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COMMITTEE FOR INFORMATION, COMPUTER AND COMMUNICATIONS POLICY**

**POLICY RESPONSES TO THE ECONOMIC CRISIS TO RESTORE LONG-TERM GROWTH:  
RESULTS OF THE OECD QUESTIONNAIRE**

**Paris, 11-13 March 2009 (ICCP)**

**Paris, 23-24 March (CSTP)**

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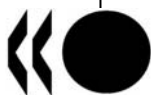
*As part of its response to the economic crisis, the OECD is identifying and analysing policy responses of its member countries. The OECD DSTI Secretariat circulated a questionnaire to member countries to collect information on their fiscal stimulus packages. 20 member countries had answered the questionnaire by 19 February 2009 and the material was complemented by publicly available information collected independently by the secretariat.*

*This paper presents the results of this information collecting exercise and will be discussed at the spring meetings of three DSTI committees: ICCP, CSTP, and CIIE (in conjunction with paper DSTI/IND/STP/ICCP(2009)1). The paper will be kept up to date until June 2009 and made available through the Innovation Strategy Portal [www.oecd.org/innovation/strategy/portal](http://www.oecd.org/innovation/strategy/portal).*

*Delegates are invited to discuss the current draft, identify omissions / corrections and provide any further responses to the DSTI questionnaire in the three weeks following the respective Committee meeting dates. Member countries are also invited to provide details of new developments to the Secretariat on a continual basis after this date (all via email to [corinne.greselle@oecd.org](mailto:corinne.greselle@oecd.org) and below contacts). Delegates are invited to discuss declassifying the document by written procedure.*

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## Introduction

1. Many governments in OECD and major non-OECD countries are currently launching economic stimulus packages to address the economic downturn. Most governments have expressed the concern that their economic stimulus package should not only be limited to producing short-term gains (*i.e.* driving short-term demand) but also help restore favourable conditions for innovation and long term growth. Many countries have components of these packages directed towards investment in research and development, infrastructure, education, the greening of the economy, support to innovation and to SMEs. Their goal is to secure competitiveness and a new foundation for growth while using the downturn as a chance to begin work on several long-term goals, such as improving energy efficiency.

2. The OECD is developing a strategic response to the crisis focusing on two priority areas: finance, competition and governance; and restoring long-term growth.<sup>1</sup> The economic crisis also increases the importance and the urgency of the work on the OECD Innovation Strategy.<sup>2</sup>

3. As part of this line of work, the OECD is identifying the strategies adopted by member countries to foster innovation and long-term growth in their policy responses. The OECD Secretariat is collecting information on the current and planned policy packages and has circulated a questionnaire to member countries investigating the packages' broader objectives, their specific measures, and their design.<sup>3</sup>

4. This document sets out initial results of this stocktaking. The first section sets out the broad characteristics of the economic stimulus packages (*i.e.* their size and main features). The second section then discusses measures relating to innovation and long term growth – the main focus of this paper. The third section discusses project selection, coordination, oversight and evaluation of measures related to innovation and long-term growth.

## Broad characteristics of economic stimulus packages

### *Size of economic stimulus packages*

5. Many OECD countries have announced stimulus packages responding to the economic crisis.<sup>4</sup> Boosting public spending has been given priority in a number of countries, including Australia, Canada, Denmark, France and Japan, with a clear focus on public investment. Some OECD countries have relied more on tax cuts, targeting in particular direct taxes on households and to a lesser extent business taxes.

6. Although comparable figures on the size of the plans will only be available in a few weeks, existing information shows that there is considerable variation in their size. As a share of GDP, the size of the economic stimulus packages ranges between 0.1% of GDP to over 5% of 2008 GDP. Whereas, for

<sup>1</sup> OECD Strategic Response to the Financial and Economic Crisis - Contributions to the global effort, January 2009, <http://www.oecd.org/dataoecd/33/57/42061463.pdf>.

<sup>2</sup> OECD Innovation Strategy Portal at [www.oecd.org/innovation/strategy/portal](http://www.oecd.org/innovation/strategy/portal). The first draft of the interim report will be available for the spring committee meetings.

<sup>3</sup> Until 19 February 2009, the day of finalisation of this version of the paper, 20 OECD countries had replied to the DSTI questionnaire: Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Hungary, Italy, Japan, Netherlands, Norway, Portugal, Slovak Republic, Spain, Sweden, Turkey, the United Kingdom and the OECD accession country candidate Israel.

<sup>4</sup> Information on the size of fiscal packages, their composition and timing is being prepared by the OECD and will be released by the OECD Economics Department on 13 March 2009, via OLIS, in the documentation prepared for the EPC meetings of 23 March. A finalised set of tables will be presented in the *Interim Economic Outlook* to be released on March 31.

instance, in terms of percentages of GDP, Sweden, Switzerland, the Slovak Republic and Norway announce smaller stimulus packages, Korea, Poland, Australia, and the United States announce large packages. Countries with a smaller absolute spending are the Slovak Republic (USD 500 million, million), Sweden, Switzerland, the Czech Republic, Finland and others (*in increasing order*) whereas those with the largest absolute spending are the United States (USD 790 billion, billion), Germany, Japan, Korea and Australia (*in decreasing order*).

7. While a comparison of the absolute amounts of these stimulus packages is tempting, the packages' size and nature are hard to compare directly for various reasons. First, most plans await political ratification and implementation and thus their details are still changing. Moreover initial plans are often followed up with additional measures (*e.g.* the case of Australia, Germany, the Netherlands, Switzerland, Japan or India who developed several packages).

8. Second, the exact financial details and how the priorities are weighted in budgetary terms are usually still uncertain. In some cases the plans propose new budgetary allocations (*i.e.* amounts which are supplementary to initial 2009 and 2010 budgets), whereas in many other cases the plans also propose to carry planned government spending forward (*i.e.* relabeling of planned expenditures). Sometimes existing budgetary allocations are reframed as being part of the economic stimulus package. In addition, most measures are intended for the fiscal years 2009 and 2010 and figures reflect expenditures for the full range of years, but in some cases the figures are not for identical time periods. Finally, some governments do not frame the packages as emergency stimuli on purpose but rather as long-term strategy, also drawing on already existing R&D and Innovation strategies or other existing strategic plans. In the case where governments continue, intensify and accelerate previous competitiveness and innovation strategies, it might then appear as if no stimulus package exists, *i.e.* these are not in this paper.

9. Third comparing the absolute size of these plans in USD terms involves the use of current exchange rates or purchasing power parities (PPPs) which – in the current volatile context – both have their weaknesses.<sup>5</sup> Fourth, the size of these plans usually does not take into account automatic stabilisers which work as a tool to dampen fluctuations in real GDP without any explicit policy action by the government. Transfer payments in the form of unemployment benefits, for example, can be quite high in some countries (notably in Europe) whereas they are lower in others. The latter might have to be more proactive with explicit policy actions which might increase the size of their stimulus package. Fifth, these figures do not take into account legislative or regulatory changes which might have quite important impacts (*e.g.* changing rules and procedures to facilitate the speeding up of planned investments and public procurement, introduction of new innovative R&D tax credit mechanisms).

10. Nonetheless, this is an attempt to provide a comparative, quantitative and qualitative description and analysis of the stimulus packages across OECD countries. Using figures and country examples the main strategic direction and some details on the proposed measures are made more comparable and also constitute a good platform for exchange of experiences and further refinement and analysis. The spectrum of measures is introduced and the identification of possible 'good' practices might emerge.

### ***Main features and broader objectives***

11. Most economic stimulus packages aim to stimulate demand in the short-term (injecting cash into the economy and protecting existing jobs). However, most governments also plan to foster medium-to long-term growth through investments which have repercussions on the supply-side.

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<sup>5</sup> The USD has been prone to significant fluctuations over the past years and PPPs rely on a subset of purchases that do not adequately reflect the expenditures being proposed

12. Tables 1 and 2 present the main objectives & measures of the currently announced or concluded packages for OECD member countries, accession countries<sup>6</sup> and enhanced engagement countries.<sup>7</sup> At this stage, the exact importance attached to the various measures (the monetary value attached to the specific measures as part of the total package and in particular on the above measures) are mostly still under debate, although they almost always include a mix of tax cuts and new government spending. Moreover, in most cases the precise mechanisms of how to allocate, disburse or oversee the sums proposed through the economic stimulus packages have not been decided upon.

13. Broadly speaking the nature of plans can be distinguished along five dimensions: *i)* measures aimed at saving banks and the financial system – excluded from the scope of this document, where possible, *ii)* measures aimed at supporting businesses (tax cuts - including cut in value-added tax rate, short term credit guarantees, reduction of non-wage labour costs, stimuli for retaining or hiring staff), *iii)* measures aimed at particular industrial sectors (notably the automobile and the construction sector), *iv)* measures to support household consumption and reduce their exposure to the crisis (including tax cuts, cash payouts to households, unemployment benefits, support to low earners such as pensioners, cuts in healthcare costs, home owners' grants), *v)* and, finally, “Measures relating to innovation and long term growth” which are the focus of this paper. Certain measures also take the form of regulatory adjustments (*e.g.* non-financial measures to stimulate green technologies).

14. When it comes to “Measures relating to innovation and long term growth”, the OECD and non-OECD economies focus on the following themes in existing economic stimulus packages:

- Improving the infrastructure (*e.g.* roads, mass transit, information and communication technologies [ICT])
- Support for research and development (R&D) and innovation
- Investment in human capital, education/training (including schools, teachers)
- Promoting the investment in and uptake of green technologies and innovation to foster energy-efficiency and sustainable economic growth.
- Support for innovation and entrepreneurship (including support for innovation and investment in small and medium-sized enterprises [SMEs], venture capital, etc.)

15. Most countries announce that they are taking on the above measures to emerge stronger from the crisis through sustainable investments in infrastructure, research and other means to secure competitiveness and a new foundation for growth in the future.

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<sup>6</sup> Chile, Estonia, Israel, Russia and Slovenia.

<sup>7</sup> Brazil, Indian, Indonesia, China and South Africa.

Table 1. Main objectives and targets of OECD country stimulus packages (continually updated)

Country	Measures
<b>Austria</b>	Support to small and medium sized companies (loan guarantees, direct loans, promoting export competitiveness, etc.), investment incentives through tax measures, infrastructure (thermal renovation of public buildings, schools), regional employment programme, additional R&D spending, free of charge "kindergarten" year.
<b>Belgium</b>	Measures to help firms (in particular small ones) to maintain their operations (alleviate financial burden of companies, facilitating payments), safeguarding purchasing power of households, speeding up of public infrastructure projects and encouraging housing investment. Green technology and energy-cost cutting measures.
<b>Canada</b>	Support and training to citizens affected by crisis, support to most affected sectors (e.g. targeted funding for the auto, forestry, farming, manufacturing, newspapers), tax relief, investment in roads, bridges and public transport, clean water as well as in knowledge and health infrastructure (including schools, post-secondary institutions, research equipment, digitization of health records and broadband and green energy infrastructure), investment in social housing and support for home renovation support.
<b>Czech Republic</b>	Lowering of taxes and social insurance contribution and direct assistance to the households, increase in public expenditures, and improving the functionality of the sickness insurance system. A more comprehensive package is currently debated.
<b>Denmark</b>	So far: only focussed on bank aid and financial measures (beyond the scope of this analysis).
<b>European Union</b>	Employment support initiative (including for low skilled, apprenticeships, training, reduction of social charges, etc.), enhance access to financing for business, reduce administrative burdens and promote entrepreneurship, Infrastructure projects (trans-European transport projects), increase of climate change and energy security investments, Improve energy efficiency in buildings, Promote the rapid take-up of "green products" and develop clean technologies for cars and construction, Increase investment in R&D, Innovation and Education, High-speed Internet.
<b>Finland</b>	Infrastructure (transport construction), energy and mining sectors, education and research, training, broadband connections and others as part of the Innovation strategy.
<b>France</b>	Mainly investment in public enterprises (postal, energy sector and train), investments in strategic areas (sustainable development and clean technologies, higher education and research – e.g. quicker research tax credit reimbursements, digital economy defense industry), investment for regional and local authorities (in partnership investment in hospitals, child care facilities and other social institutions). Also support to employment, housing, the financing of firms (in particular SMEs), health, and some measure for the environment (bonus for purchase of clean car). Focus on the automobile sector.
<b>Germany</b>	Measures to help businesses and households retain employment and overcome crisis (secure funding, reduction of non-wage labour costs, income tax cut and other means to ease burden on households), training and upgrading grants (raising levels of education), one-off bonus for every child, government guarantees to borrow money), infrastructure (particularly education-related constructions), fostering innovation and R&D, green technologies, broadband, special support to automobile industry.
<b>Hungary</b>	Easing the conditions for getting (micro) credit; simplifying construction regulation, accelerating construction projects of national importance; refinancing sources for commercial banks; simplifying the application system of the National Development Plan; reducing administrative burden, stepping up the operation of the state-owned Credit guarantee Co. and providing various forms of additional financing (including microfinance, venture capital and interest subsidies) to the SMEs; R&D and Innovation for competitive enterprises.
<b>Italy</b>	Supporting the low-income households (tax cuts for poorer families and pensioners), reducing tax burden for SMEs and stimulating investments on infrastructures and research (including broadband). Focus on greening the automobile sector with measures aimed at supporting consumption through incentives in favour of making scrap iron out of cars, methane systems and purchase of ecological cars.
<b>Japan</b>	Support for household consumption, tax reductions on mortgages, benefits for dependent persons, cutting of health costs, creation of new public sector jobs in nursing, child and elderly nursing care, and for the environment, reduction of automobile taxes for eco-friendly cars, raising the self-sufficiency ratio of food, funds on a priority basis to research in advanced technologies and related research.
<b>Korea</b>	Focus on sustaining green technology, high-tech convergence, and value-added services to build new engines of growth (including sustainable energy, technologies to reduce greenhouse gas emissions and the merging of broadcasting and telecommunications as well as healthcare and tourism).
<b>Mexico</b>	Support for employment and workers (in particular poor families, low income housing, help to replace old appliances for more energy-efficient ones), support for firms (in particular SMEs), and rebuilding the nation's infrastructure (including the development of the country-side).
<b>Netherlands</b>	Help with regard to housing market, export credit insurance, medium-sized companies and hospitals.
<b>Norway</b>	Tax relief and measures for employment, welfare and the environment. Emphasis on municipalities (schools, nursing homes, churches), construction (in particular transport and buildings with energy-efficiency in mind) and ICTs (communication infrastructure, digitising of government services, electronic signature, etc.). Also, focus on green measures and Employment, readjustment and skills.
<b>Poland</b>	Facilitating credit guarantees and payment to SMEs; stimulating investment in telecommunication infrastructure, renewable energy, research; facilitating investment financed from the EU funds; and supporting financial institutions.

<b>Portugal</b>	Public investment in education, energy (especially energy transmission infrastructure and alternative energy), new-generation technologies (new generation broadband networks), fund for industrial restructuring, help to exporting firms and SMEs, strengthening of employment (reduction of social charges, credit line to SMEs), measures to alleviate burden on household, social protection (unemployment), education (modernisation of schools).
<b>Slovak Republic</b>	Infrastructure (roads, high speed broadband, new atomic reactors), transfer financial sources from the basic research to the applied research and innovation, reallocation of funds to SMEs and venture capital, increase energy efficiency
<b>Spain</b>	Tax cuts, liquidity to credit-strapped companies (especially SMEs) and households (families, in particular), spending on public works and other stimulus measures to raise employment rates. Special help to the automobile sector and modernising basic industries such as transportation, energy, telecommunications, services, but also the public civil service.
<b>Switzerland</b>	Railway and road infrastructure, increasing energy-efficiency of buildings, tourism industry, export promotion.
<b>Turkey</b>	Reducing unemployment, increasing the competitiveness of economy (details to be confirmed)
<b>United Kingdom</b>	Aside from bank and financial-related help: cut in value-added tax rate, credit line and loan guarantees (in particular for SMEs), measures to combat unemployment (e.g. paying companies to hire and train the unemployed), acceleration of capital investment projects (likely to include some research infrastructure) and for accelerated roll-out of broadband.
<b>United States</b>	Direct relief to working and middle class families (tax credit, expansion of unemployment insurance, state fiscal reliefs, etc.), large infrastructure investment (roads, public transit, high speed rail, smart electricity grid and broadband), increase funding for key scientific and engineering agencies, modernize classrooms, labs and libraries; fostering renewable energy production and investments in the renewables sector, protecting health care coverage of citizens and modernising the health sector (including its computerisation and digital health records).

**Table 2. Main objectives and targets of non-OECD country stimulus packages (continually updated)**

<b>Measures</b>	
<b>OECD accession countries</b>	
<b>Estonia</b>	n.a.
<b>Israel</b>	Original plans: Infrastructure (desalination plants, railways), tax reduction, credit lines for business (especially SMEs), funds to hire workers & retraining, R&D, export credit
<b>Chile</b>	Infrastructure, subsidies and tax rebates, lending to middle income families and SMEs, help to poor families and other consumption support, employment and training, support package to copper industry
<b>Russia</b>	Tax cuts, providing credit to the economy
<b>Slovenia</b>	Infrastructure spending, tax relief for the poorest and help for companies that plan to invest
<b>OECD enhanced engagement countries</b>	
<b>Brazil</b>	Housing for poor families, credits for firms, support to automobile sector
<b>Indonesia</b>	Infrastructure (mainly roads), education spending, support to affected industries
<b>India</b>	Infrastructure projects (mostly in rural areas), cut of value-added tax, social security schemes, help businesses, real-estate, aid labour-intensive export sectors such as textiles and handicrafts
<b>China</b>	Low-income housing, rural infrastructure, water, electricity, transportation, the environment, technological innovation and rebuilding from several disasters. Also, support package to auto, steel industries.
<b>South Africa</b>	Infrastructure, housing

Source for Tables 1 and 2: OECD based on publicly available stimulus plans, announcements and replies to the OECD questionnaire.

### Measures relating to innovation and long term growth

16. The second part of this paper discusses the planned measures relating to innovation and long term growth in more detail while providing country examples.

17. In terms of financial weight, infrastructure investments, education and sometimes green technologies are the first and second most important spending items of economic stimulus packages (Table 3 compares a few of categories in financial and relative terms, figures should be seen as indicative and subject to revision, presented for relative purposes). Interestingly, in some cases spending on education and green technology are higher than spending on infrastructure. However, in many cases the above components of economic stimulus packages are related. Additional financial measures in favour of infrastructure are related to R&D and science (new laboratories), education (new schools) or green technology budgets contain some allocation for more energy-efficient housing (*i.e.* infrastructure) or R&D (fostering research in renewable energy). Some more medium-term impacts also exist, *e.g.* scientific research results fostered by the R&D budget which later prove useful for the development of “smarter” infrastructure (*e.g.* intelligent transport systems) or greener technologies.

**Table 3. Financial weights of selected, long-term policies in OECD country stimulus packages (provisional)**

	Infrastructure	Research (and development)	Education	Green Technology
<b>Australia</b>	AUD 11.5 billion	AUD 580 million	AUD 17 billion	AUD 5.2 billion
% of 2008 GDP	0.98%	0.05%	1.44%	0.44%
<b>Canada</b>	CAD 20 billion	CAD 800 million	n.a.	CAD 2.4 billion
% of 2008 GDP	1.25%	0.05%	-	0.15%
<b>Finland</b>	EUR 910 million	EUR 25 million	EUR 30 million	EUR 38 million
% of 2008 GDP	0.48%	0.01%	0.02%	0.02%
<b>France</b>	EUR 4.7 billion	EUR 46 million	EUR 731 million	EUR 30 million
% of 2008 GDP	0.24%	0.00%	0.04%	0.00%
<b>Germany</b>	EUR 20 billion	EUR 1.4 billion	EUR 19 billion	EUR 5 billion
% of 2008 GDP	0.80%	0.06%	0.76%	0.20%
<b>Norway</b>	NOK 3.8 billion	NOK 170 mill	NOK 270 million	NOK 1.6 bill
% of 2008 GDP	0.16%	0.01%	0.01%	0.06%
<b>US</b>	USD 100 billion	USD 16 billion	USD 83 bill	USD 59 billion
% of 2008 GDP	0.70%	0.11%	0.58%	0.41%

Source: OECD estimates based on publicly available stimulus plans, announcements and replies to the OECD questionnaire. These figures are provisional and not for public use. Although eliminated or reduced where possible, a certain degree of double-counting may occur between fields such as infrastructure and education (*e.g.* building schools).

***Investing in infrastructure***

18. Most OECD and non-OECD economic stimulus packages contain a focus on improving the national infrastructure - mostly through public works – see Table 1. The targeted infrastructure includes roads, railroads (including freight networks), public transport, airports, child-care facilities, schools and universities, hospitals, energy networks and security, and a modern ICT infrastructure (see Box 1).

19. In its Nation Building Package, Australia, for instance, plans development work on projects in health and hospitals, and transport and communications worth AUD 4.7 billion, with a focus on rail networks. Canada has assigned CAD 4 billion to renew infrastructure in partnership with provinces and municipalities and CAD 515 million to accelerate projects such as schools in First Nations projects. The United States will be devoting a total of USD 100 billion to infrastructure (in addition to research infrastructure): over USD 17 billion in public transit and high-speed rail, and, for example, USD 40 billion for roads, bridges, dams, water, and USD 7 billion to expand broadband access. Mexico announced an agenda to help rebuild the nation's highways, bridges and other public-use facilities (USD 42 billion). Japan has offered a subsidy to municipalities of JPY 4 billion to repair and quakeproof public facilities.

20. The EU has proposed to modernise its infrastructure with a focus on trans-European energy interconnections and broadband projects, mostly through the frontloading of existing budgets. Germany announced EUR 18 billion for infrastructure, mostly educational infrastructure (child-care facilities, schools, and universities), hospitals, transport and information technologies. Amongst others, with part of its EUR 4.7 billion spending on infrastructure, Spain plans to invigorate the merchandise transport by railway (7.000 KM of high speed railway) and to improve the road infrastructures. Italy is to fund railway investments (EUR 960 million), and the quality of the public-transport service (about EUR 1.5 billion over the three-year period 2009-2011). The Slovak Republic is building highways, new energy infrastructure and speeding up broadband Internet access whereas the Czech Republic factors in CZK 14.4 billion for modernization of infrastructure.

21. Most of these infrastructure investments have the express aim to add to resource-preservation and sustainability. For instance, the construction of more energy-efficient buildings is fostered, along with retro-fitting and updating of public buildings and schools. Norway has announced investment in thermal renovation of public buildings and support for the same case to private households (worth EUR 250 million in 2009 and 2010). Australia is including insulation for 2.7 million homes in its second economic stimulus package. In many plans, the construction of roads and public transport is expected to lead to reduced traffic congestion and gas consumption.

22. Besides direct investment in broadband, stimulus packages often will have a more indirect but larger impact on ICT deployment and use, for example investment in modern "intelligent" transport systems, smart buildings and grids, R&D and innovation, health, the environment, and modernizing public services. Investments flowing into these areas are much bigger in monetary terms than those for broadband (*e.g.* in the United States USD 7 billion for broadband as compared to USD 19 billion for health care ICTs or USD100 for modern infrastructure). In any case, the fostering of ICT infrastructure and services in one field (*e.g.* health or research networks) will provide the technological basis for innovation, new infrastructure and services in other fields, as there are natural synergies between broadband deployment and making other investments work, *e.g.* smart electrical grids and transport systems.

23. Non-regulatory measures in the field of infrastructure are also heavily concerned with the streamlining of the approval process of (large) infrastructure projects.

### Box 1. Investing in ICT infrastructure and applications

Many of the existing stimulus packages recognise the importance of modern fixed and wireless communication infrastructure as necessary to stimulate and support innovative products and services and the need to devote some public resources to its deployment. As such the notion to rely on ICT infrastructure and use as a tool to revive the economy is present in most stimulus packages.

Existing references to communications infrastructure in stimulus plans cover two key areas: extending broadband to areas without connectivity and upgrading existing networks to support very-high speed communications. The focus of many plans is on closing the broadband gap by providing universal broadband coverage throughout the country. These investments will be largely devoted to rural and remote areas. Depending on the country concerned, plans also devote resources to building out new, very-high-speed networks (next-generation networks). In most cases, the exact meaning of 'broadband' and 'unserved or underserved' are mostly not yet defined in terms of geography, speeds or technology. Some plans make explicit reference to the fostering of wireless services or fibre deployment. In all cases, the deployment of broadband is to ensure connectivity of most if not all businesses and households and thus to lay the foundation for broadband content and applications of the future. The table below illustrates these initiatives, including details on the planned financial investment and policy goals. Other OECD countries have developed new broadband plans in parallel to the development of their stimulus packages (e.g. Australia, France, Hungary, Japan, Ireland, Korea, and Spain).

	Planned investment	Goals	Penetration targets	Speed targets
<i>Canada</i>	CAD 211 million (USD 198 million)	extending broadband coverage to unserved rural and remote communities	n.a.	n.a.
<i>Finland</i>	EUR 66 million (USD 96 million) of EUR 200 million (public-private)	extending fast broadband	every household by 2016	at least 1 MB/s by 2010, and 100 MB/s by 2016
<i>EU</i>	EUR 1 billion (USD 1.46 billion)	extending and upgrading high-speed internet (focus on rural communities)	100% coverage of high speed internet by 2010.	n.a.
<i>Germany</i>	n.a. (available by end of February)	accelerating the spread of broadband networks. Until 2010 all unserved areas connected.	until 2014 ¾ of households should have access to high-speed Internet (all by 2018).	target is 50 MB/s
<i>Portugal</i>	EUR 111 million (USD 162 million)	subsidized investments in new generation broadband networks and ensuring broadband in schools	n.a.	n.a.
<i>Spain</i>	n.a.	measures for overseeing the installation of new generation fiber and regulating broadband	n.a.	up to 30 MB/s throughout Spain, "at cost-oriented prices"
<i>United Kingdom</i>	n.a.	universal service commitment for broadband	every household with demand	access to 2 MB/s per second broadband by 2012
<i>United States</i>	USD 7.2 billion (EUR 4.9)	to foster broadband service to unserved / underserved areas, promote broadband in schools, libraries, health-care providers, and other entities.	n.a.	not set minimum data speeds

The debate has intensified as to if and how governments should be investing in broadband networks. How to ensure competition in this context is open for debate. There are several key considerations to take into account when public funding is used for infrastructure to ensure the projects have the best, long-term prospects for economic and social benefit. The OECD Council Recommendation on Broadband Development and its recent review identify key principles and goals for governments which are still applicable in the current setting.<sup>8</sup> High-speed broadband networks need to be encouraged by maintaining and enhancing conditions of effective competition, reducing barriers to entry by improving the development of, and access to, passive and active infrastructure and ensuring access on a non-discriminatory basis and on cost-based terms. A new paper examines the justification of investment in communication infrastructures and argues for several principles which should guide any government investment (DSTI/ICCP/CISP(2009)1).

<sup>8</sup> OECD Council Recommendation on Broadband Development (2004), <http://www.oecd.org/dataoecd/31/38/29892925.pdf> and OECD (2008), Broadband Growth and Policies in OECD Countries, OECD, Paris.

Governments are also planning to foster convergence and drive demand for the ICT infrastructure and services. As part of their stimulus packages, the US, Korea and Japan are, for example, using regulatory measures to foster the transition to digital broadcasting. Norway, for example, is promoting digital government services, video conferencing in the court system, the introduction of a common electronic signature, and the introduction of electronic prescriptions in the health system (NOK 100 million). Spain plans to reinvigorate plans to provide educational and research institutions with the right ICT infrastructure. The United States, for example, plans to use technology improvements for a more efficient and secure government and to reduce healthcare costs (e.g., digitization of health records of every American over the next 5 years, USD 19 billion to accelerate adoption of Health Information Technology. Next to broadband deployment, Canada also plans to invest CAD 500 million to encourage greater use of electronic health records with the goal of having 50 % of Canadians with an electronic health record by 2010. Canada has also introduced a two-year measure that allows businesses to expense their investment in computers in the year they are acquired.

### ***Investing in R&D and innovation***

24. Investments in R&D and innovation are a priority in economic stimulus packages. In principle, these measures consist in formulating and adhering to R&D spending targets (including increases in R&D funding, or measures for specific research areas, and investments in R&D infrastructure), stimulating private R&D investments (including through R&D tax credits, public procurement), measures for SMEs, and measures for R&D employment and skills and innovation. It also includes non-regulatory measures to spur certain innovations, e.g. regulations spurring or directing research in life sciences (e.g. on issues such as stem cell research) or directing green technology research areas (e.g. standards on renewable energy, etc.). Institutional issues such as public-private collaboration and knowledge transfer, and international coordination are also part of the stimulus plans – although the latter appear only marginally in current proposals.

25. In Europe, the EU, for instance, has urged its member states to increase planned investments in education and R&D (consistent with national R&D targets) and consider ways to increase private sector R&D investments, for example, by providing fiscal incentives, grants and/or subsidies. Finland has announced that it will keep to its target of extending R&D expenditures to up to 4 % of GDP, Norway has allocated more than NOK 1.8 billion in direct grants for R&D and innovation, and Sweden has allocated an additional SEK 5 billion funding for university R&D and SEK 3 billion for public R&D institutions. Germany has pledged to put EUR 900 million at disposal for R&D in medium-sized enterprises in 2009 and 2010. EUR 500 million are intended to foster the development of hybrid and other clean car technologies. Hungary is focusing on maintaining R&D employment, to prevent brain-drain and interim unemployment of skilled R&D personnel (including support for re-employment by innovative SMEs) at a cost of about EUR 6 million. Italy is introducing income tax incentives to scientific researchers residing abroad who will return to Italy, consisting of a flat income tax rate of 10% for researchers and the exclusion of their income from certain regional taxes.

26. Spain's target is also strengthening the public investment on R&D (e.g. through tax credits, promoting investment in R&D in association with public procurement) but the measures also have an emphasis on human resources and their advanced training, a focus on improving the transfer of research results (in particular with the business sector) and a focus on spurring institutional developments, e.g. establishing R&D consortia among scientific institutions, including the launch of new laboratories and international co-operation. France and Portugal are providing incentives through its R&D tax credits (see Box 2) as is Belgium.

27. Japan has pledged to allocate funds to research involving advanced and innovative technologies such as regenerative cells. A complementary regulatory reform contributing to business creation in the life sciences sector is part of this plan. Korea has formulated 17 new national growth engines and support to

associated research: six projects in green technology industries<sup>9</sup>; six in state-of-the-art fusion industries, such as IT fusion systems, robot applications, and biomedicines; and five in high valued-added industries, including healthcare, education services and the tourism industry. It also announced a ‘Green New Deal’ which will involve "R&D Projects for Green Technologies" (see section on Green technologies)<sup>10</sup>.

### Box 2. R&D Tax incentives to provide immediate tax relief

OECD countries use various schemes that provide tax incentives for R&D expenditure in firms. The most common scheme is the tax credits for R&D expenditure which provides a tax credit for part of the R&D expenditure in the current year. In the context of the current stimulus plans, there has been growing interest in converting tax credits for R&D into immediate tax relief so as to help companies improve their cash flow. In France, the government – which recently made its tax credit (*Crédit d'impôt recherche*) volume-based only – has agreed to temporarily modify the statutes of the tax credit in order to provide temporary tax relief. As part of the Stimulus package Article 95 of the Finance Law n° 2008-1443, provides for the temporary and immediate payment in 2009 of government R&D tax credit liabilities to companies for R&D expenditures carried out between 2005 and 2008.

In Portugal on 29 January 2009, the Parliament approved a new scheme of fiscal incentives to R&D, extending the maximum rate of tax credit to 82,5% of total expenses on R&D: the highest rate in Europe. The system comprises two distinct components, cumulative in nature, with a fixed tax credit of 32,5% of total yearly expenses on R&D (also the highest in Europe), together with a second component of 50% over the annual increase of those expenses. Italy proposes the extension of tax credit to research carried out in Italy commissioned by a foreign entity as of 2009.

28. Canada is planning to update its research infrastructure and to invest in science and technology, also to develop highly-skilled people. Its 2009 budget will provide more than CAD 1.5 billion towards these initiatives (support of equipment and facilities, significant increases in funding of industrial research assistance programmes devoted to SMEs, funding for space and Arctic research facilities and finally resources for the Institute on Quantum Computing). The United States is planning to increase employment of scientists and making R&D investments. Significant stimulus packages are announced with an increase in funding for key science agencies such as the National Science Foundation (USD 3 billion, including for basic research to meet environmental challenges), the Department of Energy’s Office of Science (USD 1.6 billion, including for research on the energy future), NASA (USD 1 billion, including for work on climate change), the Advanced Research Project Agency-Energy to support high-risk, high-payoff research (USD 400 million), the National Institutes of Health (USD 10 billion, including on biomedical research).

### *Investing in human capital, education, employment and training*

29. Support for education and training that enables the transition to new jobs and emerging opportunities is also recognised as important in existing stimulus plans. Some countries even choose to put this at the heart of their recovery plans (*e.g.* the United Kingdom, Germany). Next to investments in the child-care facility, schools, and university infrastructures (see section on Investing in Infrastructure), countries are mostly focussing on encouraging firms to retain their staff, to recruit new employees and to foster skills. Such measures frequently focus on helping SMEs or fostering entrepreneurship.

30. *Education:* Improving education facilities for the 21st Century is key in many recovery plans. Amongst others, Australia, Austria, Canada, Germany and Norway propose to renovate and build new

<sup>9</sup> Including new renewable energies, low-carbon energies, LED (light-emitting diode) applications, and green transportation systems

<sup>10</sup> The government will inject more than KRW 6.3 trillion to implement the R&D projects, while increasing the ratio of investment in basic research into original technologies from 17% (KRW 150 billion) in 2007 to 35% (KRW 700 billion) by 2012.

schools and universities (*e.g.* Austria about EUR 200 million, Norway about NOK 470 million and Canada about CAD 2 billion in 2009 and 2010). Italy plans to foster digital innovation in schools. Spain is creating new school places for children under three years old.

31. Australia has put up AUD 14.7 billion long-term investments to improve infrastructure in its primary and secondary schools. The United States stimulus package proposes new funding for local school districts (also to avoid layoffs and education cuts), a new School Modernization and Repair Programme, an Education Technology programme, to foster child care, to improve higher education (student aid, improving teacher quality), providing new higher education tax cuts while improving college affordability for certain students and increase the number of fellowships for science.

32. In countries such as Germany there is an ongoing debate how money should be divided between investments in school buildings and teachers. Hungary has launched new training programmes for teachers with a resource frame of EUR 70 million.

33. Some European countries take the crisis as a starting point for reinvigorating plans to reform their higher education institutions, *e.g.* Spain with the University Strategy 2015 and Portugal.

34. *Training and employment:* The EU is proposing a European employment support initiative, with a reinforcement of schemes for the low-skilled, counselling, intensive (re-)training and up-skilling of workers, apprenticeships, subsidised employment as well as grants for self-employment, and business start-up. It also proposes to create demand for labour by reducing employers' social charges on lower incomes and innovative solutions (*e.g.* service cheques for household and child care, temporary hiring subsidies for vulnerable groups). The United Kingdom has made employment issues a key component of their stimulus package (see Box 3). Its automotive package, for instance, includes specific support for training. Austria is supporting companies in creating new jobs with EUR 80 million (2009 and 2010) and supporting qualifying measures and human capital with EUR 70 million. Germany will allocate EUR 2 billion in 2009 and 2010 to training (in particular for those on part-time work, or vulnerable groups) and in improving the staffing of the employment agency. Canada has launched its *Canada Skills and Transition Strategy* which increases funding for training (CAD 1.7 billion), in particular for the low-skilled and older/younger workers.

### **Box 3. United Kingdom New Opportunities White Paper**

The UK "New Opportunities White Paper" is proposing extending free childcare, an investment in schools and bonuses to teachers, creation of new apprenticeship places, in financial rewards for companies who recruit unemployed workers for more than six months, other financial schemes to facilitate training. It also proposes tax cuts and GBR 3 billion of capital spending, and a reduced value-added tax until end-2009.

35. Australia has offered an investment of AUD 187 million to create 56,000 new training places in 2008-09. Japan, is proposing a fund of USD 3.9 billion for the purpose of creating new jobs. The fund would nurture businesses in fields, such as in the areas of nursing care or catering services for the elderly.

### ***Investing in and uptake of green technologies and energy-efficiency***

36. As outlined earlier, policy-makers are using the opportunity of the crisis to focus investment in public infrastructure investment on green spending. Most other programmes also foresee a positive impact on energy efficiency and the move to a low-carbon economy, in particular support for research, science and pilot projects (see above section on Investing in R&D and Innovation).

37. In particular Korea has centered its economic stimulus package almost entirely on the topic of green technologies ('Green new deal') and some related new "growth engines". With the new programme, the government hopes to create nearly one million jobs over the next four years, mainly in environmentally focused construction projects and other "green" programmes. Japan pledged to create one million new jobs through green infrastructure initiatives. The promotion of energy-saving and new energy technologies (*e.g.* next-generation solar power) as well as tax measures that encourage green investment or the purchase of green products rank high in these plans.

38. The Canadian government announced CAD 1 billion in spending over five years for green energy projects. The US package plans to reduce the dependence on oil, doubling renewable energy production, fostering green technology research (in particular also advanced vehicle batteries and battery systems), renovating public buildings and transforming the US energy transmission, distribution, and production system (see Box 4). Households with modest incomes shall receive aid and tax credits to better protect their homes from the weather. USD 30 billion is spent energy initiatives such as a new, smart power grid, advanced battery technology, and energy efficiency measures. In Mexico, the recovery measures include financing to help poor families buy more energy-efficient electrical appliances.

#### **Box 4. Innovating with an energy-efficient smart grid**

The United States stimulus package gives priority to the development of a "smart grid". The central idea behind modernizing the power grid's infrastructure is to use two-way communication, sensors, and advanced IT to create an intelligent and connected power grid, optimizing and reducing electrical energy consumption.

Goals are to deliver power more efficiently as utilities utilize real-time data from sensors and advanced meters throughout the power grid to better understand specific supply and demand requirements, and allow for a better resource management. The smart grid will enable the use of new technologies including plug-in hybrid electric vehicles, distributed generation, and energy storage solutions cars. The stimulus bill is allocating funds for "smart" technologies, including smart meters and a total of about USD 11 billion for the smart electricity grid.

39. The EU stimulus plan includes calls on member states to improve the energy efficiency of the housing stock and public buildings and promote the rapid take up of 'green' products. A fund for energy, climate change and infrastructure projects is planned. Innovative financing models shall be elaborated. Performance requirements and measures to promote green products are a priority. Norway's package includes new and increased allocation for environmental purposes by NOK 1.6 billion. This comprises measures and increased funding for more effective energy utilisation, the development of carbon capture technologies, charging stations for electric vehicles, amongst a catalogue of measures. Sweden is proposing loan guarantees that are directly linked to supporting more environmentally-friendly production systems. Poland is developing financial mechanisms to support investments in renewable energy sources despite the increased risk, *i.e.* by mid 2010 a related fund will include approximately PLN 1 billion. Italy is, for example, funding zero/low-carbon technologies disseminations through low interest rate loans (*e.g.* substitution of old industrial electrical engines).

40. In the field of green technologies, most OECD countries are also implementing an array of non-financial measures: *i.e.* stricter energy efficiency requirements (sometimes related to public investments, *e.g.* in the case of buildings) and the setting of mandatory energy efficiency targets for production and new infrastructure.

41. Many OECD governments prioritise the support of their automobile industry (*e.g.* France, Germany, Italy, Japan, Portugal, Spain, United Kingdom, United States) but tie this aid to the condition of the development of more environmentally friendly automobiles – low carbon-emitting vehicles (Box 5).

#### **Box 5. Stimulus for the fuel-efficient car**

OECD governments ready to come to the rescue of their automobile sectors are making credits, tax breaks, special investment schemes, etc available. However, in return many are demanding the production of more energy-efficient engines and cars.

The EU proposes to launch a 'European green cars initiative', involving research on a broad range of technologies and smart energy infrastructures essential to achieve a breakthrough in the use of renewable and non-polluting energy sources. The UK has announced a EUR 2.5 billion guarantee scheme for loans going into low carbon projects (measures to support training schemes for car workers, grants for green R&D, etc.). France is also considering loan guarantees or soft loans to the auto industry. Sweden is granting emergency loans to its automobile companies while Spain is pledging EUR 800 million in aid. In the US, electric transportation shall be fostered and the federal government will replace older vehicles with alternative fuel automobiles. The Australian New Car Plan for a Greener Future investment promotes R&D and the achievement of better environmental outcomes. Support for low carbon R&D was also a significant element in the UK automotive sector proposal.

Governments are also putting in place financial compensation schemes to prompt businesses and households to discard old cars and buy new ones. In France, owner's of vehicles older than ten years which will be exchanged when buying a new car will receive EUR 1000. In Germany, cars older than nine years will receive EUR 2500 and the vehicle tax is to be calculated on the basis of emissions caused. Spain has a fund endowed with EUR 1.2 billion to encourage the replacement of vehicles of more than 10 years with new less polluting vehicles. Italy also has in place incentives to purchase new cars. In Japan, taxes will be reduced for purchases of eco-friendly cars. Italy is debating a financial incentive for the exchange of old for new eco-friendly cars. Overall the focus currently seems to be on a more fuel-efficient but not a "green car" (e.g. hybrid, electrical). The US provides a tax credit for families that purchase plug-in hybrid vehicles of up to USD 7500 to spur the next generation of American cars.

#### ***Helping firms, SMEs and promoting entrepreneurship***

42. OECD and non-OECD countries are devising schemes to help firms (and in particular small and medium-sized enterprises) and entrepreneurship.

43. Measures include tax breaks for companies, initiatives intended to bridge liquidity gaps (e.g. ensure banks keep lending to business, government-backed loan guarantees or loans for small firms, export credit guarantees), the simplification and speeding up of administrative procedures, the promotion of start-ups and entrepreneurship, and directing government procurement to young or smaller firms while also ensuring the rapid payment of invoices to SMEs – see Box 6 for Australia as an example.

#### **Box 6. Australian measures to help small business through the global financial crisis**

In October 2008, Australia announced measures to help small business through the global financial crisis.

- Small Business Support and Advice during the financial crisis from Business Enterprise Centres and other registered business organisations, through a \$4 million investment over 2008-09 and 2009-10.
- A guarantee of on-time payment for new small businesses contracts with Commonwealth Government Departments within 30 days, otherwise these can charge penalty interest.
- A commitment to developing standard procurement documents for co-ordinated procurement and standard approaches to make it cheaper and easier for small businesses to sell to the government.

The Australian government also introduced a Small Business and General Business Tax Break in its Nation Building and Jobs Plan, as well as a 10 per cent investment allowance for businesses in its Nation Building Package.

44. Hungary, for instance, plans to allocate USD 3.9 billion to provide lending guarantees primarily to SMEs (Portugal is also facilitating access to credit through SMEs). Spain is using tax measures and extending the available financial instruments to facilitate credit to SMEs and help their development. The United Kingdom, the United States and France have similar plans, which also include special financing schemes and the reduction of non-wage labour costs for smaller firms (also to foster job creation in smaller firms). In the EU, the European Investment Bank has been tasked to reinforce its lending to SMEs. Also, several measures have been taken to ensure that start-ups and micro-enterprises flourish. The fees for patent applications and trademarks shall be substantially reduced by the European Patent Office. Poland has pledged to reduce the administrative burden for SMEs and will support highly innovative enterprises and the venture capital market. Finland, Sweden, the Slovak Republic and Portugal, as well, plan to increase the available seed, risk and venture capital (see *e.g.* the Swedish Innovationsbron AB, the Portuguese Venture Capital Initiative and JEREMIE of the Slovak Republic). Spain is planning to introduce reforms making it possible to constitute a company in 24 hours.

45. In Mexico, to help businesses, the federal government will make at least 20% of its purchases from SMEs while – similar to Australia - the Dutch government has pledged to pay small firms faster. Beyond industrial research assistance (see R&D section), Canada is increasing the availability of credit to small firms, funding business networks, and fund and mentor young Canadians who create a new business. Japan is exempting SMEs from inheritance and gift taxes in cases where a business is passed on to a succeeding owner without cutting jobs.

### ***Non-financial measures***

46. Next to non-financial measures mentioned as part of the five themes identified above (notably the measures to green the economy), most OECD countries propose a simplification and speeding up of administrative procedures, mostly in regards to public procurement, tendering rules and initiating construction work (including building permits, especially for large infrastructures). The reduction of administrative costs is also proposed. Many OECD countries are also adapting rules and regulations to make the public administration more efficient (*i.e.* easing the burden on companies and introducing e-government one-stop shop procedures).

47. Other changes to regulatory framework are involved in adapting network industries to the additional spending and targets of the stimulus plans (*e.g.* broadband for all or investment in next-generation networks, introduction of smart grids).

### **Project selection, coordination, oversight and evaluation**

48. Details on how the stimulus packages will be governed and executed, how individual projects will be selected, how these will be coordinated across different government entities and levels and evaluated are only starting to emerge. While most plans and announcements mention that ‘shovel ready’ projects are to be preferred, little concrete information on how projects are being selected and implemented is currently available.

49. Only very few existing plans lay out some details about the way they will be run, *e.g.* the United States stimulus package includes pledges on transparency and accountability, such as that all contracts and grant permissions will be posted publicly, that investments will be vetted and reviewed and whistleblowers protected. Of course, most countries have public tender processes and rules on the transparency of the budgets which will apply. Appropriate co-ordination, oversight, accountability, impact assessment and evaluation will however be an important success criterion. Governments will have to strike the right balance between the necessary speed of translating measures into action (*i.e.* easing of usual public procurement legislation and shortening of delays) and ensuring accountability and a waste of resources.

50. Co-ordinating stimulus packages internationally - in particular in areas where spill-overs (*e.g.* R&D, green technology and investments) are international or where there are specific coordination requirements (transport infrastructure) – will be important.

## **Conclusion**

51. As part of its strategic response to the economic crisis and the Innovation Strategy, the OECD is also focusing on measures to restore long-term growth. This paper shows how current economic stimulus package include measures directed towards investment in research and development, a modern (smart) infrastructure, education, the greening of the economy, support to innovation and to SMEs. It is the result of a questionnaire to member countries and will be continually updated to reflect corrections or adjustments of ongoing stimulus packages.

52. This work should also help setting priorities and uncovering good practises, including in the area of evaluation and coordination of planned measures and increased international co-operation. It can also help debates on how to reconcile necessary short-term stimulus measures and plans to foster long-term economic and sustainable growth.