International Labour Organization

European Union

International Institute for Labour Studies

Green stimulus measures

EC-IILS JOINT DISCUSSION PAPER SERIES No. 15

GREEN STIMULUS MEASURES

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INTERNATIONAL LABOUR ORGANIZATION
INTERNATIONAL INSTITUTE FOR LABOUR STUDIES

Abstract

This paper is part of a series of discussion papers that have been prepared by the International Institute for Labour Studies (IILS) within the framework of the joint project "Addressing European labour market and social challenges for a sustainable globalization", which has been carried out by the European Commission (EC) and the International Labour Organization (ILO). The discussion paper series provides background information and in-depth analysis for two concluding synthesis reports that summarize the main findings of the project. This paper relates to the second part of the project "Preparing European labour markets to adapt to the long-run challenge of ensuring the joint social and environmental sustainability of globalization" and the concluding synthesis report "Towards a Greener Economy: The Social Dimensions". The main purpose of this discussion paper is to examine the variety of green stimulus measures that EU Member States as well as other countries such as the U.S., China, the Republic of Korea and Japan have implemented in response to the recent global economic crisis. The paper presents a definition and the most common types of green stimulus measures. Furthermore, detailed analysis of the types of stimulus measures reported by countries, with a specific focus on measures designated as "green" is provided. Additionally, tax-related measures and government spending in various programs are examined. Finally, the paper discusses the size of green stimulus measures and explores the employment impacts of green stimulus measures.

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Main findings

- Following the global economic crisis, many governments announced stimulus measures. Sizeable portions of these stimulus packages were directed at environmental goals, particularly the reduction of greenhouse gas (GHG) emissions. At the end of 2009, approximately 16.3 per cent or USD 521 billion of all fiscal measures were allocated to green stimulus, i.e. policies seeking to reduce CO_2 emissions and increase employment.

- In terms of the size of green stimulus measures, China and the U.S. are the main contributors. However, the Republic of Korea devoted 79 per cent of its stimulus to measures oriented towards climate change.

- The various stimulus measures in advanced economies can be divided into three categories: (i) general government spending, including wage and non-wage spending; (ii) tax cuts; and (ii) other government spending, including labour market policies, investment in infrastructure and product subsidies. In the countries reviewed, the most common types of stimulus measures have been environmentally-related taxes (tax cuts) and subsidies, infrastructure investment, and special government spending programmes, like scrappage payments.

- Government spending included a variety of investment schemes that encourage R&D and innovation in green technologies and also promote infrastructure development. Energy efficiency accounted for over two-thirds of total stimulus spending in the EU. The energy efficiency of buildings has received the most investment, at 17.6 per cent,

followed by grid and low-carbon vehicles, where several countries have provided aid to the struggling auto industry through support for more energy-efficient models. In the U.S., the most invested field is low-carbon power, which accounts for 34.9 per cent of the stimulus packages.

- A sizeable portion of total green stimulus measures was allocated towards infrastructure development, particularly for high-speed rail and grid network development. In fact, spending on rail development alone accounts for 25.7 per cent of total green stimulus.

- Tax instruments including tax cuts and exemptions, tax credits and subsidies, and new environmental taxes were also employed. However, most of the tax provisions aimed to promote greater fuel efficiency in vehicles.

- Beyond the stimulus, recent budget plans and long-term strategies for green growth show that countries such as China, the Republic of Korea, Japan, France, Germany, Australia and the U.S. are committed to developing a resource-saving, environmentally friendly green economy.

Introduction

Following the global economic crisis, many governments have announced stimulus measures. These includes sets of policies to stimulate the private sector, boost consumer demand for goods and services, and provide greater public investment in various sectors. Sizeable portions of these stimulus packages are directed at environmental goals, particularly the reduction of GHG emissions. This report discusses green stimulus measures enacted by countries across the globe, including EU Member States. Data presented are based on the IILS 2009 discussion paper "Stimulus packages to counter global economic crisis: A review" (see Khatiwada (2009)).

Section 1 provides a definition of green stimulus measures and provides a context for the paper. Section 2 describes the most common types of stimulus measures and details the types of stimulus measures reported by countries, with a specific focus on measures designated as "green". This section also includes a brief discussion on the scope of green measures. Sections 3 details tax-related measures. Section 4 discusses government spending in various programs. Section 5 discusses the size of green stimulus measures. Finally, section 6 explores the employment impacts of green stimulus measures.

A. Green stimulus measures

The definitions of green policies and green labour market policies proposed in the INST-EC Discussion Paper No. 10 are useful in discussing green stimulus measures. Green policies have the purpose and the potential to reduce CO_2 emissions. Green labour market policies aim at increasing the level of employment or improving working conditions within an economy that is transitioning towards a green economy. Green stimulus measures represent policy packages that seek to reduce CO_2 emissions and increase employment, in the context of economic recovery.

1. Green stimulus measures differ from green policies

Green stimulus measures are reactive sets of policies, formed in response to an aggregate demand shock. Thus, they must be able to stimulate aggregate demand in an economy. Furthermore, green stimulus measures are characteristically short-term, focusing on recovery from the crisis. Green policies on the other hand are to be understood more generally and often adopt a long-term perspective. In addition, green policies do not attempt to directly stimulate the economy. The above differences reveal that green stimulus measures present certain opportunities. In fact, these measures have been enacted during a crucial period, as governments around the world attempted to avert a global depression and at the same time attempted to reduce the environmental impact on the economy.

2. Green stimulus measures: another type of double dividend

The double dividend hypothesis (DDH) is discussed in detail in the INST-EC Discussion Paper No. 13. The DDH states that benefits to the environment and to employment can be achieved simultaneously through properly designed policies. In the context of green stimulus, another version of the double dividend hypothesis can be stated: well-designed green stimulus measures can both stabilize the economy (output and employment) and improve environmental quality.

The idea of the double dividend is popularly applied to environmental policies in an effort to show that incorporating costs to the environment into the economy does not have to reduce overall economic growth. In fact, when properly designed for country-specific circumstances, policies can achieve what were previously deemed competing goals—environmental quality and economic growth.

B. Types of stimulus measures

Most academic work on the effectiveness of government policies has been done on monetary rather than fiscal policies. Analyzing the effects of fiscal policies is much more complicated, since a variety of concrete policy options are available that work through different transmission channels. The IILS World of Work Report (2010): details various stimulus measures in advanced economies[1], which can be divided into three categories:

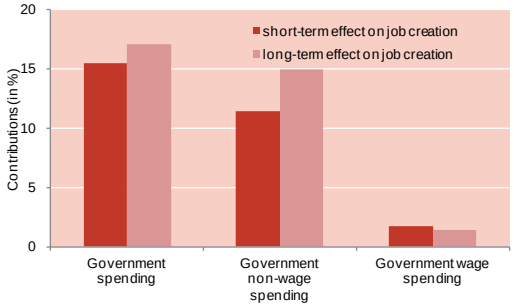
1. General government spending, including wage and non-wage spending
2. Tax cuts
3. Other government spending, including labour market policy[2], investment in infrastructure and product subsidies

Other government spending refers to both active and passive labour market policies, investment in infrastructure and subsidies. In this category of spending, the multiplier effect features prominently. The multiplier effect of government spending on output and private consumption can be sizeable, especially in the long term. In addition to impacts on output, stimulus measures are expected to have an impact on employment. Figure 1 below shows IILS estimates of employment multipliers of increased government spending.

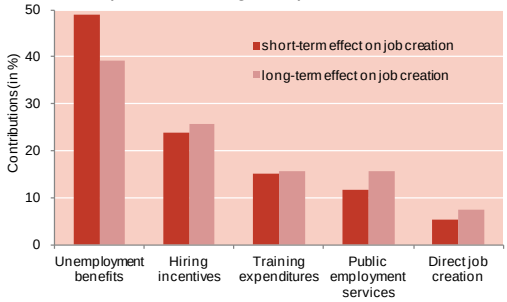
[1] See Chapter 3, "Job recovery in times of constrained public finances".
[2] The INST-EC Discussion Paper No. 10 further distinguishes between active and passive labour market policies.

Figure 1: The effects of different policy options on job creation

Panel A. Public spending: Contributions to job creation (short- vs. long-term)



Panel B. Labour market spending: Contributions to job creation (short- vs. long-term)



Note: The chart presents the contributions (in %) to job creation (measured by outflows out of unemployment) of different fiscal and labour market policies in a panel of 14 OECD countries. Contributions are measured relative to the total variance of cross-country job creation rates and are calculated with respect to the average spending shock across the country sample for each individual policy. Each bar corresponds to a single estimation of the respective policy, taking several control variables into account. Short-term effects are based on exogenous interest rates, long-term effects take the impact of an increase in government debt on real long-term interest rates into account. See www.ilo.org/inst and Ernst (2010) for detailed estimation results and methodology.

Source: IILS

In the countries included in this paper, the most common types of stimulus measures have been taxes (tax cuts) and subsidies, infrastructure investment, and special government spending programmes, like scrappage payments.

This report only considers green stimulus measures as reported by countries, which have adopted views of "green" that are usually broader than the definitions applied in the INST-EC Discussion Paper No. 10. While the majority of green stimulus measures reported by countries are related to climate change, a variety of other activities are also deemed "green", for example water, waste and pollution control. Often, countries adopt a broad view of "green" that encompassed policies that target the entire spectrum of environmental purposes.

C. Tax Instruments and Subsidies

Tax instruments have been a popular tool included in green stimulus measures, and most of these provisions have promoted greater fuel efficiency in vehicles. Tax instruments have included tax cuts and exemptions, tax credits and subsidies, and new environmental taxes. For a listing of green stimulus measures by country, refer to the tables in Appendix 1.

1. Motor vehicle taxes

From this report's perspective, not all road and motor taxes can be truly classified as green. Some of the tax incentives have been mainly introduced to serve as stimulus, not to improve the environment or mitigate climate change. However, since tax exemptions for the purchase of new cars lead also to a more fuel efficient vehicle fleet, those non-green components are still included in the following discussion. Countries such as Germany and Denmark have granted temporary motor tax exemptions for the purchase of a new car. In Germany, new cars purchased between November 2008 and June 2009 are subject to such an exemption. Moreover, the exemption applies to electric cars and cars complying with the European Norms Euro 5 and Euro 6 standards.

China and the Czech Republic are among the countries that have reduced the sales tax on vehicles. In January 2009, China's new plan for the auto sector cut the sales tax from 10 per cent to 5 per cent for cars with engines smaller than 1.6 litres.

2. Tax exemptions on electric vehicles

Many EU Member States, including Austria, Denmark, Finland, Germany, Portugal and Spain, have implemented various policy measures to promote electric vehicles. The Austrian Climate and Energy Fund Initiative supports electric vehicle tax incentives such as traffic restriction exemptions and charging stations. Denmark has extended its tax exemption on electric cars until the end of 2015.

In Japan, the "Green Economy and Social Reform" plan includes a large focus on hybrid vehicles, as well as Solar PV and energy-efficient appliances. Similarly, the Republic of Korea's stimulus package provides USD 1.8 billion for low-carbon vehicles. In the U.S., American Recovery and Reinvestment Act (ARRA) allocates a total of USD 4 billion for advanced batteries and credits for plug-in hybrids.

3. Tax incentives for energy efficiency in buildings

UNEP (2009a) indicates that buildings are responsible for 30-40 per cent of all energy use, GHGs and waste generation. Studies show that this area has the highest potential for improving efficiency and creating jobs.[3] Thus, several countries have been using more of their stimulus packages to provide incentives for greening homes and offices, and to increase investments in retrofitting public buildings with more efficient technology.

Across the countries, a total of USD 86.1 billion or 16.5 per cent of total stimulus plans has been allocated to home energy-efficiency improvement projects (see HSBC (2010)).

[3] HSBC (2009) states that every dollar spent on building efficiency results in USD 3 in electricity savings.

Some of the main measures include tax incentives, investments in improving insulation and new windows, installation of energy-efficient lights in residential dwellings and retrofitting in public buildings. The multiplier effect may be particularly strong in this category.

The European Economic Recovery Plan (EERP) of November 2008 encourages EU Member States to set demanding targets for energy efficiency in public buildings and to provide energy certification. The EERP has proposed reduced VAT rates for green products and services and reduced property tax for energy-efficient buildings. To promote green technologies, the "European energy-efficient buildings" initiative with EUR 1 billion and "factories of the future" initiative with EUR 1.2 billion are included in the plan. In Belgium, for instance, reduced VAT rates were applicable in 2009 for the construction of new buildings and for redeveloping housing after demolition.

To lower the energy consumption and improve the energy efficiency in buildings, countries like Germany, France, the UK, Austria, Belgium and Czech Republic have allocated part of their stimulus to this area. In Germany, subsidies of EUR 3 billion are provided for household repairs under the CO_2 building renovation programme. In France, EUR 200 million is invested in housing renovation and EUR 760 million in public buildings. In the UK, the package has allocated GBP 100 million (USD 137.9 million) to improve insulation and heating systems. Additionally, under the Decent Home programme, GBP 60 million (USD 82.8 million) will be spent on the latest energy efficiency measures.

In Austrian stimulus packages, investment plans are focused on the insulation for the purpose of energy saving of buildings owned by the Federal Real Estate Agency and also the renovation and construction of university, school and legal administration buildings. Austrian tax reform and two stimulus packages include investments of EUR 100 million in energy-saving renovation. The budget outlays EUR 50 million for energy conservation in commercial buildings and of another EUR 50 million for private households (see Breuss et al. (2009)).

In the Republic of Korea, to improve energy conservation in villages, domestic households and in schools, the package has spent USD 6 billion. In addition, the plan has proposed the installation of LED lighting in public facilities and construction of 2 million green homes. Similarly, in Canada, CAD 300 million (USD 238.5 million) is provided for promotion of energy efficiency in the domestic building sector under the ecoENERGY Retrofit programme to support additional 200,000 home retrofits.

In the U.S., the ARRA has allocated USD 25 billion to investments in building retrofits, fuel conservation programmes, building and home energy conservation programmes, energy audits, along with "smart growth" planning and zoning. To support demand-side management programmes, states are encouraged to update energy-efficient building codes

and regulatory policies. As part of the plan, tax credits for energy-efficiency improvements, like insulation and windows, are raised from 10 per cent to 30 per cent.

As summarized in Pasquier & Jollands (2010), many countries – like Australia, Belgium, Canada, Denmark, France, Japan, Korea, New Zealand, the Slovak Republic, Sweden and Turkey – have reported ongoing measures to improve the efficiency of the building sector by adopting building codes and fiscal policies. Some of these countries, including Australia and Denmark have encouraged efficient heat pumps. Finland, France, Ireland and Spain are planning for future measures in the building sector.

D. General Government Spending

This section on government spending refers to a variety of investment schemes that encourage R&D and innovation in green technologies and also promote infrastructure development.

1. Encouraging R&D in low-carbon vehicles

To achieve a breakthrough in the use of renewable and non-polluting energy sources, the European Economic Recovery Plan (EERP) proposed the "European green cars initiative". Most EU Member States, like Germany, France and Italy, have allocated funds to the development of low-carbon vehicles, including electric and hybrid cars. Sweden has allocated EUR 3 billion for automobile sector R&D to promote low-carbon vehicles.

Germany aims to become a leading market in the electric mobility sector. In May of 2010, a National Platform for Electric Mobility was launched to develop policies to achieve the target of at least one million electric vehicles in use by 2020. In Portugal's programme for electric mobility, 25 municipalities have signed a cooperation agreement to present municipal plans for electric mobility by the end of 2010. Also, the Spanish government approved the Integral Strategy to Impulse EV/PHEV in the spring of 2010 to develop clean and efficient technologies (see Pasquier & Jollands (2010)).

The U.S. Environmental Protection Agency and the National Highway Traffic Safety Administration has issued regulations that require cars and light trucks to get an average of 35.5 miles per gallon by 2016. As estimated, these new requirements would cut carbon emissions by about 960 million metric tons over the life of the vehicles. These regulations are intended to promote technological advances.

In China, stimulus measures provide RMB 10 billion (USD 1.5 billion) in subsidies over the next three years for automakers to develop efficient energy cars. Through its NRDC Stimulus Package, China also plans to invest RMB 300 billion (USD 44 billion) over the

next five years to develop hybrid and electric car technology, which would manufacture 3 million hybrid and 1.5 million pure electric cars by 2015.

2. Scrappage payments

Most of the European countries adopted scrappage programmes in their stimulus plans, which provide payments for trading in old cars to buy new, more efficient vehicles. The environmental impacts of such programmes are, however, largely vague. BenDor & Ford (2006) use a model to show that scrappage payments can indeed lead to sizeable reductions in emissions in the short term. In a more recent modelling study, Nemry et al. (2009) show that scrappage policies do indeed reduce emissions when they are implemented, but also that many factors affect the success of these policies – including current standards in fuel efficiency (in comparison to older cars subject to the programme), the age of vehicles, and the amount of subsidies and timing of the programmes. The study also asserts that these programmes would mostly target small and medium old cars.

Overall, the studies show smaller and temporary reductions in CO_2 emissions, as these effects end when the programme comes to a close. Nemry et al. (2009) assert that scrappage policies could actually hinder efforts at achieving 2020 emissions targets. Many factors affect the success of these policies including current standards in fuel efficiency (in comparison to older cars subject to the program), age of vehicles, and amount of subsidies and timing of the programs. Unfortunately, empirical evidence of their impacts does not exist.

Countries like Germany, Italy, France, the Netherlands, Denmark and Austria have dedicated large sums to scrapping payments in their stimulus packages. These programs have been successful in raising car sales in countries like Germany and Japan.

In Germany, the package allocates a scrappage bonus of EUR 2,500for replacing old cars more than nine years old with new cars that meet EURO4 emission standards. In Italy, the Car Stimulus Package includes a scrappage payment of up to EUR 1500. In France, the stimulus package promotes low-carbon cars through a premium of EUR 1000 for vehicles emitting less than 160g of CO_2 and EUR 500 million is allocated to scrappage and the "bonus malus" scheme in 2009.

Following the lead of the EU, several Asian countries have also launched scrappage payments. In the second stimulus package announced by the Japanese government in April 2009, a scrappage program called "Eco-Friendly Vehicle Purchase Program" valued at USD 3.7 billion was included. The program provides 100,000 Yen (about USD 1,100) for the purchase of new cars that exceed 2010 emissions standards by 15 per cent or more and an additional 150,000 Yen (about USD 1,650) for cars that are at least 13 years old and traded for "green vehicles". Due to the program's success, it has been further extended (see US EIA (2010)).

3. Renewable energy investments

As part of the expansion of public sector investment, governments have promoted investments in low-carbon energy power –renewable sources, including geothermal, hydro, wind,[4] solar, and nuclear. Countries such as France, the Republic of Korea and the U.S., along with the EU, have targeted renewable energy, which amounts to USD 43 billion or 8.2 per cent of the total green package.

The European Investment Bank (EIB) has raised annual investments for energy and climate change-related infrastructure by up to EUR 6 billion per year. Also, a new 2020 Fund for Energy, Climate Change and Infrastructure will be created. Furthermore, EUR 3.5 billion from the EU budget will be invested in energy infrastructure, of which EUR 1.75 billion will go to gas and electricity interconnectors. HSBC (2009) estimates the green stimulus at a value of EUR 1.25 billion for sustainable power generation from fossil fuels and EUR 500 million for offshore wind generation and grid connection..

In France, EUR 600 million will be spent on new renewables and on hydro power. Additionally, the government is planning to spend EUR 30 million on sustainable agriculture and modernisation of farms. As part of the stimulus plan, Canada will invest CAD 150 million (USD 119.2 million) over five years on low-carbon research. So far, Canada is the only country that includes nuclear in a stimulus package. A total of CAD 351 million (USD 279 million) is allocated to Atomic Energy of Canada Limited to finance the Advanced CANDU reactor.

The American Recovery and Reinvestment Act (ARRA has provided a significant amount of funds to the U.S. renewable energy sector. According to the HSBC's estimation, the ARRA has allocated USD 22.5 billion of incentives for the renewable energy sector. The ARRA has promoted the PTC for the sectors under TARP (wind, biomass and geothermal) for three years by allowing subsidy during 2009/10 and providing an extension of the 50 per cent bonus depreciation in 2009. Developers may receive cash grants from the Treasury in lieu of the ITC. Moreover, the package allocates USD 6 billion of DoE loan guarantees and introduces a new "build in America" manufacturing ITC, providing a 30 per cent capital subsidy for new plant in the U.S. Additionally, the ARRA has provided USD 3.4 billion to the extension of America's commitment to carbon capture and storage demonstration projects.

[4] According to the Global Wind Energy Council, wind turbine installations increased from 27.1GW in 2008 to 37.5GW in 2009. Over one-third of the new installations attribute to China, thus, Chinese wind installations of 13GW exceeded the EU's 10.5GW and the US's 9.9GW. As for the global solar sector, it reached 5.85GW in 2009 compared with 5.75GW in 2008.

4. Infrastructure investment

Public transport

By 2010, many EU Member States had adopted a wide range of policies to promote energy efficiency under their National Energy Efficiency Strategies and Action Plans. Belgium focuses on a four-pillar transport policy that encourages innovation and supports energy efficiency alternatives to road and air traffic (see Pasquier & Jollands (2010)). Poland is concentrating on improving energy efficiency through support for certain types of transport and coordination of traffic management and transport infrastructure. In Spain, the stimulus package includes eco-driving of private and public vehicles, plans for urban mobility and a more efficient private car fleet.

Many countries, including Germany, the UK, Italy and the Republic of Korea are promoting further development of transportation infrastructure. The German government has allocated EUR 2 billion of its stimulus package to investments in public transport systems over 2009 and 2010. In the UK, GBP 300 million (USD 413.8 million) is provided for acceleration of the delivery of 200 new carriages. In Italy, as part of the Emergency Package, bonds will be underwritten to finance rail investments of EUR 96 billion (USD 1.03 billion). In the Republic of Korea, around USD 7 billion will be dedicated to a public transport system of low-carbon railways and bicycle tracks.

The largest portion of total green stimulus measures is provided for spending on infrastructure development, particularly towards high-speed rail, as well as grid network development. In order to shift travel away from carbon-intensive aviation, developing high-speed railway lines is encouraged in many countries. In France for example, the package has allocated USD 1.3 billion to the construction of additional high-speed railway lines. Italy also has invested USD 1.32 billion in rail.

China has committed RMB 1 trillion (USD 150 billion) to expand its inter-province railway through the construction of 16,000 km of lines that will mainly cover passenger services. By 2020, China set overall investment of RMB 5 trillion (USD 750 billion) in rail expansion and by 2010 is expected to build 42 high-speed rail lines. In addition, the 2010 fiscal budget projects investments of around USD 5 billion in railways.

Modern grids

In order to promote the use of renewable energy sources and reduce transmission losses, more flexible and modern grid infrastructure is supported in many countries. China has allocated RMB 1.1 trillion (USD 161 billion) to expand power lines and build out transmission over 2009-2011.

In Canada, CAD 1 billion (USD 795 million) will be spent on the Green Infrastructure Fund to promote the modernisation of energy transmission lines, increasing grid

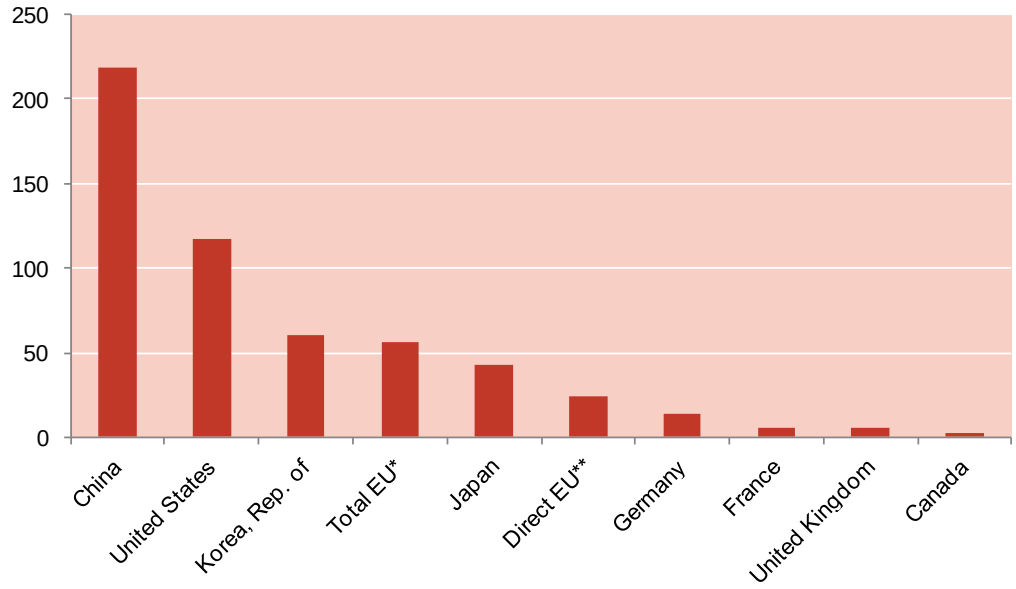
connectivity. In the U.S., USD 10 billion will be provided for mass transit and rail, along with USD 11 billion for grid infrastructure.

In 2010, several countries, including Australia, Italy, Japan, Portugal, the UK and the U.S. have actively promoted the smart grids and meters. For instance, in Italy new incentives for smart grid pilot projects are established. Portugal has launched InovGrid Programme to support the installation of smart systems for energy metering electricity in the residential sector. In Japan a Smart Meter System Study Group is established. The Smart Metering Implementation Programme Prospectus, which stresses the delivery of electricity and gas smart metering in Great Britain, is published by the UK government with Ofgem in July 2010. The U.S. Recovery Act has allocated USD 4 billion to modernization of the electricity grid, including the deployment of 18 million smart meters and 877 digital sensors.

E. The Size of Green Stimulus Packages

The HSBC (2010) estimates that around 16.3 per cent or USD 521 billion of all fiscal measures was dedicated to the green stimulus by the end of 2009. In Figure 2, it is clear that China and the U.S. are the main contributors. Over one-third of the massive Chinese stimulus package and nearly 27 per cent of the 2009 budget has been allocated to green themes, mostly rail, grids and water infrastructure, along with spending on environmental improvement.

Figure 2: Green stimulus by countries, by the end of 2009 (USD billion)

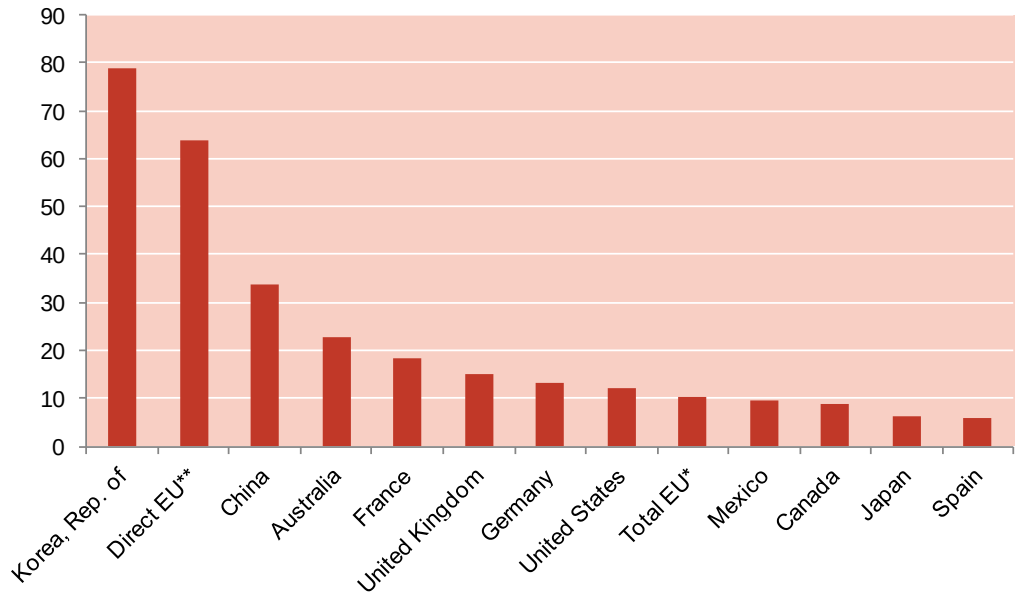


*: Includes direct EU contribution and member states; **: Direct EU contribution.

Source: HSBC

As for the U.S., the Emergency Economic Stabilization Act (EESA) and American Recovery and Reinvestment Plan (ARRP), which mainly focus on renewable energy, have dedicated USD 18.7 billion and USD 94.1 billion respectively for green spending on renewables, building efficiency, low-carbon vehicles, mass transit, grids and water. As shown in Figure 3, however, the Republic of Korea has devoted the largest share of stimulus to climate change.

Figure 3: Green stimulus as per cent of total stimulus, by the end of 2009, (percentage)

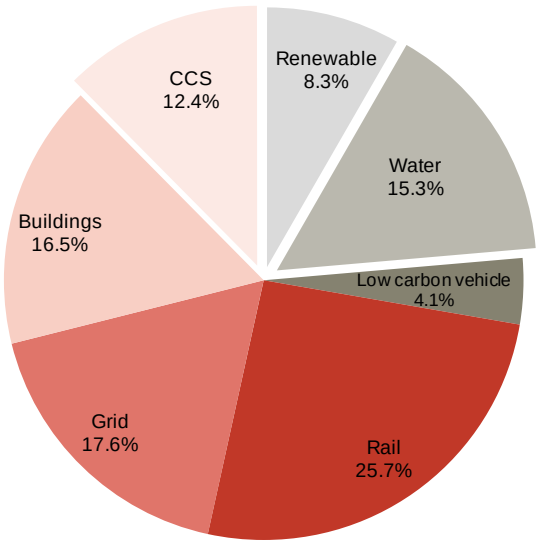


*: Includes direct EU contribution and member states; **: Direct EU contribution.

Source: HSBC

As shown in Figure 4, green stimulus can be classified into investments in low-carbon energy, energy efficiency and clean water. The energy efficiency measures, which are comprised of sustainable buildings, low-carbon vehicles, rails and grids, account for two-thirds of total climate change spending. Energy efficiency has taken the centre stage in recovery plans. China's expenditure of USD 182.4 billion on energy efficiency measures is ranked the highest, followed by the U.S. (USD 58.3 billion) and Europe (USD 38.3 billion).

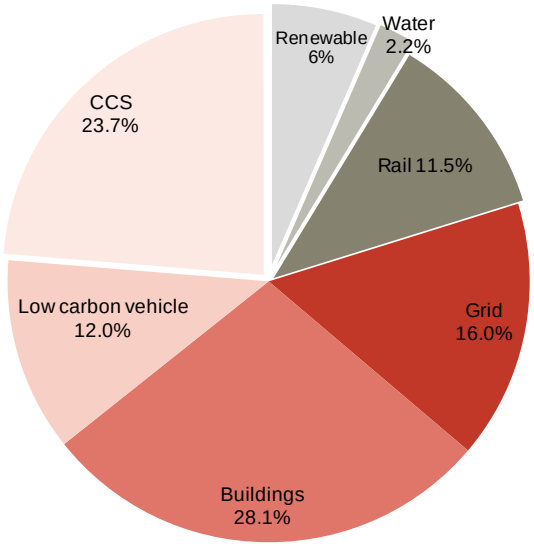
Figure 4: Total green stimulus by sectors



Source: HSBC

The European Economic Recovery Plan, worth EUR 200 billion, has proposed a comprehensive package of measures at both the EU and national levels. The largest portion of the fund, which is equivalent to EUR 170 billion, will be spent by EU Member States and the rest will be spent by the EU's budget and the European Investment Bank. According to Figure 5, over two-thirds of total climate change stimulus is spent on energy efficiency in the EU. The most invested field is the efficiency of buildings, followed by grid and low-carbon vehicles, where several countries provided aid to the struggling auto industry through support for more energy-efficient models.

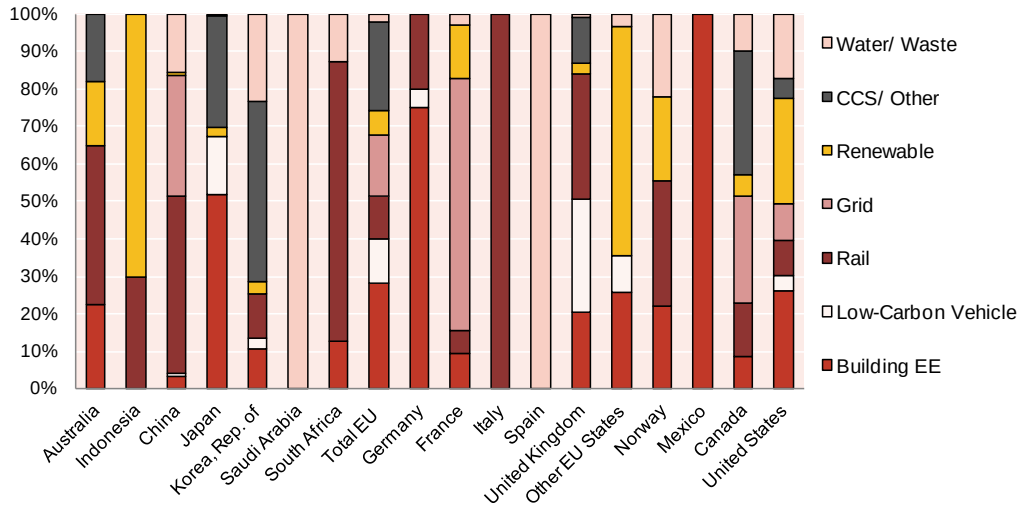
Figure 5: Green stimulus spending in the EU



Source: HSBC

Among European countries, Germany's stimulus plan represents the largest fiscal recovery programme, contributing over 20 per cent of the overall EU stimulus. The plan, valued at EUR 81 billion (USD 104.8 billion), includes tax cuts and investments in infrastructure and climate change. As shown in Figure 6, green investments, which account for 13.2 per cent of total stimulus, are focused on climate protection and energy efficiency, with most of the spending on energy efficiency of buildings (75 per cent) and the rest on rails (20 per cent) and vehicles (5 per cent).

Figure 6: Green stimulus breakdown by sectors and countries (by the end of 2009)



Source: HSBC

In France, green investments account for 18.3 per cent or USD 6.1 billion of the French Economic Revival Plan with a total value of EUR 26 billion (USD 33.7 billion) over a period of 2 years. The green measures are dominated by grids (67.2 per cent), renewable energy (14.1 per cent), buildings (9.3 per cent) and rail (6.3 per cent). In the UK, the government has launched its GBP 25.3 billion (USD 34.9 billion) recovery plan which includes USD 5.2 billion for green stimulus, as well as other environmental spending commitments.

Chinese green spending is worth USD 218 billion or 33.6 per cent of total stimulus and the fiscal budget. China also has issued a plan to support its auto sector. Almost half of Chinese green stimulus is invested in railway, followed by the spending on grid (32.1 per cent), then water and waste (15.6 per cent), building (3.4 per cent), low-carbon vehicle (0.7 per cent) and renewable energy (0.7 per cent). In addition to the green stimulus package, the Chinese government has announced that it would share 50 per cent of the investment costs for solar power capacity over 500 MW through 2011.

The Republic of Korea's stimulus package called a "Green New Deal", which undertakes financial, fiscal and taxation policies, is supplemented by additional green stimulus spending and amounted to USD 76.1 billion. Environmental measures account for about 79 per cent of the total stimulus package and include CCS (48.4 per cent), water and waste management (23.2 per cent), rail (11.7 per cent), energy efficient buildings (10.7 per cent), renewable energy (3 per cent) and low-carbon vehicles (3 per cent).

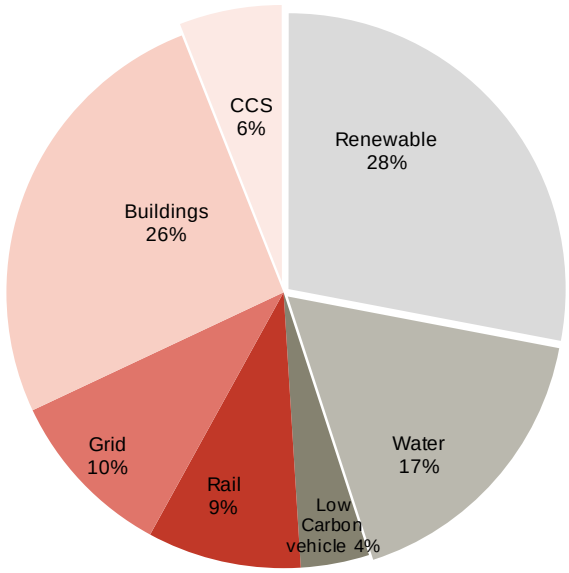
Japan, which is one of the countries hardest hit by the recession, has provided 6.1 per cent or USD 43.2 billion of its two stimulus packages and second supplementary budget for

green spending, particularly to the efficiency of buildings (52 per cent), low-carbon energy (32.4 per cent) and low-carbon vehicles (15.4 per cent).

Canada has announced its Economic Action Plan valued at almost CAD 40 billion (USD 31.8 billion) over the next two years, with 8.7 per cent or USD 2.8 billion devoting to green spending. The plan targets green projects such as CCS, building efficiency and public transit, including rail, grid, roads and bridges.

In the U.S., the EESA, valued at USD 185 billion, provides USD 18.7 billion mainly for low-carbon power. The ARRA spends 12 per cent or USD 94.1 billion of its total package on green spending, in particular on improving building efficiency, developing renewable and enhancing the grid and rail infrastructure. In sum, both packages allocate 34.9 per cent to low-carbon power, 27.3 per cent to efficiency of buildings, 4.2 per cent to low-carbon vehicle, 14.3 per cent to water and waste, 10.6 per cent to grid and 8.8 per cent to rail (see Appendix 1). Also, the U.S. budget- 2010 has proposed USD 4.9 billion for the water and waste management and the rail infrastructure. The breakdown of overall U.S. green stimulus spending, including the budget 2010 is shown in Figure 7.

Figure 7: The U.S. green stimulus spending



Source: HSBC.

F. Employment impacts

The employment impacts of green stimulus measures are difficult to quantify. Also, the multiplier effect of government spending peaks in the long term, and since stimulus measures have only been enacted in recently, the full effects of these policies may have yet to occur.

According to the IILS, general government spending seems to have a strong impact on job creation rates. Furthermore, government non-wage spending, is highlighted in this report, has a greater impact on job creation than government wage spending.

HSBC (2009) asserts that money invested in clean energy can create twice as many jobs per dollar invested compared with traditional fossil fuel-based energy. Additionally, studies suggest that investments in green power and improvements in energy efficiency have lasting employment gains. Tax cuts and traditional infrastructure investments generate jobs only for certain periods, as long as projects' funds last (see HSBC (2009)).

The World Resources Institute estimates that every USD 1 billion of government spending would result in 30,100 jobs. The Solar Energy Industries Association (SEIA) calculations show that renewable incentives will yield 60,000 jobs in 2009 and 110,000 over two years. In the U.S., the original American Recovery and Reinvestment Act ARRA is predicted to create 3 million jobs by the end of 2010 in infrastructure (48 per cent), the IT sector (30 per cent) and the energy sector (16 per cent). It is also estimated that by expanding investments in clean energy in Canada, 407,000 jobs could be created.

Germany's renewable energy policy is mainly based on generous feed-in tariffs. Thus, Germany is the main contributor in the development of solar and wind installations, and created 280,000 jobs in renewable energy in 2008. Planned investments in the stimulus package are expected to further increase job growth in renewable energy, including 30,000 in the construction of offshore wind parks. Additionally, construction and manufacturing for retrofitting buildings for energy efficiency will generate 25,000 jobs.

The French government estimates that the package would create 80,000-110,000 new jobs. Similarly, in the UK, the "green stimulus" is helping to expand the estimated 350,000 jobs in the low-carbon sector.

Several countries, such as Japan and the Republic of Korea, have launched specific plans to generate green jobs. The Republic of Korea's Green New Job Creation Plan with a KRW 50 trillion (USD 36 billion) package targets the creation of 960,000 jobs, of which 149,000 jobs will be created in 2009, mainly in construction. The Japanese government's package of Measures to Support People's Daily Lives also focuses mainly on creating jobs and stabilising financial markets.

1. Beyond recovery: Investment and policy reform towards a green economy

Beyond the stimulus, recent budget plans and long-term strategies for green growth show that countries such as China, the Republic of Korea, Japan, France, Germany, Australia and the U.S. are committed to developing a resource-saving, environmentally friendly green economy.

In July 2009, the Republic of Korea adopted a "Five-Year Green Growth Plan" (2009/13) to spend USD 83.6 billion in climate change and energy, sustainable transportation and green technologies, and expected to increase production by USD 141-160 billion and generate 1.56-1.81 million green jobs (see UNEP (2009b)).

In France, green measures under the Grenelle de l'Environnement to 2020, which accounts for over USD 600 billion, are expected to create more than 500,000 jobs and an annual return of about USD 30 billion. By improving energy efficiency in buildings, developing a sustainable transport policy and clean energy, and supporting energy consumption through tax incentives, such as "Ecotax" on carbon, around 1.5 million jobs can be created (see UNEP (2009b)).

Besides public investment, growth in green sectors in China has been supported through adoption of green targets and standards. Prior to the crisis, the Chinese government had projected green investments of USD 220 billion or about 1.35 per cent of GDP in its 11th Five-Year Plan (2006-10). Investments in energy conservation and in renewable energy amount to USD 71 billion and USD 214 billion, respectively. Chinese investment in energy efficient buildings is expected to reach USD 214 billion by 2020. In addition, the renewable energy sector is predicted to generate an output of at least USD 118 billion. Energy consumption should be cut from 1.22 tonnes of standard coal to 0.98 tonnes by 2010 and, a renewable energy share should be raised at 10 per cent of the total commercial energy use (see UNEP (2009b)).

The U.S. 2010 Budget has proposed creating a comprehensive energy and climate change plan called "Clean Energy Economy" to address the global climate crisis, invest in clean energy, reduce dependence on oil and create new jobs. Some of the green measures to reduce emissions of GHGs include the federal Title XVII Loan Guarantee (of the Energy and Policy Act of 2005) and the proposed Waxman-Markey American Clean Energy and Security Act of 2009 (ACESA). Combined with the ARRA, it is estimated that these measures can generate 1.7 million new jobs.

According to the country reports in 2010 submitted to the Energy Efficiency Working Party, energy efficiency policy planning is focused more on improvements in the buildings, lighting and appliances sectors. Additionally, measures in the transport sector include fiscal policies to support the purchase of efficient vehicles, eco-drive programmes and vehicle labelling, also financial support for electric vehicle R&D.

Some governments, like Austrian and Japanese, have financed additional energy efficiency-related activities. A budget of EUR 150 million is provided to the Austrian Climate and Energy Fund, and a new programme called "New Energies 2020" is launched with a budget of EUR 35.97 million. Japan has announced a New Economic Stimulus Package, which extends the Eco-point program for residential homes for one more year in August 2010 (see Pasquier & Jollands (2010)).

Several governments are successfully following the IEA 25 energy efficiency recommendations for the transport sector to implement eco-drive programmes. Canada has provided training to 14,000 transportation professionals on fuel-saving techniques for fleet vehicles. Canadian eco-transport programmes provided tips for better driving. Belgium, Greece and the Netherlands are also planning to implement eco-drive programmes (see Pasquier & Jollands (2010)).

References

BenDor, T. & Ford, A., 2006. Simulating a combination of feebates and scrappage incentives to reduce automobile emissions. Energy, 31, 1197-1214.

Breuss, F., Kniovski, S. & Schratzenstaller, M., 2009. Macro-economic Effects of the Fiscal Stimulus Measures in Austria. Austrian Economic Quarterly, 4, 205-216.

Ernst (2010) Determinants of unemployment dynamics. Economic Factors, labour market institutions and financial development. Geneva: International Institute for Labour Studies (IILS).

Han, P., 2009. China's stimulus helps meet green goals, China: Chinese Government's Official Online Portal. Available at: http://english.gov.cn/2009-04/30/content_1300961.htm [Accessed March 9, 2011].

HSBC, 2009. A Climate for Recovery: The Colour of Stimulus Goes Green, London: HSBC Global Research.

HSBC, 2010. Delivering the Green Stimulus, HSBC Climate Change & Global Research.

International Institute for Labour Studies (IILS), 2010. World of Work Report 2010: From one crisis to the next?, Geneva: International Labour Office (ILO).

Khatiwada, S., 2009. Stimulus Packages to Counter Global Economic Crisis: A review, Geneva: International Institute for Labour Studies (IILS).

Nemry, F. et al., 2009. Feebate and scrappage policy instruments: environmental and economic impacts for the EU27, Seville: Institute for Prospective Technological Studies.

Pasquier, S.B. & Jollands, N., 2010. Summary of Country Reports Submitted to the Energy Efficiency Working Party: Period from January 2010 to September 2010, International Energy Agency (IEA).

Saha, D. & von Weizsäcker, J., 2009. Estimating the size of the European stimulus packages for 2009: an update, bruegel.

UNEP, 2009a. A global green new deal: policy brief, Geneva: United Nations Environment Program (UNEP).

UNEP, 2009b. Global green new deal: an update for the G20 Pittsburg Summit, United Nations Environment Program (UNEP).

US EIA, 2010. International Energy Outlook 2010: Transportation Sector Energy Consumption, Washington, DC: U.S. Energy Information Administration. Available at: http://www.eia.doe.gov/oiaf/ieo/transportation.html [Accessed March 9, 2011].

Appendix 1

Data in the following table is derived from HSBC (2010).

Table 1. The Climate Change Investment in Economic Stimulus plans

Country	Packages	Date announced	Fund USD bn	Period Years	Green Fund USD bn	%Green Fund	Low-Carbon Power		Energy Efficiency (EE)				Water/Waste
							Renewable	CCS/ Other	Building	Vehicle	Rail	Grid	
Asia Pacific													
Australia	Nation Building and Jobs Plan	3/2/2009	26.7	2009-12	3.1	11.80%	0.32	-	2.06	-	0.76	-	-
	Budget 2009-2020	12/5/2009	17.1	2009-13	6.8	39.80%	1.4	1.77	0.17	-	3.46	-	-
China	NDRC Stimulus Package	9/11/2008	586.1	2009-10	200.8	34.30%	-	-	7.31	1.5	98.7	70	23.38
	Budget 2009	6/3/2009	63	2009	17.2	27.30%	1.58	-	-	-	4.95	-	10.63
Indonesia	Stimulus Package	28/01/2009	5.9	2009	0.1	1.60%	0.07	-	-	-	0.03	-	-
Japan	Safeguard People's Daily Lives	12/12/2008	485.9	2009 onwards	12.4	2.60%	-	-	12.43	-	-	-	-
	Countermeasures to economic crisis	10/4/2009	154	2009 onwards	23.6	15.30%	1.07	12.93	5.9	3.7	-	-	-
	Second Supplementary Budget	8/12/2009	72	2010	7.2	10.00%	-	-	4.09	2.95	-	-	0.2
South Korea	Green New Deal	6/1/2009	76.1	2009-12	59.9	78.80%	1.8	29.05	6.41	1.8	7.01	-	13.89
Saudi Arabia	Budget 2009	23/12/2008	126.8	2009	9.5	7.50%	-	-	-	-	-	-	9.45
Sub-total Asia Pacific [1]			1630.5		342	21.00%	6.2	43.7	38.4	9.9	116	70	57.8
South Africa	Budget 2009-2010	11/2/2009	7.5	2009-11	0.8	10.70%	-	-	0.1	-	0.61	-	0.1
Europe													
EU[2]	Economic Recovery Plan-Only EU	26/11/08	38.8	2009-10	24.7	63.70%	0.65	12.49	2.85	3.88	-	4.85	-
Germany	Stimulus Plan	5/11/2008	104.8	2009-10	13.8	13.20%	-	-	10.39	0.69	2.75	-	-
France	Revival Plan	10/12/2018	33.7	2009-10	6.1	18.30%	0.87	-	0.57	-	0.39	4.13	0.19
Italy	Emergency Package	28/11/2008	103.5	2009 onwards	1.3	1.30%	-	-	-	-	1.32	-	-
Spain	Stimulus Package	27/11/2008	14.2	2009	0.8	5.80%	-	-	-	-	-	-	0.83
The UK[6]	Green Stimulus with Loan for cars	22/04/2009	34.9	2009-11	5.2	15.00%	0.1	0.64	0.79	1.72	1.93	-	0.05
	Prebudget report 2009	9/12/2009	-	2010-11	0.6	-	0.07	0.06	0.39	0.04	-	-	-
Other EU States	Stimulus Package	9-Jan	207.1	2009-10	3.2	1.50%	1.9	-	0.8	0.3	0	-	0.1
Sub-total EU			537		55.8	10.40%	3.6	13.2	15.7	6.7	6.4	9	1.2
Norway	Fiscal Stimulus	26/01/2009	2.9	2009	0.9	29.70%	0.2	0	0.2	0	0.3	-	0.2
Sub-total Europe			539.9		56.6	10.50%	3.8	13.2	15.9	6.7	6.7	9	1.4
Americas													
Canada	Economic Action Plan	27/01/2009	31.8	2009-13	2.8	8.70%	0.16	0.92	0.24	-	0.39	0.79	0.27
Mexico	Aggr for Home Economics&Emp	7/1/2009	7.7	2009	0.8	9.70%	-	-	0.75	-	-	-	-
USA	Emergency Economic Stabilization Act	3/10/2008	185	10 years	18.7	10.10%	10.25	2.6	3.34	0.76	0.33	0.92	0.52
	American Recovery Reinvestment Plan [3]	15/01/2009	787	11 years	94.1	12.00%	22.53	3.95	27.4	4	9.59	11	15.58
	Budget 2010[4]	9-Mar	4.9	2010	4.9	-	-	-	-	-	1	-	3.9
Sub-total Americas [5]			1024.1		121.2	11.80%	32.9	7.5	31.7	4.8	11.3	12.7	20.3
Total			**3202**		**521**	**16.30%**	**43**	**64.4**	**86.1**	**21.4**	**134.5**	**91.7**	**79.6**

[1]Includes Thailand and India [2]Only EURO30bn from direct EU contribution considered for calculation as the rest (EURO170bn) is contributed by member states; [3]USD700bn under TARP for bank bailout not considered; [4]Includes only additional spending; [5]Includes Argentina and Chile Stimulus; [6]Rail upgrade investment of GBP1.1bn not considered for % green stimulus calculation.

Source: HSBC estimates

Appendix 2

Data in the following tables is mainly derived from an IILS Discussion Paper, Stimulus Packages to Counter Global Economic Crisis: A review (see Khatiwada (2009)).

Other sources include the International Energy Agency (IEA) (see Saha & von Weizsäcker (2009)), the Chinese Government's Official Web Portal (see Han (2009)),

HSBC's Global Research on climate change (see HSBC (2009), (2010)) and the United Nations Environment Program (see UNEP (2009b)).

AUSTRIA

Name of Instrument	Type of sector	Type of Instrument	Year of Introduction	Object	Source
ÖBB (Austrian railways investments)	Rail	Infrastructure Investment, transitory		Investment projects of the Austrian Railways (OeBB), energy-saving	aei.pitt.edu
Energy-saving renovation	Energy efficiency	subsidies	10/01/2008, 12/01/2008	insulation of buildings	aei.pitt.edu
charge	Energy efficiency		10/01/2008, 12/01/2008		EC INST
Science, Research and development, innovation expenditures	Renewable/Energy efficiency	Investment	10/01/2008, 12/01/2008		EC INST
Globalisation "campaign"	Renewable/Energy efficiency	Subsidies	10/01/2008, 12/01/2008		EC INST
Green technologies	Renewable/Energy efficiency	Investment	10/01/2008, 12/01/2008		EC INST
Car scrapping premium	Car	Subsidies	10/01/2008, 12/01/2008		EC INST
Energy saving cheques	Energy efficiency	Investment	10/01/2008, 12/01/2008	Incentive programme for households to engage in energy-saving investments.	EC INST

BELGIUM

Name of Instrument	Type of sector	Type of Instrument	Year of Introduction	Object	Source
Energy Subsidy to households	Energy efficiency	Subsidy	12/11/08	Subsidy to households for energy use	EC INST
Green Investments	Renewable/Energy efficiency	Investment	12/11/08		EC INST
Investments in energy efficiency public buildings	Building	Investment: Green technology	12/11/08	Energy efficiency public buildings	EC INST
Reduction of household electricity costs	Energy efficiency	Subsidy	12/11/08	Cut in electricity cost	EC INST
Fund for the reduction of the global energy cost (FRCE)	Energy efficiency	Subsidy	12/11/08	Cut in energy cost	EC INST

DENMARK					
Name of Instrument	**Type of sector**	**Type of Instrument**	**Year of Introduction**	**Object**	**Source**
Suspension of car tax on new vehicles	Car	Tax	11/20/08	Includes an extended car tax holiday for cars fulfilling strict ecological criteria.	aei.pitt.edu
Reform of car tax	Car	Tax	11/20/08	Tax reform for cars	aei.pitt.edu
Green Transport infrastructure spendings	Car/Rail/Bus	Infrastructure	11/20/08	Acceleration of planned projects already in the pipeline.	EC INST
Premium for new car purchases	Car	Subsidy	11/20/08	Paid conditional on buying an energy-efficient car and selling an old car for demolition	aei.pitt.edu
CO2-friendly renovations of houses	Building	Investment	11/20/08	Houses' CO2-friendly renovations	aei.pitt.edu
Corporate innovation and energy efficiency credit	Energy efficiency	Investment	11/20/08	Energy efficiency	aei.pitt.edu

FINLAND					
Name of Instrument	**Type of sector**	**Type of Instrument**	**Year of Introduction**	**Object**	**Source**
Transport infrastructure projects	Rail/Highway	Infrastructure	02/03/09	Highway, main roads and railways works	EC INST
Allocation for basic road maintenance	Road	Infrastructure	02/03/09	Road maintenance	EC INST
Water supply and sewer works	Water	Infrastructure		Water	EC INST
Allocation for basic rail maintenance	Rail	Infrastructure	02/03/09	Rail maintenance	EC INST
Green technologies investments	Renewable	Investment	02/03/09		EC INST

POLAND					
Name of Instrument	**Type of sector**	**Type of Instrument**	**Year of Introduction**	**Object**	**Source**
Investment in renewable energy from national fund for environmental protection		Investment	11/30/08	Renewable energy	EC INST

Portugal					
Name of Instrument	**Type of sector**	**Type of Instrument**	**Year of Introduction**	**Object**	**Source**
Installation of Solar Panels and Micro-Generation Units		Green technology	12/01/08	Solar Panels and Micro-Generation	EC INST

SPAIN					
Name of Instrument	**Type of sector**	**Type of Instrument**	**Year of Introduction**	**Object**	**Source**
Sector specific support	Car/Building/Renewable /Energy efficiency	Investment	11/1/2008, 10/1/2009	Supports car industry, expenditure on environment, research and innovation, the welfare state, housing renovations and sustainable tourism	aei.pitt.edu
Environmental actions	Climate change	Investment	11/1/2008, 10/1/2009		EC INST
Energy savings and efficiency	Energy efficiency	Investment	11/1/2008, 10/1/2009		EC INST
Promotion and mobility and road safety	Road	Investment	11/1/2008, 10/1/2009	Road safety	EC INST
Support to automotive sector	Car	Subsidy	11/1/2008, 10/1/2009		EC INST

SLOVENIA					
Name of Instrument	**Type of sector**	**Type of Instrument**	**Year of Introduction**	**Object**	**Source**
Support to the strategic projects in the field of clean and technologically advanced industry	Climate change	Green technology	12/19/2008, 2/20/2009		EC INST
Energy rehabilitation of buildings in public ownership	Building	Investment	12/19/2008, 2/20/2009		EC INST

SWEDEN					
Name of Instrument	**Type of sector**	**Type of Instrument**	**Year of Introduction**	**Object**	**Source**
Energy Efficiency	Energy efficiency	Green technology	12/5/2008, 4/1/2009		EC INST
Climate investments	Climate change	Investment	12/5/2008, 4/1/2009		EC INST
Other measures for protecting the climate	Climate change	Investment	12/5/2008, 4/1/2009		EC INST

FRANCE					
Name of Instrument	**Type of sector**	**Type of Instrument**	**Year of Introduction**	**Object**	**Source**
"Grenelle de l'Environnement"			07/01/09	Enhanced environmental measures in 13 sectors. Aims at defining a new approach to sustainable development and the establishment of a national environmental roadmap.	G20 Policy
Public investments in development of network industries	Rail/Network	Investment	10/201/2008, 11/04/2009, 02/18/2010	Rail, postal services, energy	EC INST
Car bonus	Car	Subsidy	10/201/2008, 11/04/2009, 02/18/2009	Plans to promote low-carbon cars through a premium of EUR1,000 for vehicles emitting less than 160g of CO2. In total, EUR500m will be allocated to "scrappage" and the "bonus malus" scheme in 2009.	HSBC, EC INST
Rail	Rail	Infrastructure		To help shift travel away from carbon-intensive aviation, additional high-speed railway lines will be constructed at a cost of EUR 0.95bn.	HSBC
Plan to develop a zero-carbon-emissions vehicle, including R&D support	Low carbon	Green technology	10/201/2008, 11/04/2009, 02/18/2009		EC INST
Investment on renewable energy and hydro	Renewable	Green technology	10/201/2008, 11/04/2009, 02/18/2009	New renewables and a further EUR300m on hydro power.	HSBC
Sustainable agriculture, renewable energy	Climate change/ Renewable	Green technology	10/201/2008, 11/04/2009, 02/18/2009	The government planned to spend EUR30m on sustainable agriculture and for the modernisation of farms, particularly to develop renewable energy.	HSBC
Building efficiency	Building	Infrastructure	10/201/2008, 11/04/2009, 02/18/2009	EUR 200m is being allocated to housing renovation in 2009 and 2010. In addition, existing public structures will be improved. More investment in new housing development.	HSBC
Railway networks and water management projects	Rail	Infrastructure	02/18/09		HSBC
Beyond the stimulus package: "Ecotax" on carbon emissions	Low carbon	Tax	07/02/05	Promoting energy consumption through tax incentives, including a proposed "Ecotax" on carbon emissions to be launched in 2010 at a starting price of around USD25 per tonne CO2 (EUR 17 is the exact figure proposed).	G20 Policy

ITALY

Name of Instrument	Type of sector	Type of Instrument	Year of Introduction	Object	Source
No increase of highway toll	Highway	Tax/fee	2/01/2009, 11/28/2008, 03/01/2009		aei.pitt.edu
Renewable Energy and energy savings porgramme	Renewable/Energy efficiency	Green technology	2/01/2009, 11/28/2008, 03/01/2009	Renewable Energy	EC INST
The Car Stimulus Package: Fuel-efficient vehicles	Car		02/01/09	Includes a "scrappage" payment of up to EUR1,500 for trading in an old car to buy a new, more-efficient vehicle.	HSBC
Rail investments	Rail	Infrastructure	2/01/2009, 11/28/2008, 03/01/2009		HSBC

GERMANY

Name of Instrument	Type of sector	Type of Instrument	Year of Introduction	Object	Source
Expansion and rehabilitation of Federal transport infrastructure with KfW program	Rail/Highway/Sewage	Infrastructure	11/27/2008, 01/12/2009	Railway, highway, sewage	EC INST
Vehicle tax suspension	Car	Tax	11/27/2008, 01/12/2009		EC INST
Car bonus	Car	Subsidy	11/27/2008, 01/12/2009	For the purchase of friendly ecologically vehicle. Gives a "scrappage" bonus of EUR2,500 for replacing cars that are more than nine years old with new cars that meet EURO4 emission standards.	HSBC, EC INST
Car loans	Car	Loans	11/27/2008, 01/12/2009	To support the development of new low-carbon engines, the government will provide EUR.5bn in loans over the next two years.	HSBC
Car tax reform	Car	Tax	Jul-09	The government planned to introduce emission-based vehicle taxation from July 2009 for older vehicles and for new vehicles from 2013.	HSBC
Transportation	Car/Rail/Bus	Infrastructure		Modal shift: The package will also invest EUR2bn in public transport systems over 2009 and 2010.	HSBC
Energy efficiency of buildings Fund	Building	Green technology	11/27/2008, 01/12/2009	Buildings' energy efficiency	EC INST
Central innovation Programme for SMEs (ZIM)	Renewable/Energy efficiency	Green technology	11/27/2008, 01/12/2009		EC INST
Promoting applied research for environmental improvement	Renewable/Energy efficiency	Green technology	11/27/2008, 01/12/2009		EC INST
Energetic building renovation program of KfW	Energy efficiency	Green technology	11/27/2008, 01/12/2009	Subsidies for household repairs, especially for enhancing energy efficiency under the CO2 building renovation programme.	EC INST, HSBC
Green Investment	Renewable/Energy efficiency	Investment	11/27/2008, 01/12/2009		EC INST
Green job	Job	Job	2009	25,000 jobs are expected in manufacturing and construction for retrofitting buildings for energy efficiency. Renewable energy accounted for 280,000 jobs in 2008 and planned investments, some of which will be financed out of the stimulus package, are expected to create more, including some 30,000 in the construction of offshore wind parks.	G20 policy
The Renewable Energy Sources Act	Renewable Energy	Green technology	2009	To increase the share of renewable energy in total electricity consumption to at least 30% by 2020, a doubling of the current share of almost 15%.	G20 policy
The Transfer Renewable Energy and Efficiency (TREE) project	Renewable Energy	Green technology	2008	Renewable energy international cooperation on knowledge and technology transfer. Technical support on the development of renewable energy (annual project fund USD 130 m) is being provided to over 50 countries.	G20 policy

LITHUANIA					
Name of Instrument	**Type of sector**	**Type of Instrument**	**Year of Introduction**	**Object**	**Source**
Improve insulation and energy efficiency in public buildings	Energy efficiency	Green technology	02/01/09		

THE NETHERLANDS					
Name of Instrument	**Type of sector**	**Type of Instrument**	**Year of Introduction**	**Object**	**Source**
Schiphol/aviation/flight tax	Aviation	Tax	11/22/08		EC INST
Waterways, locks and inland ports	Water	Infrastructure	11/22/08		EC INST
Faster implementation of FES environmental and sustainability projects	Climate change	Green technology	11/22/08		EC INST
Car scrapping scheme	Car	Tax	11/22/08		EC INST
Sustainable farming	Climate change	Green technology	11/22/08		EC INST
Electronic cars	Car	Green technology	11/22/08		EC INST
Energy investment tax credit	Renewable/Energy efficiency	Tax	11/22/08		EC INST
Residential energy savings	Energy efficiency	Green technology	11/22/08	Double glazing	EC INST
VAMIL/MIA (SMEs tax reduction for ecological investment)	Climate change	Tax	11/22/08	Tax cut	EC INST
Sustainable energy	Renewable/Energy efficiency	Green technology	11/22/08		EC INST
Spatial economy (Van Geel motion)		Green technology	11/22/08	Van Geel motion	EC INST
Sustainable business		Green technology	11/22/08		EC INST

UNITED KINGDOM					
Name of Instrument	**Type of sector**	**Type of Instrument**	**Year of Introduction**	**Object**	**Source**
Warm front Project	Energy efficiency	Green technology	11/27/08	GBP100m on the Warm Front scheme to improve insulation and heating systems.	EC INST, HSBC
Accelerated Decent home programme by providing funds to houses with energy efficiency and heating measures	Energy efficiency	Green technology	11/27/08	GBP60m to be spent to provide the latest energy efficiency measures, with provisions for 16,000 houses.	EC INST, HSBC
Cut in VAT	Energy efficiency	Tax	11/27/08	Energy-saving technologies benefit pro rata from the 2.5% cut in VAT.	HSBC
Expansion railway network capacity	Rail	Infrastructure	11/27/08	GBP300m to be spent to accelerate the delivery of 200 new carriages	EC INST, HSBC
Support energy and resource efficiency	Renewable/Energy efficiency	Green technology	11/27/08	In businesses, public buildings and households over the next two years	EC INST
Decentralised small-scale and community low-carbon energy programme	Low carbon	Green technology	11/27/08	GBP350m Community Energy Saving Programme	EC INST, HSBC
Low-carbon vehicles	Car		01/01/09	An additional support package for the automotive industry, guaranteeing to unlock loans of up to GBP 1.3 bn from the EIB – part of the EIB's EUR 6 bn carbon funding – matched by a further GBP1bn for lower-carbon initiatives.	HSBC
Support low-carbon industries and advanced green manufacturing	Low carbon	Green technology	11/27/08		EC INST
Accelerated call for trans-european transport projects (TEN-T)	Energy efficiency	Green technology	11/27/08		EC INST
Plan to spend budget reserves on energy and internet infrastructure	Energy efficiency	Infrastructure	11/27/08		EC INST
Climate change financing by EIB	Climate change	Investment	11/27/08		EC INST
EBRD additional credit for green and infrastructure investment	Renewable/Energy efficiency	Infrastructure	11/27/08		EC INST
British Waterways network infrastructure	Water	Infrastructure	11/27/08	GBP5m on British Waterways' network infrastructure.	EC INST
Expenditures on flood defence infrastructures	Water	Infrastructure	11/27/08	Adaptation to climate change by spending GBP20m on flood defences.	EC INST, HSBC
Low-carbon power	Low carbon	Infrastructure	11/27/08	The "green stimulus" did not allocate any additional public spending to renewables or other low-carbon power sources but extended the Renewable Obligation from 2027 to 2037.	HSBC
Jobs in the low-carbon sector	Job	Job	11/27/08	According to UK government estimates, the "green stimulus" will help to sustain and expand the estimated 350,000 jobs in the low-carbon sector.	HSBC

CZECH REPUBLIC					
Name of Instrument	**Type of sector**	**Type of Instrument**	**Year of Introduction**	**Object**	**Source**
Reinforcement of investment into transportation infrastructure	Car/Rail	Infrastructure	12/02/2008, 01/01/2009, 02/16/2009		EC INST
Increased expenditure with respect to extended access to transportation	Car/Rail	Infrastructure	12/02/2008, 01/01/2009, 02/16/2009		EC INST
Extension of the VAT deductions for passenger cars	Car	Tax	12/02/2008, 01/01/2009, 02/16/2009	For passenger cars	EC INST
Subsidy program	Building	Subsidy	12/02/2008, 01/01/2009, 02/16/2009	With respect to reduction of energy consumption in building	EC INST
Reinforcement of the PANEL subsidy program	Energy efficiency	Subsidy	12/02/2008, 01/01/2009, 02/16/2009		EC INST

UNITED STATES OF AMERICA					
Name of Instrument	**Type of sector**	**Type of Instrument**	**Year of Introduction**	**Object**	**Source**
Clean energy	Renewable energy	Green technology	10/01/10	The EESA includes US$ 185 billion in taxcuts and credits, including US$ 18.2 billion for clean energy.	G20 Policy
Highway construction	Highway	Infrastructure	02/18/09		EC INST
Investment in building and home energy conservation programmes	Building	Infrastructure	02/17/09	ARRA will provide USD25bn to enable governments to invest in building and home energy conservation programmes, energy audits, fuel conservation, building retrofits, along with "smart growth" planning and zoning. It also encourages states to update energy-efficient building codes and regulatory policies to promote demand-side management programmes by energy utilities.	HSBC
Taxcredits for energy-efficiency improvements	Energy efficiency	Tax	02/17/09	Tax credits for energy-efficiency improvements – such as insulation and windows – are increased from 10% to 30%.	HSBC
Rail, high speed rail investment	Rail	Infrastructure	02/17/09	USD10bn will be spent on mass transit and rail along with USD11bn on grid infrastructure.	HSBC
Low carbon vehicles	Car/Bus	Infrastructure	02/17/09	ARRA provides USD2bn for advanced batteries along with USD2bn in credits for plug-in hybrids.	HSBC
TaxIncentives to Spur Savings and Green Jobs	Renewable	Tax	02/17/09		EC INST
Energy efficiency and renewable energy programs	Renewable/Energy efficiency	Green technology	02/17/09		EC INST
Federal loan for renewable-energy systems and electricity transmission	Renewable	Green technology	02/17/09		EC INST
Modernizing of nation's electricity grid	Grid	Green technology	02/17/09		EC INST
Army corps of engineers (water) and other	Water	Infrastructure	02/17/09	Water infrastructure	EC INST
Water infrastructure projects	Water	Infrastructure	02/17/09	Plans to invest USD16bn in environmental restoration, flood protection and navigation infrastructure as well as providing clean, reliable drinking water to rural areas, in the process creating more than 375,000 jobs.	HSBC
Improvement of national parks	Climate change	Infrastructure	02/17/09	Parks infrastructure	EC INST
ARRA extends the PTC for the sectors under TARP	Renewable		02/17/09	ARRA extends the PTC for the sectors under TARP (notably wind, biomass and geothermal) for 3 years, allows developers to swap this for the ITC's 30% capital subsidy during 2009/10 and provides an extension of the 50% bonus depreciation in 2009. Crucially, developers may opt to receive cash grants from the Treasury in lieu of the ITC, benefiting those without sufficient taxable profits to offset.	HSBC
Carbon capture	Low Carbon		02/17/09	ARRA extends America's commitment to carbon capture and storage demonstration projects, with incentives worth USD3.4bn.	HSBC
DoE loan guarantees			02/17/09	The package provides USD 6 billion of DoE loan guarantees and introduces a new "build in America" manufacturing ITC.	HSBC
Capital subsidy for a new plant	Renewable	Subsidy	02/17/09	ARRA provides a 30% capital subsidy for companies wishing to construct new plant in the US.	HSBC

UNITED STATES OF AMERICA					
Name of Instrument	**Type of sector**	**Type of Instrument**	**Year of Introduction**	**Object**	**Source**
Job creation	Job	Job	02/17/09	The original ARRA was estimated to create 3 million jobs by the end of 2010 with infrastructure 48%, by the IT sector 30% and the energy sector 16%. The final compromise could cut the job creation potential by between 430,000 and 538,000. The Solar Energy Industries Association (SEIA) estimates that renewable incentives will create 60,000 jobs in 2009 and 110,000 over two years.	HSBC
The proposed Waxman-Markey American Clean Energy and the Security Act of 2009 (ACESA)	Green policy	Green technology	07/01/05	The proposed Waxman-Markey American Clean Energy. The Security Act of 2009 (ACESA) includes a cap-and-trade GHG reduction plan.	G20 Policy

PEOPLE'S REPUBLIC OF CHINA					
Name of Instrument	**Type of sector**	**Type of Instrument**	**Year of Introduction**	**Object**	**Source**
Car sector support	Car	Investment	11/9/2008	Subsidies for technological research and modernisation of agricultural machinery over 3 years.	aei.pitt.edu
Cut in the sales tax for cars	Car		11/9/2008, 01/2009	Sales tax cut from 10% to 5% for cars with engines smaller than 1.6 litres	HSBC
Low-carbon vehicles	Car	Subsidy	11/9/2008	The package promises RMB10bn (USD1.5bn) in subsidies over the next three years for automakers to develop alternative-energy vehicles as Beijing wishes to promote the mass production of electric cars for urban areas.	HSBC
Energy efficiency in Rail	Rail	Investment	11/9/2008	Expanding inter-province trunk railway lines	HSBC
Green Lining China's Economic Stimulus Plans: Energy efficiency in Grids	Grids	Investment	11/9/2008	More flexible and sophisticated grid infrastructure enables greater use of renewable energy sources and helps cuts transmission losses.	HSBC
Energy conservation, emission control and environmental protection projects	Renewable/Energy efficiency	Green technology	11/9/2008, 01/2009	Protection has stated that the stimulus will 'not be spent in the energy and resource-intensive industries or high-pollution industries'.	HSBC
Improved sewage ports and waterways	Water	Infrastructure	11/9/2008	Improved sewage ports and waterways component of the plan. Treatment is one of the focal areas of the ports and waterways component of the plan.	HSBC
Sustainable development	Climate change	Green technology	11/9/2008		EC INST
Technical innovation, industrial restructuring		Green technology	11/9/2008		EC INST
Public transportation investments in railway, road, irrigation and airport.	Rail	Infrastructure	11/9/2008	China's green stimulus of USD218bn tops the G20. The 48% of this amount is allocated to railway infrastructure.	EC INST, G20 policy
Investment in solar power capacity	Climate change	Green technology	7/1/2009	The government announced that it would share 50% of the investment costs for solar power capacity over 500 MW through 2011 (70% for remote regions). The Ministry of Finance estimates that this is likely to generate a total investment of USD 2.5 bn, and contribute to plans to achieve 2GW of solar capacity by 2011 and 10GW by 2020 as compared to 100MW in 2008.	G20 policy
Rural Development	Climate change	Infrastructure	11/9/2008	By building public amenities, resettling nomads, supporting agriculture works, and providing safe drinking water	EC INST
Post-quake reconstruction works	Climate change	Infrastructure	11/9/2008	In regions hit by the 8-magnitude Sichuan earthquake	EC INST
Planning to increase subsidies for farmers	Climate change	Subsidy	11/9/2008	HSBC report	HSBC
Tax cut		Tax	11/9/2008		HSBC

PEOPLE'S REPUBLIC OF CHINA					
Name of Instrument	**Type of sector**	**Type of Instrument**	**Year of Introduction**	**Object**	**Source**
Wind sector, low-carbon power	Renewable/Low carbon	Green technology	11/9/2008	Long-term development of a low-carbon economy. Expected the wind sector to 'nearly double again' in 2009, according to the Chinese Renewable Energy Industry Association.	HSBC
Beyond the stimulus package: Green investment in renewable energy	Renewable energy	Green technology	2006-2010	The government had projected the need for green investments in USD 220 bn or 1.35% of GDP in the context of the 11th Five-Year Plan (2006-2010). Under this plan, investment in all forms of energy conservation would amount to USD 71 bn and USD 214 bn would be invested in renewable energy.	G20 policy
Beyond the stimulus package: Investment in energy efficient buildings	Building	Infrastructure	2006-2011	Under 11th Five-Year-Plan, by 2020, China's investment in energy efficient buildings is expected to reach USD 214 bn.	G20 policy
Beyond the stimulus package: Energy consumption be reduced from standard coal	Efficient energy	Green target	2010	The government has indicated that by 2010, energy consumption per USD 1,430 (RMB 10,000) of GDP should be reduced from 1.22 tonnes of standard coal in 2005 to 0.98 tonnes.	G20 policy
Beyond the stimulus package: Renewable energy target	Renewable energy	Green target	2010	The government set a renewable energy target at 10% of the total commercial energy use.	G20 policy

JAPAN					
Name of Instrument	**Type of sector**	**Type of Instrument**	**Year of Introduction**	**Object**	**Source**
Creating jobs	Job	Investment	08/01/2008, 10/16/2008, 10/30/2008, 12/01/2008, 12/19/2008	As long-term care, medical care, agriculture and forestry, environment and energy	EC INST
Grant to Create Infrastructure for Local Energy	Energy efficiency	Infrastructure	08/01/2008, 10/16/2008, 10/30/2008, 12/01/2008, 12/19/2008		EC INST
Subsidies for agriculture, forestry and fishery sectors	Climate change	Subsidy	08/01/2008, 10/16/2008, 10/30/2008, 12/01/2008, 12/19/2009		EC INST
Projects for the acceleration of the dissemination of environmentally-friendly home electric appliances	Building	Green technology	08/01/2008, 10/16/2008, 10/30/2008, 12/01/2008, 12/19/2008	By utilizing "eco point" scheme	EC INST
Acceleration of the dissemination of environmentally-friendly vehicles	Car	Green technology	08/01/2008, 10/16/2008, 10/30/2008, 12/01/2008, 12/19/2008		EC INST
Establishment of "eco point" scheme for houses	Building	Green technology	08/01/2008, 10/16/2008, 10/30/2008, 12/01/2008, 12/19/2008		EC INST
Developing research infrastructure networks	Low carbon	Green technology	08/01/2008, 10/16/2008, 10/30/2008, 12/01/2008, 12/19/2008	Networks for the realization of a low-carbon society	EC INST
Promotion of green innovation	Renewable	Green technology	08/01/2008, 10/16/2008, 10/30/2008, 12/01/2008, 12/19/2008	Such as development of revolutionary environmental technology	EC INST

JAPAN					
Name of Instrument	**Type of sector**	**Type of Instrument**	**Year of Introduction**	**Object**	**Source**
Promotion of low-carbon industrial locations	Low carbon	Green technology	08/01/2008, 10/16/2008, 10/30/2008, 12/01/2008, 12/19/2008		EC INST
Emergency support for Asia and Africa	Climate change	Green technology	08/01/2008, 10/16/2008, 10/30/2008, 12/01/2008, 12/19/2008	In response to floods, droughts, food shortages, forest decline and degradation, owing to climate change	EC INST
Tax cuts	Energy efficiency	Tax	12/1/2008	Tax cuts include the immediate depreciation of investment in energy-saving and new energy equipment.	HSBC
"Green Economy and Social Reform" plan	Renewable/ Energy efficiency		03/2009*	The plan was plan is scheduled for release in March, main focus is on Solar PV, Hybrid vehicles, Energy-efficient appliances	HSBC

INDIA					
Name of Instrument	**Type of sector**	**Type of Instrument**	**Year of Introduction**	**Object**	**Source**
Allocation to National Highways authority of India (NHAI)	Highway	Infrastructure	12/07/2008, 01/02/2009, 02/26/2009, 07/06/2009	For the National Highway Development Programme	
Accelerated Power Development and Reform Programme	Energy efficiency	Infrastructure	12/07/2008, 01/02/2009, 02/26/2009, 07/06/2009		
Provision for Brihan Mumbai Storm Water Drainage Project	Water	Infrastructure	12/07/2008, 01/02/2009, 02/26/2009, 07/06/2009		

BRAZIL					
Name of Instrument	**Type of sector**	**Type of Instrument**	**Year of Introduction**	**Object**	**Source**
Support to automotive sector	Car		12/1/2008, 03/25/2009		