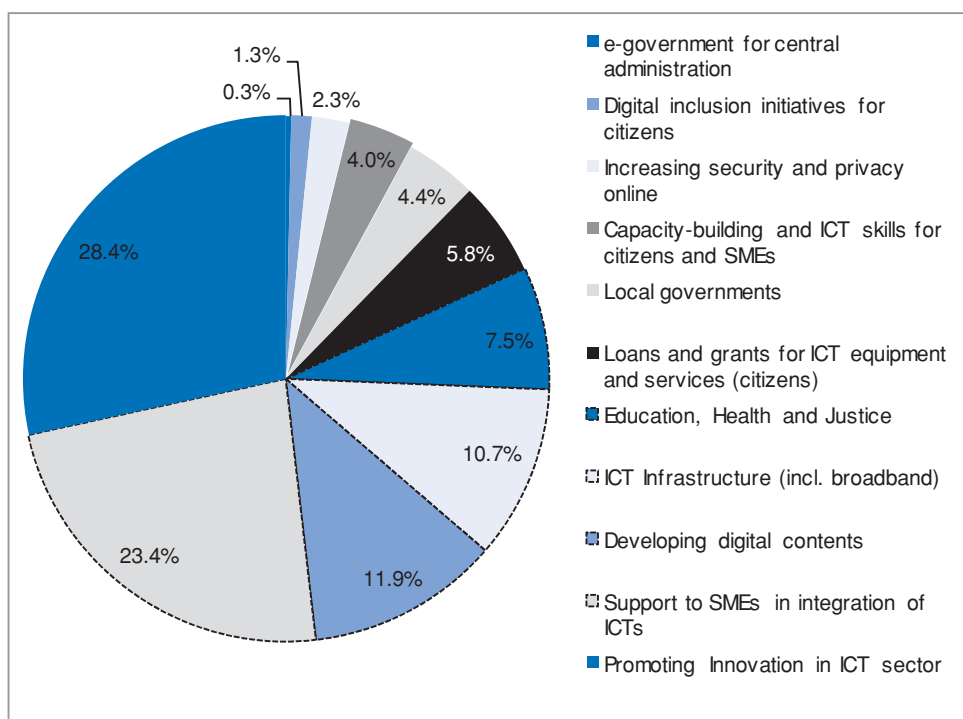


Note: Data provided by Plan Avanza Technical Office.

The Digital Economy pillar accounted for the greatest amount of resources relative to the other 3 pillars (55% of the 4-year total). Indeed, the fastest growing investment of the Plan was in the promotion of innovation in the ICT sector, which nearly tripled since 2006. Activities aimed at incorporating ICTs in SMEs also received important consideration (23.4% of total budget); however, funding for initiatives to incorporate e-commerce and e-billing, for example, dropped significantly (50%) between 2006 and 2009. This decrease can be explained to some extent because of the co-financing required by SMEs, and the effects of the crisis. The reduction may reflect a need to assess the policy instruments utilised to target SMEs and the need to develop counter-cyclical strategies for specific sub-sectors. This issue is discussed in more detail in Chapter 3. On the other hand, training and building ICT skills in SMEs remained relatively stable, yet comparatively low, at nearly 3% of the total budget over the 4-year period.

The Digital Context pillar follows the Digital Economy closely with 25% of total resources for the duration of the first action plan. Within this pillar, funding for the development of digital contents increased rapidly, more than doubling between 2007 and 2009. Infrastructure spending constituted about 32% of the context action area (11% of the total), although between 2008 and 2009 there was a marked reduction in spending upon finalisation of key programmes in mobile telephony and broadband. Second phases are due to begin under Plan Avanza 2, and spending is predicted to increase once more. Security issues accounted for approximately 9% of investment in this pillar, including initiatives with the Ministry of Interior to improve the security of national eID cards.

Figure 1.7. Budget distribution per activity (% of 2006-2009 total)



Note: Data provided by Plan Avanza Technical Office.

Prioritisation of digital services remained relatively stable throughout the first 4 years of the Plan, averaging 13% of total annual resources. Activities in this area were relatively evenly balanced between supporting local governments, and supporting e-government initiatives in the areas of health, education and justice. Growing support for the latter was largely a result of the increasing number of ministries seeking support from Plan Avanza in the management of e-government reforms. Lastly, investments for supporting central government e-government initiatives (*e.g.* co-implemented with the Ministry of the Presidency) varied greatly each year, accounting for less than 1% of the total budget. This area of work in comparison was smaller, and supported already ongoing initiatives such as the 060 portal.

While most of the Plan's pillars experienced relatively stable increases, the exception was Digital Citizenship, whose allocation was reduced by 56% between 2006 and 2009. Over the 4 years, the pillar accounted for, on average, 8.8% of the Plan's total resources. The largest area of spending was on providing citizens with loans for the purchase of ICT equipment and services. However, funding for this initiative decreased substantially towards the end of the first action plan. Spending on capacity-building (awareness and training) remained stable throughout the 4 years, but accounted for a small portion (less than 2%) of total budget. Lastly, spending on inclusion initiatives for marginalised groups also decreased.

Table 1.2. **Distribution of Plan Avanza resources (thousands EUR)**

Total funds mobilised by national, sub-national and non-governmental stakeholders

Pillar	Scheme	2006	2007	2008	2009	Total
Digital	Capacity-building and ICT skills	34 116	45 533	34 410	8 967	123 026
Citizenship	Digital inclusion initiatives for marginalised groups	28 459	30 683	37 180	21 808	118 130
	ICT equipment and Internet (loans and grants)	231 384	197 849	14 205	99 847	543 285
Digital	Support to SMEs in the integration of ICTs	860 895	653 360	246 618	432 956	2 193 829
Economy	Promoting innovation in the ICT sector	338 321	718 231	700 671	905 159	2 662 382
	Capacity-building and ICT skills	70 182	55 530	61 385	68 730	255 827
Digital	e-government for the central administration	19 474	10 115	–	1 023	30 612
Public	Local governments	82 147	122 568	116 736	91 416	412 867
Services	Education, Health and Justice	133 867	225 564	190 715	154 194	704 340
New Digital	Infrastructures	81 500	60 269	756 402	101 006	999 177
Context	Security issues	27 936	120 902	53 565	11 382	213 785
	Developing digital contents		235 142	254 432	622 009	1 111 583
Total		1 908 281	2 475 747	2 466 317	2 518 496	9 368 841

Note: Data provided by the Plan Avanza Technical Office.

Box 1.4. Plan Avanza priorities in the context of OECD information society strategies

Resource distribution can be one useful way of assessing the prioritisation of information society objectives. However, budget allocations are not a perfect reflection since differences in the costs and investments needed to achieve goals are not taken into consideration. Therefore, qualitative surveys such as those performed for the *OECD Information Technology Outlook*, can complement budgetary information for a more comprehensive perspective of strategic preferences. The following figure maps out the Spanish government's prioritisation of different ICT policy areas in 2008 and compares this mix to the average prioritisation by OECD member countries on a spectrum of 0 to 5 (low to high).

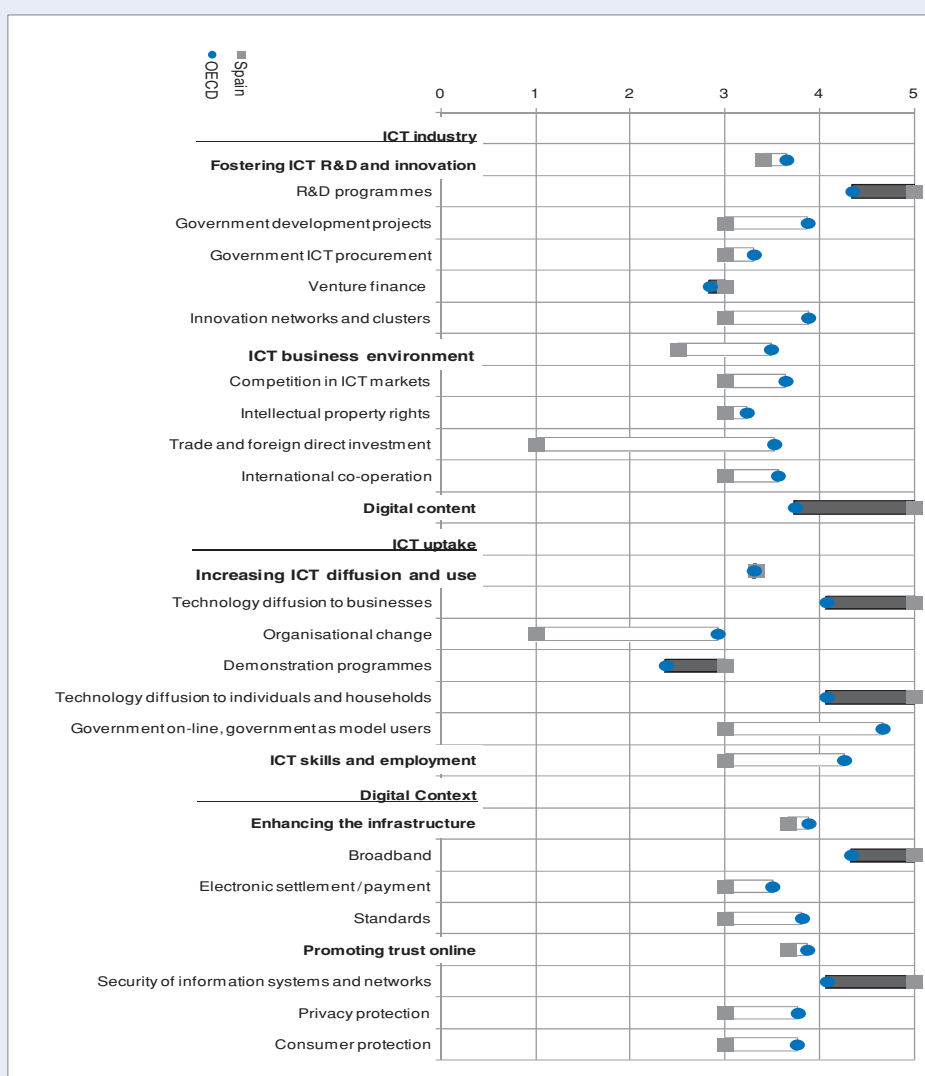
The survey generally validates earlier observations based on the distribution of financial resources. It also shows that Spain's ICT priorities are broadly in line with those of the OECD and other European countries with a growing focus on striking a balance between supply- and demand-oriented policies and infrastructure development. Support for ICT R&D and digital content aim to advance national ICT firms and focus on particular strengths in the services sector (software development, audio-visual sector) and with spill-over effects in telecommunications. To spur demand, the government prioritised ICT uptake in businesses (especially SMEs) and households. Also to spur demand, priorities include increasing security and promoting accessible pricing of broadband. This in turn should stimulate broadband uptake which remains below OECD averages (see OECD, 2008: Chapter 1 and *cf.* OECD Broadband Portal). Plan Avanza aims to close the gap with OECD member countries in spurring innovation across industry sectors and follow-up programmes target unserved or underserved areas.

Moreover, comparing Spanish results with OECD averages reveals interesting insights into where future areas of work could focus. With regards to policies aimed at fostering ICT R&D and innovation, Spain prioritises the preliminary inputs to innovation: R&D investment and venture capital, placing a higher emphasis on these initiatives compared to OECD averages. Converting these investments into marketable and profitable products and services, however, may require greater prioritisation of innovation networks and clusters in order to facilitate knowledge-sharing and co-creation. Moreover, support for innovation in the ICT sector may be targeted to promote "green" infrastructures, and Spain could possibly draw on similar existing national initiatives ("Green ICT" policies) in OECD member countries such as Denmark, Germany, Japan, Korea, and the United Kingdom.

Box 1.4. Plan Avanza priorities in the context of OECD information society strategies (*continued*)

Likewise, future priorities may include improving the business environment for ICT development and increasing the competitiveness of this sector, where lower relative prioritisation has been recorded. Spanish ICT firms may also benefit from initiatives designed to attract foreign investments and reduce the present trade deficit in ICT goods.

Finally, in the policy domain of ICT diffusion, citizens and business have received preference, while promoting take-up amongst civil servants (“government as model users”) has received lower (although moderate) prioritisation. Indeed, reforms in the public sector have thus far focused on the integration of ICTs as part of e-government reforms, rather than on the later stages of capacity-building for government employees. Since it has been shown that organisational changes must go hand-in-hand with the incorporation of ICTs, however, future initiatives may also consider pursuing such initiatives in SMEs and in the public administration.

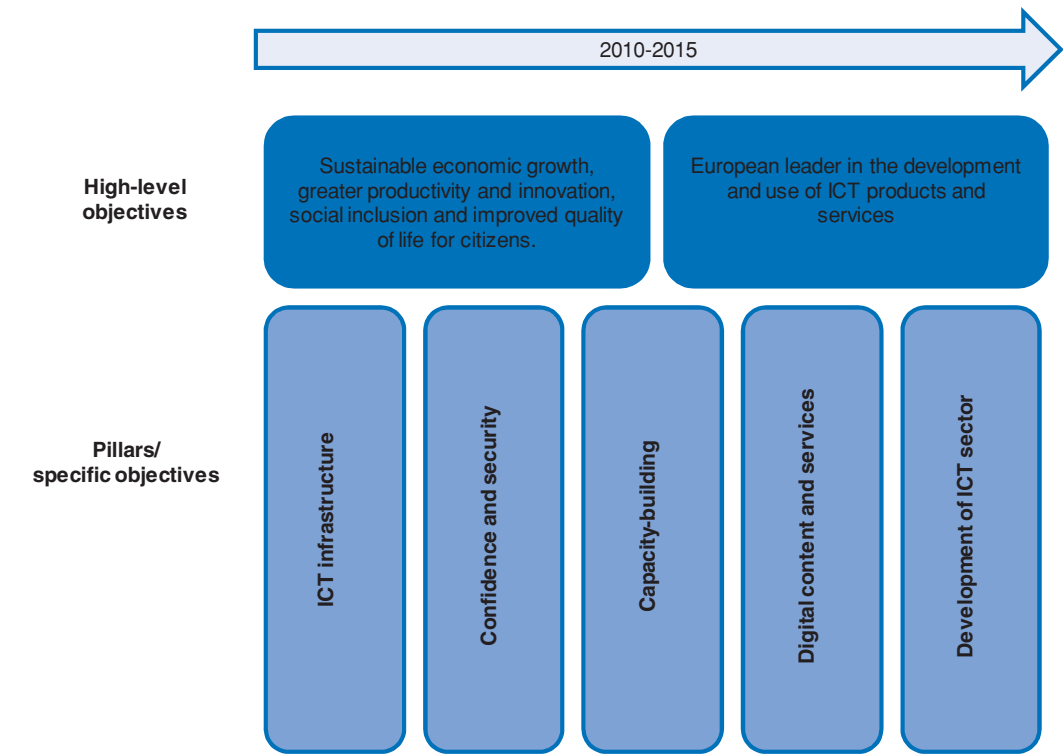


Source: OECD (2008), *OECD Information Technology Outlook*, OECD Publishing, Paris.

1.5. From Plan Avanza to Plan Avanza 2

While Plan Avanza aimed to create a critical mass of ICT users, services and coverage, the draft proposal for Plan Avanza 2 demonstrates some marked shifts in strategic objectives. These changes are not only a reflection of progress made throughout the course of the first action plan, but also exogenous factors such as the current economic climate and changing IS needs in Spain.

Figure 1.8. Evolution of Plan Avanza objectives



Source: State Secretariat for Telecommunications and the Information Society, proposed draft of Plan Avanza 2, SSTIS, Madrid.

At the time of writing, the draft Plan Avanza 2 proposal had been reviewed by the SSTIS and the national Advisory Board for Telecommunications and the Information Society, and was pending final approval by the government. Closer inspection of the proposed measures under Plan Avanza 2 reveals an increased emphasis on “demand-side” policies (*e.g.* initiatives aimed at leveraging accomplishments in ICT diffusion by promoting the adoption and utilisation of ICTs). For example, there is a single pillar dedicated to capacity-building and training. Additionally, there are new communications and awareness measures in place to spur the utilisation of features of the national eID cards. It remains unclear, however, how the distribution of resources will be adapted to reflect changing priorities, or how this strategy will be aligned specifically with the new European Digital Agenda.

In the public sector, Plan Avanza 2 will seek to continue to support modernisation and e-government initiatives in the sectors of education, health and justice, although in coming years efforts may also be extended to culture and tourism (integrating ICTs in national and local libraries, museums, cultural sites, etc.). One notable change under the proposed strategy is the increased prioritisation of local governments, who have been slower to reform service delivery methods and make public services accessible online.

While the initial goal of Plan Avanza with regards to critical telecommunications infrastructure (mobile phones, broadband, and digital terrestrial television) was inter-regional convergence, the next Action Plan proposes a shift to focus on technological convergence: on improving the speed and quality of existing broadband infrastructures, particularly in rural areas. The Universal Broadband initiative is one such programme which will create a minimal service obligation of 1 Mbps broadband access as of 2011. Furthermore, the development of interactive services via digital terrestrial television will become a priority under the next strategy.

Box 1.5. Information society strategies: a digital response to economic recovery?

The recent economic crisis has propelled ICTs onto the centre stage of policies for economic recovery: in this context not only are ICTs regarded as agents of economic growth, but also as catalysts for structural economic change. Specifically, ICTs can play a key role in consolidating the knowledge economy and creating stronger, cleaner and more innovative economies of the future. ICTs are now regarded as general purpose technologies, *i.e.* technologies that can serve as fundamental input to other technologies and applications, and thus act as multipliers of innovation. These technologies can have significant spill-over effects and influence the overall catching-up process. Indeed, the OECD *Innovation Strategy* highlights how high-speed communication networks can support innovation throughout the economy and recommends that “governments should also foster ICTs, in particular broadband networks, as platforms for innovation by upholding the open, free, decentralised and dynamic nature of the Internet” (OECD, 2010).

Likewise the OECD report *Green Growth: Overcoming the Crisis and Beyond* (OECD, 2009), recommends using the crisis as an opportunity to push forward economic structural reform through greater investment in green technologies. The *OECD Green Growth Declaration* encourages governments to include “green ICT” research and investments as a means to spur sustainable economic growth and create employment. Additionally, the World Economic Forum’s *ICTs for Economic Growth: A Dynamic Ecosystem Driving the Global Recovery* (World Economic Forum – WEF, 2009: 7) states that ICTs can play a vital role in the pathway to an economic recovery, as they “can leverage and enhance the value of other private and public infrastructure investments and foster innovation throughout the economy.”

The crisis has underscored the relevance and importance of ICTs and strengthened the government’s resolve to include these technologies as key ingredients in its strategy to accelerate Spain’s economic recovery. Indeed, the Plan Avanza 2 action plan has been incorporated into Plan E and the draft Law for the Sustainable Economy, the Spanish government’s policies for economic recovery and sustainable growth.

Source: OECD (2009), *Green Growth: Overcoming the Crisis and Beyond*, OECD Publishing, Paris; OECD (2010), *OECD Innovation Strategy: Getting a Head Start on Tomorrow*, OECD Publishing, Paris; World Economic Forum (2009), *ICTs for Economic Growth: A Dynamic Ecosystem Driving the Global Recovery*, WEF, Geneva.

Finally, in addition to continuing to promote innovation and the digital contents sector, the second phase of the strategy will focus on promoting development e-commerce and target micro-enterprises more ambitiously, as they are lagging in adopting ICTs (INE, 2009). Some new initiatives proposed under the next plan also include R&D for the development of green ICTs, the promotion of teleworking, providing venture capital for ICT sector firms, the implementation of an “Open Government” initiative to increase public sector transparency and the re-utilisation of public data.

Conclusions

Plan Avanza created a large-scale information society agenda addressing the need for international and inter-regional convergence in ICT access and use, and greater integration of citizens, businesses and the public administration into the information society. In each of these areas, the focus between 2006 and 2009 was on “supply-side” initiatives, that is, ICT diffusion and deployment of critical telecommunications infrastructure. Chapter 4 takes a closer look at the specific achievements that have been made in each of these dimensions, while Chapter 2 examines the governance model used to implement the Plan’s initiatives across the country.

The Plan has thus far been aligned with wider national agendas for e-government and modernisation. However, given the current economic climate and the potential for ICTs and the ICT sector to contribute to objectives for “green growth” and social inclusion (see Box 1.5), the strategy did not demonstrate itself as being as closely aligned with initiatives for economic recovery and innovation as it could have been. Additionally, the Plan addressed several kinds of digital divides, although it is not evident how it addressed socio-economic divides to assist those with lower than average incomes to join the information society.

As we will see throughout this report, the strategy has reached a transitional point, where the need for a greater emphasis on “demand-side” policies is evident. Although it could be argued that initiatives for capacity-building and ICT skills training are less costly to implement, these activities nonetheless represent a relatively smaller portion of the total Plan Avanza budget. This also suggests a shift in focus from technology, to end-users; from ICT diffusion, to a greater emphasis on inclusion, capacity-building and ICT skills, and improving the responsiveness of digital public services.

Chapter 2

Governance matters: success factors for the design and implementation of information society strategies

Information society strategies are complex endeavours that implicate different economic sectors, different end-users, and different tiers of government. It becomes critically important then to define clear mandates and responsibilities, and ensure that policies are coherent with wider goals including: individual sectoral policies, regional/territorial and other national strategies. Furthermore, an operating model must be established that involves regional and local stakeholders, and which mirrors the complexity and fast-paced nature of technological programmes. In Spain, the Plan's governance model was also particularly important due to Spain's highly decentralised administrative structure that devolves significant responsibilities to the country's regional and local governments. This chapter applies a governance lens to the design and implementation of Plan Avanza, examining the governance mechanisms utilised throughout its mandate to ensure that IS objectives manifested into results. Some of the critical factors that constitute the Plan's governance system, and which are discussed in this chapter, include: leadership, consultation, regulatory frameworks, implementation models, communications strategies and monitoring and evaluation mechanisms.

Box 2.1. In this chapter

As a new initiative, Plan Avanza policy makers faced the impressive challenge of creating a governance model that responded to the complexities of a large-scale strategy. In a decentralised context, how did the Plan involve stakeholders, mobilising additional resources from regional and local governments when the degree of commitment and spending on information society policy had varied considerably amongst them in the past? How did Plan Avanza overcome obstacles such as the lack of financial and technical capacities in regional and local governments to execute complex programmes? How did the Plan promote inter-territorial convergence in information society development, especially when the level of progress made by regions contrasted considerably? In a relatively short amount of time, a governance model for the design and implementation of information society (IS) policy was put in place to respond to these important issues. This chapter examines the success factors behind this model.

Key findings

- Early attention granted to important governance issues during policy design yielded some positive results which have differentiated the Plan from previous strategies: since Plan Avanza was centralised under the State Secretariat for Telecommunications and the Information Society (SSTIS), IS policy in Spain gained a lot of momentum; the joint-implementation model established in conjunction with regional and local governments was critical in Spain's decentralised administrative structure, and contributed to increasing the scope and responsiveness of information society policies; furthermore, the use of an operating agency, *red.es*, has provided the critical technical support needed to implement complex initiatives, while building the capacities of stakeholders to continue expanding IS and e-government policy in the future independently – or jointly – with the Plan.
- While Plan Avanza certainly adopted a cross-sectoral and collaborative approach throughout its design and implementation, the strategy could have better used its position of leadership and strong political mandate to strengthen the “whole-of-government” approach to the IS agenda and further increase the scope of the strategy, including the potential of IS initiatives to contribute more directly to economic recovery and long-term goals for structural reform. Furthermore, findings from interviews suggest the consultation process may not have been as inclusive and proactive as it could have been, as some important parties did not participate, and the Plan's communications initiatives were not integrated into a wider marketing strategy aimed at citizens and firms, with the goal of increasing take-up of digital public services. Furthermore, especially with regards to the pillars for Digital Citizenship and Digital Economy, mechanisms for monitoring and evaluation existed, but may have been under-utilised; the mechanisms in place focused on monitoring project inputs, rather than on evaluating the cost-effectiveness and impact of policies. The following chapter tests these hypotheses, presenting results from a survey on the effectiveness of initiatives and inter-institutional co-ordination.

Introduction

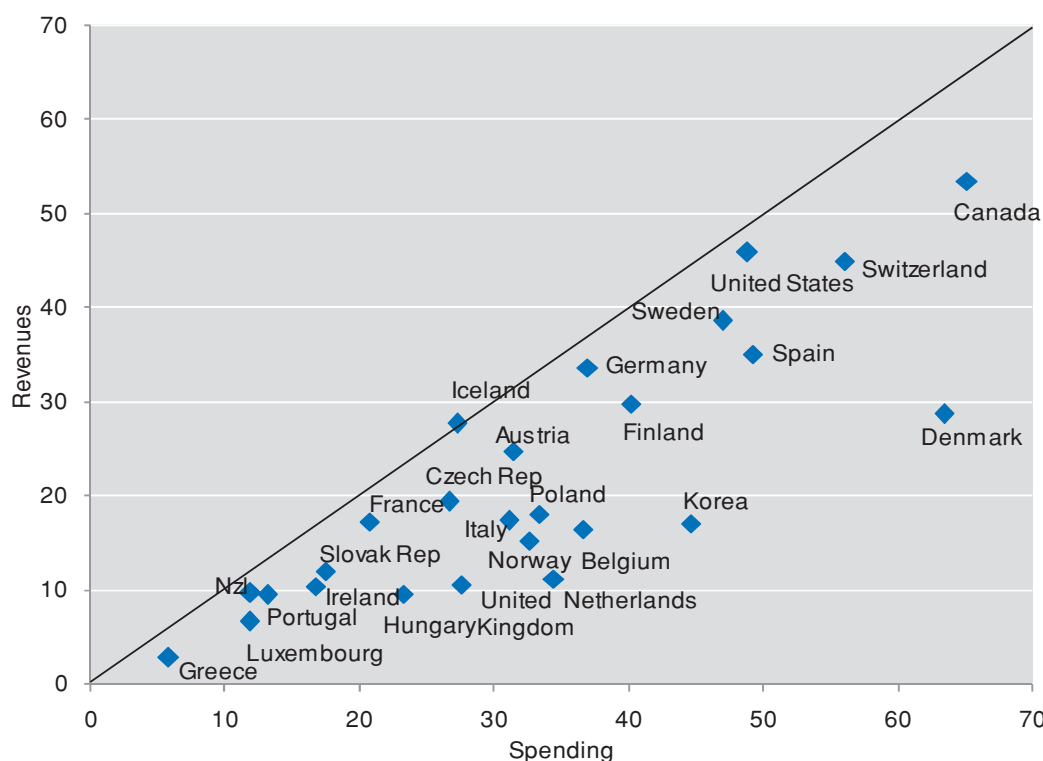
Information society strategies are complex endeavours that implicate different economic sectors, different end-users, and different tiers of government. It becomes critically important then to define clear mandates and responsibilities, and ensure that policies are coherent with wider goals including: individual sectoral policies, regional/territorial and other national strategies. An operating model must be established that involves regional and local stakeholders, and which mirrors the complexity and fast-paced nature of technological programmes. This chapter applies a governance lens to the design and implementation of Plan Avanza, examining the governance mechanisms utilised throughout its mandate to ensure that IS objectives manifested into results.

The Plan's governance model was also particularly important due to Spain's highly decentralised administrative structure that devolves significant responsibilities to the country's regional and local governments (Box 2.2 offers a detailed overview of the division of competencies in Spain). In fact, Spain is one of the more decentralised countries of the OECD: in 2009, sub-central (regional and local) governments accounted for 49% of public expenditure, and represented 35% of public revenues. Figure 2.1 illustrates (regional and local) governments' share of general government revenues and expenditure. Spain finds itself in the company of other highly decentralised (or federal) countries such as the United States and Canada.

The implications of relatively high levels of regional and local autonomy for a large-scale and transversal strategy like Plan Avanza are apparent. In a context where regional and local governments have relatively high levels of autonomy, the Plan had to be able to collaborate strongly with regional and local governments, who are key players in all policy domains implicated in IS initiatives: from ICT infrastructures, to regulation, to socio-economic policy. Co-operation with multiple stakeholders can be a challenge given significant inter-regional variations within Spain along many lines including terrain, demographics, economic composition, levels of innovation and competitiveness and, of course, in levels of ICT-use and coverage. Additionally, decentralised IS policy means that Plan Avanza had to adapt to different sub-national regulations on contracting/procurement, or work around varying sub-national budgeting procedures and legislative calendars in their planning. Conversely, however, regional and local governments rely strongly on the central government for implementing IS policy. In Spain, 40.3% of sub-central government revenues originate from central-level transfers, meaning that most regions (as some regions are more autonomous under Spanish law) cannot implement IS policies with their own capacities and revenues alone.

Figure 2.1. **Decentralisation in OECD member countries**

Share of sub-central governments in general government revenues and expenditure, 2009*



Notes: Decentralisation is measured by the changes in the share of sub-national governments in total public revenues and spending. Data for 2009 or latest year available: 2008 for Canada, Hungary, New Zealand, Switzerland and the United States; 2007 for Korea. Revenues exclude transfers received from other levels of government. Spending excludes transfers paid to other levels of government.

Source: OECD National Accounts database.

Given these complexities, the Plan had to design and put in motion a governance framework to overcome some of these challenges. Specifically, Plan Avanza stressed the importance of the following factors throughout policy design and implementation:

- strong leadership and active consultation to advance the national IS agenda and consolidate a shared vision amongst a great number of stakeholders;
- establishment of a supportive legal and regulatory framework that was conducive to – and promoted – IS goals;
- application of a joint-implementation model which increased the “reach” of the Plan, and contributed to building the capacities of regional and local stakeholders;
- a communications strategy that leveraged accomplishments in ICT diffusion to promoted usage and;
- a three-tiered monitoring and evaluation framework that gathered inputs from project-level to national-level to assess IS progress in Spain.

Box 2.2. Overview of the administrative structure in Spain

Spain has three tiers of government (central, regional and local) with 17 autonomous communities, 2 autonomous cities and 8 112 municipalities.¹ From 1978 through the late 1990s, responsibilities for policy formulation and the provision of many public services devolved considerably (1978 Constitution, Article 148). The process of devolution continues today, although to a lesser extent. As such, autonomous communities have important roles in the delivery of health and education services, as well as in social policy, economic and regional development policy, agricultural policy, environmental policy, tourism, transport and infrastructures (OECD, 2000). Local governments (municipalities), on the other hand, are mainly responsible for urban planning; maintaining local infrastructures and public spaces; local tourism; managing city public transport, traffic and roads; and local security (Law 7/1985 of 2 April, Law for the Regulation of Local Regimes). Some regions in Spain have greater autonomy than others. For instance, Catalonia, the Basque Country and Navarra have the most extensive powers, the former two were the first autonomous communities to elect regional assemblies in 1980 (OECD, 2008: 103).

Lastly, an important implication of decentralisation for Plan Avanza was that the devolution of some competencies was fairly recent, or ongoing – for instance the autonomous community of Cantabria became legally responsible for justice competencies in 2007. This influenced Plan Avanza in two ways: *i*) achieving inter-regional convergence on key IS dimensions could have been more difficult to attain for regions at different stages; *ii*) additionally, the element of capacity-building became an increasingly important part of the Plan, as newly devolved responsibilities may have been unaccompanied by sufficient sectoral/technical expertise.

1. There are also 52 provinces in Spain, considered intermediary territorial units between autonomous communities and municipalities. However, these have fewer competencies than either regional or municipal governments and are not highlighted here.

Source: OECD (2000), *OECD Review of Regulatory Reform in Spain*, OECD Publishing, Paris; OECD (2008), *Rural Policy Reviews: Spain*, pg. 103, OECD Publishing, Paris.

2.1. Critical success factors in policy design

Strong leadership for a clear and consolidated IS vision

The wide scope and complexity of information society strategies called for strong co-ordination and collaboration across policy sectors. Strong leadership was required to articulate and promote acceptance of the strategy's vision, establish clear priorities and structure implementation efficiently. In the case of Spain, the designation of a single leader responsible for pushing forward the country's IS agenda was decisive for Plan Avanza. From the Plan's inception, it was determined that the Secretariat for Telecommunications and the Information Society (the SSTIS) would be the central government's focal point for policy design and guidance during implementation. The centralisation of responsibilities within an individual government entity was a contrast to previous approaches which distributed IS obligations amongst different ministries, and which depended on the co-ordination of inter-ministerial committees.

This approach was important in the case of Plan Avanza, as not only did the Plan tackle the cross-sectoral dimension, but also a territorial one; with 17 autonomous regions, some of which may have been more advanced than others in ICT access and

usage, a strong leader was critical to push forward changes where they were needed most. In its leadership role, the SSTIS simplified the co-ordination process with stakeholders and regional governments, as there was only one main interlocutor. For instance, rather than different ministries having to co-ordinate with each other as well as individually with regional and local governments, the SSTIS performed this co-ordinative role. In this way, the process of setting objectives, priorities and determining distribution of resources was also streamlined. Lastly, strong leadership ensured that the Plan spoke with one single voice, avoiding possible ambiguities. As a result, over the past years, political and public awareness regarding the importance of ICTs increased substantially.

While certainly Plan Avanza adopted a cross-sectoral and collaborative approach throughout design and implementation, the strategy could have better used its position of leadership and strong political mandate to strengthen the “whole-of-government” approach to the IS agenda and further increase the scope of the strategy, including the potential of IS initiatives to contribute more directly to economic recovery and long-term goals for innovation/economic policy or initiatives for greater energy efficiency. Indeed, broadening the information society vision is important to take into consideration the societal-wide benefits of ICTs.

Box 2.3. To centralise or decentralise? Different leadership models in IS strategies

Policy makers of IS strategies in other OECD member countries have chosen different approaches depending on their particular country contexts. While some countries have chosen to centralise leadership, other countries have opted for more decentralised approaches. There are advantages and disadvantages to each: while centralisation can lead to greater co-ordination, synergies and uniform implementation across sectors, more decentralised leadership can ensure greater ownership of results.

To ensure a better co-ordination of information society strategy, some countries have set inter-ministerial committees or advisory bodies in charge of providing guidance and co-ordinating implementation. In **Finland**, the Ubiquitous Information Society Board is managed by a high-level advisory board of about 40 members from other ministries and civil society. The board draws on the expertise of six working groups, who provide policy advice on different issues. The main responsibilities of the board are to design the action plan, co-ordinate implementation amongst the different ministries, and conduct a yearly evaluation. Likewise, **Germany**'s IS strategies¹ are divided amongst ministries, with high-level consultative bodies acting as interlocutors. In **Italy** the IS strategy is supported at the highest political level by a Committee of Ministers for the Information Society.

Conversely, countries such as Portugal² and Greece³ have adopted models similar to Spain, designating responsibilities for their strategies. In **Portugal**, the Knowledge Society Agency operates within the Ministry of Science, Technology and Higher Education, while in **Greece** a Special Secretariat for Digital Planning has been formed in the Ministry of Economy and Planning.

1. Such as, iD2010, Germany's Broadband Strategy, Germany's High-Technology Strategy.
2. Connecting Portugal Action Plan.
3. Operational Programme for the Information Society 2007-2013.

Source: Ubiquitous Information Society (2008), *Action Plan for 2008-2011* (English version), Ministry of Transport and Communications, Helsinki.

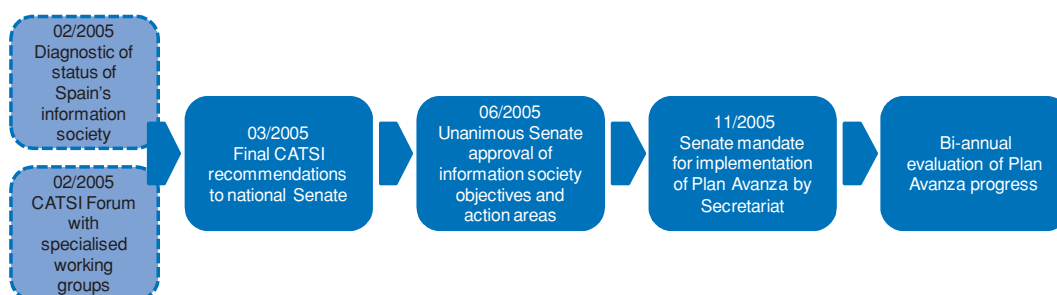
Consultation for greater buy-in and responsiveness

Information society strategies can greatly benefit from bottom-up input to ensure that policy objectives and priorities match the needs of direct beneficiaries and take into account the perspectives of different stakeholders. Indeed, an inclusive and participatory process is particularly important for IS strategies given the wide variety of actors and interests involved. Additionally, greater consensus over objectives can facilitate co-operation and help increase the amount of resources available to these strategies.

A consultative approach was applied both in the design and evaluation of Plan Avanza objectives. The *Consejo Asesor de Telecomunicaciones y Sociedad de la Información*, or CATSI (the Spanish acronym for the Advisory Board for Telecommunications and the Information Society) had a central role in advising the SSTIS in defining the Plan's primary goals and action areas. The entity is an independent body composed of over 100 members from different government ministries, business associations from the ICT sector, representatives from trade unions, user associations and consumers' rights groups, members of regional and local governments, think tanks, representatives from radio and television stations, and prominent subject-matter experts. The involvement of the CATSI allowed for a more inclusive and comprehensive evaluation of the IS needs of Spain, offering a critical view of where urgent priorities could lie. The inclusion of opinion leaders in the area of IS policy and key private sector actors added weight to the Plan's objectives and course of action.

CATSI based its recommendations for the Plan on a diagnostic of Spain's ICT infrastructure and rates of ICT utilisation in comparison with other European countries. This entity also held a forum with various specialised working groups who formulated specific recommendations for the proposed Plan. The proposed draft was presented to the national Senate and approved unanimously by the government in June 2005. The Plan Avanza 2 action plan for 2010-2012 was also deliberated by CATSI although at the time of writing, it had not yet been approved by the government.

Figure 2.2. **Plan Avanza-CATSI consultation process**



Source: OECD, derived from interviews with Ministry of Industry, Tourism and Trade, State Secretariat for Telecommunications and the Information Society, and *red.es* officials.

CATSI offers an important platform for consultation with ministries, sub-national governments, and non-government stakeholders. However, the mechanism may have been under-used to the detriment of the Plan: *i)* local governments were represented by one representative group, making it difficult to raise awareness and buy-in across the country; *ii)* membership by non-governmental stakeholders is dictated by law limiting citizens' engagement in IS policy; and *iii)* not all implicated ministries participated in the working groups or deliberations.

A legal and regulatory framework supportive of IS goals

A strong information society also requires a supportive legal and regulatory framework conducive to IS goals. Plan Avanza sponsored and helped push forward key pieces of legislation which encouraged digital inclusion and the creation of digital public services. Furthermore, INTECO continues to work on increasing security online and protecting consumers' privacy. Some of the key pieces of legislation supported by Plan Avanza include:

- **Law on Citizens' Electronic Access to Public Services** ("Law on e-Administration" 11/2007): this law states that citizens should be able to access services of the central government (*Administración general del estado* – AGE) electronically by 31 December 2009. The law declares that online interaction with government is a citizen's legal right. While it is the Ministry of the Presidency who is responsible for upholding this law, Plan Avanza had a strong role in assisting government in being able to comply.
- **Law 56/2007 on Measures to Promote the Information Society:** effective December 2008, this piece of legislation recognises the rights of citizens to access information through digital channels. The law establishes an e-accessibility obligation on public sector websites, facilitating use by older and disabled persons. Additionally, the law includes measures such as obligatory use of e-invoicing for public contracting, and makes it obligatory for some sectors (banking and utilities, for instance) to make certain information and services available online for consumers (Ministry of Industry, Tourism and Trade, 2007).

2.2. Establishing an effective implementation model

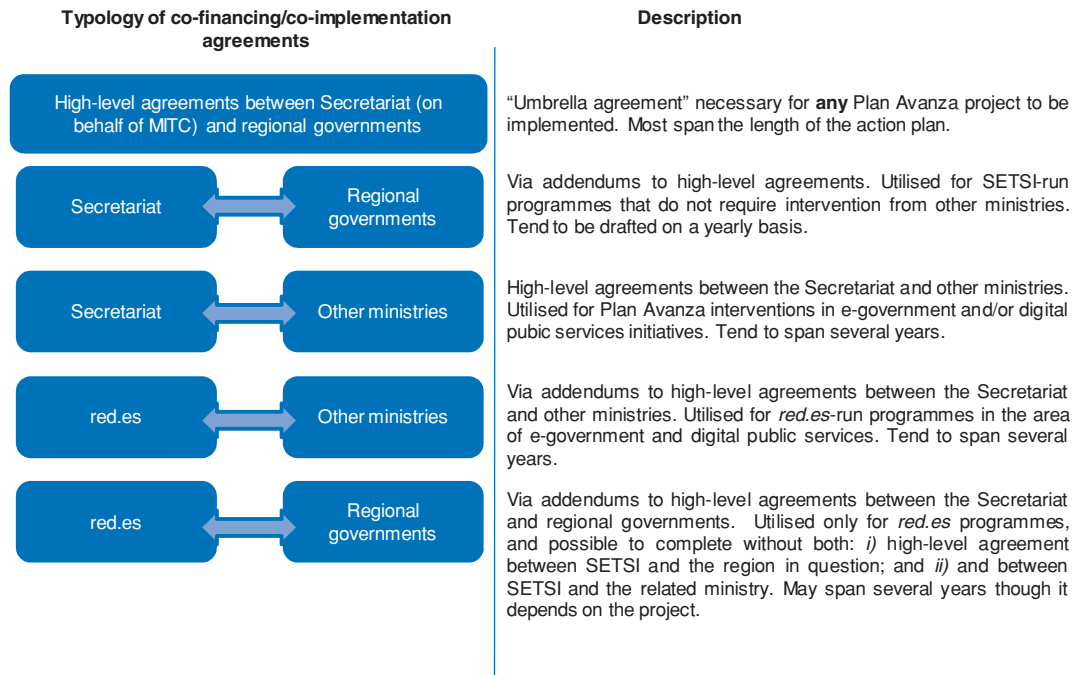
Joint-implementation model for enhanced co-ordination and greater reach

Several key Plan Avanza programmes were implemented via bilateral co-implementation agreements. Indeed, in order for many programmes to be executed in each of the autonomous communities and cities, high-level pacts (or "*convenios marco*") first had to be established between the Ministry of Industry, Tourism and Trade and each regional government. The SSTIS acted as interlocutor on behalf of the ministry in these pacts, which declared the regions' acceptance to participate in Plan Avanza for the length of the entire action plan (in the case of Plan Avanza, 2006-2009). Without these formal "umbrella" agreements, most Plan Avanza interventions would not have been possible, as it is regional governments who were granted the bulk of competencies for the provision of many public services according to Spanish law (see Box 2.2). All of Spain's autonomous regions and cities signed the *convenios marco* with Plan Avanza.

Once a high-level agreement is established with a region, addendums are supplemented on a programme-by-programme basis. Unlike the high-level agreements, these addendums tend to be annual or bi-annual in nature, outlining the management and/or financing framework between the SSTIS and the regional government for the specific programme in question. In order for a region to participate in the SSTIS's eHealth programme for instance, its government must co-sign an agreement outlining the distribution of responsibilities and the distribution of funding between parties. In cases of co-financing, the amounts provided by the SSTIS in these kinds of agreements vary by region and programme, as these allotments are determined by criteria established by the SSTIS, according to the status of the region with regards to EU criteria (convergence and

phasing-out regions can receive more funding from Plan Avanza). For more prosperous communities like Madrid and Cataluña, criteria for the Plan's contribution include regional GDP per capita, population, number of students, number of SMEs, etc.

Figure 2.3. Types of co-implementation agreements under Plan Avanza



Source: OECD, derived from interviews with the Ministry of Industry, Tourism and Trade, the State Secretariat for Telecommunications and Information Society, and *red.es* officials.

Lastly, in cases where a Plan Avanza programme was an e-government initiative or required an ICT intervention in the development or delivery of a public service, additional co-implementation agreements were necessary between the SSTIS and the other ministry implicated. For example, the eHealth Programme is co-financed by the SSTIS, regional governments and the Ministry of Health. Similarly, projects in support of the national eID cards require co-financing by the Ministry of Interior. The participation of the ministry in the agreement is necessary to ensure projects are rolled out across the country. Otherwise, there would be no obligation on part of the regional governments to collaborate. For example, the Ministry of Health must take the initiative to establish one high-level programme for the integration of electronic health records (EHRs) in the National Health System's central database, since Plan Avanza has no legal competencies in the area of health.

Table 2.1. **Distribution of Plan Avanza funds under the co-financing mechanism**

Regions*	% central/% regional
Convergence regions	60/40
Andalucía	
Castilla La Mancha	
Extremadura	
Galicia	
Phasing-out regions	55/45
Asturias	
Murcia	
Ceuta	
Melilla	
Phasing-in regions	55/45
Castilla and Leon	
Valencia	
Canarias	
Regional Competitiveness & Employment regions	40/60
Aragón	
Baleares	
Cantabria	
Cataluña	
Madrid	
Navarra	
Pais Vasco	
La Rioja	

Note: not all Plan Avanza programmes were administered through the co-financing mechanism. Some distribution criteria varied for phasing-out and phasing-in regions depending on projects. Regions are according to European Regional Development Fund (ERDF) classifications.

Source: OECD, derived from reports by the Plan Avanza Technical Office.

Plan Avanza's co-implementation regime has several advantages, allowing the SSTIS to act strategically in furthering the Plan's goals. The main benefits experienced have been:

- **Provides a formal mechanism for vertical and horizontal co-ordination.** Plan Avanza does not have legal competencies in policy domains such as health, security, education or justice. The co-implementation regime strengthens the Plan's ability to promote the information society both horizontally and vertically across government by formalising co-operation with binding agreements.
- **Reduces the implementation burden on Plan Avanza and increases its reach.** The sheer quantity of stakeholders implicated in the information society is extensive, and the task of rolling out Plan Avanza initiatives across the country is an ambitious undertaking for any government agency. Co-financing is a tool that increases resources available for mutually beneficial projects.
- **Creates powerful incentives for greater participation and co-operation.** Many regional governments pursue their own information society initiatives independently, and co-financing on behalf of SSTIS can foster stronger co-operation by providing incentives to align regional policies to the national IS strategy. For example, a regional innovation programme for the ICT sector can align objectives to Plan Avanza (by promoting the development of the same kinds of ICT products or services, for instance) and combine national funds with its own to pursue this objective.

- **Capitalises on local knowledge.** The information society needs in Spain vary significantly from region to region, and local players are often the most knowledgeable about the particular context of local citizens and firms. Regional and local governments are the most familiar with their territories' economic landscape, socio-economic and demographic characteristics, the state of public sector organisations in terms of modernisation, etc. The Plan's implementation model, then, combines central resources and strategic direction with local knowledge and expertise. This not only improves effectiveness during implementation, but also increases the responsiveness of projects to localised demands.
- **Allows for a demand-driven approach.** Each region's specific information society needs are considered when creating the co-financing agreements. In essence, the implementation regime creates the potential for tailoring the Plan Avanza strategy to different regions, rather than rolling out "one-size-fits-all" policies. As such, the regime allows regional governments to choose from a "menu" of initiatives to append to their high-level *convenios marco*. Regions that require greater intervention in the area of ICT infrastructures may choose to seek Plan Avanza support in this area, while others may choose to focus on training and innovation. For instance, the region of Extremadura received greater funding for building technology networks, while the government of La Rioja was allocated greater funding for the extension of broadband.

Additional policy instruments

Outside of the co-financing mechanism, 77% of the Plan Avanza budget was distributed by the SSTIS in the form of subsidies, grants and/or no-interest loans. Regional and local governments can include these programmes within their contract agreements.

Grants/subsidies: the SSTIS is responsible for distributing grants through Plan Avanza. The SSTIS releases calls for proposals outlining eligibility criteria for funding. Firms, NGOs and even local governments are then able to submit requests for specific projects, which were funded by two streams: Digital Citizenship and Digital Economy. For instance, under the Digital Citizenship financing stream, the SSTIS sought to target citizens at high risk for digital exclusion. The SSTIS transferred funds directly to persons or NGOs who designed/proposed programmes that best meet the Plan's objectives and who demonstrated adequate managerial capacity. Grants were also provided under the Digital Economy stream to firms to promote innovation and software development, and to local governments to incorporate ICTs into their front and back-office activities.

Loans: in addition to grants, the SSTIS also provides 0% interest loans (*préstamos 0%*) for citizens and firms looking to gain access to Internet or to purchase ICT equipment such as computers, laptops, printers, and scanners. Amounts granted in 2008 reached EUR 87.1 million for citizens and EUR 397.4 million for SMEs (aggregated amounts for 2006-2009 were EUR 281.5 million for citizens and EUR 1.47 billion for SMEs). While the SSTIS and regional governments contribute the funds, the loans are administered via Spain's Official Institute of Credit (*Instituto Oficial de Crédito*), who in turn distribute these loans in banks throughout the country.

Table 2.2. **Main loan programmes in Plan Avanza**

Name of loan programme	Targeted beneficiaries	Conditions
Technology loan/ICT loan	Firms and associations of firms	0% interest for 36 months. Minimum EUR 6 000 (though this may be removed) and annual maximum EUR 200 000
Innovation loan	Firms or firm associations in the audiovisual sector	Amounts vary. Priority given to firms working on technology for the development of new services via digital TV and radio, mobile television, and multimedia home platform.
Connected homes loan (ended 2007, then substituted by Digital Citizenship loans)	Households with school-aged children receive a “connectivity package” for the purchase of a computer, broadband access and training. More than 24 000 families have benefited since 2006.	Up to EUR 1 000 per family/household (amount increases for large families). 0%, 36 months
Digital Citizenship loans	Any Spanish citizen who resides in Spain. Over 233 571 families have benefitted since June 2007.	Maximum of EUR 3 000 for ICT equipment. 36 months.
Young people and university students online	Persons between the ages of 18 and 35 years, and/or university students. Over 28 129 loans issued.	Max of EUR 3 000, returned by 60 months.
Online training loans	Young people and firms. Close to 3 000 persons have benefited.	Amounts vary. 0% interest. Approximately 24 months to return. Programme budget of EUR 25 million.

Source: OECD, derived from interviews with the Ministry of Industry, Tourism and Trade, the State Secretariat for Telecommunications and Information Society, and *red.es* officials.

Licenses: the SSTIS also uses its authority to grant licenses as an implementation tool. Conditionalities may be attached to licenses in order to ensure that the private sector complies with certain key objectives of the Plan. The Mobile Telephony Extension Plan (Box 2.4), for instance, has applied such an approach in order to target rural and sparsely populated areas.

Box 2.4. License conditionalities in the Mobile Telephony Extension Plan (E-GSM)

In July 2005, three spectrum licenses were awarded (Ministry of Industry, Tourism and Trade – MITT, 2005) by the MITT for the provision of GSM mobile telephony services. Telefónica obtained one 4 MHz portion and France Telecom two 3 MHz portions. Licenses were awarded with specific selection conditionalities attached, and included obligations to extend mobile telephony infrastructure and services to “general interest” areas such as:

- rural areas (population centres of 1 000 inhabitants or less, with no existing or insufficient coverage): EUR 440 million;
- strategic areas (nuclear power plants, oil refineries and chemical industries, and areas within a 30-kilometre radius): EUR 26.8 million;
- newly built highways and high capacity railways, or existing ones with no or insufficient coverage: EUR 65 million.

The E-GSM Plan lasted 3 years, terminating in December 2008, and was implemented via direct commercial negotiation between operators and municipalities. If commercial negotiation failed or administrative barriers were found, operators were free to change and try another population centre included in the list of general interest areas drawn up by the SSTIS.

Box 2.4. License conditionalities in the Mobile Telephony Extension Plan (E-GSM) (continued)

While private operators managed day-to-day implementation, the SSTIS monitored the programme through a follow-up commission formed by the SSTIS and the operators. Through this commission, the SSTIS mitigated implementation issues between operators and stakeholders in the granting of permits, speeding up the process of deployment. By 2008, around 5 300 population centres and every nuclear plant and oil refinery and their 30-kilometre radius area had been covered (where 1.1 million people reside). The estimated uncovered population still reaches around 1% of the Spanish population, a target area for Plan Avanza 2.

Source: OECD, derived from interviews with the Ministry of Industry, Tourism and Trade, the State Secretariat for Telecommunications and Information Society, and *red.es* officials. MITT (2005), *Boletín Oficial del Estado* (Official State Gazette), N° 141, 14 June, Madrid, www.boe.es/boe/dias/2005/06/14/pdfs/A20515-20515.pdf.

Use of an operating agency for capacity-building, flexibility and agility

The use of the operating agency, *red.es*, in the implementation of key Plan Avanza initiatives was critical to providing the much-needed technical and sectoral capacities to execute programmes. Regional and local governments in particular benefited from this approach, which allowed them to “learn-by-doing” with the guidance of central government, while being prepared to take over ownership at a later date.

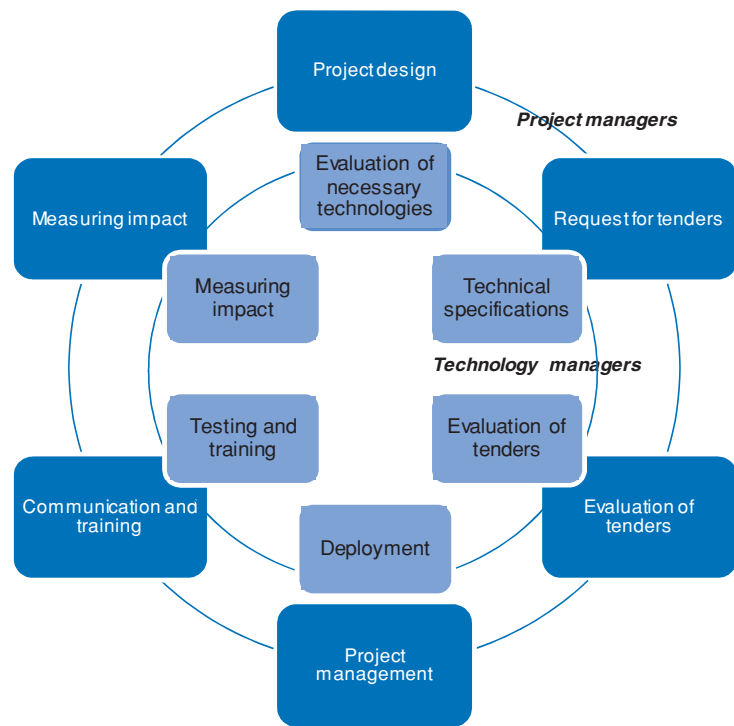
red.es was created in 2000 to manage “.es” domains, and is a descendent of retevisión, also a public corporation. Under the direction of the SSTIS, *red.es* is responsible for fulfilling three major roles:

- **Motivator:** *red.es* fulfils the role of organising, approaching and co-ordinating with other government organisations and stakeholders in the design of specific programmes. This support to other areas in the SSTIS (including the Directorate General for Telecommunications and the Secretary of State’s Office) is essential for transforming strategy into action.
- **Multiplier:** as a centralised point of management and technical support for some of the Plan’s initiatives, *red.es* allows for synergies across government such as inter-operability, security and economies of scale. For instance, *red.es* works with local municipalities to design programmes which can be rolled out simultaneously and universally.
- **Manager:** one of the most important resources *red.es* has to offer the Plan is its managerial role. The typology of projects implemented under Plan Avanza requires a great deal of co-ordination and oversight to be successful. *red.es* staff act as project managers for many of the Plan’s programmes. Additionally, under the supervision of the SSTIS, *red.es* also oversees and manages various institutions which function under the auspices of the plan such as INTECO, CENATIC, FUNDETEC and the National Domain Registry.

The *red.es* project lifecycle (Figure 2.4) consists in implementing the technological and high-level project management dimensions of the programme in parallel. Project and technology managers partner to maximise synergies and work more efficiently together. For example, project managers can better plan activities knowing the nature of ICT deployment involved and tenders can be more specific with regards to the technology solutions required.

The public/private hybrid model under which *red.es* operates permits for the necessary agility and flexibility that IS interventions need to be most effective. As a public corporation, it is subject to different regulations than other government institutions. For instance, *red.es* is bound to a different contracting regime that can, at certain times, be less rigid. This has proved to be a great benefit in specific initiatives within the Plan, such as in the deployment of ICT infrastructure and installation of ICT equipment, as it can act, on some specific occasions, more quickly than other areas within the diverse ministries involved in Plan Avanza.

Figure 2.4. Plan Avanza project lifecycle



Source: OECD, derived from interviews with the Ministry of Industry, Tourism and Trade, the State Secretariat for Telecommunications and Information Society, and *red.es* officials.

Other IS strategies in OECD member countries have adopted similar models. Greece’s Information Society, S.A., is also a public enterprise responsible for technology diffusion under the country’s plan. Finally, Portugal’s “Connecting Portugal” strategy utilises Society Agency (UMIC), which is the Portuguese public agency responsible for co-ordinating information society policies and mobilising them through dissemination, qualification and research activities.

Managing quality to sustain results

Plan Avanza has recognised that successful implementation does not end with ICT deployment. A critical ingredient to successful implementation, particularly for information society strategies, is ongoing issue and quality management to ensure that investments in infrastructures continue to yield positive results in the long-term. In IS societies, ensuring sustainability and quality often translates into the provision of technical support. Indeed, because of the technical nature of many IS initiatives, stakeholders often require ongoing assistance with issues such as security, incidents, maintenance, testing, and hosting. To this end, the Plan has established an integrated management services centre, currently managed by *red.es*.

This centre is headquartered in Madrid and includes a centralised help desk, a specialised technical support team, a security management service and a quality management team. Additionally, the office produces reports tracking incidents and incident resolutions across different programmes. Smaller centres are located throughout the country and lend their services to many Plan Avanza programmes including the eID cards programme, Internet in schools and universities, telecentres in rural areas, the .es domain registry, and the NEW (“no enterprise without a web”) Programme for SMEs, among others. Providing regional and local governments with this kind of support sustains the positive impacts of ICT initiatives, since many stakeholders lack the technical resources or expertise to maintain the programmes independently.

Table 2.3. **Overview of implementation stakeholders, roles and tools**

Stakeholder	Plan Avanza responsibilities	Tools and activities
Ministry of Industry, Tourism and Trade	A main source of funding for Plan Avanza; acts as an interlocutor for inter-ministerial issues and co-operation; monitors the Plan's progress and impact.	Budget transfers, co-financing/implementation agreements.
State Secretariat for Telecommunications and the Information Society	Establishes Plan Avanza strategies with CATSI; designs and carries out policies; monitors the Plan's progress and impact; oversees and co-finances <i>red.es</i> ; implements some IS programmes; implements large-scale ICT infrastructure programmes.	Co-financing/implementation agreements, loans, grants, licenses.
<i>red.es</i>	Under the supervision of SSTIS, <i>red.es</i> implements some Plan Avanza programmes; Monitoring and evaluation of <i>red.es</i> programmes; oversees INTECO, CENATIC and other institutions.	Co-financing/implementation agreements, project management, and communication.
Regional governments and local municipalities	Co-manage Plan Avanza programmes being implemented in their regions; provide funding and other resources.	Participate in project management, monitoring and evaluation.
NGOs	Design specific programmes according to predefined criteria; implement programmes selected for funding.	Independent project management.
Businesses/ICT sector/technology centres	Design specific programmes according to predefined criteria; implement programmes selected for funding.	Depending on the programme, may be fully responsible for project management, or may share oversight with SSTIS.
Suppliers/private sector	Develop/adapt ICT services and products to technical specifications and programme requirements; deploy ICTs.	ICT development and deployment, participate in project management and testing.

Source: OECD, derived from interviews with the Ministry of Industry, Tourism and Trade, the State Secretariat for Telecommunications and Information Society, and *red.es* officials

Communications strategy to leverage ICT investments

A critical component of Plan Avanza's implementation was its communications strategy, which allowed the Plan to leverage its investments in ICT diffusion with initiatives to promote usage. The Plan's Communications Strategy was devised by SSTISS and then managed by *red.es*, and sought to raise awareness about the benefits of ICTs and Plan Avanza programmes. Communication tools included various websites; a Plan Avanza blog; advertising campaigns, press conferences, newsletters and other publications; demonstrative events; and hosting networking events like the International Forum for Digital Contents (FICOD). FICOD, for instance, gathers professionals each year from across the globe in industries such as television, advertising, cinema, music, video games, digital publications, online education, and digital journalism. The forum forms part of the strategy to develop links between Spanish and international markets, and hosted over 15 000 people in 2009.

Box 2.5. Grab the bull by the horns: awareness and communication are key in IS initiatives

Plan Avanza policy makers recognised early on that, as is typical of information society initiatives, the challenge of the Digital Television Transition (DTT) Programme was two-fold: not only were technological and infrastructure changes necessary to carry out the conversion from analogue to digital signals and reception, but also behavioural changes would be crucial for the adoption of the new technology. In order then to raise awareness about the transition itself, convey the benefits of digital television to stakeholders and inform citizens about the measures they had to take, a strong communications strategy was implemented alongside the technical component of the programme. Failing to couple these two dimensions would have greatly increased the risk of large numbers of households being left without television reception as well as high levels of dissatisfaction with government.

Plan Avanza's DTT was an ambitious scheme consisting of 3 roll-out phases of 90 smaller projects. The objective of the programme was to equal DTT coverage to analogue before the slated "switch-over" in early April 2010.

Plan Avanza's specific response to building awareness was the launch of a communications campaign under the slogan: "Don't let the bull get you" ("*que no te pille el toro*"). This is a popular Spanish catch-phrase referring to the ills of procrastination, in essence, urging citizens not to wait until the last minute to purchase the necessary equipment to receive digital signals. With a budget of EUR 6 million, the communications strategy created television, internet, radio, and newspaper advertisements that ran for 1 month during the holiday season. The Plan strategically chose this season, despite the additional expense, to encourage citizens to purchase the DTT equipment as gifts for family and friends.

Box 2.5. Grab the bull by the horns: awareness and communication are key in IS initiatives (*continued*)

Screenshot of campaign poster



The making of the television advertisement “que no te pille el toro!” can be found at: www.tvenred.es/estuvimos-en/articles/id/2998/making-spot-tdt-que-te-pille-toro.html.

Source: Derived from interviews with the Ministry of Industry, Tourism and Trade, the State Secretariat for Telecommunications and Information Society, and *red.es* officials.

The challenge for future communications initiatives implemented under the Plan is to provide greater support to strategies for promoting the take-up of digital public services, targeting – in particular – citizens and firms. As we will see in Chapter 4, citizens’ and businesses’ take-up of government services remains lower than European averages, and it is necessary to raise awareness about the: *i*) availability of such services; and *ii*) the benefits of using the “digital channel” as a means for interacting with government. Until now, the communications strategy has centred on raising awareness of available programmes and upcoming changes (*e.g.* the transition to DTT); however, while important, the communications strategy has not been strongly integrated with e-government and channel management strategies to promote take-up of digital services.

Monitoring and evaluation to improve performance

A third factor that contributed towards improving implementation is the Plan’s framework for monitoring and evaluation (M&E). Establishing an effective and powerful oversight mechanism is important in order to incentivise better performance from managers and stakeholders, evaluate how the Plan affects targeted beneficiaries, determine resource allocations and improve planning, and to provide input for decisions regarding the strategic direction of the Plan. This is a challenging undertaking, however, given that defining and measuring performance in information society strategies is notoriously difficult: there are many actors involved, policies are implemented in parallel

with other strategies, and there are many contextual factors which make it difficult to link progress on IS indicators to the Plan's interventions (see Chapter 4, Introduction).

The Plan's governance approach to addressing evaluation, then, is a three-tier framework consisting of project committees, the Plan's Technical Office, and the National Observatory for Telecommunications and the Information Society.

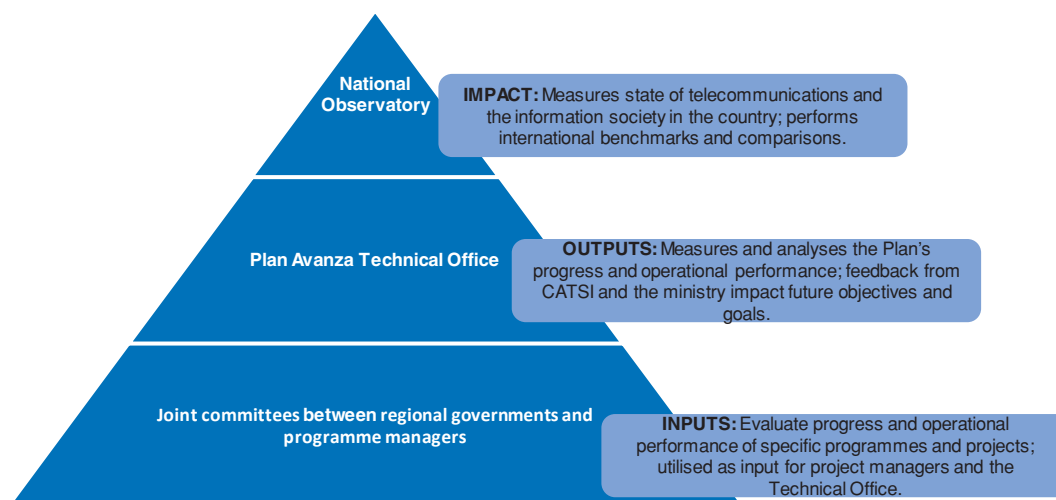
The most basic level of the M&E framework consists of the joint project committees between regional governments and Plan Avanza managers. When an autonomous region or city forges a high-level agreement with Plan Avanza, a joint committee is formed between the Plan's managers and regional delegates to monitor the progress of initiatives in that region. At project level, smaller joint committees between project managers also monitor execution.

Joint committees and the SSTIS Directorates report information on budget execution to Plan Avanza's Technical Office, which is managed by the SSTIS. *Ad hoc* reports are then published up to three times per year. Additionally, an annual report is produced which evaluates the entirety of Plan Avanza's progress.

Finally, the highest tier of the monitoring and evaluation framework is the National Observatory for Telecommunications and the Information Society (ONTSI), depending and reporting to the Secretary of State and organically run and managed by *red.es*. The Observatory is responsible for assessing the progress of key information society indicators at the country level. Information is drawn from the Technical Office but also international sources, the private sector, think tanks, the National Institute of Statistics, and academics. The Observatory has also at its disposal its own raw data, as it conducts a household survey which includes a panel of over 3 000 households and close to 7 000 individuals. The Observatory's outputs include "topical" reports, such as: the state of the information society in Spanish municipalities, ICT sectoral reports, and the demographics of ICT users, broadband speed and quality, and the status of the digital economy. In these reports, international comparisons and benchmarks are often made in order to present Spanish results in a wider context. While the Technical Office and joint committees provide input as to whether Plan Avanza is operating effectively and efficiently, these kinds of reports and analysis yield valuable information regarding how the Plan contributes to high-level national objectives. Other OECD member countries have also formed national Observatories to monitor key IS indicators and run continual diagnostics on areas to be improved. Portugal's Information and Knowledge Society Observatory performs similar functions to the Plan's national Observatory, and Italy's Observatory provides an interactive map with IS initiatives and indicators.

Plan Avanza instituted a systematic monitoring and evaluation framework which – for some programmes – set forward a set of indicators and measures for use across regions. However, this framework could be increasingly utilised for measuring performance and cost-effectiveness (*e.g.* linking inputs, outputs and outcomes). Especially with regards to the pillars for Digital Citizenship and Digital Economy, these mechanisms may be under-utilised, and indicators should be developed that assess whether these funds are having the greatest impact in regions/beneficiaries that are considered strategic by the Plan. *Red.es* acts as one factor in standardising indicators in regions, but gaps remain. The entity could work closer with regions to collect the same information. Additionally, ONTSI could work with regional governments and the National Institute of Statistics to create a "toolkit" for measuring Plan Avanza programmes.

Figure 2.5. **Dimensions of Plan Avanza performance and corresponding governance mechanisms***



Note: Australian Agency for International Development (AUSAid) (2005), *AUS Guideline*, “The Logical Framework Approach (LFA)”, Commonwealth of Australia, Canberra.

Source: OECD, derived from interviews with the Ministry of Industry, Tourism and Trade, the State Secretariat for Telecommunications and Information Society, and *red.es* officials.

Conclusions

Early attention granted to important governance issues during policy design yielded some positive results which differentiated the Plan from previous strategies: since Plan Avanza was centralised under the State Secretariat for Telecommunications and the Information Society (SSTIS), IS policy in Spain has gained much momentum; the joint-implementation model established in conjunction with regional and local governments has been critical in Spain’s decentralised administration structure, and contributed to increasing the scope and responsiveness of information society policies. Furthermore, the use of an operating agency, *red.es*, provided the critical technical support needed to implement complex initiatives, while building the capacities of stakeholders to continue expanding IS and e-government policy in the future independently – or jointly – with the Plan.

While Plan Avanza certainly adopted a cross-sectoral and collaborative approach throughout design and implementation, the strategy could have better used its position of leadership and strong political mandate to strengthen the “whole-of-government” approach to the IS agenda and further increase the scope of the strategy, including the potential of IS initiatives to contribute more directly to economic recovery and long-term goals for innovation/economic policy or initiatives for greater energy efficiency. Indeed, broadening the information society vision is important to take into consideration the societal-wide benefits of ICTs. Furthermore, findings from interviews suggest that the consultation process may not have been as inclusive and proactive as it could have been, as some important parties did not participate, and the Plan’s communications initiatives were not integrated into a wider marketing strategy aimed at citizens and firms, with the goal of increasing take-up of digital public services. Furthermore, especially with regards to the pillars for Digital Citizenship and Digital Economy, mechanisms for monitoring

and evaluation were put in place, but may have been under-utilised; the mechanisms in place focused on monitoring project inputs, rather than on evaluating the cost-effectiveness and impact of policies. The following chapter tests these hypotheses, presenting results from a survey on the effectiveness of initiatives and inter-institutional co-ordination.

Chapter 3

Assessing the effectiveness of inter-institutional co-ordination under Plan Avanza: the importance of multi-level governance

Fostering effective co-ordination between different levels and areas of government, as well as with non-governmental actors, is the essence of good multi-level governance, and it is integral for the success of information society (IS) strategies. This chapter outlines the principal drivers necessitating strong multi-level governance and highlights the key benefits that can be derived from getting this important governance element right. With a view to improving IS results, this chapter presents findings from a survey of Plan Avanza stakeholders assessing the effectiveness of the co-ordination mechanisms under the Plan. Specifically, survey results discuss the extent to which Plan Avanza stakeholders perceive policy, informative, capacity and resource gaps in the design and implementation of the strategy.

Box 3.1. In this chapter

As seen thus far, building a strong policy and governance framework is key for the success of information society policy. Increasing the impact of information society strategies, however, particularly in times of fiscal consolidation, requires that policy makers continuously look for ways to improve the performance of these frameworks; this can include identifying potential co-ordination gaps between stakeholders and leveraging existing institutions and policy instruments to maximise results. Using Plan Avanza as a case study, Chapter 3 highlights the importance of inter-institutional co-ordination in the implementation of IS policies in Spain, and assesses the effectiveness of the principal governance tools described in Chapter 2: the public enterprise *red.es*, CATSI (the National Advisory Board for Telecommunications and the Information Society), bilateral contracts and the co-financing mechanism. In particular, readers will discover:

- the common obstacles to effective multi-level governance and why is it important for information society strategies to overcome them;
- what Plan Avanza stakeholders have said about the effectiveness of co-ordination in implementing information society policy in Spain;
- the key strengths and weaknesses of the co-ordination tools utilised by Plan Avanza and what could be done to improve their performance in the next phase of the strategy.

Key findings

- Applying a multi-level governance framework to the analysis of Plan Avanza allows for a better understanding of the mutual dependencies that exist between stakeholders in the design and implementation of information society policy in Spain. Furthermore, effective multi-level governance will become increasingly important as Plan Avanza 2 starts to place greater priority on “demand-side” policies (*e.g.* those that leverage existing investments in ICT infrastructure by spurring the take-up/usage of ICTs and digital services). Efforts to increase ICT skills, incentivise take-up, and improve the responsiveness of digital public services, for example, will hinge on the effectiveness of partnerships between stakeholders since sub-national governments in Spain have high levels of autonomy in the delivery of key public services (education, health and social services, justice, etc.).
- Findings from the survey confirm observations from interviews and roundtables with stakeholders: indeed, Plan Avanza was successful in elevating IS policy onto the national and sub-national agenda. Survey results also identified a series of additional policy, information, capacity and financial “gaps” which could negatively impact the performance of the Plan. Regional and local governments were particularly affected and reported facing a relatively greater number of obstacles in implementing information society policy.
- Lastly, some effective governance tools have been established but, especially in times of fiscal tightening, more could be done to optimise resources while maximising the impact of Plan Avanza 2. Some challenges include: *i)* strengthening monitoring and evaluation mechanisms; *ii)* adapting the redistributive strategy of Plan Avanza funds to help yield better results and contribute to inter-regional convergence; and *iii)* further leveraging existing institutions for better horizontal and vertical co-ordination.

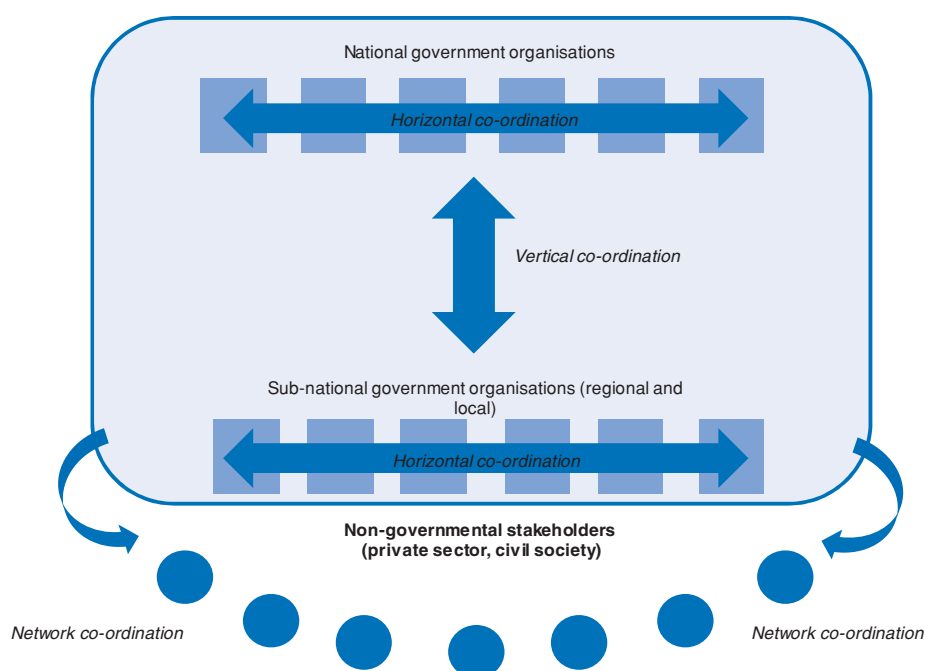
Introduction

Fostering effective co-ordination between different levels and areas of government, as well as with non-governmental actors, is the essence of good **multi-level governance**, and it is integral for the success of information society (IS) strategies for various reasons. This chapter outlines the principal drivers necessitating strong multi-level governance and highlights the key benefits that can be derived from getting this important governance element right. With a view to improving IS results, findings from a survey of 99 Plan Avanza stakeholders assessing the effectiveness of the co-ordination mechanisms under the Plan are also presented along with findings from interviews and field visits.

3.1. Multi-level governance: a daily reality for policy makers

What is multi-level governance?

Figure 3.1. Types of co-ordination in multi-level governance



Source: OECD (2009), *Mind the Gaps: Managing Mutual Dependence in Relations Among Levels of Government*, OECD Publishing, Paris.

Multi-level governance (MLG) refers to: *i*) the vertical co-ordination between national and sub-national government stakeholders; *ii*) the horizontal co-ordination amongst government agencies of the same tier of government; and includes also *iii*) the notion of “networked co-ordination,” which refers to the collaborative relationships between governmental and non-governmental stakeholders. The need for these kinds of **vertical, horizontal and networked co-ordination stem from the inherent mutual dependencies** that exist between stakeholders in a complex policy environment (OECD, 2009e). That is, different stakeholders’ **reliance** on each other to effectively and efficiently design and implement policies. Examples of mutual dependence throughout

the design and implementation of Plan Avanza are plentiful: on the one hand, sub-national stakeholders depended strongly on the national government level for leadership as well as the transfer of sufficient resources to meet their assigned obligations (see Figure 2.1). Conversely, because of the Plan's co-implementation approach, national governments relied on sub-national organisations to fulfil key implementation responsibilities as well as for crucial information to guide policy making.

It is clear that mutual dependencies call for close collaboration between stakeholders, but what kinds of co-operation specifically? In the OECD multi-level governance framework, co-operation can be conceptualised in terms of the extent to which stakeholders engage in essential consensus-building, capacity-building and communication, as well as the degrees to which they work together to monitor compliance and evaluate progress. Firstly, co-operation must embody consensus-building; as the harmonisation and alignment of different stakeholders' IS objectives and priorities requires strong co-ordination to establish a common framework for concerted action. Likewise, co-ordination also takes the form of communication and information-sharing, since it is only through the fluid exchange of information that large-scale, multi-sectoral programmes can be effectively implemented. This aspect includes not only the exchange of information, but also the building of common knowledge or a common point of reference on which to build upon. Thirdly, and particularly important in a technological complex policy such as Plan Avanza, co-ordination includes capacity-building in order to ensure that high-level policy directives are accompanied by the means (financial and otherwise) to help stakeholders achieve them. Indeed, this has been one of the principal responsibilities of *red.es*, which has played an enormous role in supplying ICT equipment, training, or providing technical expertise and assistance. Finally, in the context of MLG, joint monitoring and evaluation is a core tenant of co-operation. Establishing linkages between inputs such as ICT spending or equipment and the outputs, or evaluating the effectiveness of a policy, cannot be accomplished without the co-operation of all tiers of government.

Drivers of multi-level governance

Some of the key drivers necessitating strong inter-institutional co-ordination in the design and implementation of Plan Avanza include: *i*) Spain's decentralised administrative structure; *ii*) the strong technical component of the Plan and the growing reliance of ICTs for improving public service delivery; as well as *iii*) the large number and diversity of stakeholders implicated in IS policy in Spain.

As seen in Chapter 2, Spain is one of the more decentralised countries of the OECD, signifying that regional and local governments have higher levels of autonomy in the design and delivery of critical public services. While all OECD member countries confront this challenge to a certain extent, there are important implications for the design and implementation of IS policies like Plan Avanza. For example, decentralisation can intensify mutual dependencies between tiers of government. Furthermore, decentralisation can blur the lines between tiers of government with regards to stakeholders' specific roles and responsibilities, opening the door for co-ordination issues such as fragmented or duplicated policies.

The transversal nature of technology enables growth and competitiveness, and further necessitates strong co-ordination in IS policy. Certainly, Plan Avanza must mirror the ubiquity of ICTs themselves; just as ICTs have a wide breadth of applications in sectors such as energy, transport, health, and education, among others, different areas of

government must harmonise efforts in order to create synergies and maximise these technologies' potential for social and economic gain. It is through this cross-fertilisation of information, resources and technological solutions that new opportunities arise for greater efficiency and innovation. The development of green ICTs, for example, has implications ranging from environment to transport to housing. If real energy efficiencies are to be realised at an aggregate level, relevant ministries must work together on cross-cutting issues.

What's more, the need for horizontal and vertical co-ordination is likely to increase in the future under the vision of holistic government through e-government. Across OECD member countries, there is a growing trend towards a "whole-of-government" approach to service delivery, with the aim of delivering a more personalised interaction with citizens through more efficient means. This model relies heavily on integrated back-office operations, joined-up or bundled services and shared resources, all of which are enabled by ICTs. ICTs and technological advances are further fuelling this trend: growing digital convergence, for example, creates new opportunities for linking public services, and platforms such as cloud computing can be used to support shared services architecture. For ICTs to be fully exploited in the delivery of public services then, co-ordination between different government agencies will need to take on a different, more ambitious, form.

Box 3.2. Importance of inter-institutional co-ordination in eHealth

The eHealth Programme is one such initiative in which different levels of co-ordination are key, and which requires strong partnerships with governmental and non-governmental actors.

The eHealth initiative, implemented by Plan Avanza and the Ministry of Health and Social Policy alongside regional governments, seeks to increase the capacity of the National Health Service (NHS) central node, as well as to interconnect regional health services' information systems via this node, thereby allowing citizens and physicians to be able to access medical records and prescriptions throughout the country. Plan Avanza's role includes work on the central node itself, the deployment of necessary equipment to hospitals, primary health centres and the data centres or the synchronisation of the regional health cards to create a reliable user identification system throughout the National Health System while addressing the security and privacy issues at stake. Additionally, the programme provides training for nurses, doctors and hospital staff in new applications.

The importance of inter-institutional co-ordination is evident given the complexity of the health sector. One of the main challenges for the Plan was establishing high levels of co-operation from the stakeholders involved, in particular, regional health services. Indeed, regional governments in Spain are responsible for many of the competencies regarding the delivery of health services, and a central node without the synchronisation of the majority, if not all, of the 17 autonomous regions would limit the potential for system-wide innovation (*e.g.* joined services, new modes of care such as telemedicine, etc.). Additionally, working with health professionals' associations is critical for training, developing applications and promoting take-up.

Source: OECD, derived from interviews with the Ministry of Industry, Tourism and Trade, the State Secretariat for Telecommunications and Information Society, and *red.es* officials.

Lastly, the number of non-governmental stakeholders implicated in IS policy requires strong relationships in order to achieve objectives. Indeed, a large number of non-governmental stakeholders are strongly implicated in Plan Avanza, a trademark of other IS strategies in OECD member countries which increases the scope and complexity of co-ordination. Both the telecommunications operators and ICT sectors have prominent roles in extending broadband, DTT or mobile phone coverage. Additionally, initiatives designed to promote digital inclusion rely strongly on civil society with close relationships with target end-users. Seen in this light, implementing IS strategies can be viewed as requiring the support of an expansive system, or network, of stakeholders. Co-ordination efforts must be extended to all entities in the network to be most effective.

Benefits of effective multi-level governance

Certainly, there are important benefits for IS policy makers to getting this important element right. Namely, successful MLG tools and strategies can contribute to the following outcomes:

- **Effective MLG can improve governments' performance, and therefore potentially increase the impact of IS policies:** strong MLG can help avoid the fragmentation or duplication of policies, improve the capacities of implementers, raise consensus and political will, reduce confusion, increase incentives for participation, and help determine which initiatives work best. These “performance enhancers” ultimately contribute to more responsive strategies, they reduce unnecessary delays, and can increase the sheer scope/size of initiatives. Not only do stakeholders themselves benefit from “leaner” and more effective IS policies, but ultimately end-users do as well.
- **Effective MLG can help optimise resources in times of fiscal tightening:** measures for fiscal consolidation place additional pressure on government organisations at both national and local levels to optimise resources and maximise results. The challenge lies in reducing costs without sacrificing impact. Improved MLG supports this goal by reducing unnecessary waste and duplication, maximising limited resources, and allowing organisations to better exploit economies of scale. It is mainly by horizontal co-ordination, for example, that municipalities and regions pool resources to attain better value for money in the procurement and maintenance of ICT infrastructure and equipment.
- **Effective MLG can help promote equity and inter-regional convergence:** effective MLG can contribute to equity goals as well, such as inter-regional convergence (which is one of the overarching objectives of Plan Avanza; see Chapter 1). Decentralised IS policy allows regions to differentiate their activities, tailoring them to specific regional needs; however, this creates the risk that, over time, pre-existing disparities will be reinforced rather than reduced. After all, not all regions embark on IS initiatives with the same capacities, resources, or preconditions in place (e.g. a developed ICT sector, for instance). Effective MLG can help equalise these essential factors. For example, sub-national governments who co-operate freely in the exchange of best practices or technological solutions, for instance, can learn from each other and help laggards “catch-up”. Likewise, governance tools such as contracts and operating agencies can be utilised to equalise differences in capacities (financial and otherwise).

- **Effective MLG is key in the transition to “demand-side” policies:** as we have seen in Chapter 1, Plan Avanza 2 begins to mark a shift in that the strategy places growing emphasis on “demand-side” policies, that is, initiatives aimed at leveraging ICT investments by promoting their usage and take-up; Chapter 4 provides further support for the need to strike this balance. Effective MLG is key in these policies since, relative to measures for ICT diffusion, initiatives aimed at promoting take-up of digital public services require stronger collaboration between stakeholders: in Spain, regional and local governments have the majority of competencies in the management of education and health systems; and backing from non-governmental stakeholders (such as teacher and parent organisations, or professionals associations) is required to increase awareness amongst users’ about the benefits of ICTs, provide training, and help better adapt ICT applications to their needs.

3.2. Multi-level governance and survey framework

The OECD’s work on MLG, along with findings from interviews and roundtables with key Plan stakeholders, served as the basis for the design of a survey used to assess the effectiveness of inter-institutional co-ordination under the Plan. The survey’s aim was to: *i)* examine how different levels of government perceive co-ordination under the Plan; *ii)* identify any potential obstacles to co-ordination between and amongst levels of government; and *iii)* assess the co-ordination tools applied by the Plan (see Chapter 2 for a discussion of the main implementation tools used by Plan Avanza). Box 3.3 highlights some common “gaps” in multi-level governance in OECD member countries, whose experiences helped develop the survey and evaluate the Plan. Stakeholders were also asked to judge the effectiveness of key Plan Avanza initiatives on citizens, businesses and the public sector; these are presented in the following chapter.

Box 3.3. “Mind the Gaps”: common obstacles to inter-institutional co-ordination between and across levels of government

Challenges in multi-level governance are certainly not unique to Spain. The potential coordination issues tested in the survey were based on case studies of MLG in other OECD member countries across several public management domains including: fiscal and regulation policy, e-government, human resources management, water management, and innovation policy. Findings of these case studies were published in 2009 in the report *Mind the Gaps: Managing Mutual Dependence in Relations Among Levels of Government*. Some of the main obstacles commonly faced by governments included:

The information gap: the information gap is characterised by information asymmetry between the national and the sub-national level when designing, implementing, and delivering public policy. National and even sub-national strategies for achieving public policy objectives might face an information deficit if sub-national authorities and actors do not actively share their knowledge of what is happening “on the ground.” Sub-national governments’ views, however, are only “partial” – limited to its own area or territory. Thus, the national government plays an indispensable role in managing the information in such a way as to support a broader vision that can be linked to accomplishing public policy objectives.

Box 3.3. “Mind the Gaps”: common obstacles to inter-institutional co-ordination between and across levels of government (*continued*)

The capacity gap: capacity gaps occur when there is a lack of human, knowledge (skill-based), operational or infrastructural resources. Capacity-development needs can vary with the pre-existing levels of public administration infrastructure. Long-standing sub-national governments with well-developed institutions may require little in terms of capacity-building to assume new responsibilities. But, where sub-national governments or related institutions must be created or have a historically limited role, capacity-building needs will be greater. The capacity gap is not restricted to the sub-national level, however; it also applies to the national level in terms of managing multi-level relations, allocating responsibilities and funds, and ensuring co-ordinated, coherent policy approaches among central level actors.

The fiscal/financial gap: the existence of a fiscal gap between the revenues and required expenditures of sub-national governments results in financial dependence by the sub-national level on the national level. Thus, the sub-national level remains dependant on the national level for funding and for a fiscal capacity to meet its policy obligations. Meanwhile, the central government depends on the sub-national level to deliver more and increasingly costly public services, and meet both national and sub-national policy priorities.

The administrative gap: an administrative gap arises when administrative borders and functional economic areas at the sub-national level do not correspond to one another. This is clearly evidenced in metropolitan areas where there is an agglomeration effect arising from a set of municipalities that alone are much smaller than the metropolitan whole. Individually their influence may be limited, but as a group, they can be a strong player in the relationship among levels of government. The administrative gap is an excellent example of multi-level governance relationships based on horizontal mutual dependence, as this gap often generates the need for co-operation among sub-national governments.

The policy gap: policy gaps result from incoherence between sub-national policy needs and national level policy initiatives. Neglecting to consider a sub-national logic can reduce the possibility for successful cross-sector policy development and implementation at the sub-national level. Additionally, these gaps can also occur when ministries take a purely vertical approach to policy issues that are inherently cross-sectoral (e.g. water, energy, youth, investment, etc). If individual ministries apply their individual logic to cross-sectoral initiatives that impact or are implemented at the sub-national level, then the opportunity for “joined-up” or “whole-of-government” approaches is minimised.

Source: OECD (2009), Mind the Gaps: Managing Mutual Dependence in Relations Among Levels of Government, OECD Publishing, Paris.

The survey was administered to regional and local governments and other stakeholders responsible for implementation (including non-governmental organisations), as well as ministries having been involved in Plan Avanza at least at one point since 2006. All participating ministries and regions were invited to complete the survey, while – due to the large number of local governments in Spain – a smaller sample of these received questionnaires. This sub-sample of local governments was selected on the basis of population size to ensure the views and IS needs of small, medium and large territories were represented. Additionally, representatives on the IS Commission of the Spanish Federation of Provinces and Municipalities (FEMP) participated in the survey. In total, 99 responses were analysed, representing an overall response rate was 55%, although

local and external stakeholders were less inclined to participate (response rates were 44.7% and 41.9% respectively).

Table 3.1. **Organisations that participated in the survey**

Respondents by tier	Description
National	Ministries of Education, Health, Justice, Presidency, Interior, Culture and Infrastructures
Regional governments	
Regional co-signers for high-level regional contracts (<i>convenios marco</i>)	<i>Consejerías</i> of Science and Innovation or Telecommunications and the Information Society. In exceptional cases, regional governments at the highest level (e.g. elected regional representative).
Regional co-signers for addendums to contracts for specific projects	<i>Consejerías</i> of Education, Justice and Health
Local governments	Municipalities
Non-governmental stakeholders	ICT sector and ICT-users associations, IS academics and subject matter experts involved in the Plan
Total	99

3.3. Assessing the effectiveness of inter-institutional co-ordination under Plan Avanza: survey and interview findings

What did Plan Avanza stakeholders report regarding the effectiveness of co-ordination in the design and implementation of IS policies? What co-ordination tools were most effective in “bridging” potential co-ordination gaps between levels of government? The following section presents the main findings of the survey and interviews, namely:

- Plan Avanza has created a strong consensus amongst stakeholders about the importance of a strong information society for the country’s future. The Plan has elevated IS policy onto the national political agenda; a significant ascent considering the comparatively lower resources and weight dedicated to IS objectives prior to 2005. Achieving this consensus amongst a large number of stakeholders (across ministries, regional governments, local governments, and non-governmental organisations) has been perhaps one of the more important achievements of the Plan.
- Nevertheless, some “gaps” remain in multi-level co-ordination; sub-national governments, and especially local governments, are the most adversely affected. At the national level, the principal policy gap identified by stakeholders in interviews was the need to align Plan Avanza 2 with nation-wide initiatives for economic recovery. Additionally, regional and local governments reported facing greater obstacles to implementing IS policy and called for greater support from the Plan to overcome “gaps” in capacities – financial and in terms of know-how.
- The Plan has established some effective MLG tools, but these could be further leveraged in the future to help bridge the (aforementioned) co-ordination gaps and increase impact. Survey results confirm findings from interviews that *red.es* is an effective implementation tool which works to equalise different regions’ levels of IS development. Contracts between levels of government could be improved, especially with regards to strengthening monitoring and evaluation mechanisms and being extended to facilitate planning. Additionally, policy instruments could be used to better promote inter-regional convergence and

better reach those groups most in need. This will be critical in the shift from demand to supply-side policies.

- Horizontal co-ordination is under-utilised; and yet the potential for such collaboration to increase cost-effectiveness and create synergies is great. Compared to other tools for horizontal co-ordination, pooled procurement, information and resource-sharing and joint monitoring and evaluation are under-used. However, these are tools which could help regional and local governments maximise economies of scale and scope and increase the sustainability of programmes once ownership is transferred to them from the national level.

It is useful at this point to review the main institutions and governance tools utilised by Plan Avanza (see Chapter 2), as the following section will make reference to these important co-ordination mechanisms.

Table 3.2. **Main institutions and governance tools of Plan Avanza**

Institution/tool	Roles
State Secretariat for Telecommunications and the Information Society (SSTIS)	The Directorate within the Ministry of Industry, Tourism and Trade responsible for designing, implementing and managing Plan Avanza.
CATSI (Spanish acronym for Advisory Board on Telecommunications and the Information Society)	An advisory board composed of various working groups centred around specific information society issues; it is composed of several ministries, regional governments, and representatives of local governments (via FEMP). Additionally, various ICT sector and user associations are invited to participate as members.
<i>red.es</i>	The public enterprise responsible for managing some key Plan Avanza programmes in co-ordination with regional governments, most notably sectoral initiatives in education, health and justice. The organisation offers critical technical expertise and guidance to stakeholders.
FEMP (Spanish acronym for the Spanish Federation for Municipalities and Provinces)	An organisation responsible for representing local governments (municipalities and provinces) at the national level. FEMP has a working commission specifically for information society and technology policy which liaises with the SSTIS and participates in CATSI.
Contracts	Plan Avanza is implemented in autonomous communities and cities via contracts between national government agencies and sub-national governments. There are two kinds: high-level agreements with regional governments which last several years; and programme-level agreements which can span the length of the projects entailed. These contracts stipulate roles and responsibilities and detail how funding will be distributed.
Co-financing mechanism	Some Plan Avanza initiatives are jointly funded by the national government and stakeholders. eHealth, education and justice programmes for instance are co-financed between the regions and the different ministries implicated. <i>Red.es</i> and the SSTIS may also provide funds. Furthermore, to participate in the Avanza Local Programme, local governments must also contribute funding.
Monitoring commissions	When a contract is signed, a monitoring commission is established and charged with overseeing that its conditions are met. According to interviews, these tend to meet once a year.

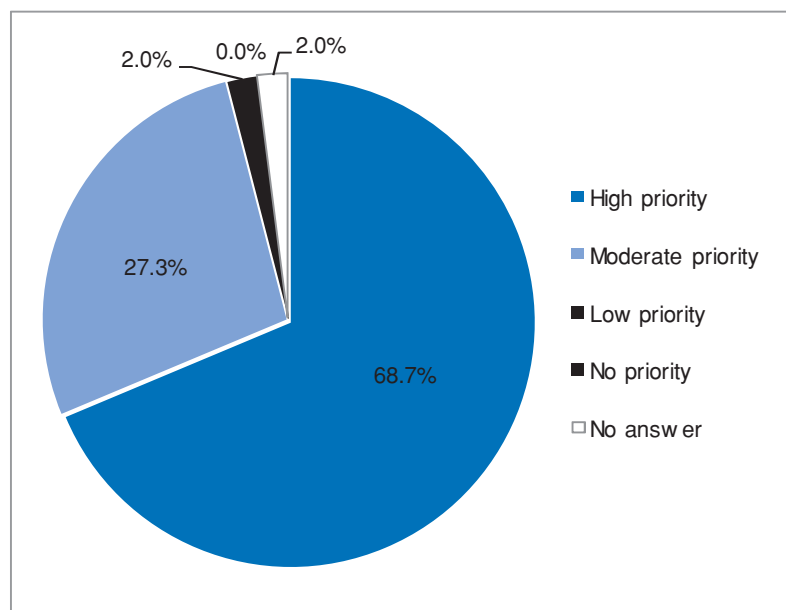
Source: OECD elaboration from meetings and interviews with Plan Avanza stakeholders.

Plan Avanza has created a strong consensus amongst stakeholders about the importance of a strong information society for the country's future

Survey results indicate that the Plan has contributed to strengthening consensus amongst stakeholders about the importance of the information society for the country's

future, and IS policies rank high relative to other organisations' initiatives. Sixty-nine per cent of stakeholders rated the policy agenda a high priority for their organisation while only 2% believed it was a low priority.

Figure 3.2. **What priority does information society policy have in your organisation relative to other policies?**



Source: OECD Plan Avanza survey: Questionnaire for Government Stakeholders.

However, surprisingly, only 45% of local-level stakeholders regarded IS policy as a high priority, compared with nearly double that amount in the central government. This suggests that future efforts to gain support for the IS agenda should be targeted at local governments, as they are often the first point of contact with citizens and SMEs and their involvement has the potential to yield positive and often more immediate impacts “on the ground” with citizens and end-users. By sector, justice practitioners place the highest priority on IS policy, a timely result as the Ministry of Justice was to launch a large-scale modernisation plan which relies heavily on Plan Avanza support. It is interesting to note that regional representatives responsible for Science & Technology (S&T) policies prioritise IS policy less than justice and education stakeholders, despite the strong linkages between ICTs and innovation policy and the potential for synergies between these two areas that could be further exploited.

Table 3.3. **Respondents answering that information society policy is of “high priority” for their organisation (%)**

National	83.3%	Justice	100.0%
Regional	80.0%	Education	77.8%
Non-governmental	75.0%	S&T	75.0%
Local	44.8%	Health	73.7%

Source: OECD Plan Avanza survey: Questionnaire for Government Stakeholders.

Some “gaps” exist in multi-level co-ordination, sub-national governments – and especially local governments – are the most adversely affected

Survey results identified potential gaps in vertical and horizontal co-ordination which may have affected the impact of the Plan by limiting its scope and responsiveness to IS needs, as well as the capacities (human, financial and organisational) of regional and local governments to effectively executive IS policies and participate in their design.

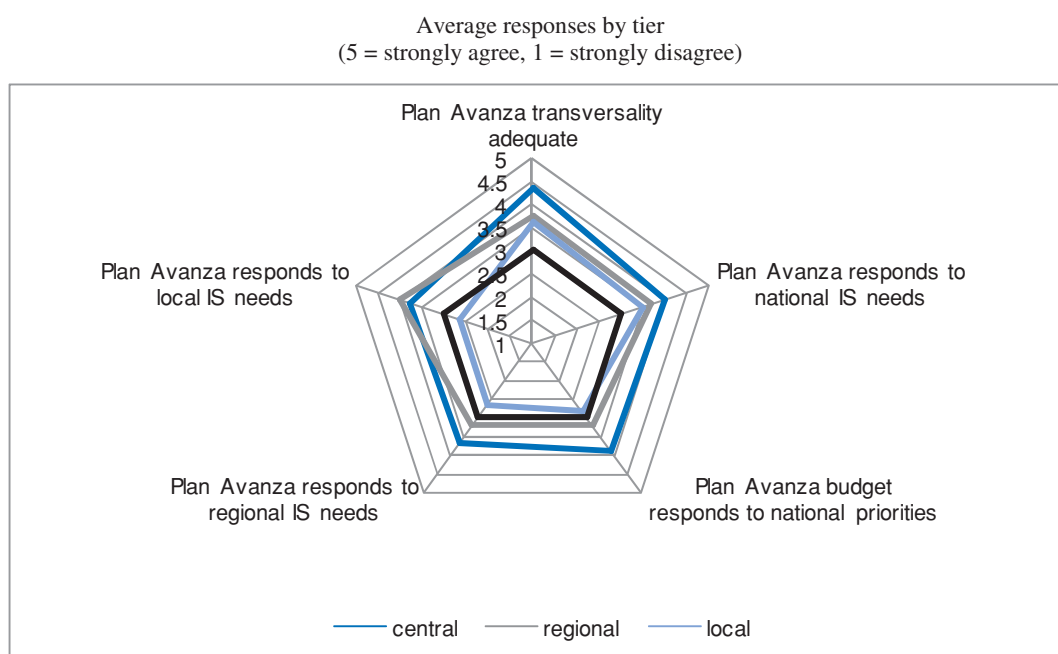
Policy gaps

Chapter 1 described the main objectives and targeted beneficiaries of IS policy in Spain. One way of establishing what policy gaps, if any, exist in this policy agenda is to ascertain the views of stakeholders on: *i)* whether the right target groups were identified by the strategy (*e.g.* ICT sector, SMEs, marginalised – or socially excluded – citizens); *ii)* whether the Plan’s initiatives were faithful to the spirit of its objectives; *iii)* whether the distribution of resources reflected the priorities of national IS needs; and *iv)* whether sub-national governments perceived the Plan as addressing the most prominent needs of the public administration in terms of advancing ICTs and supporting e-government initiatives.

The majority of respondents across tiers and sectors agreed that the Plan’s budget appropriately reflected national priorities, and that the Plan’s degree of transversality was adequate. Though in the minority, the greatest area of contention was with regards to how well the Plan was adapted to different sub-national needs, 23.1% and 20.8% of respondents perceived that the strategy did not respond well to their regional and local governments’ specific IS priorities, respectively. This is an interesting result since these two questions also received the largest percentage of “strongly agree” responses, suggesting that inter-territorial discrepancies remain. Additionally, nearly 23.3% of respondents would like to see greater strategic prioritisation given to the distribution of resources amongst the Plan’s different areas of action. As it stands, the majority of funds were destined to supply-side initiatives, and this response may indicate a readiness to begin prioritising more demand-side policies. The next chapter demonstrates readiness to make this shift in some sectors.

The differences between the views of national and sub-national governments become clearer when disaggregating results by tiers. Sub-national governments, in general, perceived the most barriers. Furthermore, while regional and central governments may differ, their responses were, on average, positive (that is, greater than or equal to 3, which is represented by the black line). Local governments, however, generally view that the Plan’s responsiveness to local and regional IS needs could be improved.

Figure 3.3. Policy gaps reported by Plan Avanza stakeholders



Source: OECD Plan Avanza survey: Questionnaire for Government Stakeholders.

Despite overall satisfaction with the nature of the Plan's goals, however, a large majority of respondents (84.1%) perceived the need for continued action, responding "yes" to whether their organisations perceived an important policy gap in Spain's IS agenda. In short, the demand for continued intervention and action on IS policy remains strong. The effect is most apparent amongst justice sector institutions, all of which responded that there was more work to be done in their sector. Plan Avanza 2 seems to have already begun to address this sector's strong demand for further action, as there is greater focus on justice in this second incarnation of the strategy. Indeed, over EUR 76 million will be destined to the Ius+Red Programme which will continue to work with civil registries and the courts to digitise records, install kiosks, and diffuse audio-visual technologies to courts. Furthermore, local governments expressed the greatest need for further support from the Plan, the vast majority (92%) recognise there is scope for greater action for IS policy in municipalities, provinces and deputations. The resounding message from these stakeholders seems to be for continued action on IS initiatives.

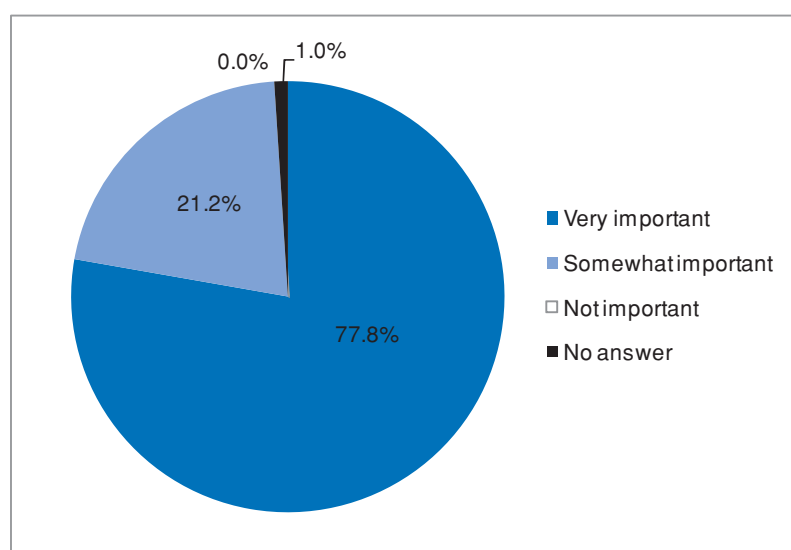
Table 3.4. Policy gaps by tier/sector

Does your organisation perceive an important policy gap in Spain's IS agenda? Respondents answering "yes"			
Justice	100.0%	Local	92.0%
Health	72.2%	Regional	81.6%
Education	66.7%	Central	63.6%

Source: OECD Plan Avanza survey: Questionnaire for Government Stakeholders.

One of the most prominent policy gaps identified in interviews with stakeholders was with regards to Plan Avanza's contribution to economic recovery. Indeed, there is a strong mandate amongst IS policy makers to link Plan Avanza 2 more closely to goals for economic recovery; indeed all sectors and tiers of government perceive a strong relationship between strong information societies, citizens' welfare and future economic competitiveness. Although the Plan's work in IS policy has contributed to economic and social objectives in the past, Plan Avanza 2 could build on this strong consensus to forge closer linkages with new high-level reforms such as the draft Law for the Sustainable Economy, for example, to contribute to both short-term recovery efforts and long-term strategies to promote economic structural change. For example, initiatives to increase e-skills in unemployed workers tie into immediate needs to re-train persons from such sectors as construction. Additionally, spurring the development and application of green ICTs and strengthening the ICT sector are both aligned with long-term goals of promoting innovation and increasing value-added of the Spanish economy; initiatives for developing green ICTs could be tied to programmes such as RENOVE for increasing the energy efficiency of buildings; and the National Plan for Climate Change and Clean Energy would further benefit from support from the Plan. Greater inter-ministerial co-ordination lies at the heart of promoting such synergies.

Figure 3.4. **How important is information society policy for the country's economic recovery?**



Source: OECD Plan Avanza survey: Questionnaire for Government Stakeholders.

Information gaps

Overall, participating organisations were satisfied with the flow of information between the SSTIS, *red.es* and themselves. The most prominent areas of improvement regard the dissemination of statistics and data on IS policy which, as it will be outlined in this chapter, reflects the presence of another kind of information gap (*e.g.* monitoring and evaluation). Stakeholders would also like greater information about the launch of new projects or the availability of new funds, and nearly 30% were unsatisfied with information about how to solicit Plan Avanza support. Indeed, in interviews, non-governmental organisations expressed the difficulties for SMEs, ICT sector

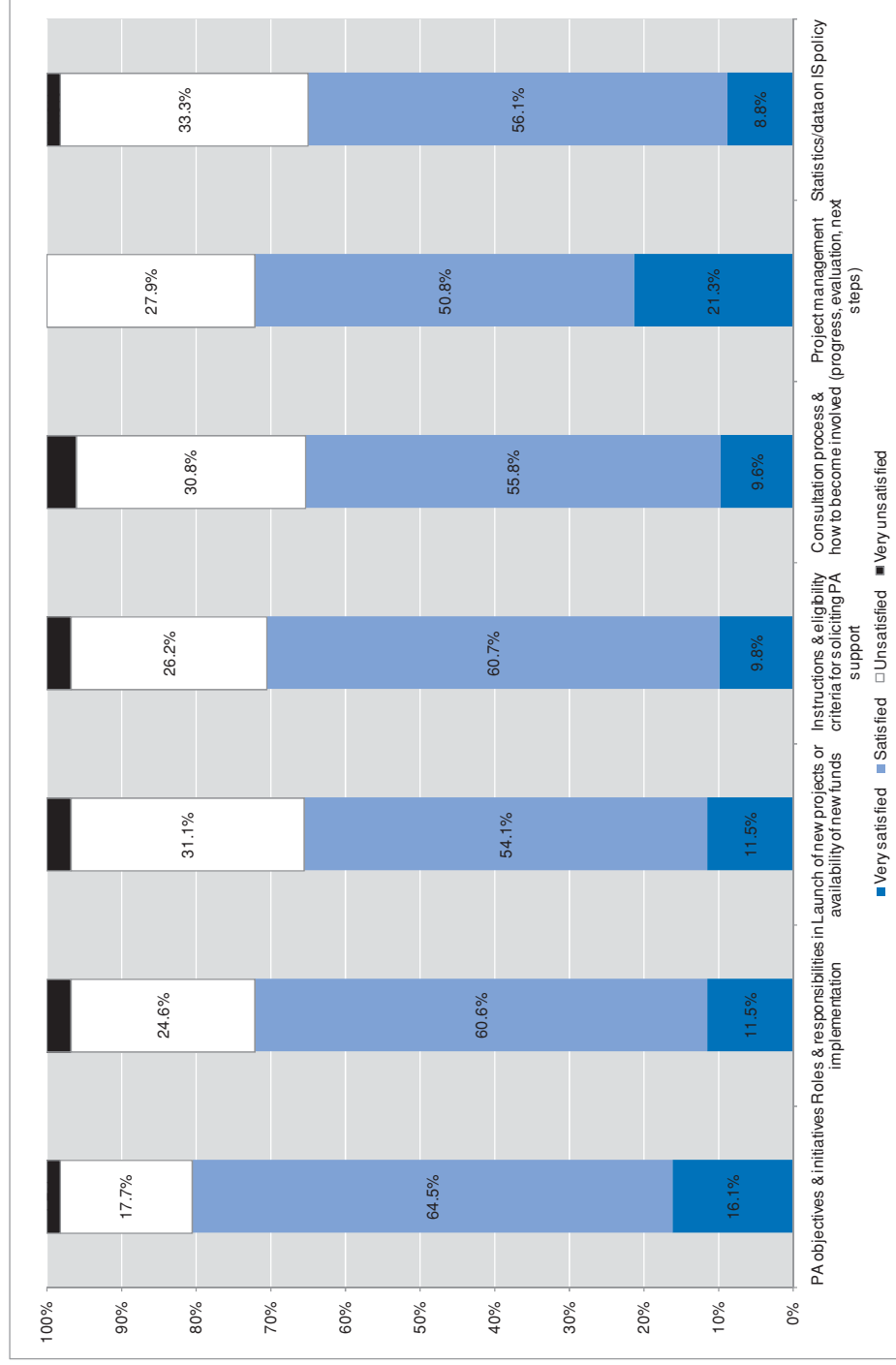
firms, etc. to solicit funding, as the administrative procedures are complex. Additionally, survey results point to the fact that stakeholders would like further information about the consultation process and how to become involved, as 31% of respondents were unsatisfied with information-sharing on this issue. This result is not surprising with the low awareness of CATSI and its role in the policy-design process (about 46% of respondents were unaware of the existence of this institution).

As evident in Figure 3.6, local and regional governments were most likely to perceive information gaps, with the black line representing the threshold for stakeholders being “satisfied” with each dimension. This is not surprising due to the difficulties in co-ordinating with such a large number of municipalities in Spain. Furthermore, the implementing agency *red.es* interacts mainly with regional governments and offers (financial) but little technical/managerial support at the local level. Plan Avanza could consider communications initiatives targeted at the local level either through greater co-ordination with FEMP or, for example, through Web 2.0 tools.

Information gaps have also affected stakeholders’ participation in policy design. 34.6% of respondents were unsatisfied with information about how to participate in the consultation process, and 60% of responding organisations reported experiencing obstacles to participating in the design of Plan Avanza 2. The most common obstacles to communication being: *i*) information not being transmitted often enough; *ii*) information not reaching the correct stakeholders; and *iii*) information not being sufficiently clear. The majority of organisations who did not report obstacles were ministries, while regional and local governments were more apt to encounter potential issues. The common obstacles identified are highlighted in Table 3.5. The most commonly cited were “not invited” or “unaware of the possibility to participate”. Efforts to raise inclusion in the consultation process could be targeted above all to sub-national levels. Organisations like CATSI, *red.es*, and FEMP may want to strengthen vertical co-ordination between the central government and their members.

Figure 3.5. Types of information gaps reported (aggregate results)

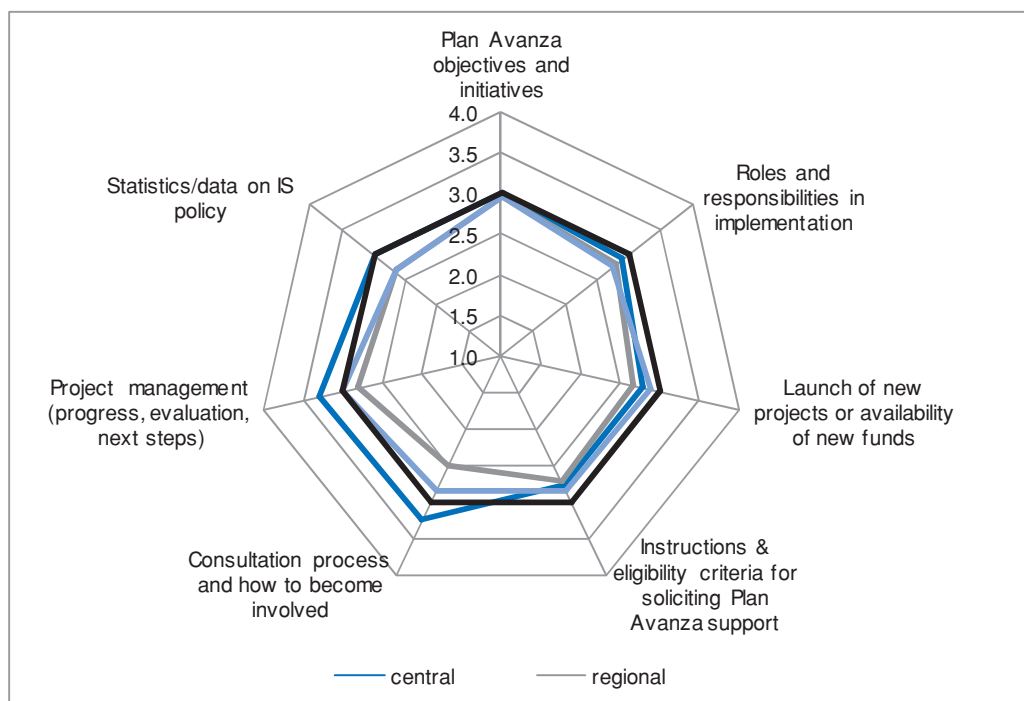
To what extent is your organisation satisfied with information received about Plan Avanza?



Source: OECD Plan Avanza survey: Questionnaire for Government Stakeholders.

Figure 3.6. **Types of information gaps reported**

To what extent is your organisation satisfied with information received about Plan Avanza?
(4 = very satisfied; 1 = very unsatisfied)



Source: OECD Plan Avanza survey: Questionnaire for Government Stakeholders.

Table 3.5. **Common obstacles to participating in the consultation process (rank)**

	Aggregate sample (national and sub-national)	Regional	Local
Not invited to participate	1	2	1
Unaware it was possible to participate	2	1	3
Unaware how to participate	3	3	2
Other	4	4	5
Lack resources to participate	5	5	4
Perceive input would not be valued	6	6	6
No interest in participating	7	7	7

Source: OECD Plan Avanza survey: Questionnaire for Government Stakeholders.

What suggestions did stakeholders have to increase awareness about IS policy and Plan Avanza in particular? One of the most common responses was that the Plan should disseminate best practices and the results of programmes, not only among public sector stakeholders but amongst non-governmental stakeholders as well. Additionally, local governments in particular asked for leadership on behalf of the Plan in helping to co-ordinate with other entities of their same tier. Web 2.0 tools such as forums/blogs/social networking which have been used successfully in education initiatives could be extended to other sectors and could support sector committees' activities (oversight, information sharing, etc.). According to the results, these tools have not been utilised extensively by stakeholders, and they could be promoted if this

“demanded” content were available. Finally, stakeholders noted the need to reach end-users, proposing communications initiatives that promote take-up of services. Just as the national DTT transition programme had large visibility, other programmes such as 060, online health appointments, e-prescriptions, etc. could benefit from efforts that raise awareness amongst citizens of their availability and the services these initiatives offers.

Capacity and fiscal gaps

As a basic definition, sub-national capacity relates to the ability of a sub-national government to fulfil their mandate. In the case of Plan Avanza, stakeholders – including regional and local governments – were asked whether they had sufficient resources to implement IS policy (OECD, 2009f: 133). At the aggregate level, the scarcest resources in the design and implementation of Plan Avanza were financial/budgetary resources and staff and personnel: 71.3% and 52.6% of respondents cited very insufficient or insufficient resources in these categories, respectively. In Figure 3.7, the black line signifies a “sufficient” amount of resources, all elements with the exception of sectoral and technical expertise are found below this threshold. As *red.es* has led the technological aspects during project management (Figure 3.8), stakeholders perceive gaps elsewhere.

There are large differences in needs, however, according to tier of government, as evident in Figure 3.7. Local and regional governments were relatively more in need of support. Local governments in particular were not included in the Plan’s regional contracts, and had to apply for co-financing of Avanza Local Programmes individually. These are competitive rounds of funding where not all municipalities receive co-financing support from the central governments. Local governments also had less technical and sectoral expertise. The support of *red.es* in municipalities and deputations takes on greater significance in terms of increasing the impact of these initiatives. Especially when (as visible in Table 3.6) local governments had fewer resources available.

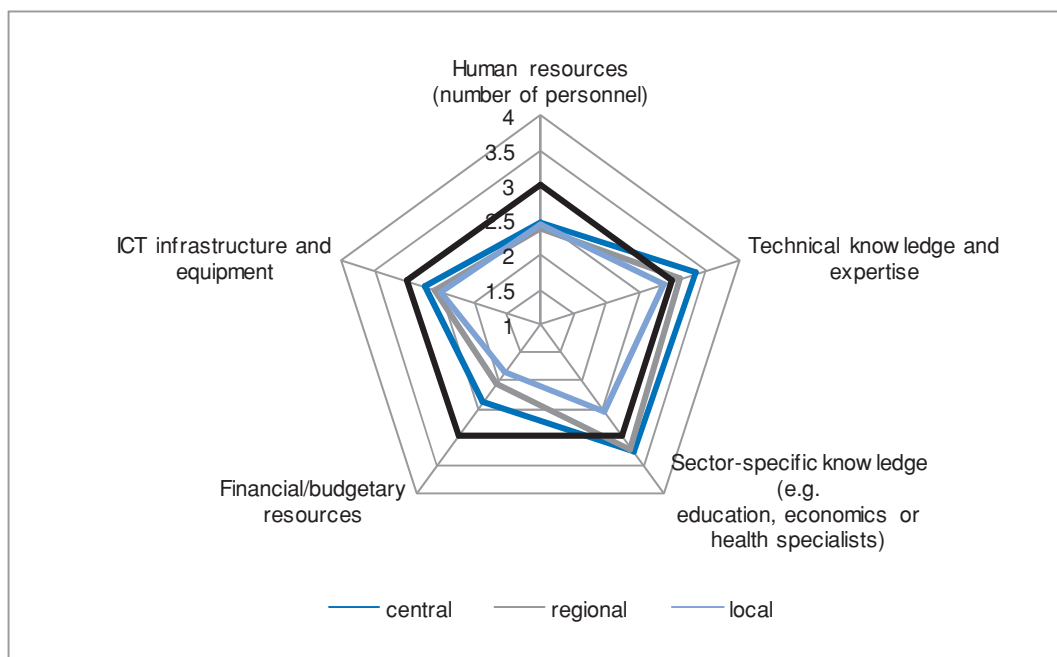
Table 3.6. **Number of surveyed municipalities according to size and ICT staff available**

ICT resources available	Over 30 000 inhabitants	15 001-30 000 inhabitants	3 501-15 000 inhabitants	1 001-3 500 inhabitants	300-1 000 inhabitants	Below 300 inhabitants
More than 50	6	0	0	0	0	0
Between 20 and 50	12	0	0	0	0	0
Between 10 and 20	19	0	0	0	0	0
Between 5 and 10	31	12	1	0	0	0
Between 3 and 5	24	35	8	0	0	0
Between 1 and 3	7	50	72	40	13	0
None	0	2	19	60	87	100

Source: National Observatory of Telecommunications and the Information Society (ONTSI) (2008), “Survey of Local Governments”, Madrid.

Figure 3.7. **Resource gaps by tier of government**

To what extent is your organisation satisfied with the resources available to implement Plan Avanza?
(1 = highly insufficient; 4 = highly sufficient)



Source: OECD Plan Avanza survey: Questionnaire for Government Stakeholders.

The Plan has established some effective multi-level governance tools, but these could be further leveraged in the future to increase impact

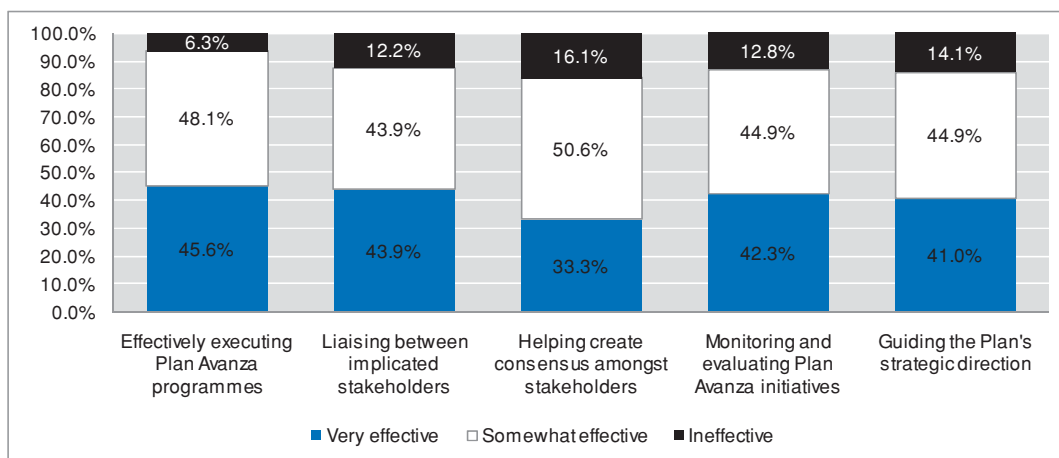
The principal governance tools of the Plan – *red.es*, CATSI, the contracts and co-financing mechanism, have the potential to help address some of the co-ordination issues raised above. This section discusses the effectiveness of the tools presented in Chapter 2.

Red.es

As noted in Chapter 2, one of the Plan’s initial decisions was to conscript the public enterprise *red.es* as one of the main implementation tools, acting as a manager, motivator, and multiplier in the implementation of programmes across the country. The public-private hybrid, is the “executing arm” of Plan Avanza, which is mandated to translate policy directives into action in schools, hospitals, and registries across the country as well as to work with local governments in the telecentres and Avanza Local Programmes. The organisation draws from a cadre of technical and subject-matter experts. Has this institution been effective in executing key Plan Avanza programmes, liaising between stakeholders, consolidating consensus and monitoring performance?

Survey results confirm findings from field visits and interviews that *red.es* was judged by stakeholders as being a generally effective governance tool in a variety of the aforementioned dimensions, most notably in effectively executing Plan Avanza programmes, and it was regarded as one of the more effective tools of the Plan. Stakeholders also viewed that the organisation effectively liaised between the many stakeholders involved in the Plan, helped create consensus, monitored and evaluated initiatives, and guided the Plan's strategic direction.

Figure 3.8. According to your organisation's experience, to what extent is *red.es* effective in the following dimensions?



Source: OECD Plan Avanza survey: Questionnaire for Government Stakeholders.

As will be discussed Chapter 4, *red.es* also supported the Plan's overarching goal of promoting inter-regional convergence. Sectoral interviews with stakeholders from regional and local governments in the areas of education, health and justice highlighted how the agency helped to equalise the progress made across regions by providing critical capacity-building to sub-national governments farther behind in the implementation of key programmes. Because different regions find themselves at different levels of development across projects, the enterprise can use its experiences in managing programmes to transfer know-how from leading regions to those just commencing. The "know-how" and experiences of other regions can be more effectively transferred to others, helping to make programmes less costly and more effective.

The principal challenge for *red.es* is with regards to implementing more concrete change management strategies; which could facilitate a transfer of ownership of Plan Avanza projects between the public enterprise and regional and local governments. In interviews and roundtables, local and regional governments noted that the sustainability of projects and *red.es*' investments were endangered when, after termination of projects, many regions were unprepared for the new financial and technological (maintenance) obligations that would ensue. The following options could be considered under the next Plan to help overcome this challenge: *red.es* could work with regions to integrate, within Plan Avanza contracts, measures to "phase-out" their involvement; *red.es* could help foster horizontal co-ordination between regions to help them pool/share resources and maximise economies of scale; or *red.es* could consider contracting out their services, also allowing this entity to generate some revenue.

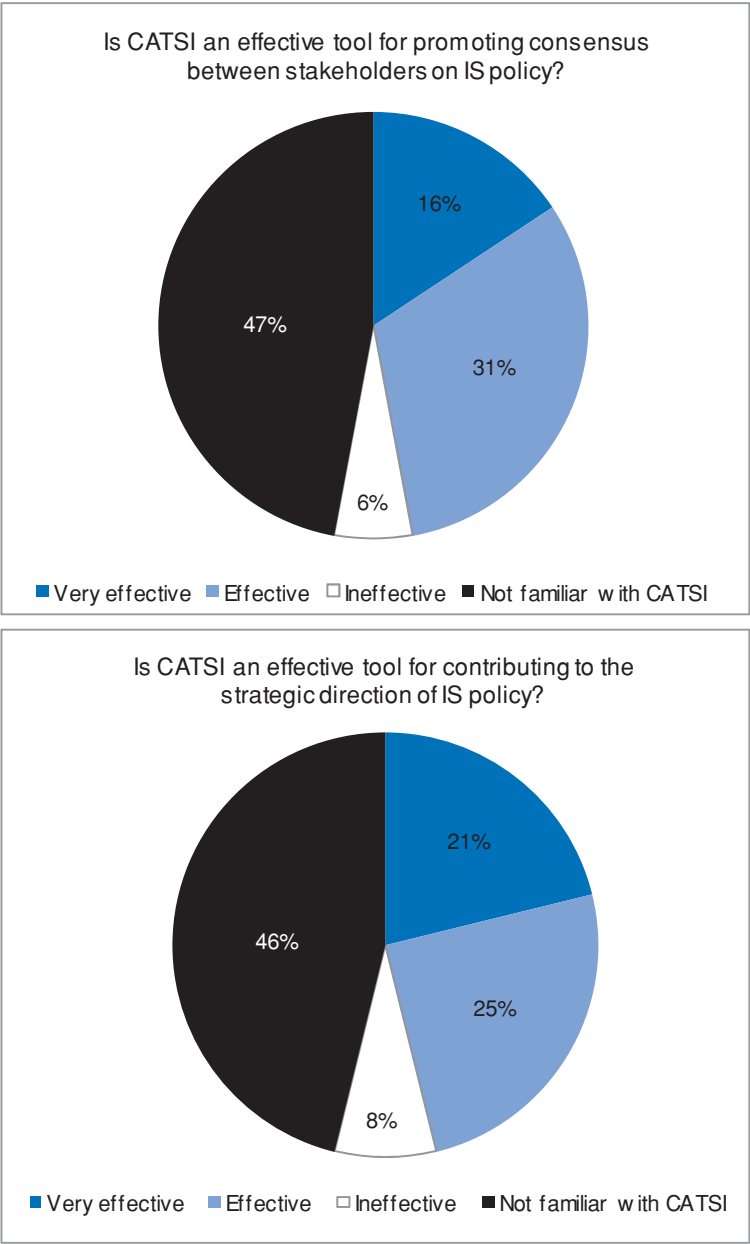
CATSI

CATSI, the Spanish acronym for the Advisory Board for Telecommunications and the Information Society, has an essential role in determining the strategic vision of the Plan and building consensus through its thematic working groups who recommend policy lines along with the SSTIS and the Senate Commission. Because membership and functions are determined by law (*e.g.* Royal Decree 1029/2002), there could be potential issues of organisational rigidity that could hinder its contribution to the Plan: for example some citizens' association were not included as members, and central government organisations that could potentially participate further in the Plan (*e.g.* Ministries of Science and Innovation, Environment, Housing, or Secretariats of Industry and Energy) and which could add significant value in terms of creating greater synergies across sectors, were not actively participating.

Survey results point to the fact that CATSI, as a tool for consultation, may have been under-utilised. In theory all stakeholders invited to participate in the survey are also eligible to participate in CATSI, either directly (as members), or indirectly via a representative group. However, of this sample, about 46% of respondents (excluding local governments as they participate via FEMP) were not aware of the existence of this high-level advisory board.

It seems the potential of this body to further promote IS goals (especially amongst local governments who deem IS policy as less important) has been under-exploited. Spain could look into further leveraging this organisation, opening membership in its working parties, convening more often, contributing more to forecasting and strategy exercises, including other ministries. Additionally more informal governance mechanisms could be adopted to complement CATSI's work: in Denmark, the Government IT Council acts as a constant "think tank" available to policy makers for continual benchmarking of policies. Japan's ICT Policy Task Force serves a similar function, and Germany holds an annual ICT summit with ministries and regions. Finally, Spain could leverage other entities like the National Observatory for Telecommunications and the Information Society (ONTSI) and the Plan Avanza Technical Office to help support the policy-making process, conducting benchmarks or feasibility studies. ONTSI and the Technical Office could consider working more closely with Spanish universities to support CATSI working groups in developing specific strategies (for instance, in assessing the territorial dimension of ICT sector development to help guide Plan Avanza investments).

Figure 3.9. Effectiveness of CATSI



Source: OECD Plan Avanza survey: Questionnaire for Government Stakeholders.

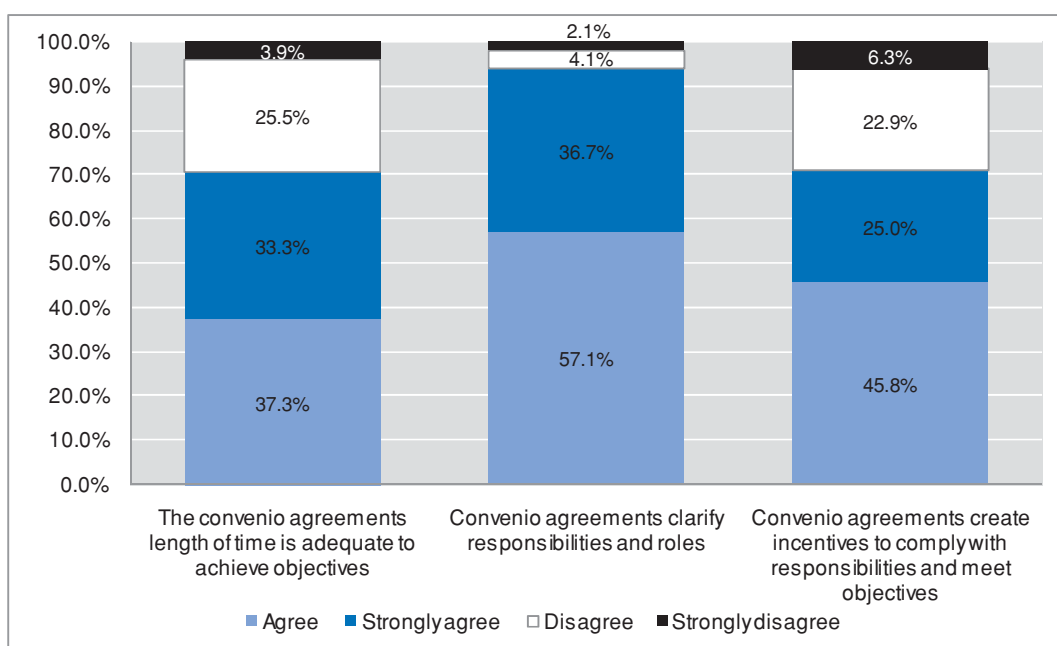
Contracts

Contracts are common governance tools in OECD member countries, as they allow for the management of interdependencies in policy implementation. Indeed, the joint-implementation model adopted by the Plan relied heavily on contracts, which were essential to: *i*) increasing the scope and reach of IS policy in Spain; *ii*) promoting inter-regional convergence; and *iii*) tailoring Plan Avanza policies to specific regional needs. As seen in Chapter 2, this model is based on two kinds of contracts between central and regional governments including: *i*) high-level “umbrella” agreements with regions which are extended annually; and *ii*) multi-year agreements (or addendums to

high-level contracts) utilised to execute specific programmes. The latter often include *red.es* as an additional stakeholder to the agreements.

Overall, the majority of stakeholders were satisfied with the effectiveness of contracts as tools for assigning roles and clarifying responsibilities. That said, however, 29.4% of respondents did not believe the contracts' length of time was adequate to fulfil their responsibilities in implementing programmes, and 29.2% disagreed that the contracts helped ensure compliance with implementation responsibilities. This confirms findings from interviews where it was noted that programme-level contracts were often for one- or two-year periods, and it was necessary in some regions to extend contracts to allow programmes to be completed. Additionally, while contracts set out and creation of working commissions to monitor progress, agreements did not act as structures for incentivising compliance: they did not formally set targets nor did they establish performance indicators for evaluating progress or impact (OECD, 2007b). As we have seen earlier in this chapter, the lack of monitoring and evaluation could be improved, perhaps through the Plan's contracts by integrating measures for oversight, monitoring and evaluation.

Figure 3.10. Note your organisation's view regarding the following statements on *convenio* (contrat) agreements

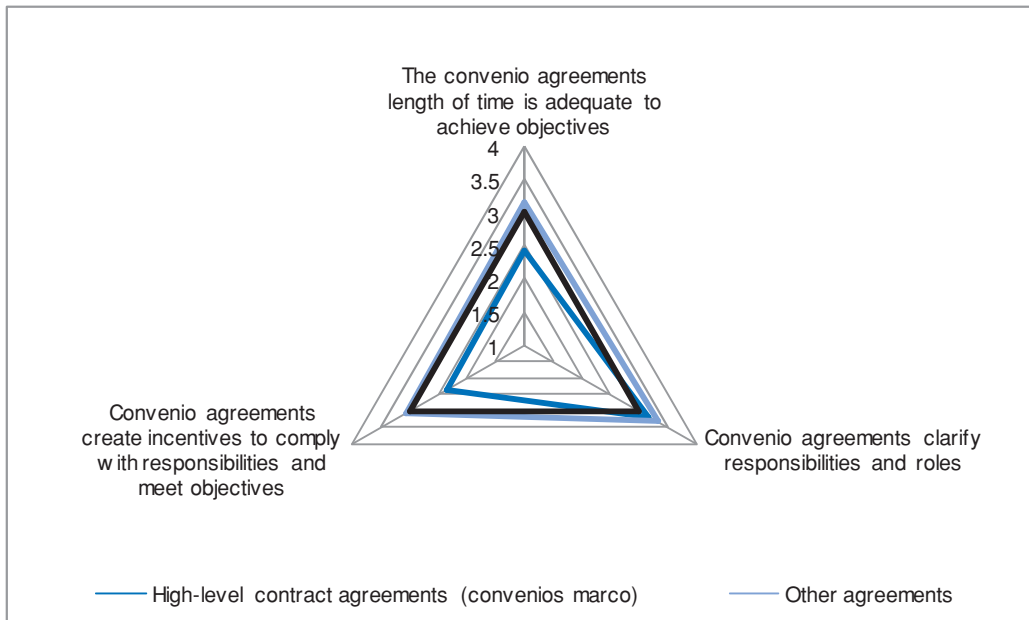


Source: OECD Plan Avanza survey: Questionnaire for Government Stakeholders.

Furthermore, differences were found in the perceived effectiveness of contracts according to type of contract agreement. High-level (*convenio marco*) agreements are signed with each regional government prior to any additional sectoral initiatives. These are **relational** contracts, meant to establish commitment from parties to co-operate. Survey responses suggest that these high-level agreements were less effective than the bi-lateral agreements (addendums) used in education, justice and health. Once more, the black line signifies the threshold of “satisfaction” with the contracts – the greatest difference being in their ability to promote compliance. Fifty-eight per cent of respondents from Science and Innovation (responsible for high-level agreements)

disagreed or strongly disagreed that the contracts' length of time was adequate for fulfilling responsibilities; the same percentage disagreed or strongly disagreed that contracts were effective tools for complying and monitoring milestones; however, all agreed or strongly agreed that these clarified roles and responsibilities.

Figure 3.11. **Effectiveness of contracts**
(1 = strongly disagree; 4 = strongly agree)



Source: OECD Plan Avanza survey: Questionnaire for Government Stakeholders.

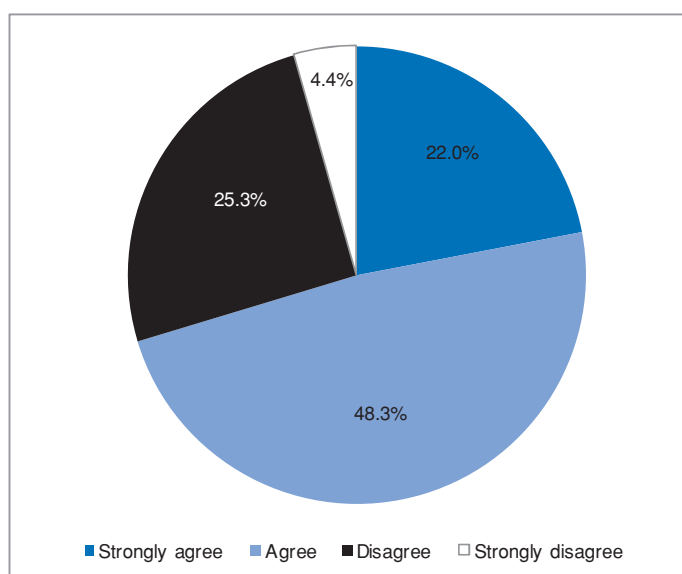
Spain could look to other OECD member countries for ways to improve these co-ordination tools and for tailoring the nature of contracts to the objectives of specific programmes. For example, in ICT infrastructure deployment, other decentralised countries such as Australia have used more “streamlined” contracts: the country has developed joint implementation frameworks between central and sub-national governments which are applied at the programme level; one single framework can be forged for a particular line of work. These agreements ensure that all tiers of government are included (central, regional and local), assign and clarify roles and responsibilities, and outline the distribution of funding from all parties involved. This is in contrast to the approach used in Spain where, currently, Plan Avanza creates individual high-level agreements (*convenios marco*) which exclude local governments. Streamlining this process, or “bundling” initiatives for the three tiers of government under the same contract, could be useful in Spain for at least some programmes such as infrastructure deployment. This could help include local stakeholders more proactively, as well as reduce confusion and delays, help promote better monitoring and evaluation, and build consensus. In the case of ICT deployment this could prove useful as stakeholders in Spain reported co-ordination issues with local governments in attaining licenses and permits. Additionally, in Australia, implementation frameworks have also been extended to programmes executed in co-operation with NGOs. This is a concept that Spain could consider in an effort to strengthen oversight and evaluation mechanisms with third parties.

Co-financing mechanisms

In the case of Plan Avanza the primary purpose of the contracts then is to outline roles and responsibilities and formally set out stakeholders' financial contributions to the programme. However, while in other dimensions the mechanism was perceived favourably (the majority agreed that it provided incentives to pursue IS policy and comply with IS objectives) the greatest area of disagreement with regards to the Plan's co-financing mechanism was whether the model provided financial support to those sub-national governments who needed it most, supporting overall goals for inter-regional convergence: in Figure 3.12, 29.7% of responding organisations did not believe this to be the case. Contention over this issue may stem from assessing only absolute amounts of Plan Avanza funding per region, since the percentage of central government contributions out of total Plan Avanza funds mobilised do seem to reflect the IS needs of regions lagging in national and European averages in key IS dimensions according to criteria discussed in Section 2.2.

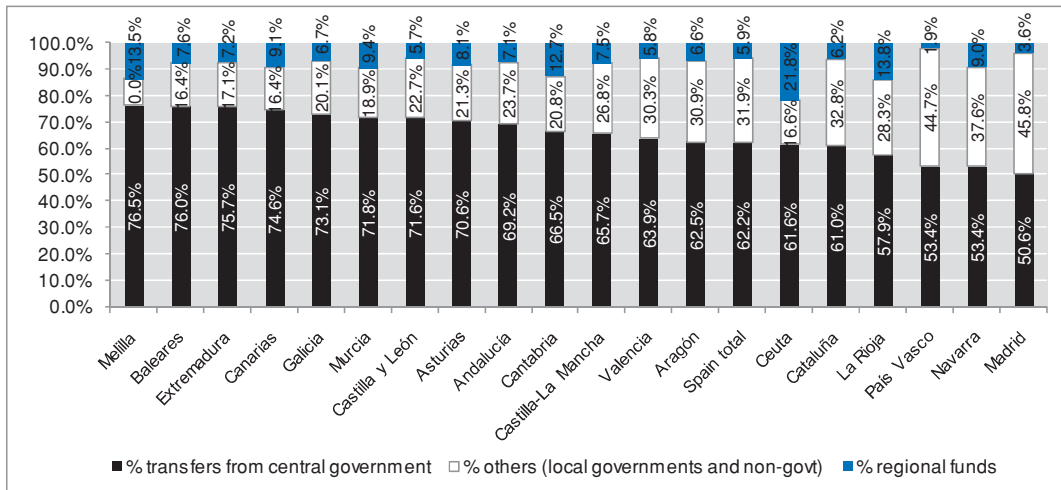
Indeed, when examining the distribution of funds (both including and excluding infrastructures), national government transfers represent a higher percentage of total funds in regions that are arguably more in need of assistance *e.g.* regions with a high percentage of rural areas with mountainous terrain, dispersed populations and lower ICT access and usage. As seen in Chapter 2, about 10% of Plan Avanza funds were destined to infrastructures; 99% of this spending originated from the national government, while regions contributed the remaining 1%. Figures 3.13-3.15 depict the distribution of Plan Avanza funding (by source) in each of the regions, and finally in absolute terms through the co-financing mechanism.

Figure 3.12. **Do Plan Avanza's co-financing mechanisms provide financial assistance to those regional and local governments who need it most?**



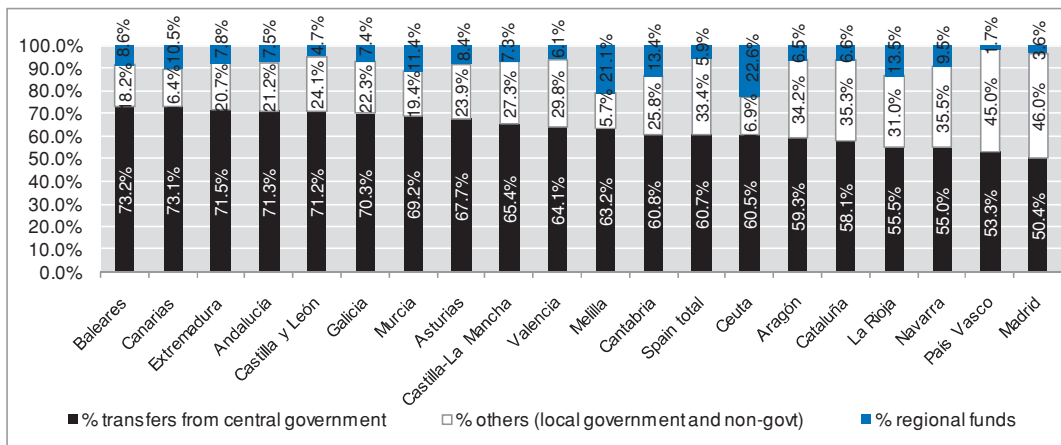
Source: OECD Plan Avanza survey: Questionnaire for Government Stakeholders.

Figure 3.13. Plan Avanza funds mobilised by source (total 2006-2009)
including infrastructures



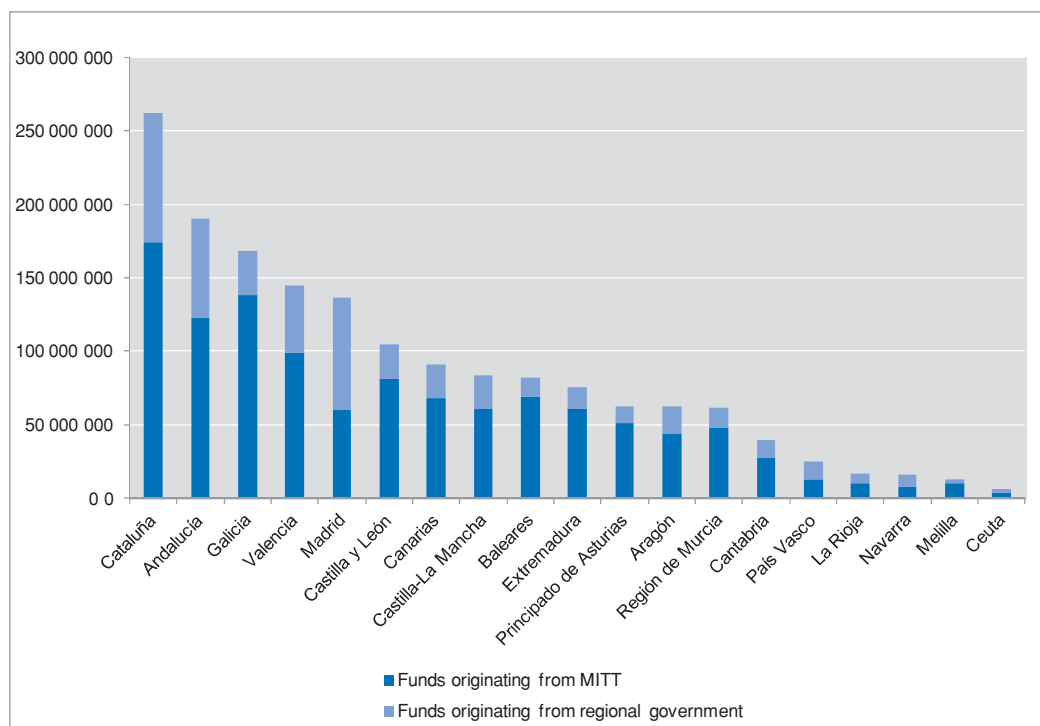
Source: OECD Plan Avanza survey: Questionnaire for Government Stakeholders.

Figure 3.14. Plan Avanza funds mobilised by source (total 2006-2009),
excluding infrastructures



Source: OECD Plan Avanza survey: Questionnaire for Government Stakeholders.

Figure 3.15. Distribution of Plan Avanza funds by region through the co-financing mechanism (total 2006-2009)



A closer look at the way in which total funding was distributed (that is, both through co-financing mechanisms and the remainder), however, may support the case that – with regards to **some** programmes (*e.g.* those targeting citizens meant to promote digital inclusion) – the Plan’s financing schemes could be improved to further contribute to inter-regional convergence and close digital divides. This is due to the fact that approximately 77% of the Plan’s funds were not co-financed by sub-national governments and were solicited directly by recipients. Therefore, regions having larger populations, a greater number of SMEs or stronger ICT sectors, were likely to receive a greater amount of total financing. Indeed, as a result, these two factors can cause some differences between regions in the total support they received from the Plan.

The question then for policy makers is not whether the co-financing mechanism was effective, but rather, whether a greater percentage of the Plan’s funds should be subject to some of the same distribution mechanisms offered by this regime. For Digital Citizenship and Digital Economy funds, the answer to this question will vary by the objectives of specific Plan Avanza programmes, and should consider several factors:

- **Whether funds should be distributed to beneficiaries/regions where they would be most productive:** in the case of Plan Avanza, this approach may apply to programmes supporting innovation, the ICT sector, and to a lesser extent, SMEs. Funds for these purposes may not need to be territorialised since they are likely to be more productive in areas with greater absorptive capacity (*e.g.* with the existing capital – human and financial, stronger presence of the ICT sector, greater market opportunities, etc.) that can yield greater results from public investments.

- **Whether funds should be distributed to beneficiaries/regions most in need:** on the other hand, funds may yield a greater impact where they are most in need. This approach may be more applicable to funds for digital inclusion; that is, funding targeting marginalised citizens and NGOs, and to some extent SMEs. Raising the capacity of lesser developed regions can contribute to national goals.

It is important to note that these conditions are not mutually exclusive and apply to both streams of funding (Digital Citizenship and Digital Economy), and that the objectives (*e.g.* inclusion or economic productivity) need to be aligned with the financing strategy. As discussed in the assessments and proposals for action, revisiting the distribution of funds could mean considering several options:

- A more redistributive funding formula: through the co-financing regime Plan Avanza could contribute a higher percentage of financial support to regions most in need of support for furthering IS goals. With respect to programmes targeting citizens and SMEs, this approach could be extended to a wider range of initiatives to continue to support inter-regional convergence.
- Co-developing Plan Avanza financing strategies with regional governments: Plan Avanza could work closer with regional governments (*e.g.* co-signers of high-level *convenio marco* agreements) to ensure that, within regions, a higher share of funds are directed towards the most relevant issues and needs. Plan Avanza policy makers could also work more closely with the most prioritised regions in the development of project proposals, and territorialised strategies for IS development.
- Improving access to funding for prioritised beneficiaries: the Plan could consider revisiting its distribution channels to ensure that those (citizens) most in need of Plan Avanza support have access.

Horizontal co-ordination is under-utilised; and yet the potential for such collaboration to increase cost-effectiveness and create synergies is great

There are substantial benefits to be gained from horizontal co-ordination, both at the national and sub-national levels of government. For instance, at the ministerial level, further co-operation could help exploit synergies and avoid policy gaps. The realisation of energy efficiencies from the development of green ICTs depends highly on inter-ministerial co-ordination between the ICT sector and housing, Secretariats of Energy and Industry, etc. Increasing the e-skills of unemployed workers may require further co-operation with the Ministry of Labour, and further co-ordination with the Secretariat of Industry can help the Plan better target SMEs.

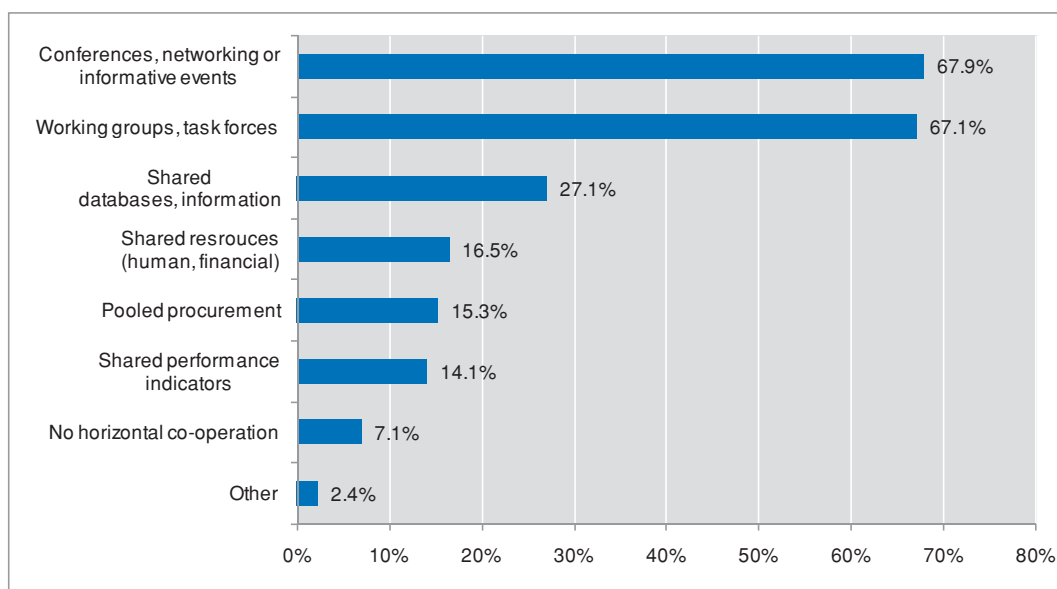
In particular, collaboration with the Ministry of Science and Innovation is critical in supporting the development of the ICT sector and technology-based innovation in SMEs. For instance, there is potential for overlap in objectives with the Ministry of Science and Innovation (MSI), specifically via entities like CDTI (*Centro de Desarrollo Tecnológico Industrial* or the Center for Industrial Technological Development). Although recipients are not eligible to receive funding from both the MITT and the MSI, and the two agencies meet annually as part of the monitoring and evaluation exercise SISE (*Sistema Integral de Seguimiento y Evaluación*, or Integral System for Monitoring and Evaluation), it is possible that potential synergies are not exploited at the strategic policy-level.

At the sub-national level, horizontal co-ordination can be more pragmatic, but just as beneficial. Significant cost-savings can be attained from pooled procurement of ICTs and support services. Regions farther along in implementing eHealth or e-government reforms could share technical solutions and experiences with those regions that are just commencing.

Promoting horizontal co-ordination can be particularly important in times of fiscal consolidation; at the time of this writing, Spain was in the process of implementing strict public sector austerity measures to reduce public debt in face of the crisis. However, stakeholders reported low levels of horizontal co-ordination that could potentially bring about cost-savings such as shared resources or pooled procurement.

Stakeholders were also asked to report the main barriers to horizontal co-ordination. At the central level, the main obstacles cited were the lack of political commitment and leadership as well as the lack of strategic planning. In these cases, high-level policies like the Plan E or the draft Law for the Sustainable Economy, or even the new EU2020 strategy could serve as parting points for discussions on shared goals. Sub-national governments, on the other hand, additionally cited the absence of information of a common framework for co-operation. Formal and informal mechanisms for horizontal co-ordination could be introduced to close this gap and facilitate greater cost-savings. *Red.es* and FEMP may be well placed to act as interlocutors between regions and facilitate inter-regional action on IS policy.

Figure 3.16. Respondants who utilise tools for horizontal co-ordination with the same tier of government (%)



Source: OECD Plan Avanza survey: Questionnaire for Government Stakeholders.

Table 3.7. **Obstacles reported for horizontal co-ordination (ranked)**

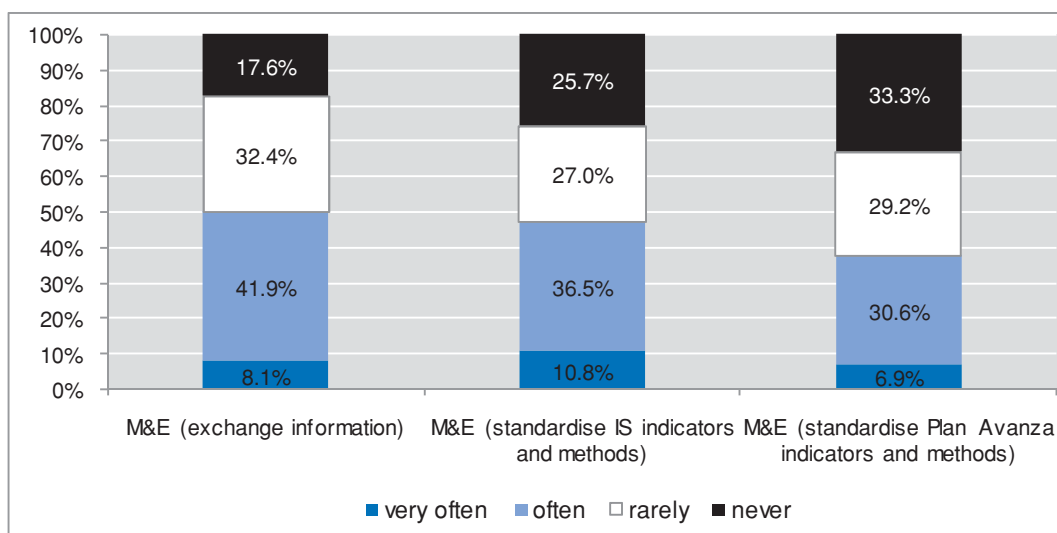
	Sub-national governments	Central government
Lack of political commitment/leadership	1	1
Absence of information or common framework	2	3
Lack of strategic planning and sequencing of decisions	2	2
Lack of incentives to co-operate	2	3
Lack of technical capacity	5	5
Competition for funds	6	6
Lack of dialogue	7	7
Fragmented policies	8	8
No clear designation of roles/responsibilities	9	9
Duplicated policies	10	9
Contradicting policies	11	11

Source: OECD Plan Avanza survey: Questionnaire for Government Stakeholders.

Monitoring and evaluation

The results indicate that co-operation among stakeholders in defining measures for joint monitoring and evaluation was still limited: 33% never co-operated to standardise indicators and methods for measuring the outcomes/results of common Plan Avanza initiatives; and 26% never participated in attempts to standardise indicators and methods. The latter is surprising given that 86% of sub-national stakeholders reported pursuing IS initiatives outside of the scope of Plan Avanza. For the sake of comparability and benchmarking, joint exercises in monitoring and evaluation will be needed much more in the future. *Red.es* and the National Observatory for Telecommunications and the Information Society could act as liaisons between sub-national governments to align reporting/evaluating methods. Large differences between levels of government were not found on this dimension, suggesting this is an issue that could be improved across all tiers.

Figure 3.17. **To what extent does your organisation participate in the following monitoring and evaluating activities regarding Plan Avanza?**



Source: OECD Plan Avanza survey: Questionnaire for Government Stakeholders.

Conclusions: improving the performance of Plan Avanza to maximise results

Survey results confirm observations from interviews and roundtables with Plan Avanza stakeholders; indeed, the Plan has been successful in elevating IS policy onto the national agenda, and it is considered an important initiative for the country's future. However, in the current economic and fiscal climate, co-ordination and governance are more important than ever. Effective multi-level governance can help policy makers optimise existing resources, use funds effectively and target beneficiaries/regions where they are needed most, and act more efficiently to reduce delays and duplications. This is critical given the potential for the Plan to contribute to recovery goals. The survey has already identified some potential areas for improvement:

- Survey and interview results have identified a series of co-ordination “gaps” which could negatively impact the performance of the Plan, especially as IS policy places greater emphasis on “demand-side” initiatives:
 - Strengthening mechanisms for monitoring and evaluation is an issue of importance for all tiers of government. At the national level, it was found that Plan Avanza's reach could be extended to policies aligned with economic recovery.
 - Regional and local governments reported a relatively greater number of obstacles to implementing IS policy: information, capacity and fiscal gaps could be overcome to strengthen their capabilities and reinforce their participation in IS development in times of fiscal consolidation. Local governments in particular face additional barriers resulting from capacity gaps – including both human and financial resources.
 - At the regional level, information gaps related to implementation are an issue. This is not surprising since regional governments possess considerable responsibilities for the implementation of key initiatives. Additional co-ordination mechanisms – both formal and informal – could be considered at this level, and co-signers of high-level contracts could play larger roles in co-ordinating Plan Avanza activities within their regions. Lastly, it was noted during interviews that the lack of a strategy for transitioning ownership from central to sub-national levels was threatening the sustainability of the results, as entities lacked the capacity to carry out new responsibilities once contracts had terminated.
- **Existing co-ordination tools are under-utilised:** overall, the Plan's principal governance tools were perceived as effective by key stakeholders; however, they could be further exploited to help bridge co-ordination gaps and improve impact:
 - The co-financing mechanism is viewed as effective in incentivising participation in IS policy; however, funds which are not included under this regime could be distributed more effectively in order to: *i)* reach beneficiaries/regions most in need; and/or *ii)* ensure funds are allocated where there is absorptive capacity and where they would have greater impact.
 - Co-ordination and implementation tools such as *red.es*, CATSI, monitoring commissions and FEMP could be further leveraged to foster or facilitate horizontal co-ordination, play a larger role in change management, and expand the consultation process. Spain could look to how other IS strategies

in OECD member countries use additional – formal and informal – mechanisms to improve co-ordination. The working commissions, for instance, are not heavily utilised other than to validate contracts between tiers of government. These institutions and mechanisms already exist, and are critical for bridging some of the co-ordination gaps identified.

- Contract agreements could do more to incorporate mechanisms for performance management and evaluation; high-level contracts in particular were seen as less effective in terms of promoting compliance with objectives and allowing sufficient time for planning and programme implementation. Furthermore, they could also be adapted to allow for an easier transition of ownership between parties.
- Examples of co-ordinating bodies are plentiful in other IS strategies of OECD member countries which demonstrate the importance of establishing informal co-ordination tools. Germany's Annual IT Summit between ministries and sub-national governments; Denmark's Government IT Forum; or annual meetings in Korea between ministers and local governments are all platforms that – though not binding mechanisms – can greatly facilitate vertical and horizontal co-ordination and improve the exchange of information. Territorial representatives, *e.g.* co-signers of high-level agreements, could play larger roles in co-ordinating Plan Avanza initiatives being implemented in their territories. In Spain, there is a commission named the *Conferencia Sectorial de Telecomunicaciones y de la Sociedad de la Información* which could be further leveraged.
- **Horizontal co-ordination is under-exploited:** increasing horizontal co-ordination at both central and sub-national levels could help optimise resources and avoid policy gaps. In interviews with regional and local governments, stakeholders recognised the need for greater horizontal co-ordination but called for greater leadership and support to carry out such measures. In addition to regional governments themselves, the SSTIS, *red.es* and the Spanish Federation of Provinces and Municipalities are possible candidates for facilitating these exchanges.
- Amongst central government organisations: the lack of inter-ministerial co-ordination can endanger the momentum that IS policy has gained thus far. Co-ordination gaps between Plan Avanza policy makers and those of Science, Technology and Innovation policy are noted despite close ties between their objectives. The same is true with co-ordination with the Secretariat of Industry on issues related to the development of SMEs. Lastly, lack of inter-ministerial co-ordination on energy, green growth, and housing was also noted in interviews, although a new inter-ministerial commission was recently launched.
- Amongst sub-national governments: horizontal co-ordination at the sub-national level has the potential to help maximise economies of scale and reduce costs, especially after *red.es* transfers ownership of projects/programmes. As it stands, MLG tools that could be used to optimise resources (*e.g.* pooled or joint procurement) are under-utilised.

Effective multi-level governance is not only important for optimising resources but it will also become increasingly essential as Plan Avanza 2 places greater priority on “demand-side” policies (*e.g.* those that leverage existing investments in ICT infrastructure by spurring the take-up/usage of ICTs and digital services). Efforts to increase ICT skills, incentivise usage, and improve the responsiveness of digital public services, for example, will hinge on the effectiveness of partnerships between stakeholders, since sub-national governments have considerable competencies in each of these dimensions. The following chapter discusses the impacts of the Plan thus far on citizens, businesses and the public administration, demonstrating how the movement to policies for ICT take-up and usage are expected to gain priority.

Chapter 4

Delivering benefits to citizens, businesses and the Spanish public administration

In the context of the S-curve framework, this chapter assesses the progress made since 2005 in incorporating citizens, businesses, and government organisations into Spain's information society according to selected indicators on ICT diffusion, access and use. The assessment on progress made since the launch of the Plan is also complemented by perceptions from stakeholders on the contribution of the strategy to IS objectives in the sectors of education, health and justice. The chapter also examines progress made in the diffusion of ICT infrastructure such as broadband and telephony networks.

Box 4.1. In this chapter

Plan Avanza has created a strong momentum for furthering information society (IS) policy in Spain, mobilising close to EUR 9 billion over 4 years from national, sub-national and non-governmental stakeholders. But what have these important investments contributed to wider societal goals: public sector modernisation and increasing citizens' trust in government; creating job opportunities and preparing a future work force for a competitive, globalised economy; supporting economic reform; improving citizens' welfare and promoting equity? Chapter 4 takes inventory of the Plan's main achievements thus far and its remaining challenges for the future, reflecting on how the next phase of the Plan can best serve society through 2015. Some topics discussed include:

- the difficulties of measuring the impact of IS policies, and how the S-curve framework can provide policy makers with a more comprehensive perspective in the analysis of results;
- what the Plan's stakeholders report about the effectiveness of Plan Avanza's main initiatives to date, and whether IS indicators reflect these perceptions from "on the ground", and the key achievements and remaining gaps of the Plan Avanza strategy with regards to end-users: citizens, businesses and the public administration.

Key findings

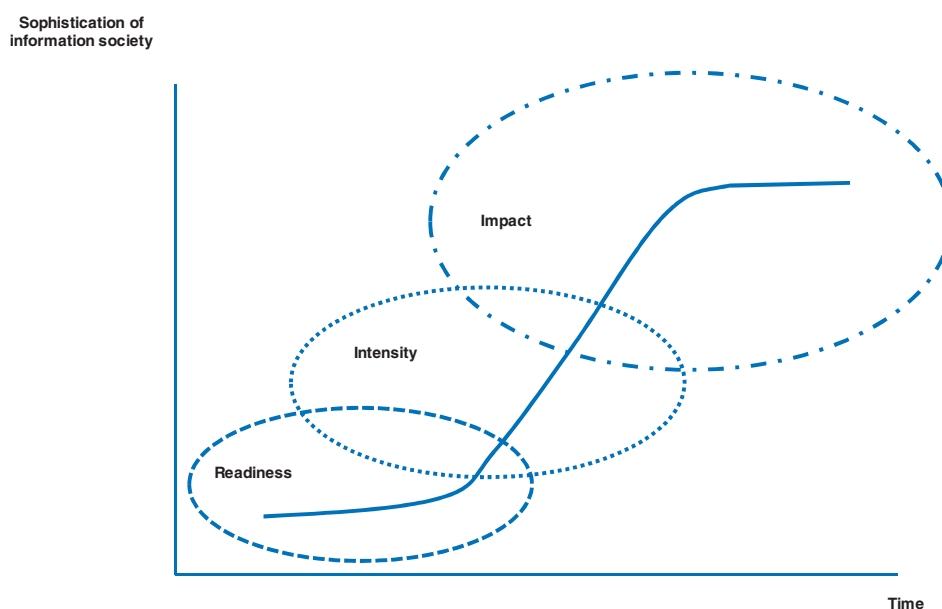
- It is evident that since its launch in 2006, Spain's information society has made considerable progress in increasing its state of "e-readiness" (*e.g.* the availability of key ICT infrastructure on which the continued development of ICT goods and digital services depends): access to online public services, broadband, and the diffusion of ICTs have increased substantially. Some sectors like education – and to a lesser extent health – have reached a tipping point, signalling that measures to increase usage and take-up could receive greater priority (*e.g.* "e-intensity"). Furthermore, the Spanish ICT sector, though not immune to the crisis, has demonstrated resilience relative to other segments of the economy, and shows promise as a driver of future growth and innovation. It is difficult to ascertain, quantitatively, the extent to which Plan Avanza has contributed to these achievements; this chapter therefore complements data on the evolution of the Spanish information society with perceptive data from key stakeholders regarding the influence of the Plan on key information society objectives.
- Considerable progress has been made; however, if Plan Avanza 2 is to achieve its goal of consolidating Spain as a leading European knowledge economy, strong e-readiness is necessary but, alone, insufficient. It is clear that Plan Avanza 2 marks the start of a shift in the national IS agenda – a more challenging, transitional phase awaits. The next phase of the Plan faces the difficult challenge of striking a greater balance between e-readiness and e-intensity measures, as leveraging existing accomplishments in ICT diffusion relies on whether policy makers can achieve greater equilibrium between these two dimensions.
- What's more, at this point of information society development, especially with regards to citizens and SMEs, existing e-readiness objectives could be refined. In order to increase aggregate levels of progress, continued efforts centred on ICT diffusion should be targeted to specific sub-groups of those currently prioritised by the Plan. This approach not only has implications for what policies are prioritised under the next Plan (*e.g.* what regions, socio-economic/demographic groups or sectors), but also for the choice of policy instruments used.

Introduction: from measuring ICT diffusion to measuring impact, a bumpy road

After more than four years after its launch, there is little doubt that Plan Avanza has left a mark on Spain's information society: there is greater public and political awareness about the importance a strong knowledge economy has for the country's future, stakeholders are increasingly active in IS policy, and a growing number of sub-national governments and NGOs are participating more ambitiously in the Plan. While these accomplishments have established an impressive momentum in furthering the IS agenda in Spain, the challenge for policy makers remains in establishing what benefits have been achieved for targeted beneficiaries. This chapter contributes to this goal, taking a closer look at how the Plan's initiatives have affected citizens, businesses and the public administration. As the backbone to these achievements, progress in the deployment of key ICT infrastructures are also examined.

But what constitutes a successful IS strategy? How is the impact on society defined in the context of IS policy? One way of examining the results of IS strategies is by utilising the S-curve framework (OECD, 2009b: 12), which establishes three phases of IS development: e-readiness, e-intensity and e-impact.

Figure 4.1. Assessing information society development: the S-curve model



Source: OECD elaboration, based on model by Industry Canada.

- **e-readiness:** e-readiness refers to the extent to which the technological, commercial and social infrastructures necessary to support a competitive information society have been established. The definition also extends to the quality of these infrastructures. Because ICT infrastructures serve as platforms for the development of ICT goods and ICT-supported services, e-readiness indicators allow policy makers to construct a statistical picture of whether an information society is capable of supporting the development and use of these additional applications.

- **e-intensity:** e-intensity indicators, on the other hand, assess the extent to which ICTs and ICT-supported services are exploited by users. Indicators on ICT-usage, the frequency and purpose of their use, as well as the quality of services provided can help establish a benchmark for whether the ICT infrastructure developed in the e-readiness stage has the **potential** to provide added value to society, the next stage of the S-curve.
- **e-impact:** the ultimate goal of IS policies is to maximise the potential of ICTs to contribute to social and economic outcomes. In this context, e-impact refers to the value that is created by the usage of ICT platforms and ICT-supported services. Measuring the impact of IS policies, then, involves determining whether – and to what extent – ICTs have contributed to increasing efficiency and cost-effectiveness, produced savings, created new sources of wealth, or generated welfare for citizens.

What are some indications that a “tipping point” has been reached between one phase of the S-curve and another? In addition to monitoring data representing the progression of ICT access, usage and/or value-creation, an additional signal that suggest policy makers should begin to consider shifting priorities is the decreasing cost-effectiveness of current policies. Indeed, broad-based policies aimed at the whole society or economy become less effective over time due to diminishing returns. For example initiatives to increase broadband adoption in rural households will (eventually, with progress) mean that adoption rates slow, and investments/efforts made in communications, subsidies, etc. to extend broadband services will be less cost-effective with time. This requires that, in transitional phases of the S-curve, policies become more targeted and precise: seeking to impact specific socio-economic or demographic groups or specific sectors. It is through reaching the specific groups that are farther behind in IS development that, at an aggregate level, greater progress can be made.

Relative to measuring states of readiness or intensity, measuring the impact of IS policies can be more problematic. Indeed, measuring ICT-supported value creation in terms of such factors as the amount of revenues generated from e-commerce, the growth of the ICT sector, trust in government, satisfaction with public services, or the perceived quality of life – and linking these to the investments and efforts of IS policies – is a challenge for policy makers due to the following three issues:

- **The magnitude of the impact of ICTs on socio-economic outcomes varies and can be difficult to quantify.** In some instances, underlying causality mechanisms remain the subject of ongoing research. Although a general consensus exists among policy makers and researchers about the positive role that ICTs can play in pursuing socio-economic objectives, research is ongoing to measure the scale of these effects.
- **A multitude of externalities can affect IS targets.** IS strategy objectives are broad, and such outcomes depend on a host of externalities and macroeconomic conditions. Isolating the influence of ICTs from that of other factors can complicate policy makers’ assessments.

- **The development of outcome-based – or impact – indicators for IS strategies is ongoing:** until recently, the evaluation of IS policy has focused on: *i)* access/coverage of ICT goods and services; and *ii)* take-up/usage of services supported by ICTs or the Internet. Efforts are underway to complement such indicators with those that assess the outcomes, and international stakeholders are co-operating to reach a consensus on standardised definitions and methodologies for comparison.

Box 4.2. The challenges of measuring e-impact: the productivity paradox in education

In the sector of education, the productivity paradox presents one example of some of the aforementioned challenges of measuring e-impact. For instance, an increase in productivity is expected to follow the adoption of a new technology and justify the corresponding investment. But, as the productivity paradox states, what actually happens if a new technology is adopted in a context in which processes are not changed, technology may be found to be useless, if not obtrusive, and in many cases may even lead to a decrease in productivity.

In education, technology is a tool that can be used for a variety of purposes. Whether the adoption of technology leads to improvements in educational performance will depend on whether its introduction contributes to changes in the learning process or in the educational system which will produce measurably better outcomes. Without such changes, and when technology is used merely to maintain an existing pedagogical process or structure, the positive results may be limited, especially over the longer term. Additionally, improvements associated with changes in methodology require appropriate technical and pedagogical support.

The right question, therefore, is not which new technology leads to increased productivity, but which new technology-supported methodologies improve student performance over traditional ones and what other factors intervene. The almost infinite array of methodological possibilities makes this kind of investigation extremely difficult, but it is not impossible provided that sufficient effort is devoted to the accumulation and dissemination of the resulting knowledge base.

Some of the pieces already available of such a knowledge base are well known, but the resulting landscape is still fragmentary. For instance, two examples of existing research-based knowledge are that the adoption of technology in the classroom increases the motivation and level of engagement of students in the classroom, and, as the most recent OECD report on the use of technology and educational performance using PISA data shows, there is sustained evidence that home use of technology by 15-year-olds is linked to educational performance. Yet, such a link cannot easily be made in respect to the use of technology in school, partly because of the productivity paradox (using technology to teach the same way), and partly because of the threshold effect (insignificant levels of technology use in the classroom that can hardly be compared with the engagement of today's learners with technology at home).

Source: OECD (2010), Are the New Millennium Learners Making the Grade? Technology Use and Educational Performance in PISA, OECD Publishing, Paris.

4.1. The S-curve framework and analysis of Plan Avanza

Conceptualising the progress made under Plan Avanza in the context of the S-curve framework has implications for the appraisal of the Plan. First, while policy makers should always strive for ICTs to create value for end-users (*e.g.* the e-impact phase), to be

useful for purposes of planning next steps and the design of future policies, assessments must also reflect the current state of IS development. For example, it may be less pragmatic to conclude that Plan Avanza policies have had little influence on increasing the productivity or competitiveness of the Spanish economy – goals corresponding to an information society in the e-impact stage of development – if the initial goal of the Plan was to diffuse ICTs amongst SMEs and public sector organisations. This is not to say that such conclusions are not valid, but rather that they should also be considered in the context of the original objectives. The S-curve framework offers this more comprehensive perspective, which can give policy makers information about the feasibility of pursuing more ambitious strategies, and whether they are likely to be successful given the current level of IS development. In the case of Plan Avanza, this holds especially true. As the first major national strategy in IS policy, the Plan's activities have largely focused on the e-readiness-related dimension; additional, but fewer, of the Plan's resources were dedicated to activities to promote e-intensity. Assessment of the strategy in this chapter therefore reflects these initial priorities, drawing largely from indicators corresponding to ICT diffusion and accessibility. Indicators corresponding to e-intensity (*e.g.* usage, take-up) are presented with a view to establishing and prioritising areas for future work.

Second, because of its stratified, path-dependent, perspective to IS development (*e.g.* e-impact cannot be achieved without first achieving e-readiness and e-intensity), the S-curve framework takes into account different countries' starting points when assessing their current state of IS development. In this context, convergence with international IS leaders remains important; however, the rate of convergence is an additional element of interest brought to the forefront by the framework. In evaluating Plan Avanza (where data is available), this chapter focuses strongly on examining improvements over time (comparing the latest data with that of 2004/2005, before the Plan was launched). Certainly, these evolutions are assessed relative to the IS developments of other EU and OECD member countries, as they are in the section concerning the ICT sector and ICT-use by citizens.

Lastly, the model's three distinct phases imply that the objectives, priorities and barriers of IS strategies change over time according to the evolution of the information society along the curve. To be responsive to IS needs, policy makers must be able to successfully tailor objectives and priorities to those needs. Additionally, it is difficult to ascertain, quantitatively, the extent to which Plan Avanza has contributed to information society achievements. For these two reasons, this chapter therefore complements data on the evolution of the Spanish information society with perceptive data from key stakeholders regarding the influence of the Plan on key information society objectives, and stakeholders' satisfaction with the Plan Avanza initiative itself. As a first step in advancing the IS in Spain, stakeholders were asked to reflect on whether the right objectives were pursued, and whether they were satisfied with the contribution of the Plan thus far to IS objectives in their fields.

Considering these three elements, this chapter evaluates the Plan's progress since 2006 according to: *i)* stakeholders' perception of the objectives and initiatives pursued; *ii)* progress over time in comparison to other countries; and *iii)* e-readiness indicators as the main means of evaluating achievements, with usage/intensity indicators analysed with the purpose of judging whether the Plan has reached the "tipping point" between e-readiness and e-intensity.

The remainder of the chapter then, is divided as follows: *i*) a brief overview of this chapter's key results; *ii*) stakeholders' perceptions of the effectiveness of the Plan; *iii*) the evolution of progress in terms of ICT infrastructures; *iv*) the ICT sector and SMEs; *v*) citizens; and finally *vi*) results of the Plan in the public sector – the modernisation of the education, health and justice sectors. Stakeholders' appreciations of specific programmes are included throughout to complement data.

4.2. Overview of chapter results

Prior to detailing the progress of IS development in citizens, businesses and the public sector, this section provides an overview of the results presented throughout the chapter. The principal conclusion of this chapter is that Plan Avanza has contributed considerably to increasing the e-readiness of the Spanish information society (*e.g.* the availability of key ICT infrastructure on which the continued development of ICT goods and digital services depends). To maximise the potential of ICTs to create value for society, however, and to leverage the investments made thus far in ICT diffusion and deployment, future efforts under Plan Avanza 2 may require a greater balance of e-readiness and e-intensity measures. This shift implies a greater focus on ICT skills and end-users in order to promote take-up and usage, and may require greater co-ordination with sub-national governments since they have high levels of autonomy in delivering the public services where the Plan has been active (*e.g.* local governments and the health, education and justice sectors). What's more, at this point of development – especially with regards to citizens and SMEs – policy makers could consider refining e-readiness objectives: continued efforts to increase ICT diffusion may need to be more targeted and precise if they are to increase aggregate levels of progress. This approach not only has implications for what policies are prioritised under the next Plan (*e.g.* what regions, socio-economic/demographic groups or sectors), but also for the policy instruments used. This may require a change from broad-based initiatives to more precise policy instruments, with criteria that are conducive to new e-readiness goals.

Important achievements have been made in increasing broadband and mobile phone coverage, thus increasing the availability of Spain's core telecommunications infrastructure. Additionally, Spain is one of the first countries in Europe to have made the transition to digital terrestrial television. While progress over the past four years has enabled a multitude of initiatives in other sectors (education, health, justice, e-government, etc.) and contributed to closing digital divides in society, connectivity issues remain for some rural regions. New programmes under Plan Avanza 2 such as the Universal Broadband initiative and measures to promote next generation ICTs promise to consolidate accomplishments in boosting e-readiness and create a great number of opportunities for the immediate future such as the development of DTT-enabled services. Reducing broadband prices and promoting competition in the telecommunications market through more effective regulatory measures could also contribute to increasing broadband access and contribute to addressing socio-economic "digital divides" in Spain, which up until now were not among the top priorities of the Plan.

An additional challenge for Plan Avanza 2 is ensuring that citizens benefit from the strategy's successes in improving telecommunications infrastructure by increasing broadband adoption in households and Internet-use amongst citizens, particularly those at a high risk of digital exclusion. Rates of progress were positive from 2006-2009: in some regions and demographic groups these exceed average national convergence rates, while in others further efforts may be needed. To be successful in closing digital divides, Plan

Avanza 2 could address inter-regional variations in the advancement of IS policy more ambitiously since, without promoting inter-regional convergence within the country, international convergence in certain IS dimensions will remain difficult. Policy instruments then could be better aligned to these goals. For example, many subsidies for promoting e-inclusion are not territorialised nor are criteria particularly aligned with those most in need of intervention.

Furthermore, the Spanish ICT sector, though not immune to the crisis, has demonstrated resilience relative to other segments of the economy, and shows promise as a driver of future growth and innovation. It is important that the Plan's interventions to support the continued development and competitiveness of this sector be closely tied to wider national initiatives for economic recovery and promoting structural change. For example, the development and application of green ICTs could contribute to efforts to increase sustainability and energy efficiency, key goals of the draft Law for the Sustainable Economy. Additionally, further efforts may be needed to promote diffusion and take-up of ICTs in SMEs and to grasp opportunities for the internationalisation of the Spanish ICT sector abroad.

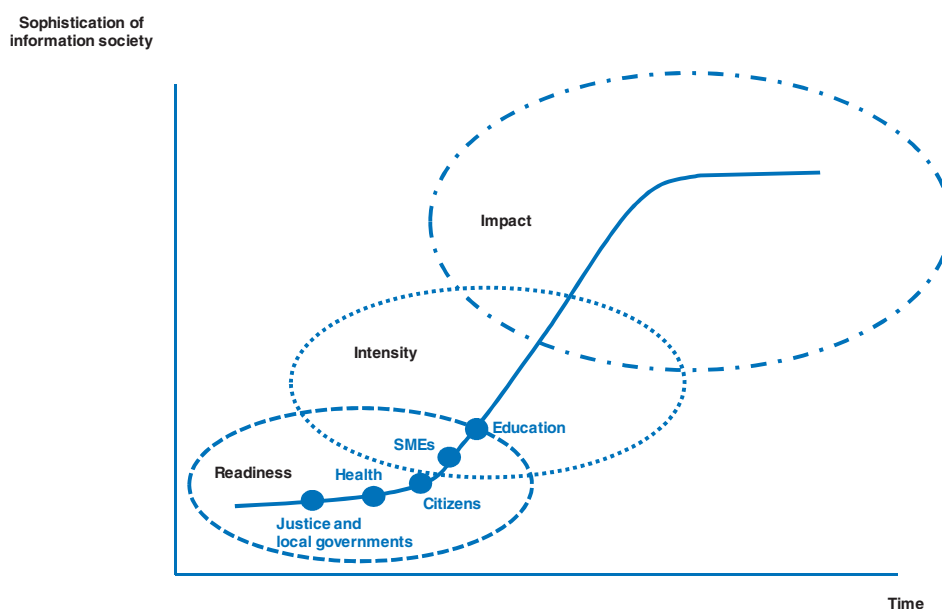
In the areas of education, health and justice, the picture is also mixed. Education, and to a lesser extent health, have made large strides in ICT diffusion in the education and health systems, but data and survey results suggest that generating impacts for end-users (*e.g.* students, teachers, parents, patients, physicians, etc.) will require a greater focus on increasing intensity, *e.g.* usage. In the case of education, barriers to take-up include a lack of e-skills and awareness amongst educators about the benefits of ICTs for teaching and learning. In the health sector, there are a great deal of opportunities for telemedicine and efficiency/cost reduction gains that have yet to be exploited. In the case of justice, where the integration of ICTs is fairly nascent, the focus should remain on modernisation efforts to digitise records and incorporate ICTs in courts.

Figure 4.2 represents a subjective positioning of different sectors/target groups along the S-curve based on the data and survey results presented in this chapter.

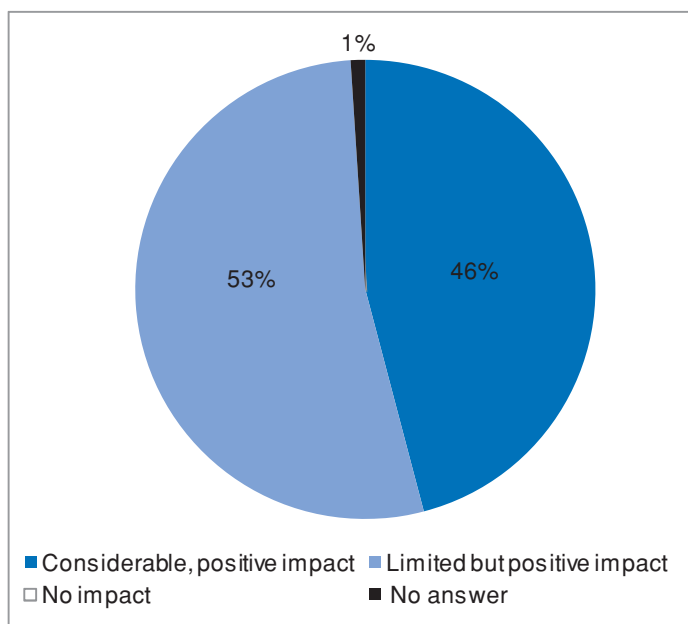
It is clear that Plan Avanza 2 marks the start of a shift in the national IS agenda – a much more challenging, transitional phase awaits. IS policy makers must be prepared to optimise resources under budget constraints without sacrificing the social and economic impacts of IS policies which are critical for economic recovery. This will mean prioritisation (*e.g.* more precise e-readiness objectives), choosing the right policy instruments, and distributing resources strategically.

Stakeholders' general perceptions of Plan Avanza: survey results

Overall, stakeholders are pleased with the effect of the Plan in furthering IS goals in Spain: the majority of those surveyed (53%) reported that Plan Avanza has had a limited, but positive effect on the country's information society. Meanwhile, a very large percentage (46%) perceived a considerable, positive impact. Perhaps the most telling result, however, is that no organisation responded that the Plan has had "no impact". surprising in a sample of 99 organisations. This level of support perhaps reflects the largest achievement of the Plan: mobilising stakeholders and elevating IS policy onto the national agenda. Indeed, as will be presented throughout this chapter, clear progress has been made in strengthening the building blocks of Spain's information society; it seems that stakeholders are also recognising these important steps forward.

Figure 4.2. **Current states of IS development (chapter overview)**

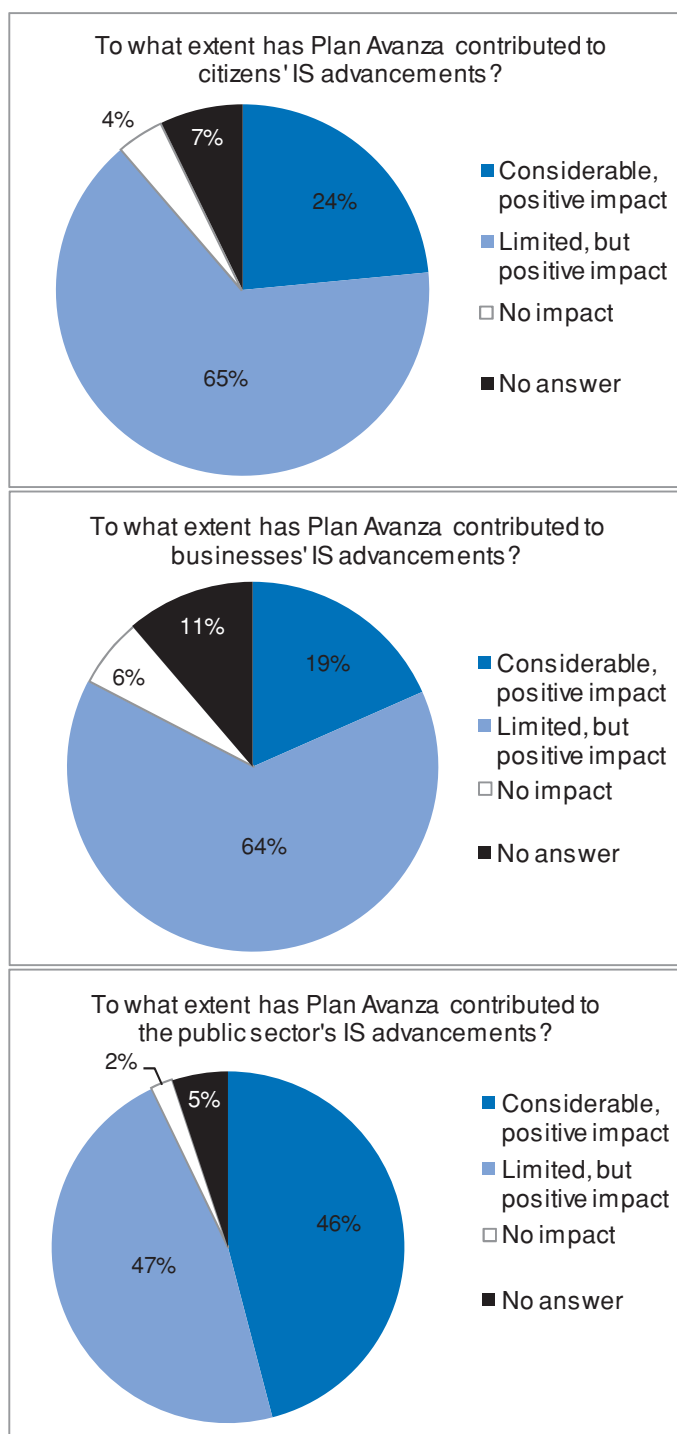
Source: OECD elaboration, based on model by Industry Canada.

Figure 4.3. **Since its launch in 2006, what contribution has Plan Avanza made in advancing Spain's information society?**

Source: OECD Plan Avanza survey: Questionnaire for Government Stakeholders.

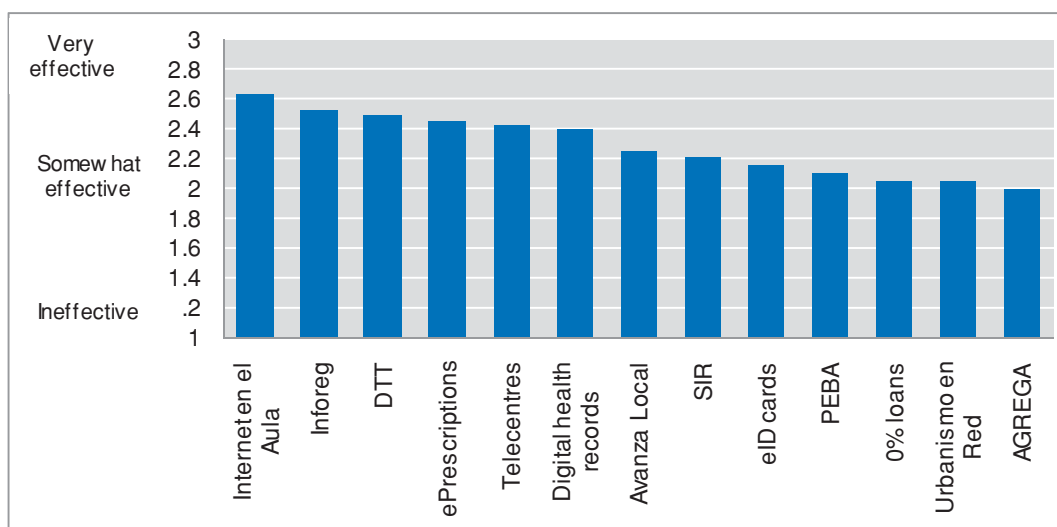
With regards to targeted end-users, the Plan is also viewed in a generally positive light. Once more, the majority of respondents perceived the impact thus far as limited, but positive. The exception is the perceived impact of the Plan on the public administration: 46% of respondents considered that the Plan's initiatives in the public sector have had a considerable, positive impact. Indeed, as we will see in this chapter, initiatives aimed at supporting modernisation and e-government efforts across the administration have been amongst the most marked achievements of the Plan.

Plan Avanza stakeholders were also asked to reflect on the effectiveness of specific programmes and all were rated as being, at least "somewhat effective" in achieving their objectives. *Internet en el Aula*, the programme to integrate ICTs in schools, was rated as the most effective programme, and – as will be shown in this chapter – this result is in line with data which demonstrate considerable progress in this sector. Certainly, the education sector is perhaps the most advanced in terms of e-readiness. Programmes such as the PEBA initiative, the 0% interest loans for ICT equipment and internet service, *Urbanismo en red* (e-government application for municipalities) and *Agrega* (the digital learning resources repository) were rated less effective in comparison. Certainly, these results may be warranted: broadband extension to rural areas has increased but connectivity and access issues remain in these regions. Additionally, the 0% loans may not have had clear effects on closing digital divides as they may not have been reaching those the most at risk of digital exclusion. Local government stakeholders noted in interviews that they lacked the capacities to implement such programmes as *Urbanismo en red*, which form part of the wider Avanza Local Programme to promote e-government in local governments. Finally, stakeholders in the education sector reported that *Agrega*, though an important step forward in increasing the use of digital content in schools, suffered from the lack of use since educators were not yet adopting this tool in great numbers. It is necessary to note, however, that *Agrega* was a relatively new initiative at the time of writing. These results point to the existence of important barriers that will need to be addressed to increase the impact of the Plan, and will be discussed in further detail in this chapter.

Figure 4.4. **Plan Avanza's contributions to citizens', businesses' and public sector IS goals**

Source: OECD Plan Avanza survey: Questionnaire for Government Stakeholders.

Figure 4.5. Perceived effectiveness of Plan Avanza programmes (averages)



Source: OECD Plan Avanza survey: Questionnaire for Government Stakeholders.

4.3. Plan Avanza and ICT infrastructure: strengthening the foundation of an information society

Telecommunications infrastructure deployments within the Plan Avanza framework largely relied on three main plans: the Mobile Telephony Extension Plan (E-GSM), the National Broadband Extension Plan (PEBA) and the Strategy towards DTT (digital terrestrial television) Transition. A summary of impacts will be provided in this section in order to highlight the main results and position Spain among OECD member countries in terms of infrastructure deployment.

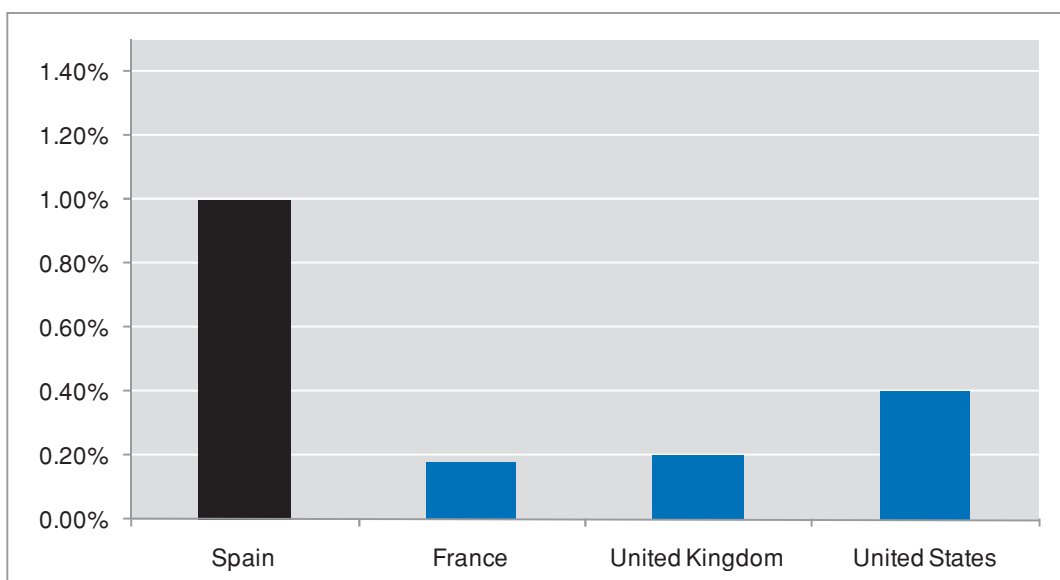
The Mobile Telephony Extension Plan (E-GSM)

As Box 2.4 points out, Spain used the spectrum licensing process that took place in 2005 to attach specific selection conditions, and included obligations to extend mobile telephony to “general interest” areas, *i.e.* rural areas, strategic areas (nuclear power plants, oil refineries and chemical industries), and newly built highways and high capacity railways, or existing ones with insufficient coverage. For the first time, 1.1 million people were provided with mobile telephony availability (around 2.3% of the population) as a result of the commitments made by the operators, who invested EUR 552 million in these “general interest” areas.

At that point, the innovative approach towards spectrum licensing was that it included obligations to extend mobile telephony infrastructure and services. Unlike other countries that have prioritised public revenues when awarding spectrum licenses, Spain’s focus was coverage extension, by attaching a coverage and deployment obligation to the licenses. Whether the right choice was made by using this instrument depends on a number of factors, such as the operators’ expected deployment plans, the outcome of a potential auction (where in principle much higher public revenues are expected), and the geographical characteristics of a given country (as some countries may be entirely covered by the market and therefore no public action is necessary).

Major efforts were made to increase mobile telephony coverage. However, the share of the population with no coverage still remains high when compared to selected countries (France, the United Kingdom or the United States), and is estimated at less than 0.5 million people (Figure 4.6). Mobile penetration (107.9 lines/100 inhabitants) remains high in relation to the OECD average (96.1) (OECD, 2009g),¹ although the compound average growth rate (CAGR) was only half (4.7% against 9.7%) during the 2005-2007 period.

Figure 4.6. **Mobile telephony (% of unserved population)**



Notes: France: the data come from the Autorité de régulation des communications électroniques et des postes (ARCEP) (2009), “La couverture en téléphonie mobile en France”, French Government, Paris, www.arcep.fr/uploads/tx_gspublication/synt_et_rap-bilan-couv2G-aout09.pdf; Spain: the data come from the Ministry of Industry, Tourism and Trade; United Kingdom: the data come from OFCOM (n.d.), “Telecoms Charts”, OFCOM, London, www.ofcom.org.uk/research/cm/cmnr08/telecoms/; United States: the data come from the United States Federal Communications Commission (FCC) (2009), “Thirteenth Report”, DA-09-54, Washington, D.C., http://hraunfoss.fcc.gov/edocs_public/attachmatch/DA-09-54A1.pdf.

Broadband availability, penetration and pricing

Broadband availability and speeds

Availability may in broad terms be qualified as in line with the OECD average. A considerable effort has been made by the PEBA and other regional broadband schemes. Even though broadband coverage indicators are far from being harmonised and countries still have to find ways to produce more comparable indicators, some work has been done on the issue, namely in “Indicators of Broadband Coverage” (OECD, 2009h and the OECD Broadband Portal.). While comparisons should be made with caution as the figures represent heterogeneous indicators and averages are made across them, Spain’s DSL and cable modem availability are slightly above the OECD average, with roughly 96% of the population with DSL availability and 60% of households having cable modem coverage (Figure 4.7).

However, fibre-to-the-home and fibre-to-the-building (FTTH/B) deployments have hardly started yet, with the exception of limited deployments in some big cities.² While around 10 OECD member countries have FTTH/B availability near or above 10%, Spanish operators have frozen their fibre investments and coverage lies between 1 and 2% of households (Figure 4.8). As a result of low investments in infrastructure, particularly in fibre, Spain’s average advertised broadband download speed is 12.8 Mbps (median speed in Spain is 6.1 Mbps), the 6th lowest among OECD member countries, while the OECD average is 30.55 Mbps (OECD median speed is 12.28 Mbps). Figure 4.9 shows advertised broadband speeds, as compared by the OECD Broadband Portal. While it does not represent actual download speeds, it provides an overview of available broadband offers in terms of advertised download capability.

Figure 4.7. DSL and cable modem coverage

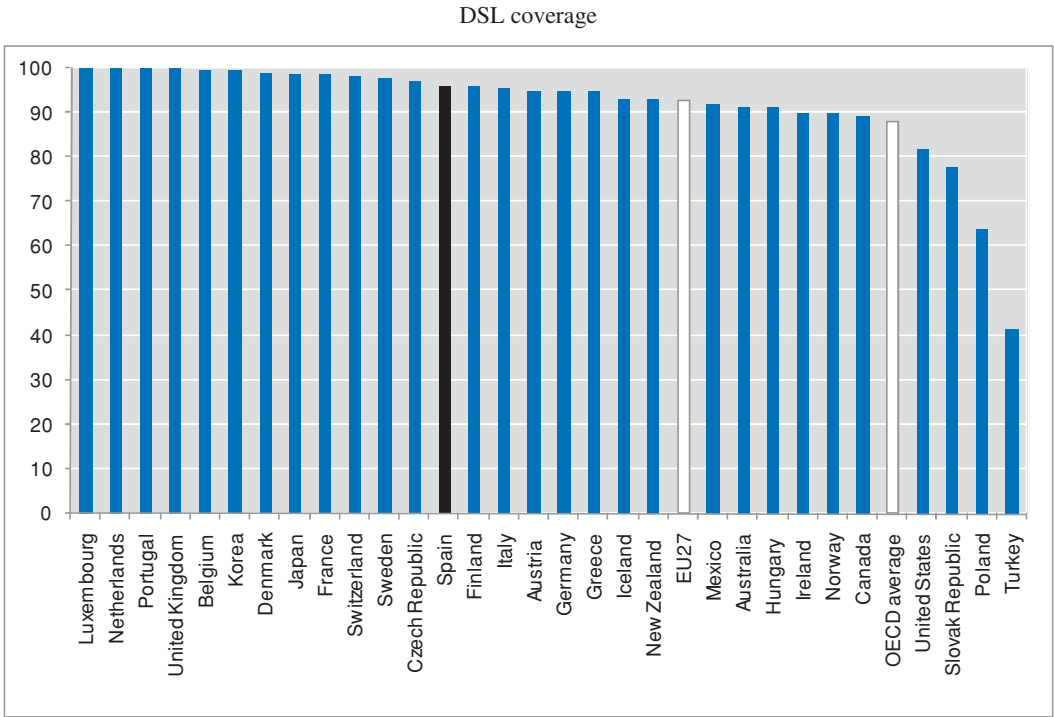
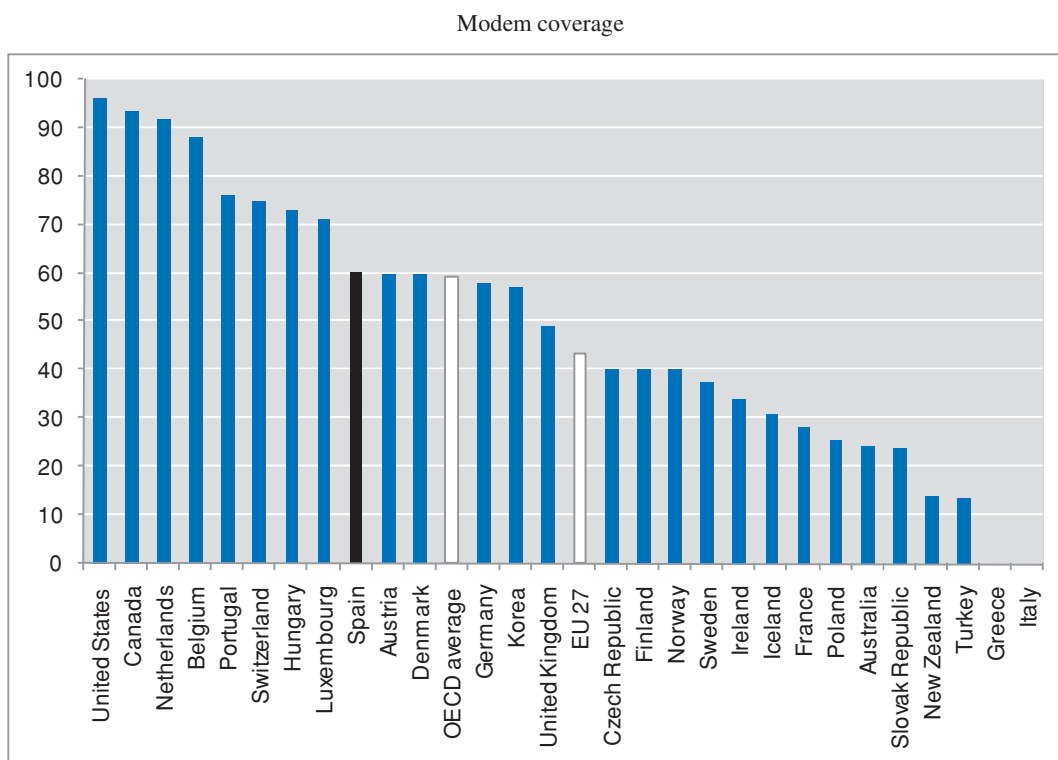


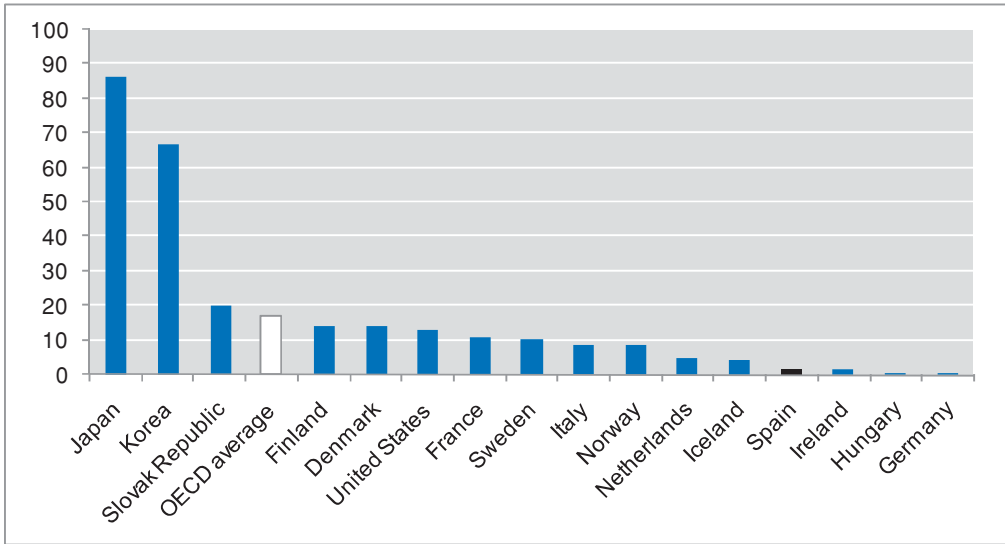
Figure 4.7. DSL and cable modem coverage (*continued*)

Source: OECD (2009), "Indicators of Broadband Coverage", DSTI/ICCP/CISP(2009)3/FINAL, Working Party on Communication and Information Services Policy, Directorate for Science, Technology and Industry, OECD, Paris, www.oecd.org/dataoecd/41/39/44381795.pdf and OECD (n.d.), OECD Broadband Portal, www.oecd.org/document/54/0,3343,en_2649_34225_38690102_1_1_1_1,00.html. EU-27 data is from the IDATE Consulting and Research (2009), "Broadband Coverage in Europe", elaborated for the European Commission (DG INFSO),

http://ec.europa.eu/information_society/eeurope/i2010/docs/benchmarking/broadband_coverage_in_europe.pdf.

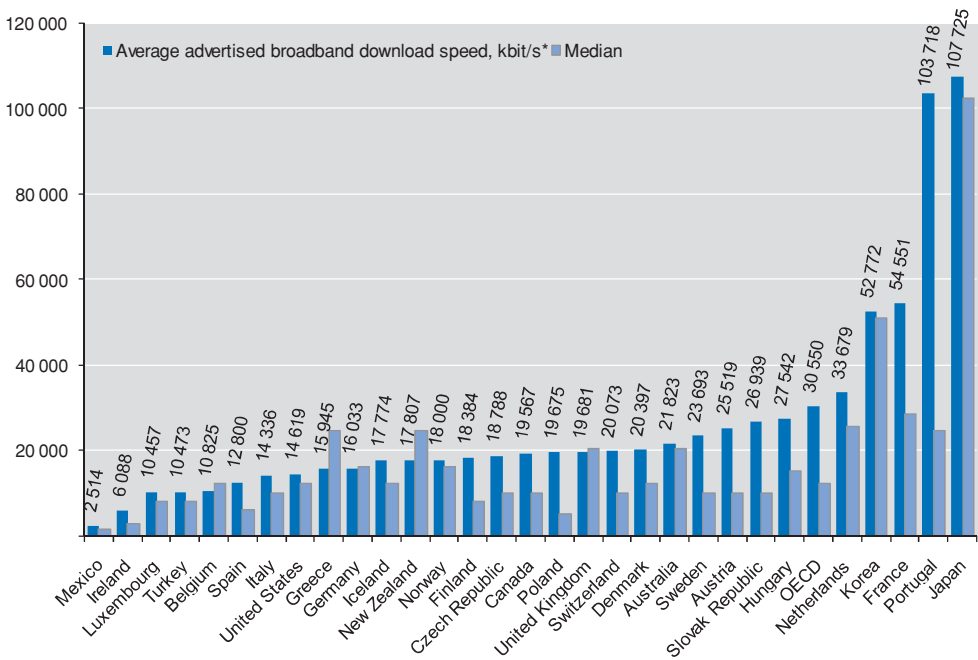
When compared to EU average speeds (European Commission, 2010a) (in terms of the advertised speeds of lines, not of offers), 70% of reported fixed broadband lines are in the range 2-10 Mbps (the EU average is 60%), whereas 19% of the lines are above 10 Mbps (the EU average is 23%). Only 11% of the lines are below 2 Mbps (the EU average is 16%). Although these figures do not include EU countries that did not report data, they show that Spain has fewer lines in higher and lower speeds, while more lines in the medium speed segment.

Figure 4.8. Fibre-to-the-home and fibre-to-the-building coverage



Source: OECD (2009), “Indicators of Broadband Coverage”, DSTI/ICCP/CISP(2009)3/FINAL, Working Party on Communication and Information Services Policy, Directorate for Science, Technology and Industry, OECD, Paris,
[http://www.oecd.org/officialdocuments/displaydocumentpdf?cote=dsti/iccp/cisp\(2009\)3/final&doclanguage=en](http://www.oecd.org/officialdocuments/displaydocumentpdf?cote=dsti/iccp/cisp(2009)3/final&doclanguage=en) and OECD (n.d.), OECD Broadband Portal,
www.oecd.org/document/54/0,3343,en_2649_34225_38690102_1_1_1_1,00.html

Figure 4.9. Average advertised broadband download speed, by country, kbit/s (October 2009)



Source: OECD (n.d.), OECD Broadband Portal,
www.oecd.org/document/54/0,3343,en_2649_34225_38690102_1_1_1_1,00.html

As announced by the Minister of Industry, Tourism and Trade (MITT, 2009a), as from 1 January 2011, broadband services at 1 Mbps will be included under universal service obligations (USOs). That is, broadband access at 1 Mbps will be included in the set of communications services that all citizens are entitled to, with certain levels of quality and affordability, with some exceptions. The implementation conditions of this change have not been disclosed yet, although it has been included in the Draft Law for the Sustainable Economy (Ministry of Economy and Finance, 2010) and an additional budget (EUR 200 million) will be allocated for loans to extend broadband access to remaining un-served areas (around 450 000 people) (El Economista, 2010). The inclusion of broadband in USOs represents a major milestone in terms of improving citizens and businesses' connectivity rights.

Broadband penetration

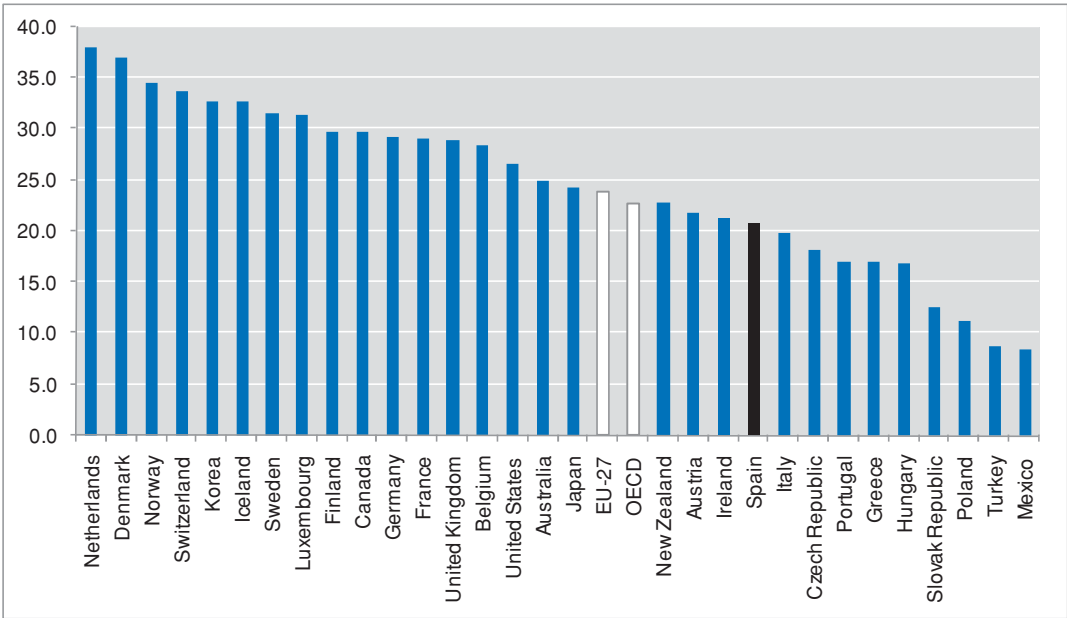
PEBA and other regional broadband strategies have been targeting areas where market dynamics have not been sufficient to provide broadband availability due to the lack of commercial incentives or expected return on investments. They have focused on white zones, that is, those not covered by providers without some sort of state-aid. Both broadband penetration and availability are heavily dependent on market dynamics and on competition in the broadband market. As we are dealing with regulated markets, where significant market power has been found by the regulator (CMT), market definition, analysis and the imposition of remedies play a prominent role in bringing down prices, fostering investments and promoting consumer choice.

Figures 4.11 and 4.12 chart broadband penetration in OECD member countries (in terms of lines/100 inhabitants): Spain's penetration by December 2009 was 21.3 lines, while the OECD average was 23.3 lines and the EU average was 24.8 lines; thus Spain remains below the OECD and EU averages (Figure 4.10).

While the expected trend would be that Spain's figures converge towards OECD and EU numbers, actual market figures are far from this conclusion. Since 2006, Spain's penetration has remained stable in relation to the OECD's at around 90%, while diverging from the EU average (Figure 4.11). It is also noteworthy that the EU penetration was around 20% below the OECD's in 2004, while it now stands at 106%. This can be explained by the presence of some non-EU countries such as Canada, Japan, Korea, and the United States, who adopted broadband early. These countries experienced a high rate of broadband growth in early years, while growth in Europe started at a later stage.

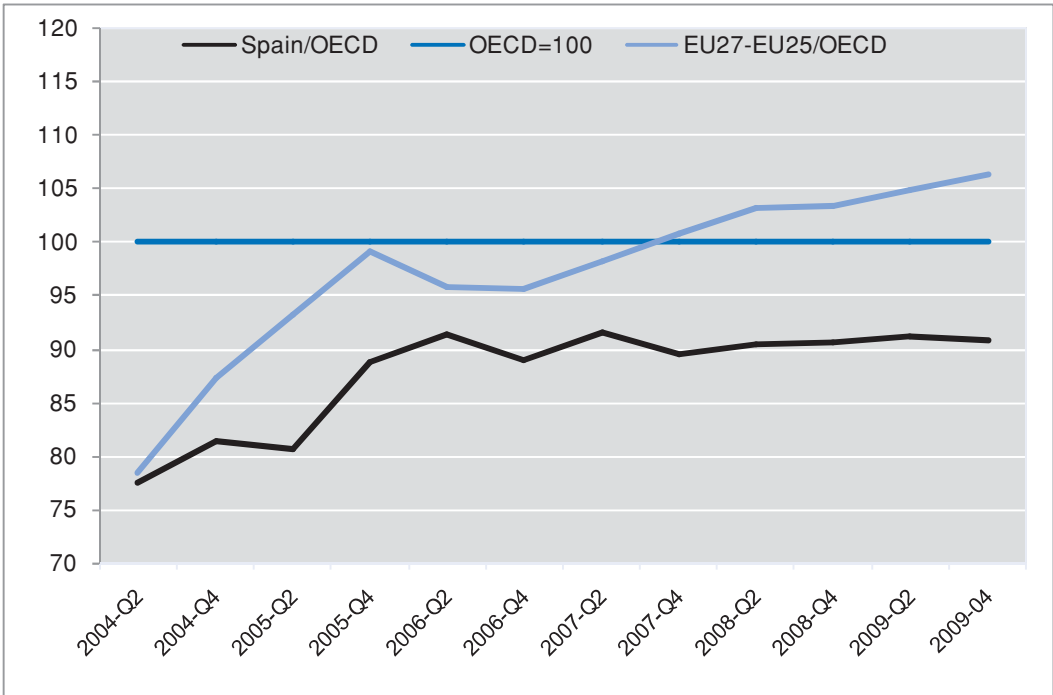
As the Spanish regulator pointed out in a recently released report (CMT, 2010a and 2010b), the competitive segment of the broadband market (where at least 3 alternative operators with a network infrastructure enabling unbundling are present) only reaches 41.4% of the lines (despite a 4% increase year-on-year). The incumbent's market share is very high in non-competitive areas and is increasing. This may be one of the reasons why the incumbent's broadband market share remains high (55% of lines, while the EU average is 45%) (European Commission, 2010a) and so do prices.

Figure 4.10. Broadband penetration (lines/100 inhabitants), December 2009



Source: OECD (2009), “1m Broadband Penetration, Historical Time Series, December 2009”, OECD, Paris, www.oecd.org/dataoecd/63/53/41551452.xls.

Figure 4.11. Spain’s and EU-27/25 broadband penetration as a % of the OECD average



Note: Data refer to EU-27 from 2007-Q2 on, and to EU-25 from 2004-Q2 to 2006-Q4.

Broadband pricing: affordability

While Plan Avanza focused on extending broadband availability and did not target broadband pricing or regulatory policy, broadband affordability and competition remain key aspects involved in providing access to businesses and citizens. The OECD has developed a set of methodologies for comparing retail prices of telecommunication services provided to consumers and businesses. Some pricing elements may not be taken into account, as sometimes they are not disclosed by operators or are difficult to compare across countries. Data are collected according to established criteria (OECD, “Criteria for OECD Broadband Price Collections”).

Nonetheless, relative to OECD member countries, Spain has often been ranked as having expensive broadband prices. To illustrate this, and according to the most recent data published on the *OECD Broadband Portal* in October 2009 (OECD, “Criteria for OECD Broadband Price Collections”), Spain was ranked the 7th most expensive country (out of 24) for very low-speed offers (256 Kbps-2Mbps), the 4th most expensive country (out of 30) for medium-speed offers (2-12 Mbps), and the 8th most expensive (out of 21) for very high-speed offers (over 35 Mbps). Nevertheless, Spain ranks better for medium speeds (between 12 and 35 Mbps), being the 15th least expensive of 29 countries. This benchmark addresses stand-alone broadband and does not cover bundled offers.

The characteristics of the Spanish market, where customers typically purchase broadband bundled with fixed telephone services and unlimited national calls, with no data limitation attached to the broadband connections, may have an influence on these results. However, quoting CMT (CMT, 2010a), “market competitive forces are uneven across the Spanish territory”. While roughly 40% of the lines are situated in an area where 3 competitors have deployed their own infrastructure (cable operators and/or alternative operators using unbundling), some 60% of the lines do not result in higher market shares of the incumbent, and higher prices (both from the incumbent and from alternative operators), as offers based on unbundling are not available.

Another example (CMT, 2009) of a price benchmark that takes into account bundled offers (broadband and voice), shows that the best available offer for broadband at medium speeds³ bundled with voice turned out to be 6.3% above the EU average (considering all operators) and 69.7% above the EU average (considering only the countries’ incumbents), thus confirming the appreciation of high broadband prices in Spain. Van Dijk Management Consultants (2010) elaborated a report for the European Commission, which showed bundled broadband prices.⁴ For some bundles (2-play, 3-play), Spain was relatively well-ranked, even though a significantly high number of speed ranges was chosen, and as a result there were no offers available in certain ranges in many countries.

The provision of affordable broadband will only be possible when alternative operators extend their footprints (and do not have to rely on indirect access), thus increasing the competitive pressure on the incumbent, as is already happening in some areas. Table 4.1 demonstrates the distribution of market shares according to retail services revenues for internet services, as well as for fixed and mobile phone and business communications across the main operators. In 2008, alternative operators accounted for 37.8% of the market share for internet services. Therefore, regulatory instruments should aim at encouraging the presence of alternative operators (either DSL-, cable- or fibre-based) in most of the country (not only in big cities), as well as at enabling competitive offers through indirect access, outside alternative operators’ footprints.

Table 4.1. **Percentage of market share of retail services revenues, 2008**

Enterprise	Fixed phone	Mobile phone	Internet services	Business communications
Telefónica de España	78.6%	–	62.2%	59.0%
Movistar (Telefónica subsidiary)	–	48.9%	–	–
Vodafone	2.0%	33.1%	3.1%	1.1%
Orange	2.6%	16.6%	9.4%	2.5%
Ono	8.6%	0.0%	11.5%	8.0%
Others	8.3%	1.4%	13.8%	29.3%
Total	100.0%	100.0%	100.0%	100.0%

Source: Spanish Telecommunications Market Commission (2008), *2008 Annual Report*, Madrid.

Mobile broadband

While playing an increasingly important role, mobile broadband is used as a complementary service to fixed broadband by most subscribers. OECD member countries have recently agreed on a methodology to develop a mobile broadband indicator (OECD, 2009i). The European Union is also collecting data on mobile broadband users, although not every country reports data. In Spain, nearly 14.7 million (European Commission, 2010a) customers are active users of mobile broadband. 3G broadband availability is in line with the OECD average and covers 83% of the Spanish population.

Digital terrestrial television (DTT)

Spain successfully completed the “digital switch-over” and “analogue switch-off” on 3 April 2010. One of the critical challenges of the Spanish ICT agenda was discontinuing analogue TV emissions nationally. It was the final phase of the DTT Transition Plan, whose first regional switch-off project was completed in Soria in July 2008. DTT incorporates some advantages over analogue technology, such as an increased selection of channels, better image and sound quality, higher spectrum efficiency and new services (VOS, interactive services, electronic programming guides, etc.).

Among OECD member countries, only the Netherlands and Luxemburg (2006); Finland and Sweden (2007); Germany and Switzerland (2008); and Denmark, Norway and the United States (2009), had already concluded the analogue switch-off, while most OECD member countries will cease analogue broadcast emissions between 2011 and 2012 (OECD, 2009g and European Commission, 2009). In 2005, the European Commission proposed the beginning of 2012 as the deadline to complete the digital switch-off (European Commission, 2005a). Nonetheless, Spain’s switch-off experience is unique as countries having already ceased analogue emissions (especially in Europe) had more favourable conditions: Spain’s difficult terrain needed more broadcasting sites and the share of households connected to analogue terrestrial TV was among the highest in the OECD (OECD, 2009g).⁵

Table 4.2. Rollout of digital terrestrial television in OECD member countries

Until 2007	2008	2009	2010	2011	2012 and after
Finland, Luxemburg, Netherlands, Sweden	Germany, Switzerland	Denmark, Norway, United States	Austria, Belgium, Spain	Canada, France, Hungary, Japan	Australia, Chile, Czech Republic, Greece, Hungary, Ireland, Italy, Korea, Mexico, New Zealand, Poland, Slovak Republic, Turkey, United Kingdom

Source: Data from European Commission, Communications Committee, *Working Document COCOM09-01*, “Information from Member States on switchover to digital TV”; Federal Communications Commission (FCC); and OECD *Communications Outlook* (2009). European Commission data available at: http://circa.europa.eu/Public/irc/info/cocom1/library?l=/public_documents_2009/cocom09-01_switchover/_EN_1.0_&a=d

There are national, regional and local channels. In April 2010, 98-99% of the Spanish population had DTT coverage of public and commercial channels. While 93.5% of households had access to digital channels on the DTT platform by May 2010 (see Table 4.3), DTT TV-share was 76% in April 2010. Around 32 million decoders had been sold by February 2010. The stakeholders’ commitments consisted of ensuring a DTT coverage comparable to the coverage of analogue TV. In addition, the MITT has invested EUR 220 million in co-financing DTT deployments to ensure coverage beyond the operators’ obligations, and EUR 68 million in DTT knowledge diffusion. The economic impact of the DTT transition is estimated to reach EUR 12 billion in investments, and 40 000 jobs (Ministry of Industry, Tourism and Trade, 2010a).

Table 4.3. Digital terrestrial television household penetration (%)

Country	DTT household penetration
Spain	93.5%
France	56.6%
Italy	48.3%
United Kingdom	71.2%

Note: data may not be comparable due to the use of different methodologies.

Source: France: Conseil Supérieur de l’Audiovisuel (October 2009); Italy: DGTVi (January 2010); Spain: Ministry of Industry, Tourism and Trade (May 2010); United Kingdom: Ofcom (September 2009).

One of the potential benefits of the digital switch-over is that the spectrum corresponding to former analogue channels is freed, and may be used for other services such as advanced data services (mobile broadband). The European Commission strongly supports the use of the 790-862 MHz band (currently used for broadcasting in most EU member countries) for electronic communications services and wants EU countries to act quickly, as co-ordinated management of this spectrum could boost the EU economy by EUR 44 billion and help to achieve the EU 2020 Strategy target of high-speed broadband for all by the end of 2013 (European Commission, 2010b). The European Commission has laid down harmonised technical rules in order to avoid harmful interference (European Commission, 2010c).

As a result of being among the first countries to accomplish the digital switch-over, Spain is in a position to reap the benefits of the newly freed spectrum resources. For example, Germany has already held an auction to award spectrum resources in this band (German Federal Ministry of Economics and Technology, 2010), raising EUR 4.4 billion.

It should be kept in mind that Germany's existing spectrum allocations have favoured the release of the band. The 790-862 MHz band is especially adapted to provide sparsely populated areas with innovative mobile applications and broadband Internet access. In Spain, the MITT has set criteria to release the 790-862 MHz band before 1 January 2015 (Ministry of Industry, Tourism and Trade, 2010b), and to provide advanced electronic communications services, especially wireless services. The process of allocating spectrum resources for these new services and providing commercial services is complex. For example, unlike in other countries, the new DTT channels were allocated in the digital dividend band. However, Spain should take advantage of having undertaken the digital switch-off to accelerate reaping the benefits of the digital dividend.

Conclusions

It is clear that the foundation of Spain's information society – the critical telecommunications infrastructure – has been strengthened by Plan Avanza: broadband availability and mobile phone coverage have increased, although the quality of broadband connectivity could continue to be improved, especially in rural areas. While the inclusion of 1 Mbps broadband access in universal service obligations is a step forward in ensuring universal access, there is still a gap in terms of speeds in relation to OECD member countries. Additionally, the DTT Programme has been one of the major successes of the Plan, as Spain was among the first of the EU countries to undertake a process of this size and scope to cease analogue emissions. To summarise the main achievements:

- E-GSM has provided an interesting example of using conditionalities in spectrum licenses to encourage operators to extend GSM coverage. While 1.1 million citizens have gained access to mobile telephony as a result of the Plan, the remaining 1% of the population is still uncovered. This is high compared to selected OECD member countries, even though a high proportion of the rural population and difficult terrains pose considerable challenges to mobile telephony deployment.
- The PEBA has been successful in extending broadband availability to most rural and remote regions in Spain, resulting in broadband availability in line with OECD member countries, even though infrastructure needs to be further improved and extended in rural areas, which is a target for Plan Avanza 2. DSL population coverage is 96.1 %, which is above the OECD average (88%), and cable modem reaches 60%, although these averages have been obtained across indicators and may not be always comparable. The inclusion of 1 Mbps broadband access in universal service obligations as from 2011 will reinforce consumers' rights.
- Broadband penetration in terms of lines/100 inhabitants reached 21.3 in Spain in December 2009, which is below the OECD average of 23.8. It remained around 90% of the OECD penetration during the period 2006-2009, while diverging from the European Union's average. Further policies and actions are needed to achieve convergence. Available advertised speeds remain low when compared to OECD member countries.
- Broadband prices are high in relation to OECD member countries. It may be due to the limited competition in the broadband market, at least in some geographic areas. Stronger regulatory action is needed, as current policies have not been successful in achieving a higher degree of competition. Providing alternative

operators with the necessary tools to deploy infrastructure and enhanced regulatory remedies in the wholesale broadband markets are needed in order to unleash competitive forces.

- Competition and investment incentives are also key to improve broadband speeds, both in rural and urban areas, the latter focusing on fibre deployments. Operators in countries with extensive fibre deployments achieve higher data transmission speeds. Therefore, regulators and policy makers should aim at enabling the deployment of ultra-high speed networks, as the proposal for Plan Avanza 2 acknowledges.
- The switch-over to digital terrestrial television was completed in April 2010. Spain was one of the first countries to undertake a similar process in terms of complexity and impact. Analogue television emissions have been switched-off and coverage comparable to the former analogue television has been achieved (higher than 98%). The benefits of this early transition, especially the spectrum that will be released as a result, should be made available to the society as soon as possible. This “digital dividend” will provide a unique opportunity to meet the huge demand for new wireless communications services and help bridge the “digital divide”.

Though there is scope for continued work, these achievements have laid the critical groundwork for the evolution of Spain’s information society and created important social and economic opportunities for the next phase of Plan Avanza. As we will see in the remaining sections, the implications of the Plan’s investments in strengthening the country’s telecommunications infrastructure are far-reaching, and fruits of these efforts are already visible – in homes, businesses, schools, hospitals, and the public administration. The following sections continue to highlight the progress made in these areas between 2006 and 2009 as a result of the investments made in boosting e-readiness.

4.4. Plan Avanza and businesses: promoting productivity, competitiveness and innovation

This section assesses the impact of Plan Avanza on the position and performance of Spain’s ICT industry compared to other OECD member countries, and it assesses the impacts of the programme on fostering economy-wide innovation through ICTs. The main focus is on Plan Avanza impacts up to 2008 in order to exclude the impacts of the economic crisis. To a large degree, developments in 2009 and 2010 are independent of the Plan Avanza and therefore create difficulties in evaluating the Plan’s achievements. Box 4.3 discusses some impacts of the crisis in more detail.

Fostering an innovative domestic ICT sector

Plan Avanza aimed to further develop a strong ICT industry, which is generally acknowledged to be an important source of innovation and growth. ICT firms (manufacturing and services) in the OECD make up one-third of all private sector expenditures on research and development (R&D), they contribute one-third of patenting activity and are recipients of one-third of venture capital. On average, ICT firms in the OECD contribute 8% to national GDP and 6% to employment (OECD, forthcoming). Recent years have seen a shift of ICT manufacturing activities towards non-member countries, in particular in Asia. As a result, the relative contribution of ICT services

companies in most OECD member countries has increased. This includes software, IT services, creative content development and telecommunications services.

Positioning Spain's ICT sector in the OECD context

Spain follows the trend of OECD member countries as it has traditionally focused more on ICT services than on ICT manufacturing. Spanish **ICT services** firms contributed USD 53 billion to domestic value-added (7.6% of total services) and employed around 340 000 people in 2008 (4%) (Figure 4.12). The sector is largely focused on computer and IT services, telecommunications services (including broadband and mobile), software and digital content development. Labour productivity (*i.e.* value-added per persons employed) in Spanish ICT services firms is close to the OECD average (OECD, forthcoming). Spain is among the top OECD exporter of ICT services, exporting close to USD 8 billion worth of ICT services and showing a trade surplus of over USD 2.7 billion in 2009.

Spain's **ICT manufacturing** sector is small in domestic and international comparisons, contributing around USD 5 billion to national value-added (2.3% of total manufacturing) and employing around 70 000 people (2.3%). It has the lowest contribution to manufacturing value-added of any OECD member country, in turn obliging the country to import a high share of ICT goods and components. Consequently, Spain has one of the highest trade deficits in manufactured ICT goods across OECD member countries.

Figure 4.12. **ICT services value-added and employment, OECD, 2008**

Share of ICT services value-added in total

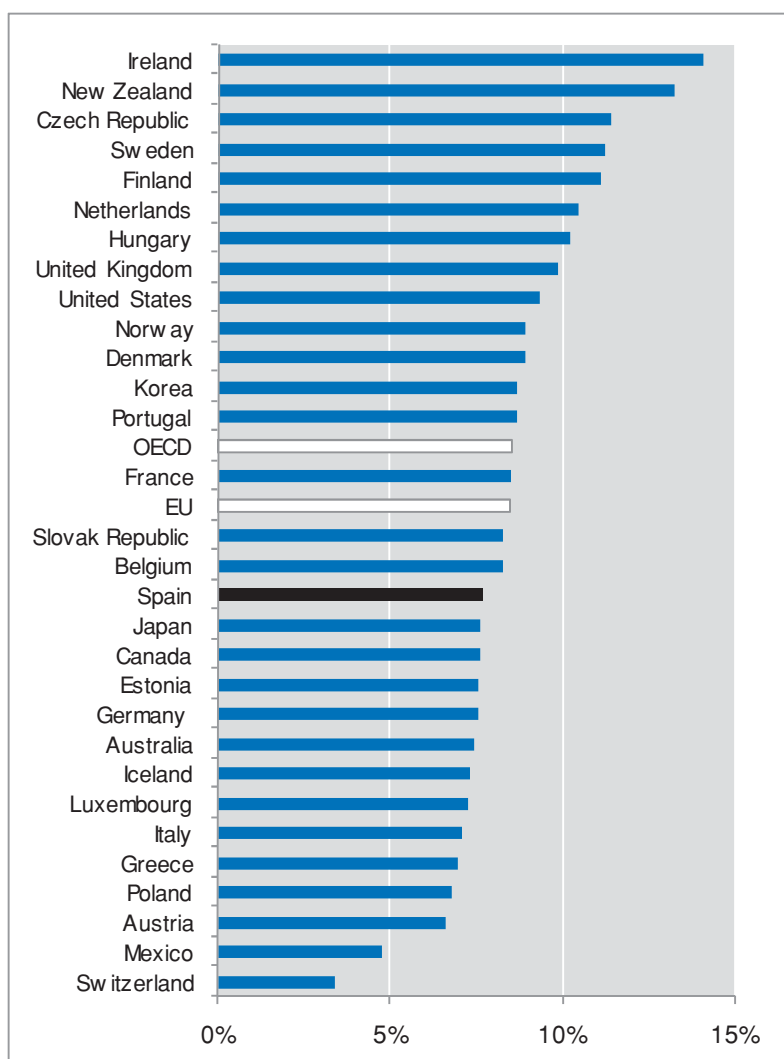
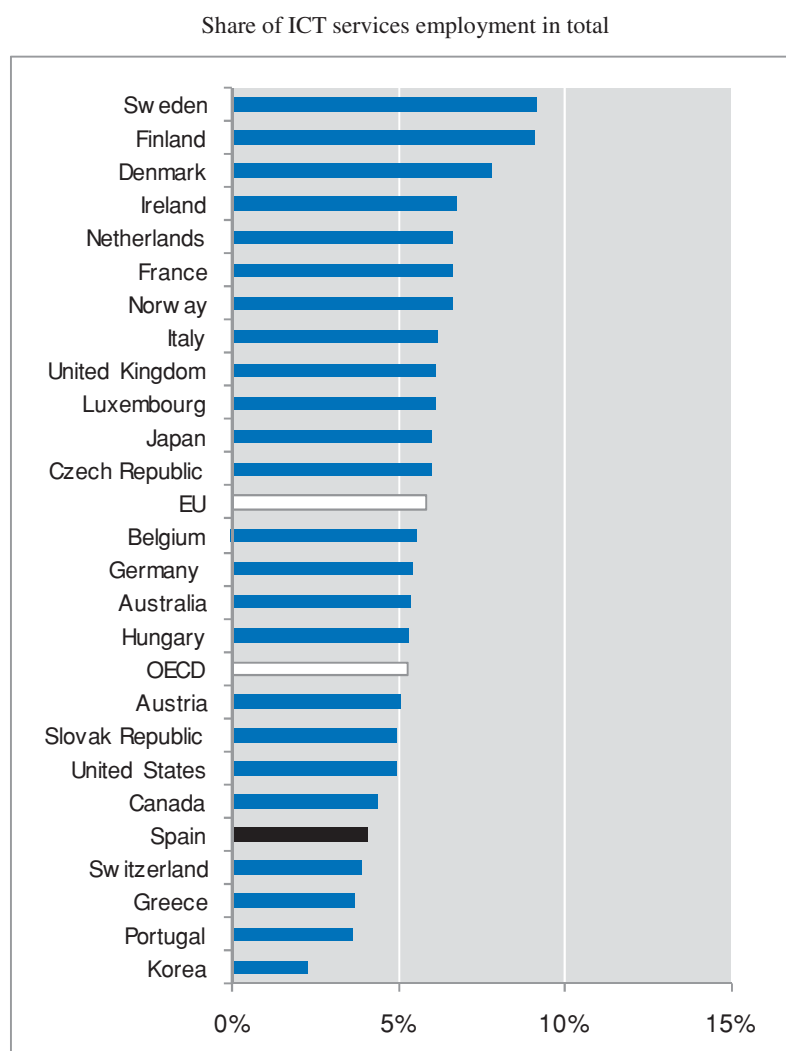


Figure 4.12. **ICT services value-added and employment, OECD, 2008** (*continued*)

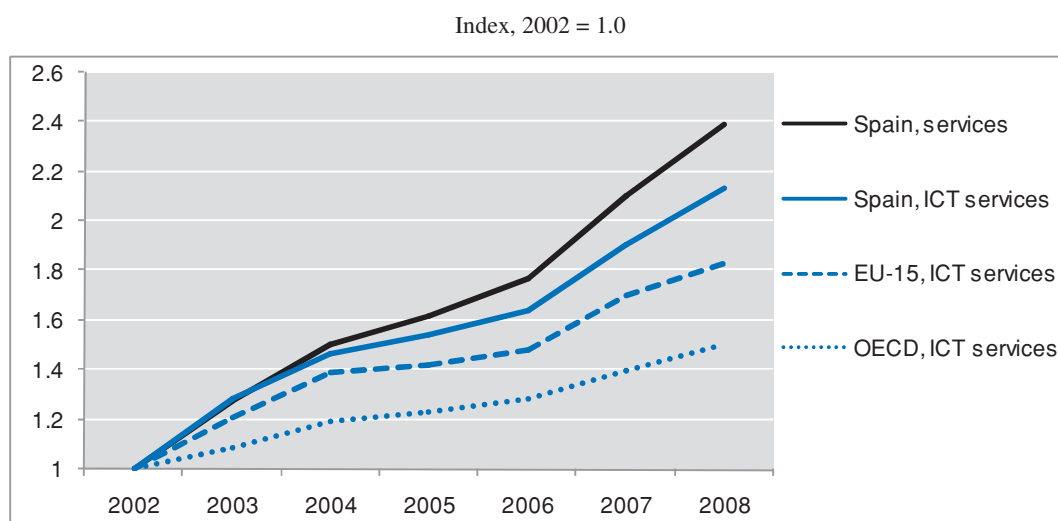
Note: OECD average of reporting countries; EU average refers to EU-15.

Source: OECD (forthcoming, 2010), *OECD Information Technology Outlook 2010*, OECD Publishing, Paris.

Evaluating Plan Avanza's performance

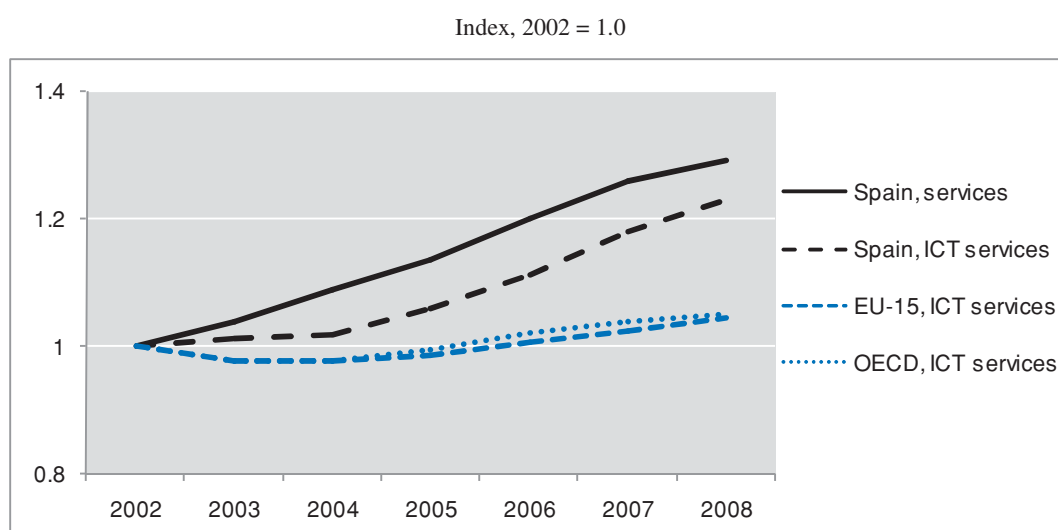
During the implementation of Plan Avanza (since 2005), Spain's ICT services industry has made considerable progress (impacts of the economic crisis are discussed separately, see Box 4.3).⁶ Especially since 2006, value-added from Spanish ICT services has increased faster than in the EU and the OECD on average (Figure 4.13). The impact on employment has been marked too (Figure 4.14). Spanish ICT services companies have greatly increased their headcount compared to firms in EU or OECD member countries on average. These trends were also boosted by strong overall growth in Spanish services, which stimulated demand for ICT services.

Figure 4.13. Value-added growth in overall and ICT services sectors



Source: OECD estimates, based on national sources; *STAN* and *National Accounts* databases, February 2010.

Figure 4.14. Employment growth in overall and ICT services sectors



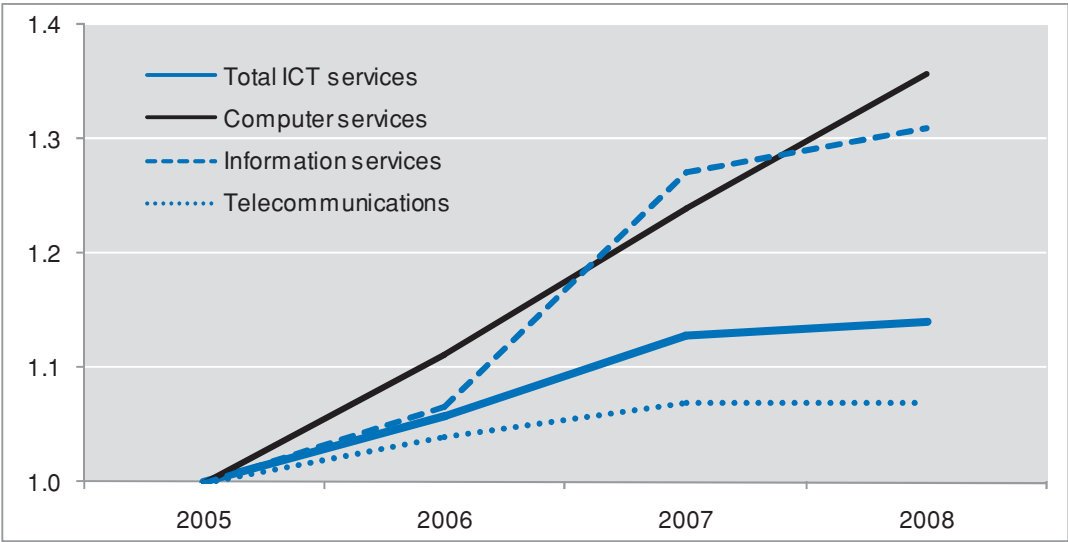
Note: OECD (average of 25 countries: Chile, Iceland, Israel, Mexico, New Zealand, Poland and Slovenia not available).

Source: OECD estimates, based on national sources; *STAN* and *National Accounts* databases, February 2010.

The sub-sector of computer and information services has grown the strongest since 2005, especially when compared to telecommunications (Figures 4.16 and 4.17). The computer services sector includes software developers, consultancies and related IT services. It has increased its turnover by 35% and its workforce by 16%. In contrast, the revenues of telecommunications firms grew much slower during that period and the sub-sector continued pre-2005 trends of cutting employment.

Figure 4.15. Revenue growth in ICT services sub-sectors, Spain

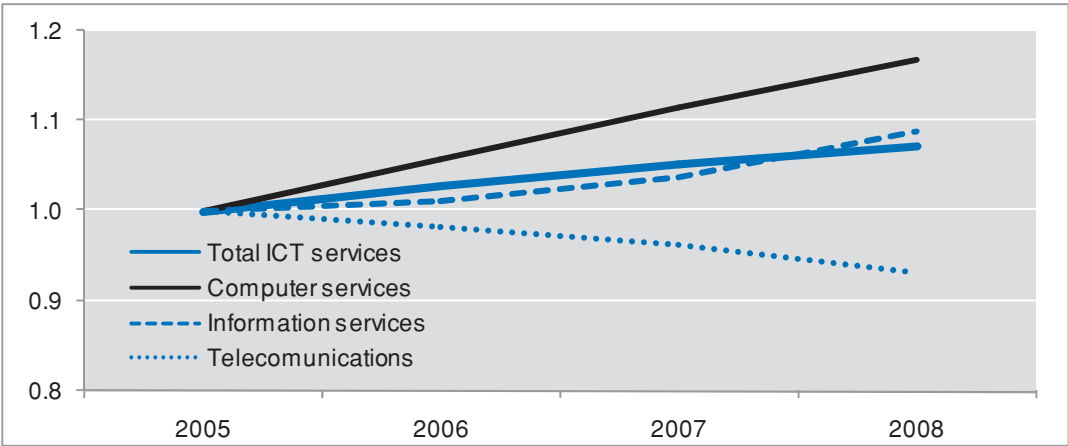
Index, 2005 = 1.0



Source: OECD calculations based on Spanish National Institute of Statistics, May 2010.

Figure 4.16. Employment growth in ICT services sub-sectors, Spain

Index, 2005 = 1.0



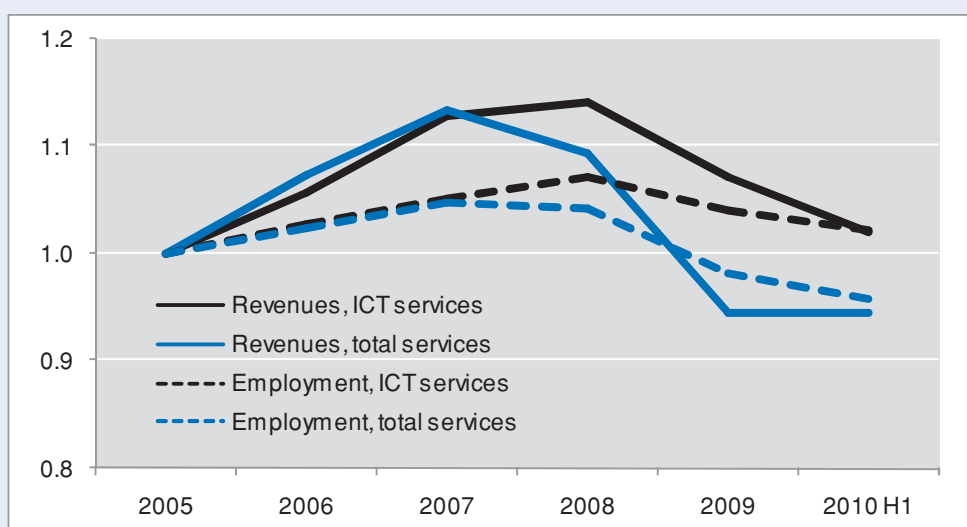
Source: OECD calculations based on Spanish National Institute of Statistics, May 2010.

Box 4.3. ICT services sector performance during the economic crisis

Spain, as most OECD member countries, has been hit hard during the economic crisis with falling GDP, high unemployment and increasing debt (OECD, 2010a). In response, the government has formulated a recovery package, which also refers to the ICT sector as a source of growth and innovation (Plan E and draft Law for the Sustainable Economy). The ICT sector has indeed performed relatively well in most OECD member countries (OECD, forthcoming). As in many OECD member countries, turnover and employment in ICT firms have seen a dip in Spain, but the impacts were not as dramatic as in other business services sectors (e.g. banking). However, full impacts on employment might not yet be visible and are likely to aggravate in some industry sectors (OECD, 2010a).

Overall and ICT services sector performances during the economic crisis, Spain

Index, 2005 = 1.0



Note: 2010 index based on data for January to June.

Source: OECD calculations based on Spanish National Institute of Statistics, August 2010.

As governments are increasingly focused on sustainable economic development (“green growth”), this will create impetus for the ICT sector. The industry is highly innovative in areas relevant to climate change and the environment. Demand for technologies such as the “smart” electricity grid is expected to generate new employment opportunities. In the OECD *Information Technology Outlook* (2010), governments indicated more focus for the recovery on broadband diffusion, e-government and ICTs for green growth (OECD, forthcoming). Policy signals can stimulate private sector investments for green innovation (OECD, 2010d) and Spanish ICT services firms can benefit from this trend, e.g. software and services to manage environmental data. Other ICT services growth areas include IT outsourcing services provision and cloud computing services.

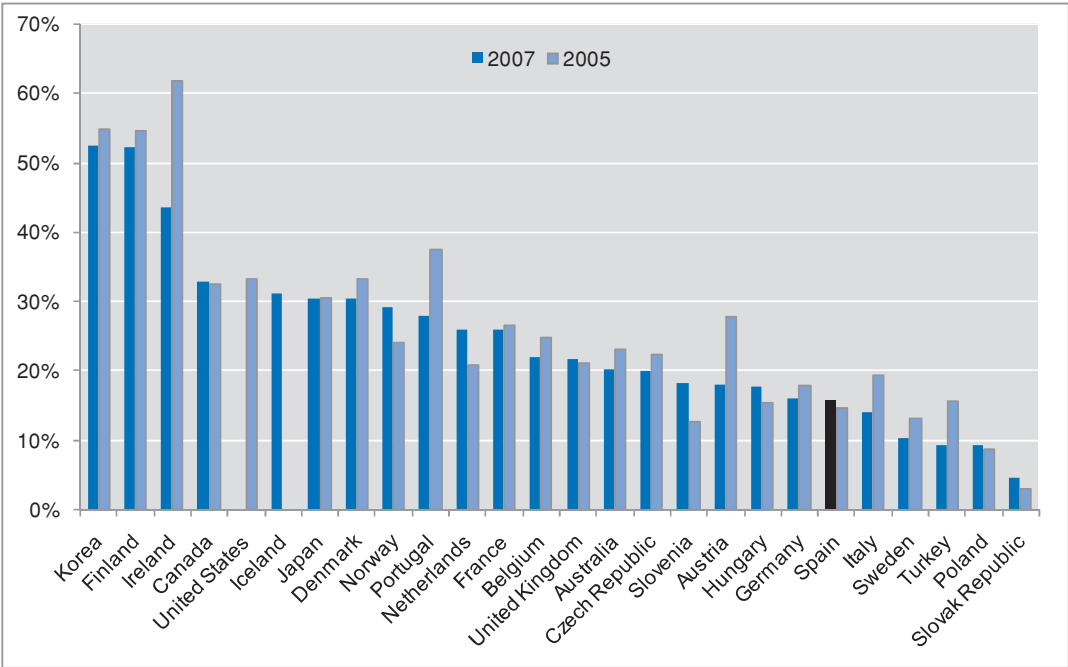
Source: OECD (2010a), *Economic Outlook 2010*, Chapter 2: Spain, No. 87, OECD Publishing, Paris; OECD (2010d), *Interim Report of the Green Growth Strategy: Implementing our Commitment for a Sustainable Future*, OECD Publishing, Paris; OECD (forthcoming, 2010), *Information Technology Outlook*, OECD Publishing, Paris.

Innovation

The ICT sector is an important contributor to innovation across economic sectors and socio-economic application areas. Spain’s ICT sector has typically been in the lower tier of OECD member countries in some traditional innovation indicators such as R&D spending, patenting, venture capital and ICT research personnel (*cf.* OECD, 2008a, Chapter 3). This is partly a structural challenge, related to Spain’s overall low R&D expenditures per GDP (1.2% in 2006) compared to the OECD average (2.3% in 2006). However, Spain is in the top tier of OECD member countries when considering solely ICT services firms’ R&D expenses as a share of GDP (2006 data).⁷

Spain is in the lower tier of OECD member countries when it comes to **researchers in the ICT business sector**. Spanish ICT firms (goods and services industries, without telecommunications) employ around 7 500 researchers.⁸ Compared to the 42 000 researchers employed across the entire economy, this makes a share of only 16% working in the ICT industry. At the same time, Spain has slightly increased this share since 2005, contrary to the decrease witnessed in most OECD member countries (Figure 4.17).

Figure 4.17. Share of ICT researchers in total researchers, 2005 and 2007

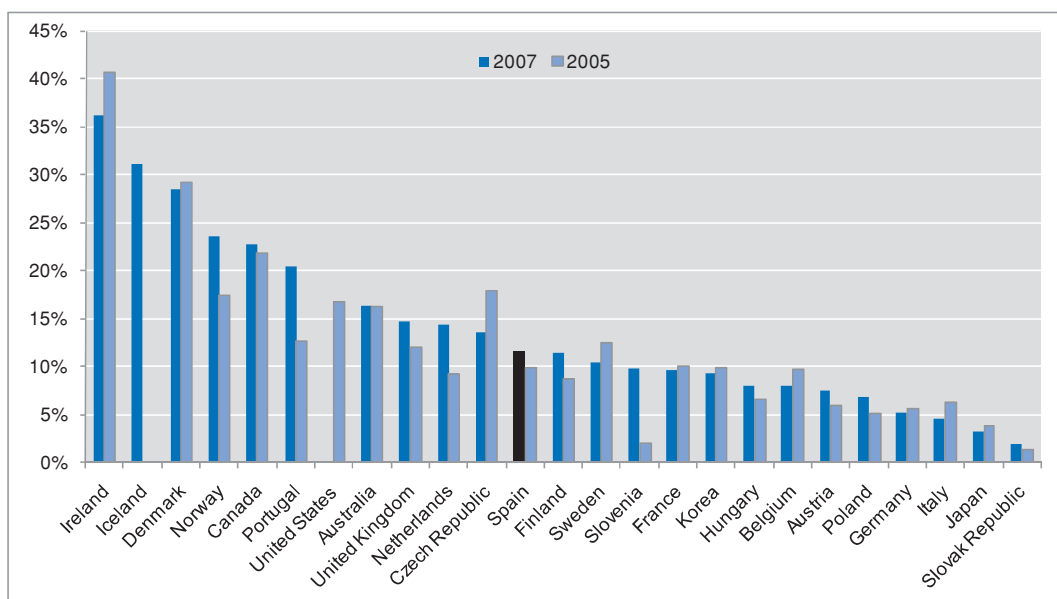


Note: 2006 data used instead of 2007 for Australia, France and Italy. 2006 data used instead of 2005 for Austria. No data available for 2006 or 2007 for the United States.

Source: OECD calculations based on OECD (2010), *Research and Development Statistics*, OECD Publishing, Paris.

Spain compares much better internationally when looking only at **ICT services sector researchers**. With 12% of domestic researchers employed in ICT services firms, Spain ranks in the middle of OECD member countries and has increased this share since the inception of Plan Avanza in 2005 (Figure 4.18). The ICT services sector (computer and related activities, without telecommunications) employs almost 5 000 researchers – two-thirds (65%) of domestic ICT researchers – underlining the importance of this segment of industry for domestic innovation.

Figure 4.18. **Share of ICT service sector researchers in total researchers, 2005 and 2007**



Note: ICT services refers to the industry sector “computer and related activities”. 2006 data used instead of 2007 for Australia, France and Italy. 2006 data used instead of 2005 for Austria. No data available for 2006 or 2007 for the United States.

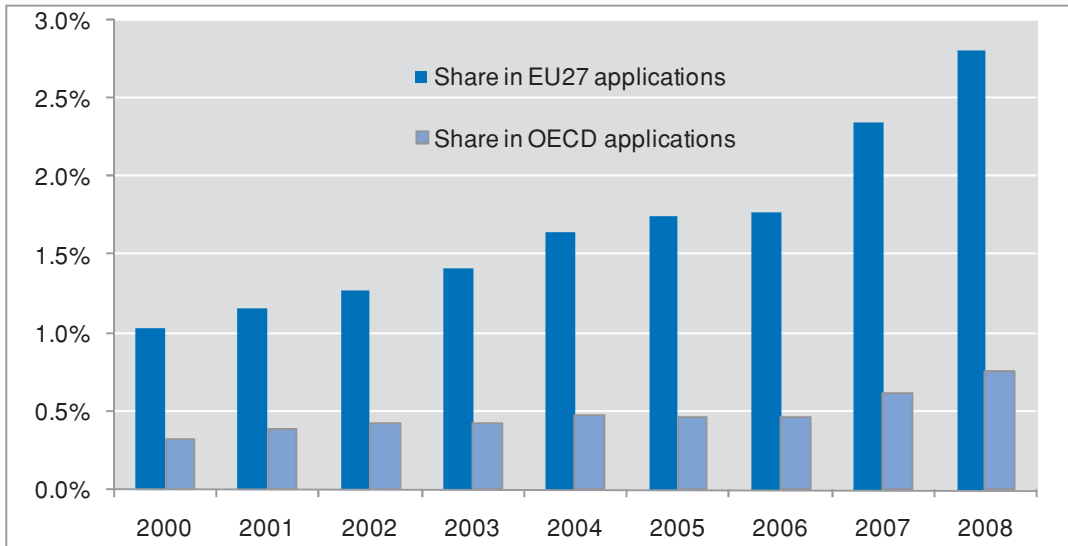
Source: OECD calculations based on OECD (2010), *Research and Development Statistics*, OECD Publishing, Paris.

Spain’s ICT sector is in the mid-field of OECD member countries regarding patenting activity, but with growing shares in recent years. Looking at ICT patent applications under the Patent Co-operation Treaty (PCT), Spain came in 14th in 2008 (OECD, 2009j). Spain has markedly increased its share since 2007 to reach 0.8% of OECD and 2.8% of EU-27 ICT-related patent applications (Figure 4.19).

Timely data on innovation is hard to obtain. Governments are aware of the lack of more timely and accurate indicators and the OECD has developed a comprehensive compendium of existing innovation indicators, gaps in measurement and next steps for the development of new indicators (OECD, 2010b: 3-5). ICT infrastructure indicators feature amongst traditional indicators. Spain’s position and progress were discussed in the previous section.

Figure 4.19. Spanish ICT patent applications filed under the PCT, 2000-2008

Share in EU and OECD ICT patent applications



Note: Patent statistics are provided according to priority date and inventor's country of residence. 2008 data were only available until September. To improve comparability, shares are calculated using data for all countries from January to September of each year.

Source: OECD Patents database, July 2010.

International trade

Spain has traditionally had trade surpluses in ICT services, which were mainly driven by strong exports of computer and information services (*e.g.* consultancy, digital content and software development, IT system and database services, data processing and hosting). Since Plan Avanza was launched in 2006, two new trends for ICT services trade can be discerned – pulling in opposite directions (Figure 4.20, bars):

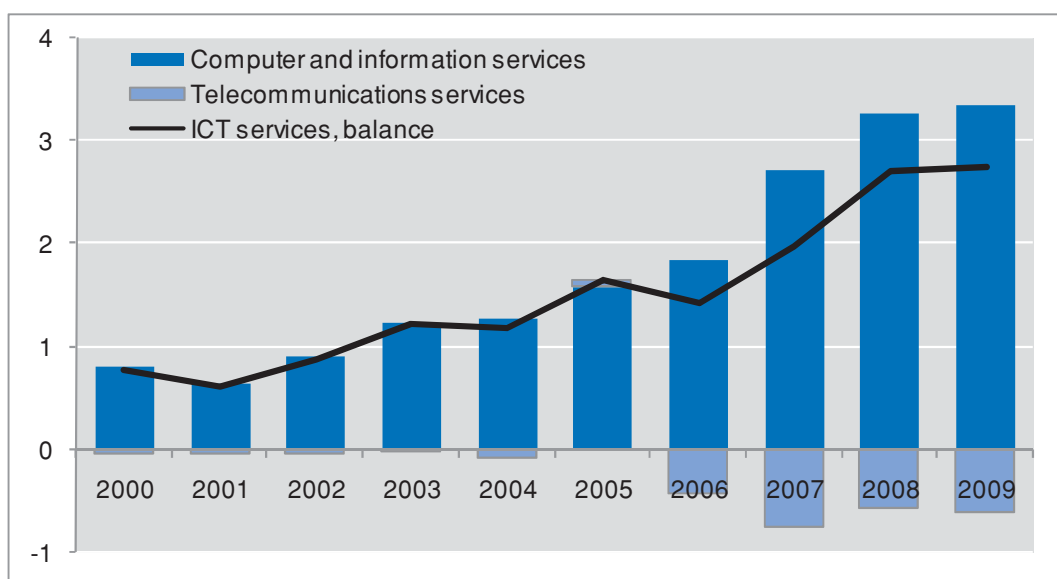
- The first is a **strong acceleration of net exports of computer and information services**. The sub-sector doubled its trade surplus by 2008, reaching an unprecedented high of over USD 3 billion. This growth can be attributed to domestic firms increasingly exploiting business opportunities for ICT services in global markets, particularly Spanish-speaking ones. The 2009 figures underline the resilience of the computer and information services sector, which maintained strong net exports of over USD 3 billion.
- At the same time, Spain has witnessed a **sudden and steep increase of net imports of telecommunications services**. Although interpretation of ICT services trade data is complex because of the different activities covered (Funk Kirkegaard, 2008 and United Nations, 2010), the Spanish case of increasing communications services imports is a likely result of two factors: *i*) computer and information services firms increasing the volume of foreign business activities (see above), which leads to increased communication with overseas clients, and termination and other charges by foreign telecommunications operators are billed as imports; *ii*) Telefónica's USD 30 billion acquisition of UK-based O₂ in 2005, which added large foreign

affiliates in European countries to the group. Certain types of intra-group cross-border payments are accounted for as communications imports, adding to Spain's deficit in this area.

Strong growth of computer and information services exports is compensating high net telecommunications imports. As a result, Spain managed to increase its trade surplus in ICT services by almost 70% between 2005 and 2009, reaching a total of USD 2.7 billion (Figure 4.20, black line). As outlined in other parts of this section, Spanish IT services firms showed themselves to be relatively resilient to the economic crisis and are likely to continue expanding on the domestic and international markets.

Figure 4.20. **ICT services trade balance, including sub-sectors, Spain**

Billions USD; positive values: net exports; negative values: net imports



Note: The black line represents the trade balance of the two ICT services sub-sectors (computer and information services, and telecommunications services), which are displayed as bars.

Source: OECD calculations based on International Monetary Fund (2009), Balance of Payments Statistics, December.

Fostering economy-wide innovation through ICTs

Plan Avanza placed a great focus on diffusing ICTs and the Internet to the wider economy. This included objectives regarding the connectivity of enterprises, the use of ICTs for business operations and improving the skills base of the Spanish workforce.

Plan Avanza particularly focused on **small and medium-sized enterprises (SMEs)**, given their importance in the Spanish economy. In the European Union, SMEs (up to 250 employees) are a principal source of economic growth. They represent over 99% of all enterprises, employ around two-thirds of the total workforce and generate over half of EU-wide value-added in the private sector, excluding financial businesses (Schmiemann, 2006). SMEs are most active in the construction, trade, hotel and restaurant sectors.

Spain differs somewhat from the overall European context due to a more dominant number of small to very small (less than 50 employees) enterprises. These firms employed over 60% of the Spanish workforce and generated over 50% of domestic value-added (2003 data, but distribution has not significantly changed since). In fact, very small enterprises (less than 10 employees) employ close to 40% of the domestic workforce and contribute over one quarter of value-added. In Europe, no other country has as important a number of very small firms except Italy. As smaller enterprises tend to have a lower uptake of Internet, ICTs and e-commerce, Spain's particular distribution of firm sizes can be expected to result in lower overall rates when compared to other countries. This is a general note as well as a particular challenge to Plan Avanza.

Access to Internet and broadband

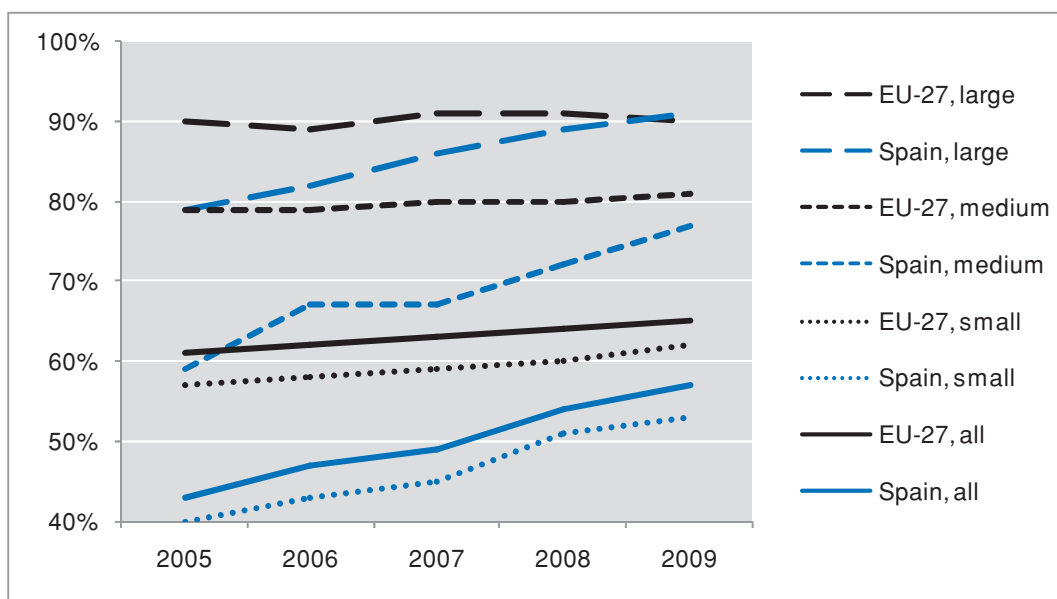
Connectivity of enterprises across the Spanish economy has greatly increased since Plan Avanza started. In 2009, Spanish companies topped the EU average in terms of Internet access, also with regards to SMEs. The lead was even higher with broadband Internet access. The reason behind this is that Spanish companies, which were lagging behind EU averages for Internet access in 2005, jumped directly from narrow-band connections to broadband connectivity. Approximately 94% of Spanish enterprises with over 10 employees reported having broadband Internet access in 2009 (Eurostat, 2009).

Spain's relatively high share of very small enterprises makes this an important category for (broadband) Internet access. As can be expected, shares of Internet access are lower than for large firms: only 68% of very small firms had Internet access and only 63% had broadband access in 2009. These shares fall somewhat short of Plan Avanza's objectives for 2010 – 79% and 68% respectively – and suggests that further efforts are necessary.

Using ICTs and the Internet for business operations

Spanish companies have used their improved connectivity to promote and optimise business operations. Close to 60% of Spanish companies now have a website and the gap with the EU-27 average has narrowed considerably since 2005 (Figure 4.21). Shares of large and medium-sized enterprises have practically converged with EU averages since 2005. Further efforts are needed in the area of small and very small enterprises where only 53% and 20% of firms, respectively, have a website. Plan Avanza set out to achieve a share of 39% for the latter by 2010.

Figure 4.21. Share of businesses with a website by size, EU-27 and Spain



Source: Eurostat (2010), “Survey on Computers and the Internet in Households and Enterprises”, Eurostat, Luxembourg.

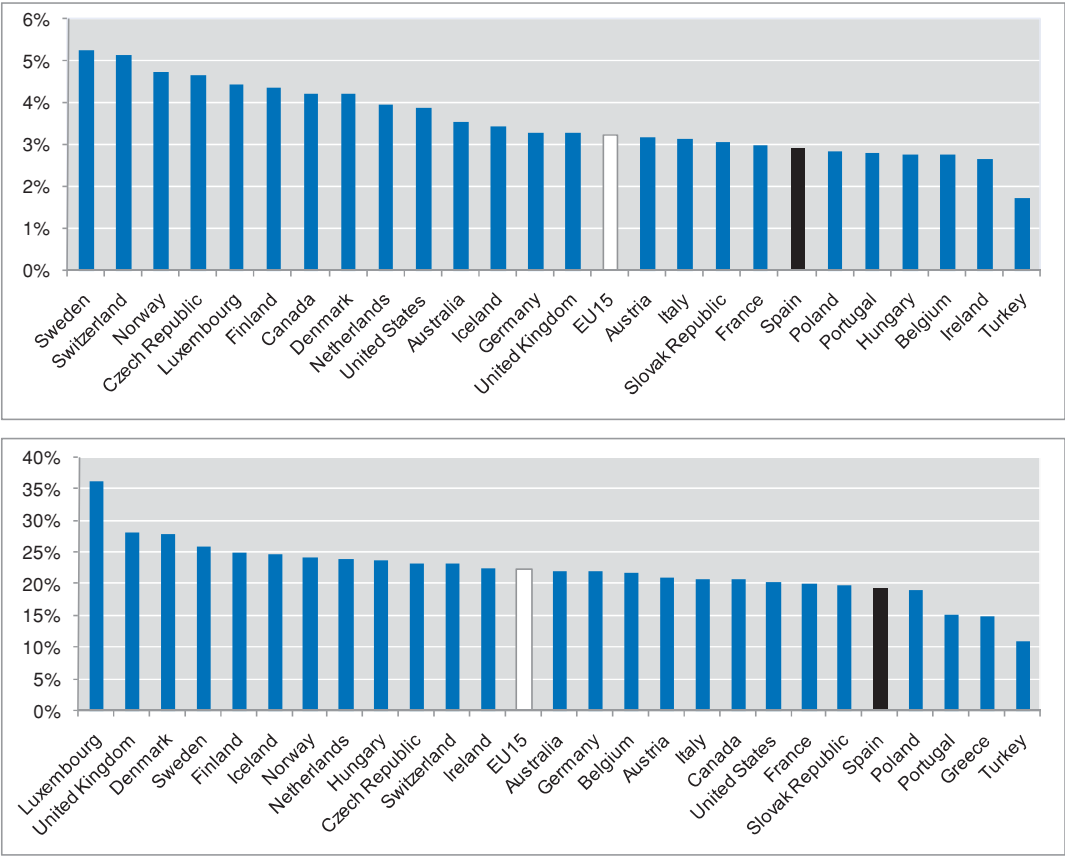
Using ICTs to optimise business operations and sales activities in Spain has largely converged with EU averages, although at overall relatively low levels. Integrated software systems to manage business processes (enterprise resource planning, ERP) are used by less than one in five firms: 17% of EU and 19% of Spanish businesses; software to manage client operations (customer relationship management, CRM) is used by one quarter of firms in both cases. Uptake is expectedly high with large firms: over 60% use ERP and close to 50% use CRM (in the EU and in Spain). Very small firms have low uptake rates, mainly due to high fixed purchase and maintenance costs and uncertainty about the cost savings that companies in this size class can achieve. The promotion of non-commercial or open-source applications could provide alternative options to increase the uptake of enterprise software in smaller firms.

Electronic commerce activities of Spanish companies have greatly increased since 2005. Previously existing gaps to the EU average have almost disappeared in the shares of firms that receive **online orders** and the related **shares of online revenues** (although at relatively low levels): in 2009, 10% of Spanish firms received orders over the Internet, compared to 12% in the EU-27. Around 10% of revenues were generated from online sales in Spain, compared to 13% across EU countries. The progress is marked, given that both indicators stood at 3% in 2005. Shares are lower with smaller firms, which is partly a structural phenomenon: a high number of small enterprises are in sectors where immediate benefits from online commerce are not obvious, *e.g.* construction. The use of **e-invoicing** across Spanish companies almost doubled between 2007 and 2009, to reach 17%. This still falls short of the EU average of 23%, but the gap significantly narrowed during the period for which data is available.

Developing an ICT-skilled workforce

There remain gaps to be filled regarding the development of a broad ICT-skilled Spanish workforce. These refer to both ICT specialists (*e.g.* software developers) and occupations that depend on intensive use of ICTs (*e.g.* administrators using personal computers and Internet). These trends are not limited to Spain as other OECD member countries also increasingly report difficulties, *e.g.* in attracting young people into computing and engineering graduate programmes (OECD, forthcoming). Although gaps have narrowed since 2006, the share of ICT specialists and ICT-using occupations in Spain remains slightly below EU averages and in the lower tier of OECD member countries (Figure 4.22). ICT specialists in Spain represent 2.9% of the total workforce, compared to 3.2% in the EU-15; ICT-using occupations represent 19.3%, compared to 22.3% in the EU-15.

Figure 4.22. Share of ICT specialists (upper) and ICT-using (lower) occupations in the total labour force, 2009 or latest year available



Source: OECD (forthcoming, 2010), *Information Technology Outlook*, OECD Publishing, Paris.

Employing ICT specialists and skilled users is important for companies' competitiveness and there is room for improvement among Spanish firms. According to Eurostat data, only 12% of Spanish firms employed ICT specialists, which is well below the EU average of 17%. Spanish firms also lag behind EU averages in the provision of general ICT skills training to employees. Only 9% of Spanish firms provide opportunities for employees to enhance ICT skills – on average less than half than across the EU (21%) (Eurostat data).

Remaining challenges

Summary of findings:

- The ICT industry has benefited from Plan Avanza, in particular the IT services sector. The sector has increased revenues and employment and held up relatively well during the economic crisis. Innovation indicators for Spanish ICT firms remain relatively low overall, but are more positive when the ICT services sector is singled out.
- Plan Avanza set a great focus on SMEs. Available data points to improvements in connectivity and ICT use indicators, but further challenges remain as Spain has a large base of very small enterprises, some of which are in structurally disadvantaged sectors such as construction.
- Plan Avanza has helped Spanish ICT services firms to further explore international markets. Here again, ICT services firms provide a solid foundation for increasing future exports.
- The economic crisis has affected the ICT industry and ICT uptake across the economy as IT investments have slowed down in some areas. Legislation such as the draft Law for the Sustainable Economy make reference to broadband deployment as a stimulating element for economic recovery. Other OECD member countries have put an even stronger focus on ICTs as enabling technology for green growth, *e.g.* in the areas of smart energy, transport and buildings.
- ICT services employment has grown strongly and has held up relatively well during the economic crisis. Nevertheless, the share of ICT specialists in the Spanish economy remains low compared to other OECD member countries. Challenges remain with regards to matching skills with existing jobs, especially since the telecommunications sector has released many employees in recent years. Professional and on-the-job training programmes might need to be strengthened in order to match potential employers' skills needs, especially in the IT services sectors (without telecommunications).

4.5. Plan Avanza and citizens: working to close digital divides

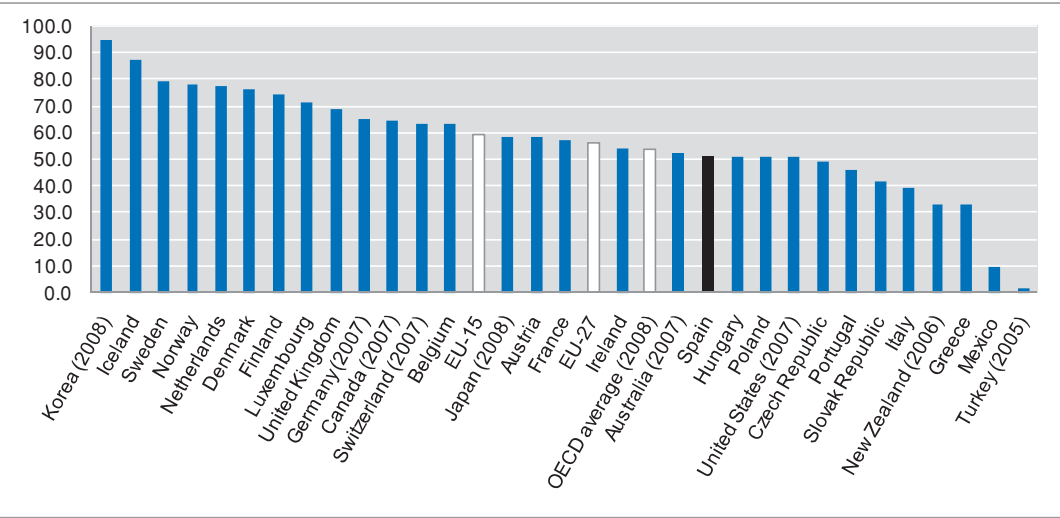
This section discusses some of the key results of Plan Avanza initiatives aimed at increasing digital inclusion, focusing on broadband adoption and internet use amongst citizens. As mentioned in Chapter 1, these policies have principally consisted of 0% loans for citizens and capacity-building initiatives in collaboration with NGOs and sub-national governments. Specifically, programmes have sought to target those most at risk of digital inclusion: older people, persons living in rural areas, school-aged children and women. Additionally, since the education system is a powerful ally in strengthening the

information society, achievements of some key programmes in this sector will be discussed. Indeed, integrating ICTs into education promotes e-inclusion by exposing students to ICTs at an early age and teaching critical e-skills to the future workforce. Where data is available, disaggregations are made by region in order to highlight the important territorial dimension to IS development in Spain.

Broadband adoption

As described in Section 4.2, the Plan’s PEBA initiative has helped increase broadband accessibility in Spain (particularly in rural areas), reaching 99% of the population. However, according to the most recent data, currently 51.3% of households in Spain use a broadband connection, a figure below OECD and EU averages. Nevertheless, the progression of this indicator over time has been positive, and the Plan has exceeded its original target of 45% for 2010.

Figure 4.23. **Percentage of households using a broadband connection, 2009 or latest year available**

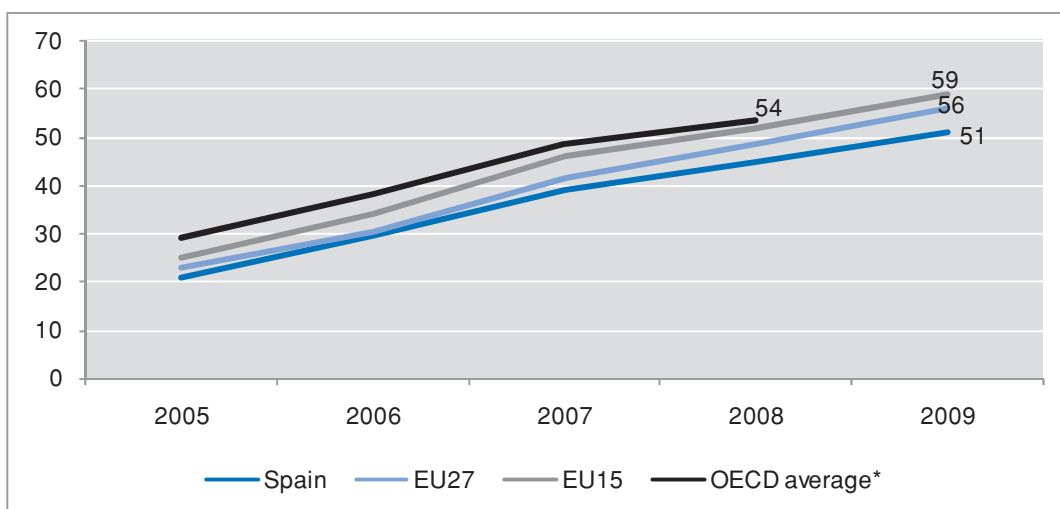


Notes: Generally, data from the EU Community Survey on household use of ICT, which covers EU countries plus Iceland, Norway and Turkey, relate to the first quarter of the reference year. Czech Republic: data relate to the fourth quarter of the reference year. Korea: for 2000 to 2003, data include broadband access modes such as xDSL, cable and other fixed and wireless broadband via computers. As of 2004, data also include mobile. Canada: statistics for 2001 and every other year thereafter include the territories (Northwest Territories, Yukon Territory and Nunavut). For the even years, statistics include the ten provinces only. Japan: only broadband access via a computer. Luxembourg: for 2004, data include wireless access. Mexico: for 2001 and 2002, households with Internet access via cable. From 2004, households with Internet access via cable, ADSL or fixed wireless. Norway: for 2003, data include LAN (wireless or cable).

Source: OECD, Broadband Portal, www.oecd.org/document/54/0,3343,en_2649_34225_38690102_1_1_1_1,00.html accessed May 2009; Eurostat (2009), *Information Society Statistics*, Eurostat, Luxembourg, http://epp.eurostat.ec.europa.eu/portal/page/portal/information_society/data/database.

Indeed in 2005, when the Plan was launched, only 21% of households were utilising a broadband connection, less than half of the current amount. However, the relative growth of broadband adoption, with a compound annual growth rate from 2005-2009 of 25%, is similar to the EU-15 and EU-27 average rates. If Spain aims to converge with its European counterparts, further efforts may be needed to increase adoption rates including reducing broadband prices, improving speeds, and awareness and capacity-building efforts for citizens.

Figure 4.24. **Households using a broadband connection, 2005-2009**



	2005	2006	2007	2008	2009	CAGR
Spain	20.8	29.3	39.2	44.6	51.0	25.2%
EU-27	23.0	30.4	41.6	48.6	56.0	24.9%
EU-15	25.0	34.0	46.0	52.0	59.0	23.9%
OECD average	29.3	38.5	48.5	53.5	..	16.3%

Note: OECD average through 2008.

Source: OECD, Broadband Portal, www.oecd.org/document/54/0,3343,en_2649_34225_38690102_1_1_1_1,00.html accessed May 2009; Eurostat (2009), *Information Society Statistics*, Eurostat, Luxembourg, http://epp.eurostat.ec.europa.eu/portal/page/portal/information_society/data/database.

Furthermore, there is a strong territorial dimension to IS development in Spain that must be considered in the goal for convergence with EU counterparts; Spain cannot converge with IS leaders without inter-regional convergence within its borders. With regards to broadband adoption, the nation as a whole has adopted broadband at relatively the same pace as other European countries, but several regions in Spain have considerably surpassed average growth rates. Broadband adoption in the regions of Extremadura, Castilla de la Mancha and Navarra for example have increased at above average rates since 2005, suggesting that the country will continue to progress steadily over time. There are some regions converging at a slower pace and which also continue to find themselves below Spanish national averages for broadband adoption, and these may need to receive greater attention from Plan Avanza 2 in the short-term.

Table 4.4. Households using a broadband connection, by region

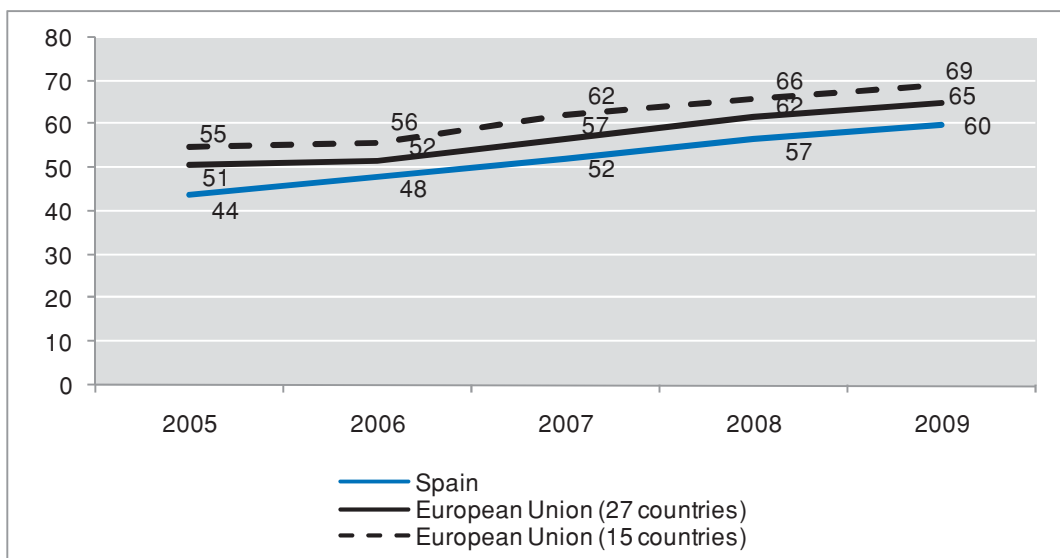
Region	CAGR 2005-2009	Rank	Region	2009	Rank
Extremadura	38.2%	1	Madrid	62.6%	1
C. La Mancha	35.2%	2	Cataluña	60.5%	2
Navarra	32.1%	3	OECD average	60.5%	2
Galicia	29.1%	4	EU-15	59.0%	4
Andalucía	28.3%	5	Baleares	58.2%	5
Rioja	28.0%	6	EU-27	56.0%	6
Cantabria	27.8%	7	Cantabria	55.2%	7
Murcia	27.5%	8	País Vasco	55.2%	7
Aragón	26.1%	9	Canarias	52.9%	9
C. León	25.3%	10	Navarra	52.4%	10
EU 27	24.9%	11	Spain	51.3%	11
Spain	24.9%	12	Asturias	51.2%	12
C. Valenciana	24.9%	13	Aragón	50.8%	13
Melilla	24.4%	14	Melilla	50.8%	13
País Vasco	24.2%	15	Rioja	48.0%	15
EU 15	23.9%	16	C. Valenciana	46.9%	16
Baleares	22.9%	17	Andalucía	46.3%	17
Cataluña	22.5%	18	Ceuta	45.6%	18
Madrid	22.2%	19	Murcia	44.4%	19
Canarias	22.1%	20	C. La Mancha	43.8%	20
Asturias	19.0%	21	C. León	41.1%	21
OECD avg	17.9%	22	Extremadura	39.4%	22
Ceuta	8.7%	23	Galicia	38.3%	23

Note: Data provided by the Observatory for Telecommunications and the Information Society (ONTSI) (2009), www.ontsi.red.es/index.action.

In terms of internet-use, Plan Avanza's original target for 2010 was to reach 65% of individuals who had utilised Internet within the last 3 months. According to the most recent Eurostat data, at 60%, Spain is still 5 percentage points from its goal. Progress since 2005 is promising, however, with rates growing slightly higher than EU-15 and EU-27 averages. Indeed, since the Plan was launched, there has been a 36.4% increase in regular Internet users.

When disaggregating internet use, however, we find that a key to Spain converging with the EU may lie in targeting specific age groups and geographic areas. It seems the Plan's efforts of targeting older persons have been effective, as they are adopting Internet must faster than their EU counterparts, a very important contribution of the Plan considering Spain's large ageing population. To close the 5% gap, ICT skills initiatives targeting the 25-34 and 35-44 age groups may need to be prioritised under the next strategy, as this group is a core demographic of the workforce and remains below EU averages. Short-term productivity and competitiveness gains in the economy can largely depend on initiatives targeting this demographic group.

Figure 4.25. Percentage of individuals reporting having used internet within the last three months



	2005-2006	2006-2007	2007-2008	2008-2009	Compound annual growth rate	% increase 2005-2009
Spain	9.1%	8.3%	9.6%	5.3%	8.1%	36.4%
EU 15	1.8%	10.7%	6.5%	4.5%	5.8%	27.5%
EU 27	2.0%	9.6%	8.8%	4.8%	6.3%	25.5%

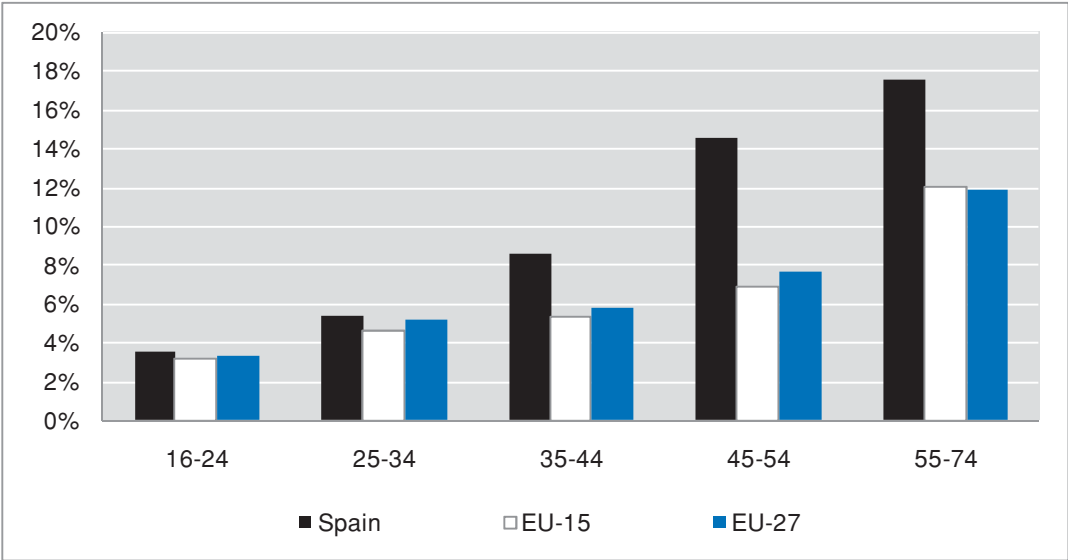
Source: Eurostat (2009), *Information Society Statistics*, Eurostat, Luxembourg, http://epp.eurostat.ec.europa.eu/portal/page/portal/information_society/data/database.

Table 4.5. Internet use (within last three months) by age, 2009

	Total	16-24	25-34	35-44	45-54	55-74
Spain	60%	92%	80%	68%	55%	21%
EU 15	69%	93%	85%	79%	68%	41%
EU 27	65%	91%	82%	75%	63%	36%

Source: Eurostat (2009), *Information Society Statistics*, Eurostat, Luxembourg, http://epp.eurostat.ec.europa.eu/portal/page/portal/information_society/data/database.

Figure 4.26. Compound annual growth rates (2005-2009) of internet use (within the last three months) by age



CAGR 2005-2009	16-24	25-34	35-44	45-54	55-74
Spain	3.56%	5.33%	8.54%	14.50%	17.55%
EU 15	3.20%	4.60%	5.41%	6.94%	12.06%
EU 27	3.27%	5.18%	5.74%	7.60%	11.85%

Source: Eurostat (2009), *Information Society Statistics*, Eurostat, Luxembourg, http://epp.eurostat.ec.europa.eu/portal/page/portal/information_society/data/database.

Once more, the territorial dimension to IS development must also be considered when examining Spain’s progress. Regions like Asturias, Canarias, Melilla, Rioja, Murcia, Galicia and Ceuta are both: *i)* below national levels; and *ii)* are not demonstrating progress at the same pace as the national average.

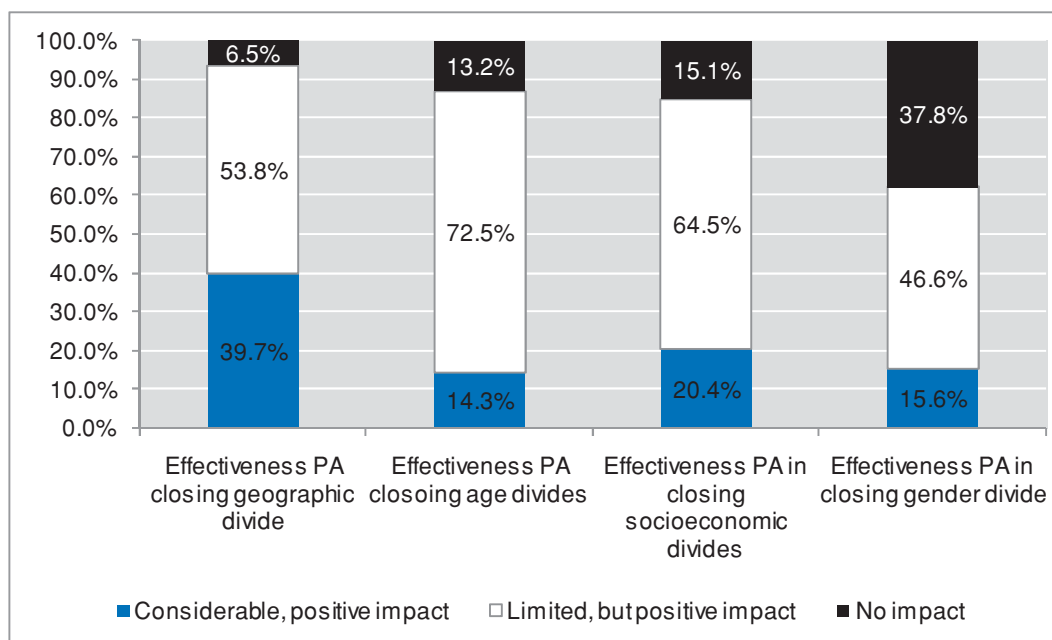
It is interesting to compare data with stakeholders’ perceptions of the effectiveness of Plan Avanza in helping to close some of the principle digital divides of Spain. The majority of respondents perceived limited, but positive improvements. With regards to closing geographic divides (urban/rural), nearly 40% of respondents saw a considerable improvement: the faster convergence rates of rural regions would seem to support these results. Contributions to closing the gap between men and women in joining the information society, however, were seen to be less effective. Policy instruments used to pursue these initiatives have been mainly through NGOs, where monitoring and evaluation has been weak and funds have not been territorialised.

Table 4.6. Internet use within last three months by region (%)

Region	% 2009	2005-2009 CAGR
EU 15	69.0	5.8%
Madrid	67.8	5.4%
Cataluña	66.0	6.1%
Navarra	65.5	9.4%
Baleares	65.0	7.4%
EU 27	65.0	6.3%
Aragón	62.8	10.5%
País Vasco	62.5	6.2%
C. Valenciana	60.5	9.6%
Cantabria	60.3	8.8%
Spain	59.8	8.1%
Asturias	58.1	7.3%
C. León	57.4	10.0%
Canarias	56.9	7.1%
C. La Mancha	55.3	8.7%
Andalucía	54.8	10.4%
Melilla	53.6	1.8%
Rioja	53.6	5.8%
Murcia	51.4	7.1%
Galicia	49.8	6.9%
Extremadura	49.6	8.1%
Ceuta	49.3	7.4%

Source: Data provided by the Observatory for Telecommunications and the Information Society (ONTSI) (2009), www.ontsi.red.es/index.

Figure 4.27. Since 2006, to what extent has Plan Avanza contributed to closing the following kinds of “digital divides” in Spain?



Source: OECD Plan Avanza survey: Questionnaire for Government Stakeholders.

Conclusion: closing digital divides

Progress made in increasing the availability of ICTs for citizens is evident, especially in targeted groups such as rural areas and older persons. However, in some regions and age groups the rate of that progress may need to be greater if the goal of Plan Avanza 2 is to make Spain a European leader. It is clear that there is a strong territorial dimension to be considered in the future, and which ultimately affects the overall impact of the strategy; the mix of policy instruments used to address digital inclusion could be more conducive to inter-regional convergence. For example, 0% loans destined for citizens' purchases of computers and broadband internet service are not territorialised, and – while there is a subset of loans targeting families with school-aged children – currently there are no additional criteria to ensure that funds are destined to persons living in rural areas or for certain socio-economic groups. Likewise, funds for capacity-building distributed to NGOs do not follow a territorial convergence logic. Tailoring policy instruments with this objective in mind is likely to help increase future impacts while increasing cost-effectiveness in times of fiscal constraints.

4.6. Plan Avanza and the public administration: supporting national agendas for modernisation and e-government

The remainder of this chapter examines the progress made by Plan Avanza in the specific sectors of education, health and justice, according to both survey results and the most recent data available on ongoing modernisation and e-government reforms. Additionally, the section looks at how future efforts can contribute to increasing users' take-up of digital services, both by incentivising the use of digital channels as a means of interacting with public authorities, increasing e-skills competencies, and by focusing more on users' needs to ensure that digital services are responsive and generate perceivable benefits.

Plan Avanza, ICTs and education

There is little doubt that ICTs have an important role to play in education. In the first place, ICTs can have a positive – although limited – impact on student performance. Analysis of 2003 and 2006 PISA results for example, yield positive correlations between students' average scores and: *i*) their access to technology; *ii*) their experience using technology; and *iii*) their confidence in their ability to utilise ICTs. Additionally, positive relationships were established between moderate ICT-use and above-average PISA scores (OECD, 2010c). But there are additional reasons for integrating ICTs into curriculums: as cornerstone institutions of modern knowledge economies, excluding schools from technological advances reinforces socio-economic divides and also hinders the productivity and competitiveness of the future labour force. Indeed, beyond contributing to improvements in student performance, ICT-use in schools can help students develop the necessary e-skills to succeed in a globalised knowledge economy, as well as help reduce socio-economic and gender divides in access to jobs.

From its inception, Plan Avanza policy makers understood these linkages between education, ICTs and the advancement of the information society: programmes like *Internet en el Aula* (and its important sub-programme *Agrega*) were amongst the first initiatives to be adopted by the Plan in collaboration with the Ministry of Education. In total, between 2006 and 2009, close to EUR 460 million were mobilised for these

2 programmes; the budget reflects the emphasis that has been placed – at this point – on e-readiness.

Table 4.7. **Key Plan Avanza programmes in the education sector**

Programme	Budget (EUR)	Period
<i>Internet en el Aula</i> & <i>Agrega</i>	453 million	2005-2009
e-skills for teachers	5 million	2006-2008

Source: National Observatory of Telecommunications and the Information Society (ONTSI) and *red.es* (2009).

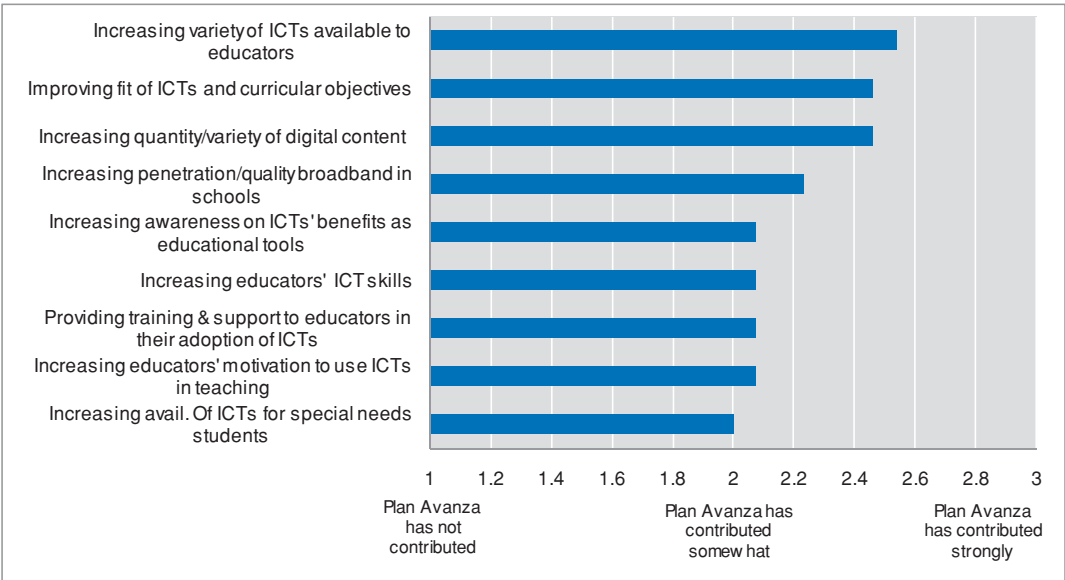
- ***Internet en el Aula*:** this programme is the second phase of an initiative (“*Internet en la Escuela*” or “Internet in School”) between the Ministry of Education and *red.es*. The initiative is largely dedicated to ICT diffusion in schools including: extending broadband to schools and purchasing other ICT equipment such as computers and digital whiteboards. Under the drafted Plan Avanza 2 these efforts will continue under the auspices of a new initiative “*Escuela 2.0*”. The objective of this project is to continue to improve connectivity (speed, resilience or broadband connections) to schools, as well as provide students with individual laptops.
- **Agrega:** The *Agrega* project has involved establishing a repository of downloadable educational digital content for educators. The programme is now co-operating with the United Kingdom to promote the exchange of materials. Box 4.4 offers a more detailed description of this programme.
- **e-skills for teachers:** Plan Avanza has invested EUR 5 million on “training of trainers” programmes for educators in the use of ICTs.

Results

What has been the result of 4 years of close co-operation and over EUR 450 million invested over the course of 5 years? Survey results from Plan Avanza stakeholders in the field of education complement the latest available data of ICT access and use. Perceptions from stakeholders confirm that the Plan has contributed most to objectives associated with ICT diffusion: increasing schools’ access to broadband and Internet, provision of computers and other ICTs such as digital whiteboards, and the development of digital content were cited as areas of the Plan’s larger contributions. Respondents represent the central government (*e.g.* Ministry of Education) as well as regional government organisations (*e.g.* regions’ *consejerías* of education).

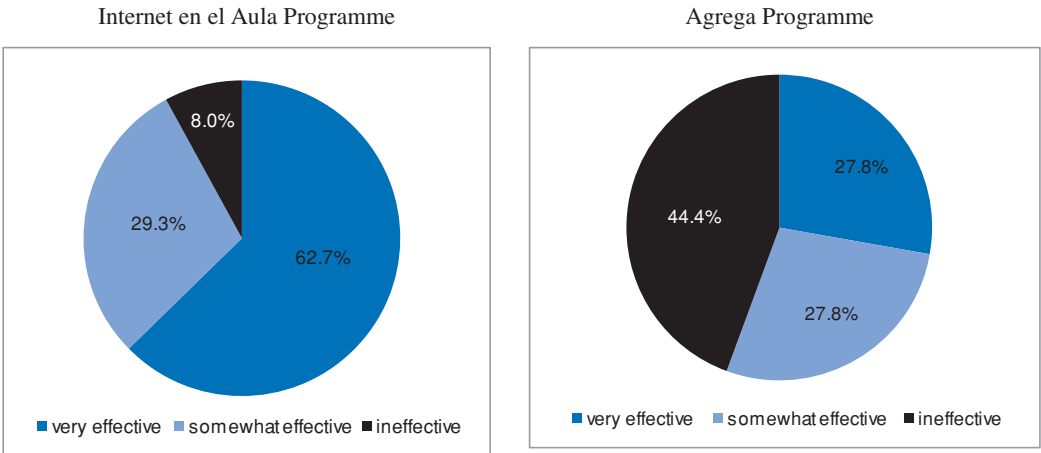
With regards to the effectiveness of specific projects, the *Internet en el Aula* initiative was rated highly by stakeholders – with 63% reporting it was very effective. However, the *Agrega* Programme was rated as less effective with the majority responding as “somewhat effective”. Once again, this discrepancy may stem from the fact that *Internet en el Aula* is more infrastructure-based, while *Agrega* is more dependent on educators’ usage and take-up of the tool. Indeed, without educators’ active participation in the programme, downloading and using materials in class, the initiative is less likely to be effective. Lastly, it is important to note that *Agrega* is a relatively new programme, having only been put on line in 2009.

Figure 4.28. Indicate the extent to which Plan Avanza has contributed to improvements in the following objectives



Source: OECD Plan Avanza survey: Questionnaire for Government Stakeholders.

Figure 4.29. Effectiveness of educational programmes



Source: OECD Plan Avanza survey: Questionnaire for Government Stakeholders.

Analysis of indicators on Internet and broadband access in schools confirms findings from surveys and interviews that progress has been most marked in terms of increasing e-readiness. Table 4.8 demonstrates the growing access to broadband since 2005: a 14% increase in DSL connections over 3 years. Additionally, the percentage of schools with speeds over 2 Mbs increased from approximately 21.6% during the 2006-2007 academic year to 28.4% in 2007-2008 (Ministry of Education, Office of Statistics, 2006-2010). What's more, gains in schools' access to broadband under Plan Avanza seems to have been relatively equitable throughout the country, with the exception of some regions who lag behind leaders like Madrid and Baleares, and the autonomous cites of Ceuta and Melilla.

Table 4.8. Percentage of educational institutions (primary, secondary and private) with an Internet connection

	Internet connection	Phone line	ISDN	DSL	Other
2005-2006 school year	98.7	10.2	12.6	77.4	10.7
2006-2007 school year	99.3	6.4	8.9	86.2	8.7
2007-2008 school year	99.5	5.4	6.4	88.3	9.6

Note: A centre may have more than one kind of internet connection.

Source: Ministry of Education, Office of Statistics, 2006-2010.

Table 4.9. Percentage of educational institutions (primary, secondary) with an Internet connection by region, 2007-2008 school year

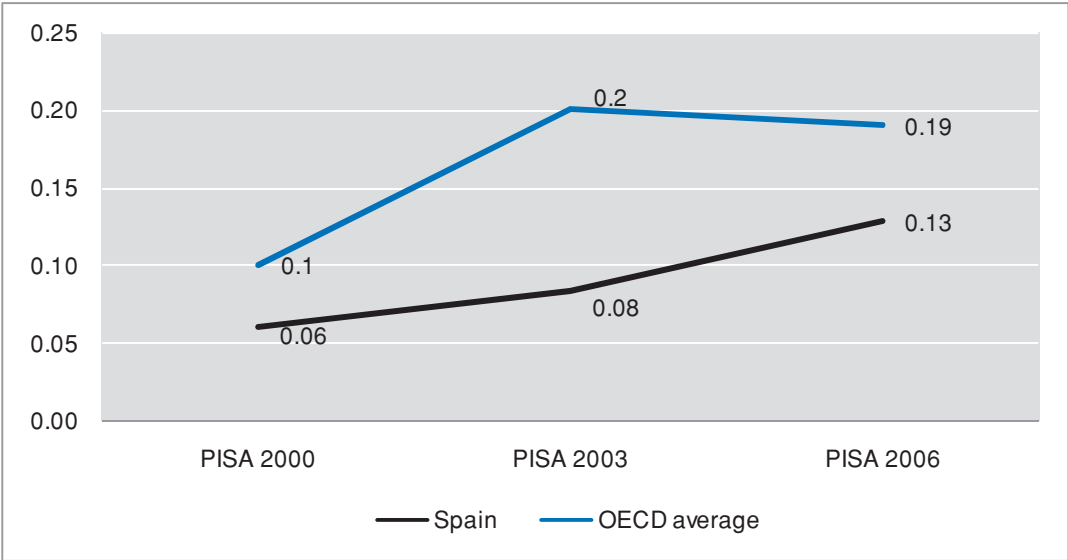
Region	Internet connection	Type of connection (% of schools)			
		Phone line	ISDN	DSL	Other connection
Spain	99.5	5.4	6.4	88.3	9.6
Andalucía	99.4	0.6	0.7	89.9	8.2
Aragón	100.0	7.0	4.5	93.2	15.6
Asturias (Principado de)	99.8	5.6	3.9	89.3	14.8
Balears (Illes)	99.2	1.4	2.8	96.1	3.0
Canarias	99.4	24.0	3.9	89.6	10.1
Cantabria	99.2	1.2	0.8	95.5	5.0
Castilla y León	99.8	14.3	10.7	89.5	10.1
Castilla - La Mancha	99.3	9.3	11.8	91.0	7.7
Cataluña	99.3	1.1	2.2	89.9	8.7
Comunitat Valenciana	99.3	2.8	5.6	94.8	1.3
Extremadura	99.8	9.3	7.6	47.5	46.5
Galicia	98.3	2.7	12.8	77.8	5.1
Madrid (Comunidad de)	99.9	8.4	18.7	96.1	3.6
Murcia (Región de)	99.8	1.5	2.0	88.2	8.4
Navarra (Comunidad Foral de)	100.0	3.2	7.7	84.6	8.1
País Vasco	100.0	1.3	5.5	78.6	28.6
Rioja (La)	100.0	22.7	6.4	95.5	7.3
Ceuta	100.0	0.0	3.6	100.0	7.1
Melilla	100.0	8.7	0.0	100.0	21.7

Note: One centre can have more than one type of connection.

Source: Ministry of Education, Office of Statistics.

Access to computers has also increased under the *Internet en el Aula* Programme (Figure 4.30), and the latest OECD data from PISA 2006 results suggest that Spain is approaching the OECD average in terms of the number of computers per student.

Figure 4.30. Number of computers per student



Note: Findings based on PISA 2006 results.

Source: OECD (2010), *Are the New Millennium Learners Making the Grade? Technology Use and Educational Performance in PISA*, OECD Publishing, Paris.

Once more, access to computers has been relatively equitable: the differential between urban and rural schools in Spain is lower than the average OECD differential of 0.4.

Table 4.10. Computer access in rural and urban areas

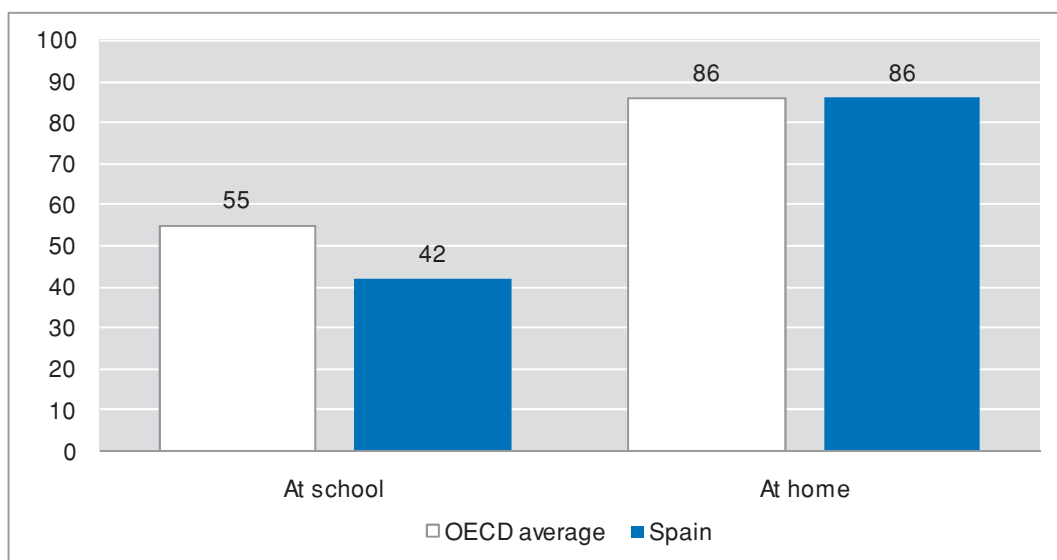
	Computers per student in rural locations or towns	Computers per student in cities
Spain	0.13	0.12

Note: Findings based on PISA 2006 results.

Source: OECD (2010), *Are the New Millennium Learners Making the Grade? Technology Use and Educational Performance in PISA*, OECD Publishing, Paris.

PISA results reveal that in most OECD member countries, the relationship between home use and academic attainment is stronger than that of school use and academic attainment, even when accounting for socio-economic factors. Indeed, students without access to a computer at home, or who use computers less frequently at home, tend to be lower achievers than those who have access to a computer at home (OECD, 2010c). Given this fact, it is a positive development that Spanish-OECD differences disappear when looking at use of computers at home: the percentage of students with a computer at home is comparable to the OECD average of 86%.

Figure 4.31. **Percentage of students on average in OECD member countries who utilise computers frequently**

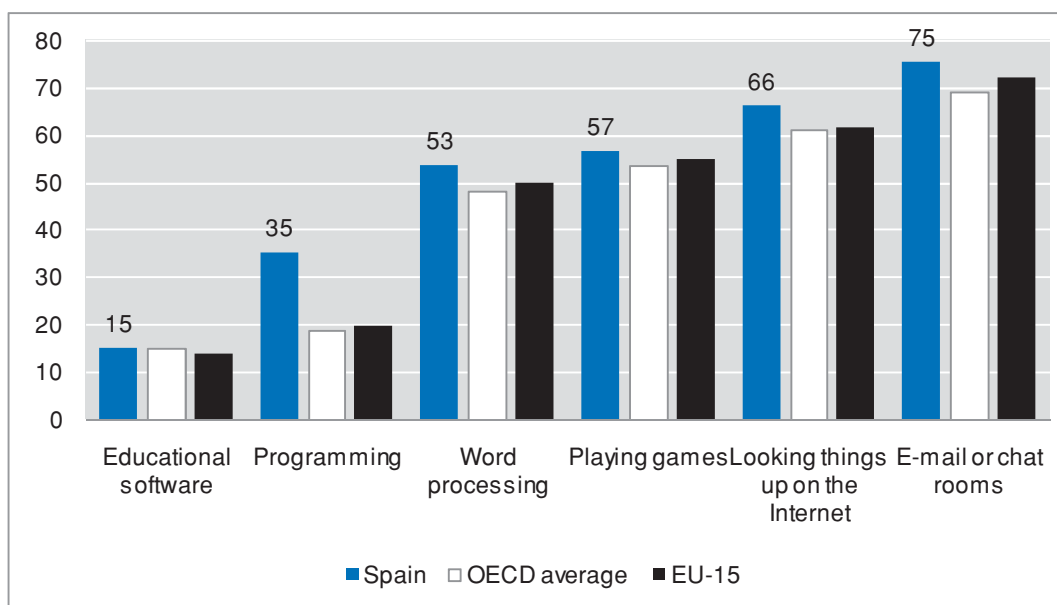


Note: Findings based on PISA 2006 results.

Source: OECD (2010), *Are the New Millennium Learners Making the Grade? Technology Use and Educational Performance in PISA*, OECD Publishing, Paris.

However, of those students who use computers frequently, the main activities are email and chats, internet searches, and games. Only 15% of students frequently use computers for utilising educational software. The trend holds for educators: according to a different study conducted in 2005, only 7.4% of professors said they often downloaded educational software. The comparatively lower take-up of ICTs by teachers, students, and even parents for educational purposes may signal the presence of important barriers to take-up that have not been addressed. Indeed, according to interviews with stakeholders, lagging utilisation is a result of educators' and parents' lack of awareness about the role of ICTs in learning and teaching, the lack of e-skills, and difficulties in tailoring digital learning resources to curricular needs.

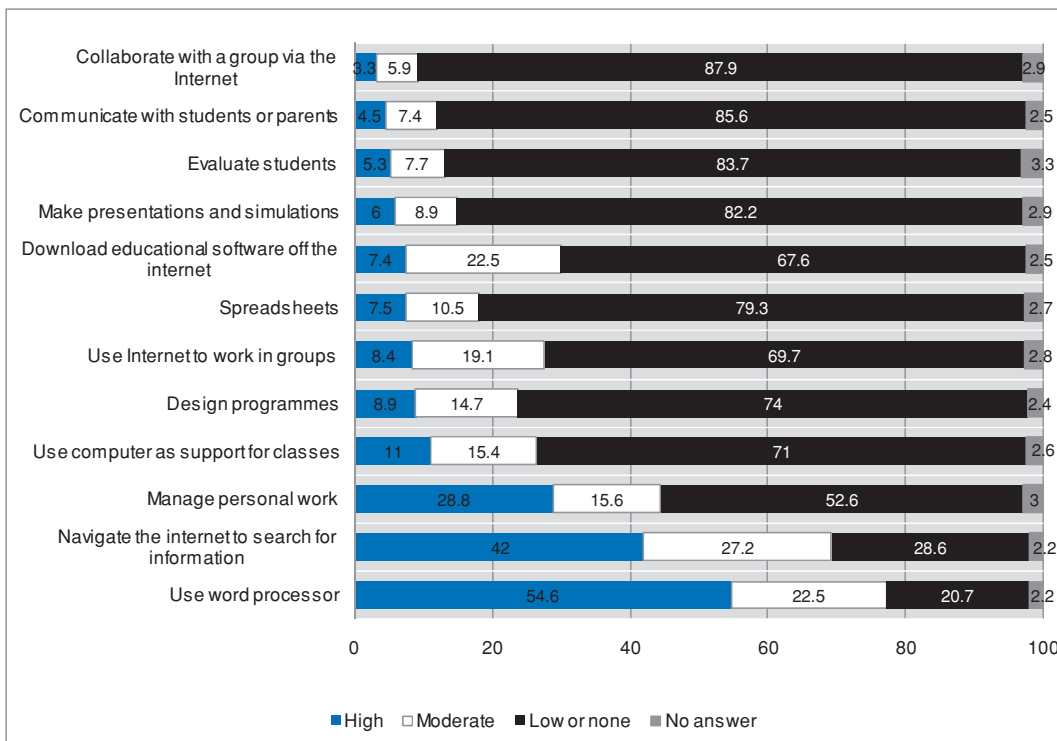
Figure 4.32. Activities of frequent computer users



Notes: Findings based on PISA 2006 results. EU-15 does not include the United Kingdom.

Source: OECD (2010), *Are the New Millennium Learners Making the Grade? Technology Use and Educational Performance in PISA*, OECD Publishing, Paris.

Figure 4.33. Frequency of use of ICTs by teachers (% of teachers)



Source: National Observatory of Telecommunications and the Information Society (ONTSI) (2005), *Las Tecnologías de la Información y de la Comunicación en la Educación*, ONTSI, Madrid.

Conclusions: shifting from technology to methodology

Deployment of ICTs in schools does not automatically translate into impacts associated with the third phase of the S-curve: higher attainment, higher attendance rates, lower drop-out rates, etc. Certainly, reaching these goals will first require a shift in IS priorities from readiness to intensity – from technology to methodology – where ICTs are not just present in classrooms and schools, but integrated into pedagogical methodology and curricular objectives.

Both survey results and data suggest that a tipping point may have been reached in Spain where a better balance may be achieved between policies aimed at promoting access and usage: access to broadband and computers has risen, but the differential between ICT use at home and at school remains large. Additionally, both students and teachers are under-utilising ICTs for educational purposes. The relatively slower adoption and use of ICTs should drive policy makers to think about what barriers are preventing programmes like *Agrega* (whose success relies on educators' adoption of ICTs) from becoming more effective, and what roles educators and parents must play in promoting their use.

Perhaps more than in any other sector (*e.g.* health or justice), the time is right to make the transition to the intensity phase of the S-curve. It is to be noted, however, that new programmes launched in 2010 such as *Escuela 2.0* seem to continue to prioritise the deployment of ICT infrastructure over initiatives aimed at increasing take-up. Plan *Avanza 2* initiatives in the education sector could, rather, consider addressing some of the main obstacles to raising e-intensity.

Box 4.4. The *Agrega* Programme

The *Agrega* project has consisted in the development of an online repository which provides access to digital learning resources to complement teaching, and which standardises and organises materials according to curricular objectives and e-learning platforms. The development of the concept of the project itself, as well as the portal, was performed in a collaborative and consultative manner with panels of teachers and educational professionals. In this way, the needs and considerations of end-users were incorporated from the start, improving the quality of the materials, their reach and their rate of utilisation.

Indeed, educators have for some time recognised the utility of incorporating ICTs into curricula, as they allow for greater visualisation, interaction and student independence. They also have the added benefit of helping students to learn to use ICTs, and become more comfortable utilising computers, software, and the Internet from an early age. Animated and interactive digital content has been amongst the most successful and effective of educational tools.

The *Agrega* portal allows teachers and families to browse and download animated educational materials according to different subjects, grade-levels and even languages. Indeed, many materials are not only available in the different regional languages (Catalan, Valencian, Gallegan and the Euskara language) but also in English. Additionally, for the purposes of professional training, educational simulations have been developed and added to the repository. Various ministries are creating informational materials (for instance, on health habits, safety, gender equality, etc.). Lastly, the *Agrega* Programme also provides training for teachers on how to best utilise the portal and materials.

Box 4.4. The Agrega Programme (continued)

Finally, Plan Avanza is also collaborating internationally in order to increase the quantity of materials available and achieve cost-savings. By sharing digital contents from Agrega with similar IS initiatives in the United Kingdom for instance, the amount of digital content available in English has increased.



Screen shot of “Snowflakes Everywhere”, a children’s English language course from the Agrega repository.

Source: OECD, derived from interviews with the Ministry of Industry, Tourism and Trade (MITT), the State Secretariat for Telecommunications and Information Society (SSTIS), and *red.es* officials.

Plan Avanza, ICTs and health: building a critical mass

Plan Avanza initiatives targeting the health sector certainly have a large potential to affect the quality of lives of citizens and help reduce operating costs, as Spain has universal health coverage, a large aging population, and a decentralised National Health System (NHS) that can create costly inefficiencies from fragmentation and duplication. But maximising this potential hinges first on the levels of e-readiness achieved as well as on the existence of a critical mass of participating health institutions and regions. Indeed, while Plan Avanza interventions in the education sector have had a longer trajectory and are beginning to focus on exploiting the value of ICTs for teaching and learning, policies targeting the health sector have primarily focused on building this critical mass of users (e.g. participating regions, hospitals and pharmacies) on which to subsequently promote the development of new services and achieve cost-reductions.

Spain’s National Health System and the role of ICTs

According to Spanish law, all persons living in the country are entitled to access to healthcare under the National Health System (NHS), and in 2007 total spending on health equated to EUR 63.8 million (8.5% of GDP). Close to 72% of this expenditure was financed publically, amounting to EUR 1 421 per capita, about 12% below the OECD average (OECD 2009k). Of 804 hospitals in the country, 315 are public, and divided into

3 types: primary hospitals, specialist centres and primary care centres, which users access with national health card (Ministry of Health, 2010).

Management of the National Health System (NHS) in Spain is decentralised. As evident by the distribution of funding amongst the different tiers of government, competencies for the provision of health services are devolved to regional governments, as outlined by both the Constitution and Law 16/2003 of 28 May.

Table 4.11. **Competencies in healthcare delivery and management of NHS**

Tier	Competencies	2009 budget
Central	Co-ordination with sub-national governments to ensure minimum standard of conditions for health institutions and practitioners; health policy for research, prevention, pharmaceuticals; international co-ordination; provision of health (via INGESA) of autonomous cities.	EUR 4.69 billion
Regional	Planning and provision of public health; management of public health services.	EUR 58.96 billion
Local	Collaboration in management of health services, such as co-ordination between health and social services; sanitation of public spaces.	EUR 1.07 billion

Source: Ministry of Health (2010), *Sistema Nacional de Salud de España, 2010*, Ministry of Health, Madrid.

Maintaining policy coherence and avoiding the fragmentation of information between health institutions and regions is challenging in a decentralised context. Inefficiencies have the potential to affect the quality of care provided and threaten the sustainability of system as they can incur unnecessary costs. As in other OECD member countries, the adoption of ICTs in the Spanish NHS has had the following three objectives (OECD, 2010e):

- **Increasing the quality of care:** the use of ICTs in healthcare delivery can facilitate information-sharing and communication between health practitioners, increasing patient safety and improving the quality of care provided. For example, Plan Avanza's eHealth Programme has included a pilot initiative which uses customised software to reduce the potential for human error in blood transfusions and timely access to patients' records (*e.g.* medications, past incidents, etc.) can help doctors better diagnose and treat patients. Additionally, older people or persons with chronic illnesses – who are often treated by several physicians or receive treatment in more than one centre – can receive better treatment as different physicians can more easily share information via a centralised node.
- **Reducing operating costs of clinical services and administrative costs:** evidence from case studies in OECD member countries suggests that ICTs have the potential to help save time, reduce paperwork and improve the productivity of health practitioners, ultimately reducing costs. For example, the use of digital medical images reduces waiting times for tests/lab results. Additionally, services like e-billing or online reservation systems not only increase convenience for patients, but can also help streamline administrative processes.
- **Enabling entirely new modes of care:** ICTs can also be central to supporting new models of care. Patients living in rural or remote areas, for instance, can benefit greatly from telemedicine initiatives that allow them to receive specialised medical attention faster, without having to travel long distances. The region of Balears, for example, has implemented a telestroke programme that delivers immediate specialised care to remote areas. Furthermore, assisted living

technologies allow older or disabled persons to maintain greater independence, as their physicians can monitor them remotely.

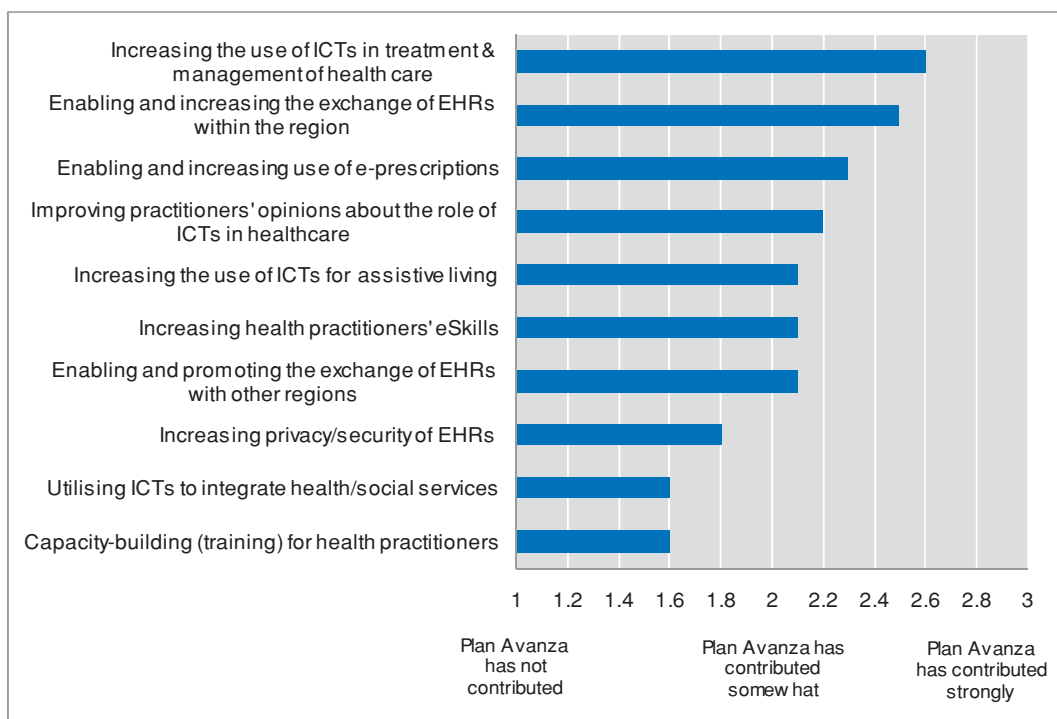
Recognising the scope for ICTs in health, ICT investments by the Spanish NHS have increased (from EUR 443 million in 2008 to EUR 544 million in 2009). However, this amounts to 0.9% of the overall healthcare budget (red.es, 2010). Within the auspices of Plan Avanza, several initiatives have been implemented under the umbrella of eHealth, which received EUR 122 million from the central government, and a total of EUR 428 million from regional governments between 2006-09.⁹

- **ePrescriptions:** this Plan Avanza programme targets pharmacies and primary care centres, allowing doctors, hospitals and pharmacies to exchange and store prescriptions electronically. This system saves patients time and allows them to have access to medications from different regions.
- **Electronic health records:** an electronic record is a digital record of health-related information on an individual that conforms to nationally recognised inter-operability standards and that can be created, managed, and consulted by authorised clinicians and staff across more than one healthcare organisation (OECD, 2008b). In Spain, the EHR Programme works to ensure the inter-operability of different regions' electronic health records (EHRs) systems in order to integrate clinical records into a centralised, national node. Currently ten regions are participating in the programme, whose aim is to be able to make all patients' records accessible regardless of their location. The central node currently complies with ISO 27001 and 27002 standards. Plan Avanza has also worked to back-up the central node.
- **ICT equipment:** via *red.es*, Plan Avanza has supplied the critical ICT equipment which supports the goals of the EHR and e-prescriptions initiatives (servers, computers, scanner and printers, high-resolution monitors for viewing diagnostic images, etc.).
- **Online booking:** under Plan Avanza, the initiative working to enable patients to make online appointments has now been expanded to include 11 regions.

Results

Overall, the Plan's stakeholders from the health sector are pleased with the contribution of the Plan to eHealth goals. In their view, the main contribution of Plan Avanza since 2006 has been increasing the use of ICTs in the treatment and management of healthcare, suggesting that the provision of ICT equipment (computers, scanners, servers, monitors, etc.) is perceived as the highest area of impact. Second, stakeholders perceive positive contributions to enabling and increasing the exchange of EHRs within the region; this is in contrast to enabling the exchange of EHRs with other regions, which although it ranked lower, still remains a challenge for Plan Avanza 2 as not all regions are integrated in the central node. Also, according to respondents, future efforts could prioritise measures to integrate ICTs with social services and provide training and support to health practitioners to increase the utilisation of the applications available. As we will see in the conclusion of this section, these measures are necessary for increasing take-up of services and leveraging existing investments; up until now, it seems these efforts have received less priority.

Figure 4.34. Indicate the extent to which Plan Avanza has contributed to the following objectives



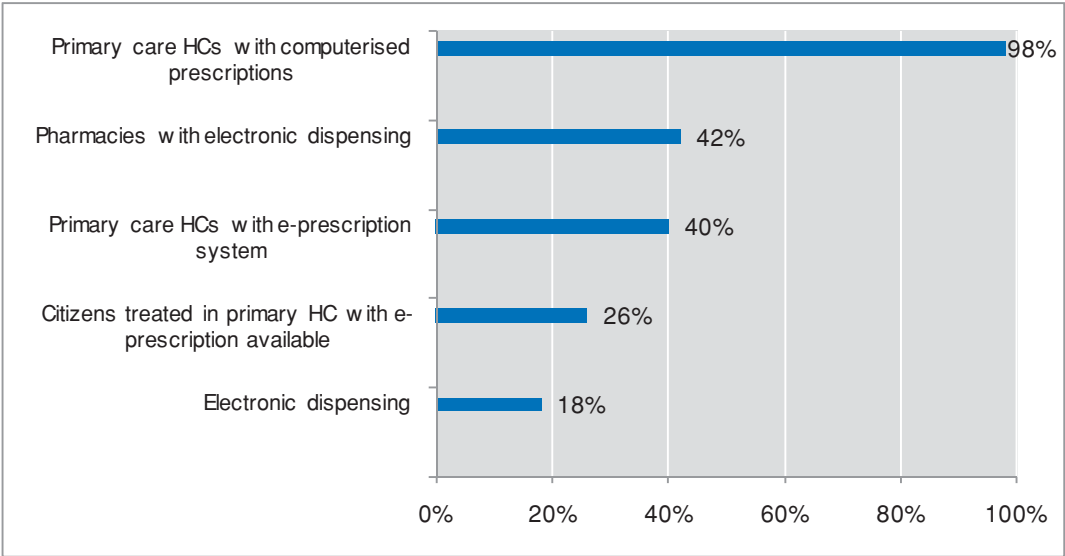
Source: OECD Plan Avanza survey: Questionnaire for Government Stakeholders.

e-prescriptions

In 2007, according to a survey commissioned by the EU (European Commission/ Empirica, 2008), 3.1% of general physicians (GPs) in Spain reported using an e-prescriptions system. The EU-27 average at that time was 6.3%. By 2009 however, many more regions in Spain had undertaken initiatives to promote the availability of e-prescriptions systems. According to data from *red.es*, for example, 2009, 18% of medicines dispensed in Spain were handled electronically, and 42% of pharmacies had the option of dispensing prescriptions electronically (*red.es*, 2010). Though data from the EU study measured usage and ONTSI statistics measure readiness, it can be inferred that in two years, progress has indeed been made. Additionally, whereas in 2006 only 1 region had implemented an e-prescription programme, in 2009, 5 had commenced execution of this project (Canary Islands, Catalonia, Galicia, Valencia and Pais Vasco).

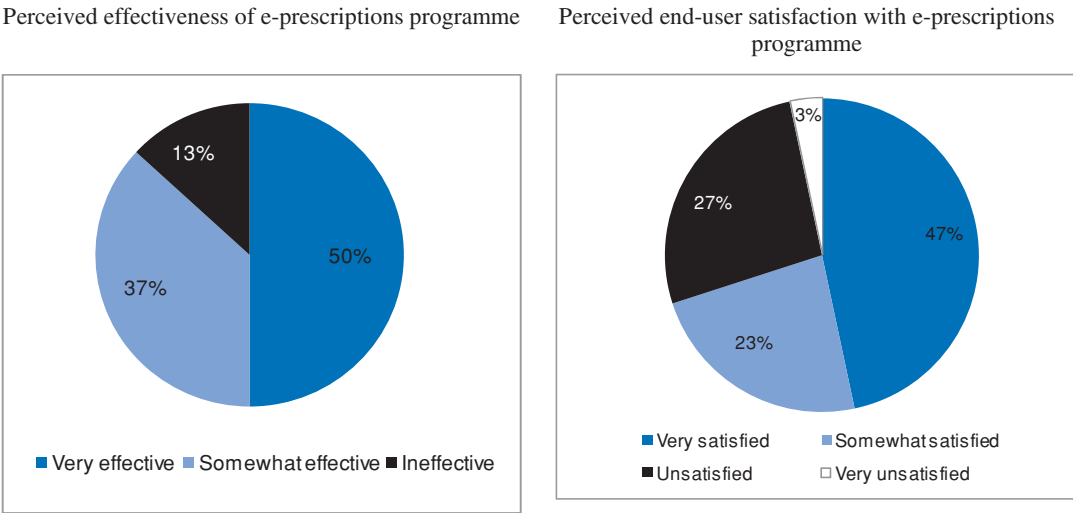
Out of the respondents surveyed, the majority were very satisfied with the effectiveness of the e-prescriptions Programme, with a small (13%) subset reporting they were unsatisfied. The challenge it seems is reaching end-users, as 27% of stakeholders reported that end-users were unsatisfied with the programme. This may reflect two things: *i)* firstly, the fact that this service is not yet available nation-wide; and *ii)* readiness (in participating regions) to increase the priority of initiatives aimed at raising the awareness of the benefits of these applications amongst end-users (pharmacists, physicians, patients), in order to increase the utilisation of these services.

Figure 4.35. E-prescriptions in primary healthcare, 2009



Source: red.es (2010), *Las TICT en el Sistema Nacional de Salud (ICT in the National Health System)*, ONTSI, Madrid.

Figure 4.36. Effectiveness of the e-prescriptions Programme

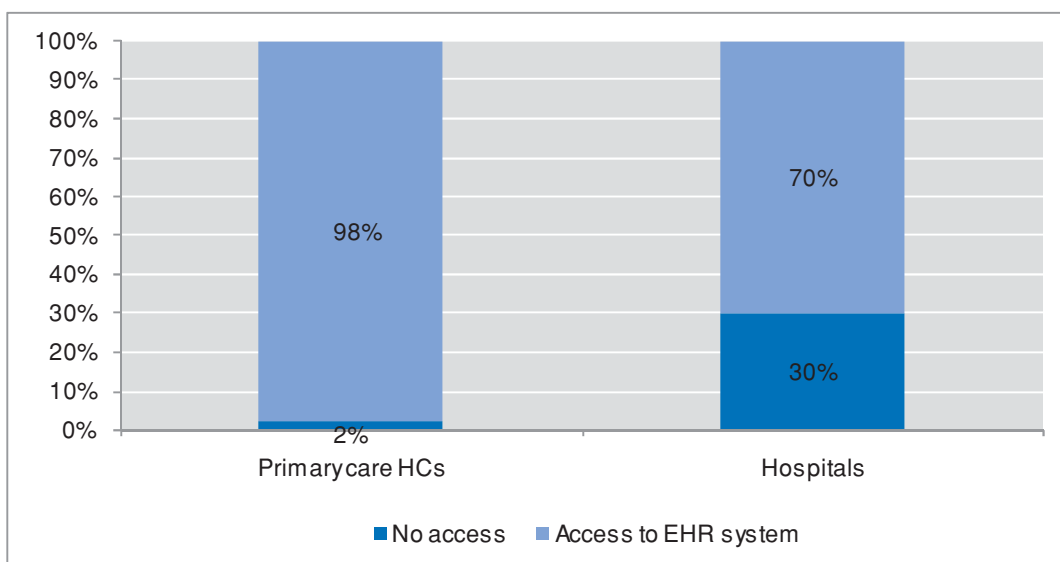


Source: OECD Plan Avanza survey: Questionnaire for Government Stakeholders.

Electronic health records

In 2007, only 12.6% of general physicians in Spain reported having transferred medical data electronically to other medical practitioners (European Commission/ Empirica, 2008). In 2009, however, 87% of doctors had **access** to an EHR system, and 88% of the population had an electronic health record. Again, comparisons between these indicators is problematic, but it could be argued that the potential for GPs to exchange information electronically has progressed considerably in only two years' time.

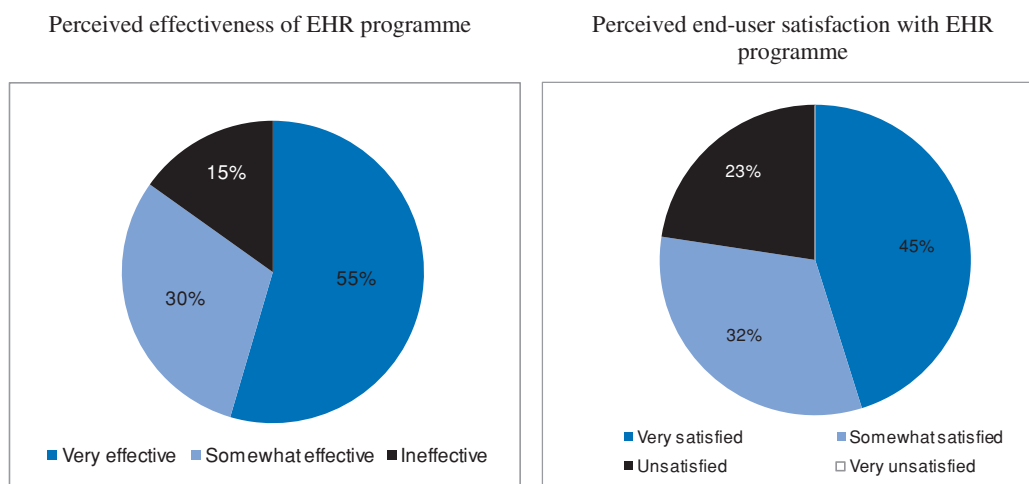
Figure 4.37. **Percentage of health institutions with access to the electronic health records system, 2009**



Source: *red.es* (2010), *Las TICT en el Sistema Nacional de Salud (ICT in the National Health System)*, ONTSI, Madrid.

The difference between stakeholder and citizen satisfaction is also evident with the EHR Programme: 55% of direct stakeholders reported the initiative was very effective, while the perceived satisfaction of end-users was relatively lower. Again, this could reflect the fact that exchanges are not yet possible nation-wide, and that up-take of the service remains lower than it potentially could be.

Figure 4.38. **Effectiveness of electronic health records programmes**



Source: OECD Plan Avanza survey: Questionnaire for Government Stakeholders.

Lastly, due to interventions under the auspices of Plan Avanza, progress in the availability of online booking services increased 46% in 2 years, with 88% of primary health centres currently offering patients this option. However, despite the fact that the number of online appointments more than doubled over the same period, these only represented 3.3% of total bookings made in 2009.

Table 4.12. **Progress of online appointments initiative**

Year	% of primary HCs offering online appointments	Number of online appointments made
2007	60.2%	5 289 677
2009	87.6%	12 464 018
% increase	46%	136%

Source: *red.es* (2010), *Las TICT en el Sistema Nacional de Salud (ICT in the National Health System)*, ONTSI, Madrid.

Conclusions: leveraging existing investments while bringing “eHealth” to citizens

Plan Avanza has made a difference in ICT diffusion of Spain’s NHS, reaching hospitals, primary health centres, pharmacies and laboratories in participating regions. Project data and survey results support this conclusion, but indicate that greater strides may be needed to yield results for end-users since new capabilities are: *i*) under-utilised; and *ii*) not yet rolled-out nation-wide. After all, initiatives for permitting the efficient and accurate exchange of medical information – whether they be clinical records or prescriptions – require the participation of all regions if they are to maximise benefits for citizens and health practitioners: if a patient seeks care in a non-participating region or health institution, it matters little for them if their “home” hospital is integrated in the national node, as their records will not be transferable.

When it comes to interventions in the health sector, a difficult challenge awaits Plan Avanza 2 in balancing e-readiness and e-intensity policies in this sector, as there are greater inter-territorial discrepancies in their levels of implementation, and levels of progress vary by programme. For example, it would seem that the EHR Programme is farther along in creating a critical mass of users than that of the e-prescriptions initiative. Promoting the utilisation of these capabilities (especially within institutions of the same region), then, may be a greater priority for these programmes in the short-term.

ICTs in justice: first steps in modernisation

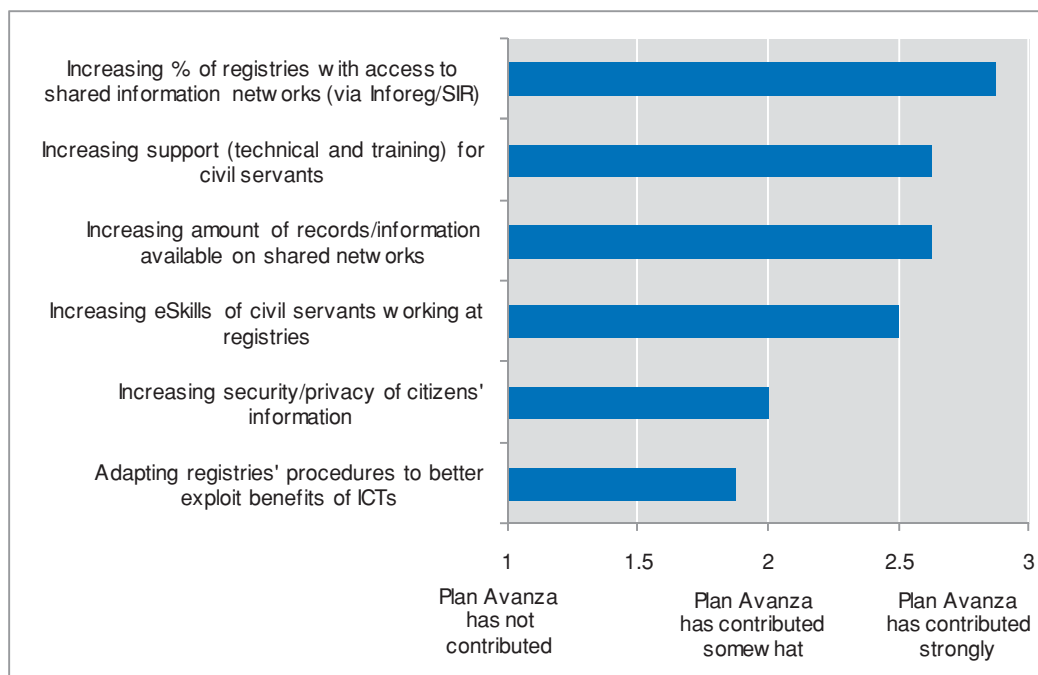
The Plan’s interventions in the justice sector have centred on civil registries. The Civil Registries Online Programme was allocated a budget of EUR 129 million over 4 years and was implemented jointly by Plan Avanza and the Ministry of Justice. The project consists of rolling out a web-based system, Inforeg, across local civil registries, enabling civil registry officers to record information onto an online intranet. Additionally, the programme digitises all birth, marriage, death and guardianship records dating back to 1950. Lastly, a third leg of this pillar has been the integration of registries within and across regions, via the SIR network.

Results

Thus far, in the 432 civil registry offices in the country, 99.7% of civil records in Spain have been digitised and 100% of these have access to the Inforeg application. Several thousand local courts have received computers and other ICT equipment.

With regards to eJustice programmes in civil registries, stakeholders report that the greatest contributions have been increasing the availability of ICTs in registries, increasing support for civil servants in their use of new applications such as SIR and Inforeg, and increasing the amount of information accessible via shared networks. The main concerns seem to be ensuring that the Plan contributes to increasing the security of information and the privacy of citizens, as well as adapting back-office procedures to better exploit the potential of ICTs and produce real efficiencies in processing and cost reductions.

Figure 4.39. **Perceived contributions to eJustice**



Source: OECD Plan Avanza survey: Questionnaire for Government Stakeholders.

Conclusions

Justice sector institutions have, arguably, gotten a “late start” in implementing major modernisation and e-government reforms, and in the short-term programmes are likely to continue focusing on the “supply-side” dimension. Plan Avanza 2 seems to have already begun to address this sector’s strong demand for further action, as there is a greater focus on justice in this second incarnation of the strategy. Indeed, over EUR 76 million will be destined to the Ius+Red Programme which will continue to work with civil registries and the courts to digitise records, install kiosks, and diffuse audio-visual technologies to courts.

Plan Avanza: supporting e-government programmes

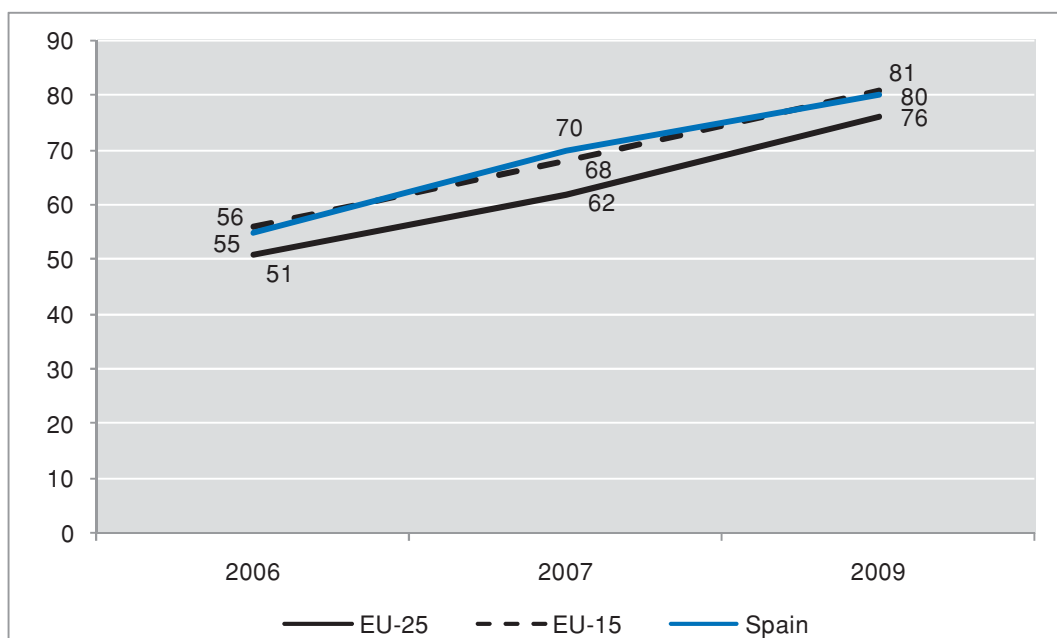
As seen at the beginning of this chapter, Plan Avanza’s initiatives in the public sector have been rated as amongst the most effective by the Plan’s stakeholders with 46% of respondents reporting that the Plan had a considerable and important impact (Figure 4.4). Initiatives in this line of work have focused largely on integrating ICTs into back-office operations, supporting modernisation efforts and promoting e-government policies in

co-ordination with local governments, the Ministry of the Interior and the Ministry of the Presidency. Some of the key programmes have included:

- **060 online Portal:** the Ministry of the Presidency launched the 060 Portal in 2007, an online one-stop stop for government services bundled according to customer profiles and life events (paying taxes, getting married, retirement, etc.). Plan Avanza and the ministry have an agreement in which *red.es* provides training to citizens on how to use this channel at rural telecentres, in order to promote take-up of digital public services.
- **National electronic ID cards:** Plan Avanza has provided support to police stations, where national ID cards are emitted, with the provision of key equipment for issuing these cards. Additionally, the Plan has also rolled out applications at these stations for waiting list management and online booking, and communication initiatives have been implemented to raise awareness of the benefits of using eID cards and what functions they offer. Rural telecentres are utilised as training centres for using these cards to access online public services.
- **Avanza Local:** this programme includes a line of funding for municipalities to support e-government initiatives. The Avanza Local Programme funded EUR 1 million in 2009 alone, for holding informative sessions and workshops for municipalities and providing a suite of technological solutions such as LOCALGIS, LOCALWEB, SIGEM, CATASTRO, specifically developed for municipalities. One of these solutions, *Urbanismo en Red*, was allocated a budget of EUR 57 million over 4 years. This particular application involves the implementation of a GIS Open Source solution (LOCALGIS or POSTGIS). The programme also supports the digitalisation of the town planning according to initial phase systematisation.

Programmes such as Avanza Local and 060 have increased the availability of government services online. Both EU and UN data confirm the leaps that have been made in this dimension. According to a survey by Capgemini commissioned by the EU to assess the availability of digital public services, the country's score increased by 60% in only 3 years, with 80% of services measured accessible through the digital channel in 2009.

Figure 4.40. E-government availability (supply-side)



Note: no data is available for 2008. Based on a survey conducted by Capgemini on the online availability of 20 public services.

Source: Eurostat (2009), *Information Society Statistics*, Eurostat, Luxembourg, http://epp.eurostat.ec.europa.eu/portal/page/portal/information_society/data/database.

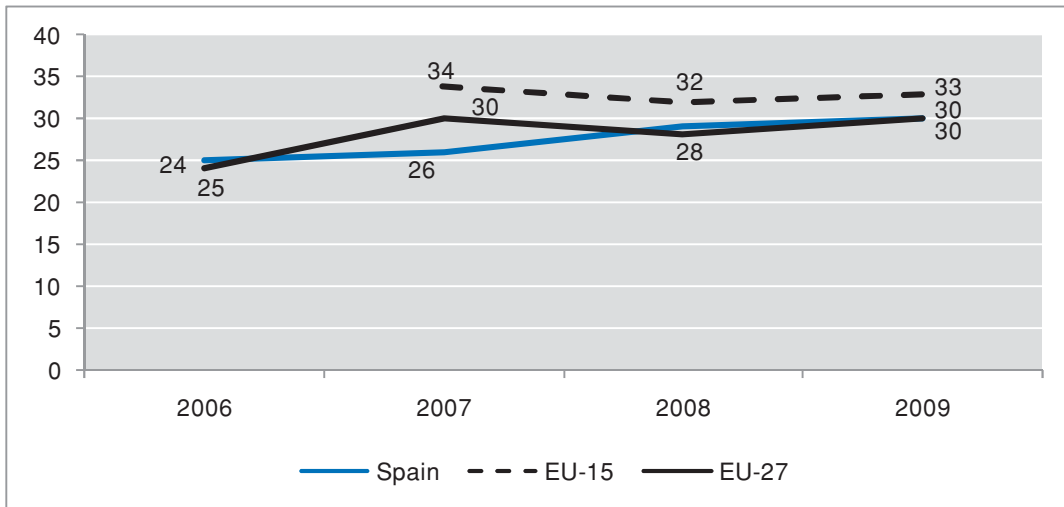
Likewise, Spain's position in the United Nations e-government rankings has increased substantially, moving up 30 places in the e-government ranking and 66 in the online services one. The launch of the 060 Portal in 2007 and the continued efforts to integrate national and sub-national services through this tool have been reflected in international comparisons.

Table 4.13. Spain's position in e-government rankings

Spanish position in United Nations e-government rankings	2005	2008	2010	Progress
E-government rank	39	20	9	+30
Online services rank	71	15	5	+66

Source: United Nations 2010 e-government survey (2010), <http://unpan1.un.org/intradoc/groups/public/documents/UN-DPADM/UNPAN038853.pdf>

While access is increasing at a fast pace, the utilisation of public services by the general population, however, remains lower in comparison to availability, with only 30% of individuals having used the Internet to interact with public authorities. Take-up is continually increasing (and at a more stable pace, with a 22.7% increase between 2006 and 2009), but the rate of adoption is slightly below that of its EU counterparts.

Figure 4.41. **Percentage of individuals who have used internet to interact with public authorities**

	2006-2007	2007-2008	2008-2009	% change	CAGR 2006-2009
Spain	4.0%	11.5%	3.4%	20.0%	6.3%
EU-15	–	-5.9%	3.1%	–	–
EU-27	25.0%	-6.7%	7.1%	25.0%	7.7%

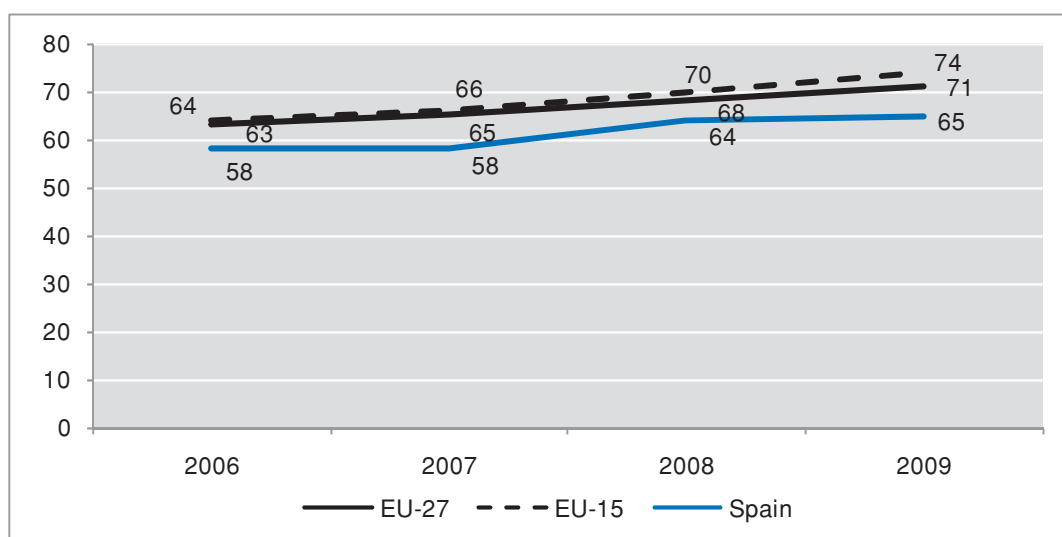
Source: Eurostat (2009), *Information Society Statistics*, Eurostat, Luxembourg, http://epp.eurostat.ec.europa.eu/portal/page/portal/information_society/data/database.

The digital channel is utilised more, however, by enterprises, since it is now mandatory by law for some administrative procedures to be carried out on line. In October 2007, a ministerial order was issued intending to standardise and promote electronic invoicing for public contracts. The aim was to ensure common practice amongst ministries, and the order applies to invoices issued by private individuals or entities. It deals with two main aspects of electronic invoicing:

- the approval procedure within ministerial departments and other bodies which opt to accept incoming electronic invoices;
- the technical conditions to be met by those sending electronic invoices to the public administration.

In particular, the origin and content of an invoice must be authenticated by an electronic signature that is valid under the Law on Electronic Signatures. Nonetheless, 65% report having utilised the Internet to interact with public authorities. This remains below EU averages, and rates of progress are also slightly lower than EU-15 and EU-27 averages.

Figure 4.42. Percentage of enterprises which use the Internet for interacting with public authorities



	2006-2007	2007-2008	2008-2009	% increase	CAGR
Spain	0.0%	10.3%	1.6%	12.1%	3.9%
EU-15	3.1%	6.1%	5.7%	15.6%	5.0%
EU-27	3.2%	4.6%	4.4%	12.7%	4.1%

Source: Eurostat (2009), *Information Society Statistics*, Eurostat, Luxembourg, http://epp.eurostat.ec.europa.eu/portal/page/portal/information_society/data/database.

Conclusions

Overall, the majority of stakeholders implicated in modernisation and e-government initiatives perceived positive impacts from Plan Avanza interventions. Nearly all viewed that either a considerable or limited contribution has been made to improving processing speeds, increasing the quantity and quality of services provided, reducing administrative burdens, and facilitating the exchange of information between different public sector organisations. However, twenty-one per cent of respondents noted that, thus far, ICTs have not been exploited to increase the transparency of the public sector. The United States Open Government Initiative, for example, may offer inspiration to Plan Avanza as this programme has exploited the potential of ICTs, Web 2.0, and social networking to ensure that ICT applications are not sequestered to the back-office, but rather have more visible impacts for citizens. Box 4.5 offers an example of a pilot project supported by the Plan as a first step in promoting the use of technologies to “open government” and increase transparency.

Box 4.5. ICTs for increasing public sector transparency

Although policies aimed at promoting the **reutilisation of public data** are relatively nascent in Spain, important first steps have been made under the auspices of the national information society strategy Plan Avanza 2 (2010-2015). The most prominent example is a project launched in early 2009, *Aporta*, a user-friendly repository and search engine similar to that of the United States' *data.gov*. *Aporta* (literally meaning to “contribute” or “share” in Spanish) has a budget of EUR 1 million, allocated to the construction and maintenance of an online portal (www.aporta.es). Government organisations can upload data and share with citizens, businesses and other public sector organisations. The project also seeks to stimulate take-up of this tool, by funding informative and capacity-building sessions for citizens, SMEs and civil servants.

Aporta demonstrates Spain's intentions to follow the trend of other EU countries to encourage **open government**, with the goals of fostering public sector co-operation and innovation; increasing transparency and inter-operability; and generating new opportunities for social and commercial gain. Spurred by the EU Law 2003/98/CE, national legislation followed in Spain with Law 37/2007 of 16 November, which also governs the conditions under which data can be shared and used. Indeed, Plan Avanza 2 includes open government as one of its strategic objectives, though specific initiatives beyond *Aporta* are still in the early stages development.

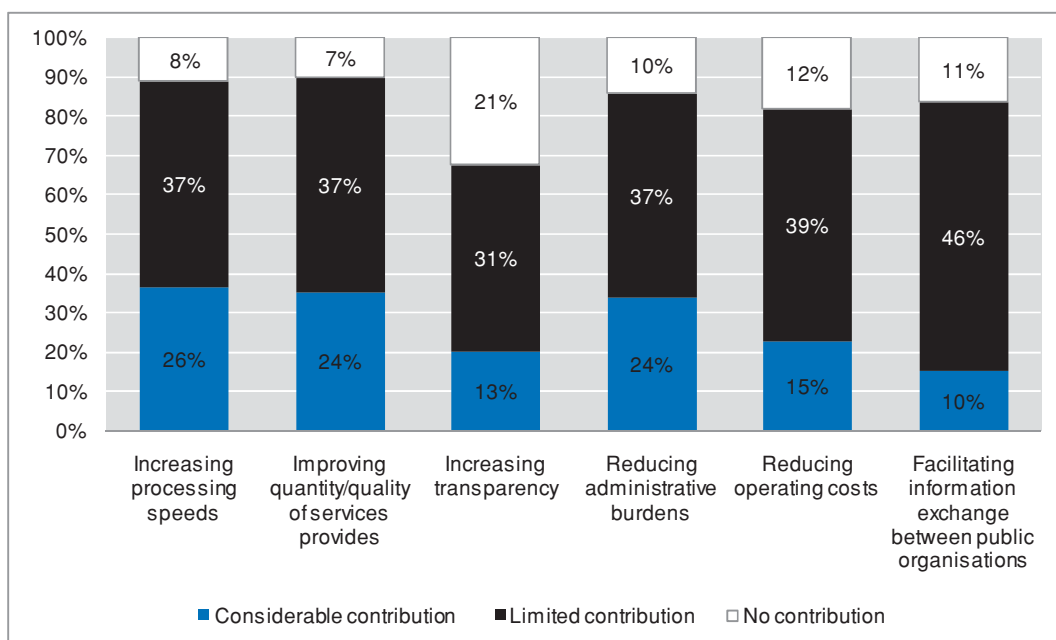
Spain's 17 autonomous communities are also following suit. Pais Vasco for instance is one of the first regional governments to launch its own website <http://opendata.euskadi.net/w79-home/es/>. Thus far, some of the solutions developed from re-use of public data have included wikis and geographic information systems that compile tourism and cultural information of interest, as well as customisable widgets.

Though not unique to Spain, challenges remain to increase the exploitation of re-use opportunities. This will require specific measures to:

- foster a culture of information-sharing in the public sector;
- increase the awareness of the potential benefits of open government and re-use of public data;
- ensure that uploaded information shared is of value to users;
- help link these initiatives to strategies/procedures for performance management.

Source: OECD, based on information provided by the SSTIS.

Figure 4.43. Plan Avanza's contribution to the modernisation of the public administration



Source: OECD Plan Avanza survey: Questionnaire for Government Stakeholders.

Towards a user-centred approach

Investments in ICT diffusion in the public sector and support for the development of digital public services require a critical mass of users if they are to be cost-effective and generate real benefits for the largest number of citizens and businesses. As we have seen in this chapter, certain levels of e-readiness have already been achieved enabling citizens and businesses to choose the digital channel when interacting with government: *i)* broadband access has grown, especially in rural areas; *ii)* more households and businesses have adopted internet/broadband services; *iii)* internet use is growing in some segments of the population (*e.g.* younger people) and rates have already converged with EU averages; and *iv)* a much larger percentage of public services are available online. Like many other OECD member countries, Plan Avanza's challenge now is to balance continued efforts for modernisation and support to the development of digital public services with initiatives to foster take-up. To accomplish this, they must place focus on users, considering (OECD, 2009a):

- **Users' awareness of the availability of public services online:** are users aware that they can access services online? Are they aware of the benefits of choosing this way of interacting with government?
- **Users' trust in government:** do users feel the digital channel is secure? Do they perceive that measures have been taken to maintain their privacy and sensitive personal information?

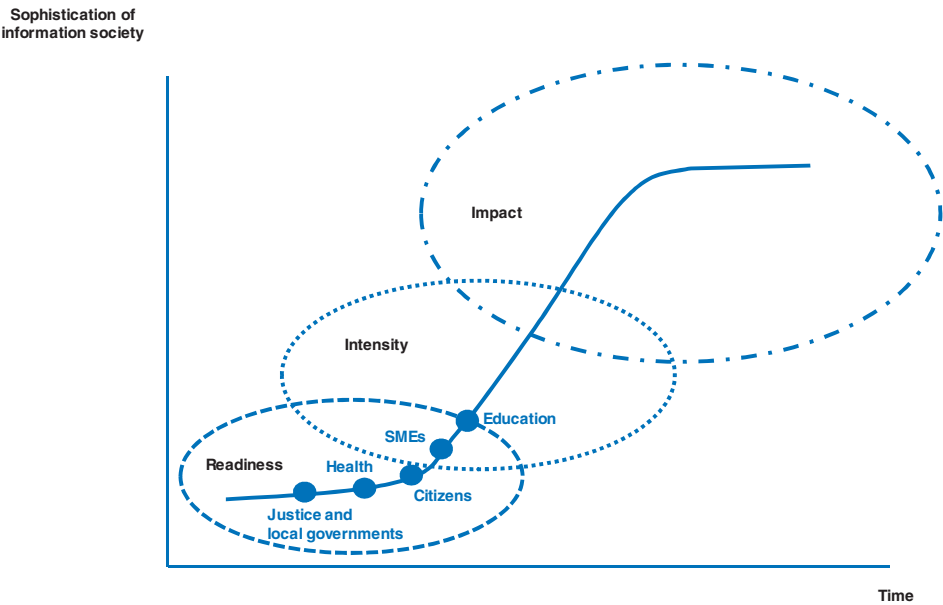
- **Users’ motivation to use digital services:** do citizens prefer the digital channel over another (*e.g.* phone, in person, etc.)? Do they realise benefits in this way that they wouldn’t otherwise? Do they perceive improvements in the quality/quantity of services provided?

Conclusions: from e-readiness to e-intensity

As discussed at the beginning of this chapter, the assessment of Plan Avanza should consider the strategy’s original goal, which was to primarily to increase the state of the e-readiness of Spain’s information society, especially in regions and demographic groups lagging behind national and EU averages for various reasons: whether because of their mountainous terrains, disperse populations, socio-economic disparities, the pre-dominance of SMEs, or traditionally low levels of economic activity in the ICT sector. Has this goal been achieved? Survey results, programme indicators and international data signal that considerable progress has been made in ICT diffusion, thanks in large part to investments in telecommunications infrastructures, the adoption of a collaborative governance model based on co-financing and joint-implementation, as well as critical support from the public enterprise *red.es*.

The next logical question for IS policy makers at this important junction in Spain’s IS agenda (Plan Avanza 2 was launched in May 2010) is whether sufficient progress has been made in ICT diffusion to justify a growing prioritisation of e-intensity policies (*e.g.* a greater focus on the use and take-up of digital services). While, in general, findings from this study point to an affirmative answer, this highly depends on the policy sector and region in question. Based on the data and survey results presented in this chapter, Figure 4.42 represents a possible positioning of different sectors/target groups along the S-curve.

Figure 4.44. **Current states of IS development (chapter overview)**



Source: OECD elaboration, based on model by Industry Canada.

Looking at rates of progress also offers clues as to whether the tipping point between e-readiness and e-intensity is approaching. In justice and health, rates of ICT diffusion remain high since these are relatively new areas of work. Conversely, in the sector of education, rates of growth in Internet/computer access have slowed, as a high percentage of schools have improved their connectivity. Likewise, the latest annual trend for household broadband adoption suggests rates of growth are beginning to stabilise, though the effect of the crisis cannot be discounted. This could be further evidence in favour of a shift of objectives in some sectors.

It is evident that since Plan Avanza's launch in 2006 Spain's information society has made considerable progress in increasing its state of "e-readiness" (e.g. increasing the availability of critical ICT infrastructure on which the continued development of ICT goods and digital services depends). Several factors have contributed to this achievement – namely strong leadership on the part of the State Secretariat for Telecommunications and the Information Society, as well as close collaboration with sub-national governments and stakeholders. However, if Plan Avanza 2 is to achieve its goal of consolidating Spain as a leading European knowledge economy, strong e-readiness is necessary but, alone, insufficient. Now, leveraging the progress achieved thus far in ICT diffusion will depend on establishing a greater equilibrium between demand and supply-side policies. As Plan Avanza begins a new phase, then, achieving greater "e-intensity" is key, that is: *i)* promoting ICT take-up and usage; *ii)* building ICT skills of all kinds (users' skills, practitioner skills, e-business skills); and *iii)* improving the responsiveness of public services. This means exploiting ICTs not only to improve efficiency and reduce costs, but also to create value for society: increasing public sector transparency, offering new services, and improving the quality of services. This changing philosophy can be summed up as follows: a shift in priorities is needed, from a focus on technology to a focus on users.

This shift in priorities in information society policy is important not only to contribute to greater public value, but it is especially important in terms of contributing to Spain's economic recovery. Plan Avanza 2 has an important role to play in the current economic context as ICTs and the ICT sector have the potential to contribute to societal-wide goals for greater growth, innovation, sustainability and equity. Indeed, in a globalised world that increasingly depends on knowledge-based transactions, where ICTs facilitate access to new markets and ideas, and where access to information can help "level the playing field" for socially excluded groups, OECD member country governments are understanding that societies that are good at creating, diffusing and exploiting information for social and economic gain will find themselves at the forefront of new economic opportunities and pioneering ways for generating welfare for citizens. Plan Avanza has much to contribute in this regard, and recent initiatives such as the draft Law for the Sustainable Economy are windows of opportunities for IS policy to contribute further to wider socio-economic goals.

However, to maximise the Plan's impact (as well as to optimise resources in times of fiscal consolidation), Plan Avanza could encourage greater co-ordination between stakeholders and adapt policy instruments to match its changing objectives and priorities. As we've seen in this report, the governance tools exist, it is a matter of leveraging them further and looking at cross-sectoral synergies that can be realised.

Notes

1. A more recent figure (the European Commission's "15th Implementation Report") shows that the mobile penetration rate in Spain had reached 117.6% as of October 2009, which is below the EU average (121.9%). http://ec.europa.eu/information_society/policy/ecomm/doc/implementation_enforcement/annualreports/15threport/es.pdf.
2. As of June 2009, there were only 7 168 FTTH lines (Telefonica) and 180 000 cable lines using DOCSIS 3.0 (which may be FTTH/B or not, depending on whether fibre reaches the building/home) (Comisión del Mercado de las Telecomunicaciones – CMT, 2010a).
3. 2-10 Mbps advertised download speed, which includes between 70 and 80% of the customer base.
4. Available offers from EU-27 countries plus Canada, Iceland, Japan, Korea, Norway, and the United States (California, Colorado and New York) were considered.
5. Spain's share of households using terrestrial technology (75.2%) is among the highest in the OECD (second after Italy).
6. Although Plan Avanza targets the ICT industry overall (manufacturing and services), the remainder of this section will discuss the performance of the larger ICT services sector. This sector is around ten times larger in terms of value-added and employment and therefore a stronger factor in domestic economic development.
7. Timely data on innovation is hard to obtain by detailed industry sectors. At the time of writing, internationally comparable data on ICT-related R&D was only available for 2006. For further discussion of existing and new innovation indicators, see OECD (2010), *Measuring Innovation: A New Perspective*, OECD Publishing, Paris.
8. The telecommunications sector employs around 12% of Spain's ICT researchers. International comparisons are difficult because data on the telecommunications sector R&D personnel is only available for a few countries, mainly due to confidentiality issues.
9. Information provided by ONTSI and *red.es*.

Conclusions

This report has examined some of the key advancements made recently in integrating citizens, businesses and the public administration into the information society, and identified areas on which future work could focus in order for Spain to continue converging with EU and OECD member countries in ICT access and usage, in the growth of the ICT sector, and in the development of e-government services. Insights gained from the peer review exercise are particularly relevant at this time, as the information society policy agenda finds itself at a critical juncture in Spain. The EU's Digital Agenda was released this year and the next Spanish IS strategy (Plan Avanza 2) will be implemented in parallel, with the advantage of building on achievements and learning from the strengths and weaknesses of its predecessor.

One of the main conclusions of this report is that the coverage of broadband, mobile network communications and digital terrestrial television has amplified; ICT take-up amongst citizens and firms is rising; and the government is increasingly adopting ICTs for service delivery. The future of the information society in Spain seems strong, as young people are significant users of ICTs and schools are increasingly adopting these tools in the classroom. Indeed, broadband and mobile networks cover 99% of the population, 70% of public services are available online, over 13 million eID cards have been issued, and the ICT services sector has demonstrated positive trends in growth and employment.

A critical factor in reaching this turning point has been the strong centralised leadership on the part of the Secretariat of State for Telecommunications and the Information Society (SSTIS), as well as the adoption of a co-implementation model which relies heavily on mutually beneficial partnerships with stakeholders. These two factors have been critical in promoting IS policy (and Plan Avanza) on the national agenda as a tool for modernisation, supporting e-government initiatives and contributing to economic development. The approach adopted by Plan Avanza has led to critical buy-in from key stakeholders, the mobilisation of greater resources and – ultimately – a wider impact on citizens, businesses, and the public administration itself. For example, survey results from this peer review highlight this changing mentality in Spain, which is perhaps the principal achievement of Plan Avanza: today, 69% of Plan Avanza stakeholders report that IS policy is a “high priority” for their organisation, and 78% report that IS policy is “very important” for economic recovery; an impressive backing that – according to interviews with long-time proponents of IS policy in Spain – was uncommon in Spain a decade ago.

However, while Plan Avanza has adopted a cross-sectoral and collaborative approach throughout its design and implementation, the strategy could reinforce its leadership and strong political mandate to strengthen the “whole-of-government” approach to the IS agenda and further increase the scope of the strategy, including the potential of IS initiatives to more directly contribute to economic recovery and long-term goals for structural reform (*e.g.* “the dual dividend”). For instance, Spain has placed less emphasis

on ICTs as enabling technologies for green growth, and Plan Avanza has not yet greatly contributed to easing unemployment and “re-skilling” the workforce by helping to build ICT skills/capacities;

A second important finding from the study is that the Spanish ICT sector, and in particular the services sector, demonstrates promise as a driver of growth; the sector has increased revenues and employment and held up relatively well during the economic crisis. Nevertheless, some challenges remain with regards to matching skills with existing jobs, especially since the telecommunications sector has released many employees in recent years. Indeed, untapped opportunities remain for the Plan to support this sector as a horizontal catalyst across the economy for spurring growth and a shift towards more value-added economic activities, including, as in much of Europe, furthering the development of e-commerce.

The review has also found that the most marked contributions of Plan Avanza have been in terms of increasing the “e-readiness” of Spain’s information society (ICT diffusion and availability), with a more moderate impact on increasing ICT usage and the take-up of e-government services (*e.g.* “e-intensity”). This policy sequencing has been deliberate, since the continued development of ICT goods and digital services depends firstly on the presence of this foundation. However, further efforts are now needed at this stage to increase capacity building, the necessary organisational and procedural changes, the managerial practices – as well as the capacities – needed to exploit the potential of these technologies for attaining such outcomes as boosting productivity and innovation, generating welfare, and increasing public sector efficiency and transparency. A shift towards a user-centred philosophy could indeed promote the transition to e-intensity.

Local governments face greater challenges in becoming involved in the design and implementation of Plan Avanza programmes. While they are less likely to pursue e-government and IS initiatives due to lack of staff and funding as well as know-how, local authorities nonetheless can and should be key players in IS policy. Currently, regional governments report that they encounter significant difficulties in: *i*) maintaining ICT infrastructure and equipment; *ii*) financing programmes once contracts with the public enterprise have expired; and *iii*) integrating ICTs into their back-office operations in ways that maximise efficiency gains. Because of the important territorial dimension involved in IS development in Spain (*e.g.* rural/urban divides and remaining differences in IS development between regions), it is important that such elements be addressed.

Plan Avanza has arguably been Spain’s most comprehensive policy to date aimed at furthering the development of the country’s information society, a significant accomplishment in and of itself when considering the challenges involved in launching a new initiative of such a large, cross-sectoral scope and complexity. Indeed, under the auspices of Plan Avanza, Spain’s information society is approaching an important turning point wherein the progress made in ICT diffusion has reached a threshold of critical mass. Plan Avanza 2 now must work to build on this progress and achieve the transition to greater utilisation and value-creation of ICTs.

Annex A

Organisations participating in interviews and roundtables

The following is a list of the organisations that participated in interviews and roundtables during the OECD missions to Madrid in July and November 2009 and in March 2010.

Central government organisations

- Senate Commission for Industry, Tourism and Trade
- Secretariat of State for Telecommunications and the Information Society
- red.es
- National Observatory for Telecommunications and the Information Society
- Ministry of Interior
- Ministry of the Presidency
- Ministry of Education
- Ministry of Justice
- Ministry of Health
- Ministry of Environment
- Ministry of Science and Innovation
- Secretariat of Energy
- Directorate for SMEs
- Telecommunications Market Commission
- Telecommunications Customer Support Office

Regional and local government representatives

- Andalucía
- Aragón
- Basque Country
- Cantabria
- Extremadura
- Galicia
- Madrid
- Murcia
- Navarra
- Spanish Federation of Municipalities and Provinces (FEMP) – ICT Commission
- City Hall of Lleida
- City Hall of Molina de Segura

Non-governmental organisations and field visits (Spanish acronyms in parentheses)

- International Financial Analysts S.A.
(*Analistas financieros internacionales*, S.A)
- Autonomous University of Madrid (UAM)
- Official College of Telecommunications Engineers (COIT)
- Telecommunications Engineering School (ETSIT)
- Spanish Electronics, Information Technology and Telecommunications Industries Association (AETIC)
- Spanish Multi-Sectoral Association of ICT and Electronics Businesses (ASIMELEC)
- Spanish Associations for E-Commerce and Marketing (AECCEM)
- Spanish Confederation of Users and Consumers (CEACCU)
- *Cibervoluntarios*
- Foundation for Technological Innovation (COTEC)
- Spanish Society for IT in Health
- *Nuestra Señora de Sonsoles de Ávila* (hospital)
- *IES Valle del Tiétar de Arenas de San Pedro* (school)
- Madrid Civil Registry

Annex B

Survey methodology

In addition to extensive interviews with government and non-governmental stakeholders, a diagnostic of Plan Avanza has also been conducted with three objectives in mind: *i)* first, to identify the multi-level governance strengths and challenges of the Plan; *ii)* second, to evaluate the effectiveness of the current co-ordination tools; and *iii)* third, to measure the perceived effectiveness of key Plan Avanza programmes. Chapter 3 presented the findings of the first two objectives, Chapter 4 on the latter. It is important to note that the survey was administered to regional and local governments, implementation stakeholders (including non-governmental organisations), as well as ministries currently involved in the Plan (*e.g.* Ministries of the Presidency, Interior, Justice, Education and Health). All participating ministries and regions were invited to complete the survey, while – due to the large number of local governments in Spain – a smaller sample of these received questionnaires. This sub-sample of local governments was selected on the basis of population to ensure that the needs of small, medium and large territories were equally represented. Additionally, representatives of the IS Commission of the Spanish Federation of Provinces and Municipalities (FEMP) participated in the survey.

A series of core questions were distributed to all participants, including questions on multi-level governance and overall impacts. An additional set of sector-specific questions were developed for education, justice, health, and science and technology. All respondents were asked to reply on behalf of their organisations; in order to comply with this condition, in many cases several individuals co-operated in the completion of the same survey. In total, 167 organisations were invited to participate in the survey, the overall response rate was 55%.

Table B1.1. **Number of respondents of the Plan Avanza survey by tier and sector**

Organisation by tier	Organisations invited to participate in the survey	Response rate	Organisations by sector	Organisations invited to participate in the survey	Response rate
National	9	88.8%	Health	18	94.4%
Regional	60	68.3%	Education	17	63.2%
Local	67	44.7%	Justice	9	55.6%
External stakeholders	31	41.9%			
Total	167	55.1%			

In total, 99 responses were received. Table B.2 disaggregates respondents by tier and sector. It is important to note that all sectors are represented at the central and regional levels, however, non-government stakeholders and local governments are not affiliated to any sector in particular. Their answers are not applicable (and were omitted) from sector-specific impact questions.

Table B1.2. **Disaggregated respondents of the Plan Avanza survey by tier and sector**

Respondents by tier	Number of responses	Respondents by sector	Number of responses
National	13*	Education	12
Regional <i>consejerías</i>	43	Health	20
Regional co-signers for high-level contracts (<i>Convenios Marco</i> , most often with S&T <i>consejerías</i>)	12	Science and Technology	12
Regional co-signers for addendums to contracts (sectoral <i>consejerías</i> of education, health, justice)	31	Justice	6
Local governments	30	Local (telecentres and Avanza Local)	30
Non-governmental stakeholders	13	Other (Interior, Presidency and non-governmental)	19
Total	99		99

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Good Governance for Digital Policies: How to Get the Most Out of ICT

THE CASE OF SPAIN'S PLAN AVANZA

Plan Avanza, Spain's national Information Society strategy, has created a strong momentum for furthering information society (IS) policy in Spain, mobilising close to EUR 9 billion over four years from national, sub-national and non-governmental stakeholders.

But what have these important investments contributed to wider societal goals such as public sector modernisation and increasing citizens' trust in government; creating job opportunities and preparing a future work force for a competitive, globalised economy; supporting economic reform; improving citizens' welfare and promoting equity? This report takes inventory of the Plan's main achievements thus far and its remaining challenges for the future, reflecting on how the next phase (2010-2015) can best serve society.

In particular, the report looks at how Plan Avanza has helped integrate citizens, business and the public administration into the knowledge economy. It identifies areas on which Spain should continue to work: convergence with EU and OECD countries' levels of access to and use of ICT; growth of the ICT sector; and development of e-government services.

The experiences of Spain and other OECD countries suggest that building a strong policy and governance framework is key for the success of IS policies. Indeed, to increase the impact of IS strategies policy makers must continuously look for ways to improve the performance of these frameworks. This can include identifying potential co-ordination gaps between stakeholders and leveraging existing institutions; ensuring that policy sequencing contributes to strategic objectives; strengthening funding mechanisms and incentive structures for stakeholders; and improving evaluation and oversight. Using Plan Avanza as a case study, this study highlights the importance of each of these factors in maximizing the impact, and improving cost-effectiveness, of IS strategies in times of growing fiscal constraints.

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