Building a green recovery

CARING FOR CLIMATE SERIES

THE GLOBAL COMPACT

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HSBC Climate Change

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Launched in 2000, the United Nations Global Compact us both a policy platform and a practical framework for companies that are committed to sustainability and responsible business practice. As a multi-stakeholder leadership initiative, it seeks to align business operations and strategies with ten universally accepted principles in the areas of human rights, labour, environment and anti-corruption and to catalyze actions in support of broader UN goals. It is the world's largest voluntary corporate citizenship initiative, with over 6,500 signatories based in more than 130 countries. Visit www.unglobalcompact.org.

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Headquartered in London, HSBC is one of the largest banking and financial services organisations in the world. HSBC's international network comprises around 9,500 offices in 86 countries and territories in Europe, the Asia-Pacific region, the Americas, the Middle East and Africa. We believe that companies that manage their business in a sustainable way are better placed to compete in the global economy. HSBC's view is that climate change is the single greatest economic, environmental and social challenge we face this century. HSBC was the world's first carbon neutral bank, and has established a five-year USD100 million HSBC Climate Partnership with four leading environmental organisations. The HSBC Climate Change Centre of Excellence has been created to analyse the commercial consequences of climate change to enable informed decisions by the HSBC Group and its clients. Visit www.hsbc.com

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Foreword

Caring for Climate (C4C) was introduced by United Nations Secretary-General Ban Ki-moon in July 2007. The Secretary-General challenged Global Compact participants to exercise leadership on climate issues by:

- Making climate change a leadership issue for strategy and operations;
- Setting emission reduction targets and exploring low-carbon technologies;
- Supporting public policy efforts aimed at achieving low carbon economies;
- Sharing experiences and publicly disclosing progress made on an annual basis.

Less than two years on, Caring for Climate has emerged as the world's largest and most diversified business engagement platform on climate, with more than 350 corporate signatories in over 60 countries.

Less than seven months before the crucial UN Climate Change Conference in Copenhagen, we are releasing several new research studies and reports, the Caring for Climate Series, to offer a range of perspectives on the role of business and investors in tackling climate change. It is our hope that the findings of the C4C Series will inspire more businesses to make climate change a priority issue, so that policy makers will feel more confident that business is ready to be part of the solution.

The good news is that businesses from all regions and sectors have already started their journey towards energy efficiency, innovation and GHG emission reductions. Indeed, in many instances businesses have embraced climate action as an opportunity to drive efficiency and to gain competitive advantages, even where Governments have not yet taken action.

Caring for Climate participants recognize that climate change is not only an environmental issue. Around the world, businesses are beginning to feel the economic impacts as well. Consequently, some have made the connection between mitigation and adaptation, putting in place long-term measures to address not only emissions, but also food and water concerns and related natural resource issues. In fact, this drive towards energy efficiency and carbon reductions, combined with a proactive management of systemic climate risks, is defining a new level of environmental stewardship. Long-term investors, asset managers and analysts are also beginning to integrate these considerations into investment analysis and decision-making.

The bad news is that, despite encouraging and inspiring leadership, the number of businesses that are actively addressing climate change is far too small. Too many are still sitting on the fence waiting for others to act first.

What is needed now is Government leadership to produce a clear incentive structure that favours good performance and a global deal on climate change that creates certainty. Governments should be confident that change is possible. If Caring for Climate is any indication, business and investors certainly have the capacity and understand the compelling case for taking action.

We therefore hope that the C4C Series will give policy makers and negotiators the confidence and inspiration to bring the Copenhagen Climate Conference to a successful conclusion.

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Summary

- Around the world, governments have allocated more than USD470bn in fiscal stimulus to key climate change investment themes. China and the US lead the way
- Key beneficiaries include rail transportation, water infrastructure, grid expansion and improved building efficiency. Renewable energy has received limited support to date, except in the USA
- Following the G-20 summit in April, Australia, Japan and the UK strengthened their 'green stimulus' plans. We believe that the first phase of linking strategies for economic recovery with climate priorities has ended, with a second phase starting in the run up to Copenhagen talks in December

Governments are facing a triple crisis of economic downturn, energy insecurity and climate change. We have analysed the degree to which government efforts to stimulate the economy are also consistent with the shift to a low carbon economy, examining stimulus packages and budgets in over 30 countries across the world.

We have evaluated the stimulus packages according to the 18 investment themes identified in the HSBC Climate Change Index, which are grouped into four broad areas:

- Low carbon power generation
- Energy efficiency and energy management
- Water and waste management; and
- Carbon finance

Overall, around 15% of the USD3.1trn in fiscal measures can be associated with these climate change investment themes. Geographically, Asia is in the vanguard with over 20 per cent of stimulus spending in key climate areas, led by China, Japan and South Korea. The USA is second on the back of the American Recovery and Reinvestment Act which contains the broadest based stimulus in terms of fiscal support for renewable, building efficiency, low carbon vehicles, rail, grids as well as water and waste. In Europe, the stimulus in general and the green stimulus in particular is smaller than others, which is partly explained by the existence of automatic fiscal stabilizers

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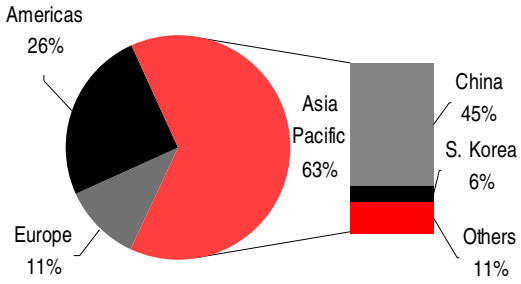
A climate of recovery? The climate change investment dimension of economic stimulus plans

Region/country	Fund USDbn	Period years	Green Fund USDbn	% Green Fund	Low carbon power: Renewable	Low carbon power: CCS/other	Energy efficiency (EE): Building EE	Energy efficiency (EE): Lo C Vech+	Energy efficiency (EE): Rail	Energy efficiency (EE): Grid	Water/waste
Asia Pacific											
Australia	26.7	2009-2012	2.5	9.3%	-	-	2.48	-	-	-	-
	17.1	2009-2013	6.8	39.8%	1.40	1.77	0.17	-	3.46	-	-
China (NDRC Stimulus)	586.1	2009-2010	200.8	34.3%	-	-	-	1.50	98.65	70.00	30.69
China (Budget 2009)	61.4	2009	15.6	25.4%	-	-	-	-	4.95	-	10.63
Indonesia	5.9	2009	0.1	1.6%	0.07	-	-	-	0.03	-	-
Japan (Stimulus 2008)	485.9	2009 onwards	12.4	2.6%	-	-	12.43	-	-	-	-
Japan (Stimulus 2009)	154.0	2009 onwards	23.6	15.3%	1.07	12.93	5.90	3.70	-	-	-
South Korea	38.1	2009-2012	30.7	80.5%	1.80	-	6.19	1.80	7.01	-	13.89
Saudi Arabia	126.8	2009	9.5	7.5%	-	-	-	-	-	-	9.45
*Sub-total Asia Pacific**	*1518.9*		*302.0*	*19.9%*	*4.3*	*14.7*	*27.2*	*7.0*	*64.7*	*70.0*	*64.7*
South Africa	7.5	2009-2011	0.8	9.4%	0.0	0.0	0.1	0.0	0.6	0.0	0.1
Europe											
European Union**	38.8	2009-2010	24.7	63.7%	0.65	12.49	2.85	1.94	-	4.85	-
Germany	104.8	2009-2010	13.8	13.2%	-	-	10.39	0.69	2.75	-	-
France	33.7	2009-2010	7.1	21.2%	0.87	-	0.83	-	1.31	4.13	-
Italy	103.5	2009 onwards	1.3	1.3%	-	-	-	-	1.32	-	-
Spain	14.2	2009	0.8	5.8%	-	-	-	-	-	-	0.83
United Kingdom	34.9	2009-2011	3.7	10.6%	0.10	0.64	0.79	1.72	0.41	-	0.05
Other EU States	207.1	2009-2010	1.9	0.9%	0.8	-	0.6	0.3	-	-	0.1
Sub-total EU	*537.0*		*53.4*	*9.9%*	*2.4*	*13.1*	*15.5*	*6.6*	*5.8*	*9.0*	*1.0*
Norway	2.9	2009	0.9	29.7%	0.2	0.0	0.2	0.0	0.3	0.0	0.2
Sub-total Europe	*539.9*		*54.3*	*10.1%*	*2.5*	*13.1*	*15.7*	*6.6*	*6.1*	*9.0*	*1.2*
Americas											
Canada	31.8	2009-2013	2.6	8.3%	-	1.08	0.24	-	0.39	0.79	0.27
Mexico	7.7	2009	0.8	9.7%	-	-	0.75	-	-	-	-
US EESA***	185.0	10 Years	18.2	9.8%	10.25	2.60	3.34	0.76	0.33	0.92	0.52
US ARRA	787.0	10 Years	94.1	12.0%	22.53	3.95	27.40	4.00	9.59	11.00	15.58
US Budget 2010#	4.9	2010	4.9	-	-	-	-	-	1.00	-	3.90
Sub-total Americas##	*1024.1*		*121.2*	*11.8%*	*32.8*	*7.6*	*31.7*	*4.8*	*11.3*	*12.7*	*20.3*
Grand total	**3090**		**478**	**15.5%**	**39.7**	**35.5**	**74.6**	**18.4**	**132.1**	**91.7**	**86.3**

*Includes Thailand and India stimulus; ** Only EUR30bn from direct EU contribution considered; *** USD700bn under TARP for bank bailouts not considered; # Includes only additional spending in Green sector under focus; ## Includes Argentina and Chile stimulus; +Low carbon vehicles
Source: HSBC

Green Stimulus contribution by region (USD478bn)



Source: HSBC

Thematically, the largest allocation is towards the broad energy efficiency theme, as a result of large-scale infrastructure investments in rail, grids and building efficiency Water and waste is next, followed by renewable energy and other low carbon power sources (largely carbon capture and storage). In terms of timing, most of the green stimulus will take effect in 2010 and measures planned for 2009 will be back ended to the second half. Already China's stimulus plan is starting to have an effect and the first clean energy projects have been agreed in the USA.

Following the G20 summit in April, we believe that the 'green stimulus' agenda has reached the 'end of the beginning'. Key questions for investors include:

- is the green stimulus large enough?
- will there be delays in implementation?
- is the green stimulus really green?
- will it generate long-term employment and jobs? and
- will it mobilize private investment for a low carbon recovery?

We expect a further instalment of the low carbon stimulus targeted at developing countries as part of the Copenhagen negotiations in December.

An extended version of this report can be found on www.hsbc.com/1/2/sustainability

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The green deal gets real

- Policymakers are increasingly favouring a strong climate component in economic recovery plans
- This could help frontload the investment required to slow, stabilise and then reduce greenhouse gas emissions
- Questions remain over size, timing, environmental effectiveness, job creation potential and multiplier effects

From margin to mainstream

The deepening global economic downturn has propelled ideas that were once on the margins of economic policy into the heart of decision-making: bank nationalisation, quantitative easing and, the focus of this report, low-carbon recovery. In July 2008, a group of far-sighted pioneers in the UK proposed a "Green New Deal" as a way of reviving demand, creating jobs and accelerating the transition to an economy consistent with the need to dramatically reduce greenhouse gas (GHGs) emissions over the coming decades[1].

Advocates of a low-carbon stimulus now exist at the highest levels in government and business across the globe. The reasons for this shift are five-fold:

- Policymakers realise that there are powerful symmetries between the systemic failures of risk management that have led to the current financial crisis and those that threaten dangerous climate change if GHG emissions are left unchecked.
- The recent sharp rise in energy prices – and their subsequent collapse – has provided a strategic warning of the importance of reinforcing energy security, notably through a substantial improvement in the efficiency with which energy is used in homes, businesses and transport, and through the mobilisation of free, inexhaustible renewable energy resources.
- The low-carbon economy can also be a job-rich economy at a time of soaring unemployment, particularly through enhancing building efficiency, either via retrofit or new construction, and improving mass transit.
- There is growing acceptance that the next wave of productivity and innovation could well come from smart technologies that enable a growing world economy to thrive in the context of deepening carbon as well as other natural resource constraints, most notably water.
- There is the importance of protecting the climate itself, which all major world leaders accept as a global imperative. The science is secure, impacts are already present and negotiations are underway for a new global climate treaty, scheduled to be completed this December in Copenhagen.

[1] *New Economics Foundation, A Green New Deal, July 2008*

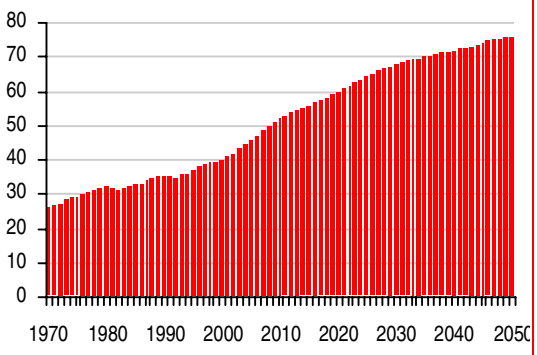
This agenda is by no means uncontested. Commercial and political concerns that environmental action in a recession is an unaffordable luxury certainly remain. Indeed, the European Union's Climate Package was the target of a sustained assault to reduce the cost of carbon curbs in December 2008. Yet, in spite of pressures to water down its climate commitments, the package came through largely intact. What has changed is the content of the climate investment narrative, moving away from an emphasis on the costs of confronting global warming change to a focus on clean-growth opportunities.

Targeted, timely, temporary…

Governments are currently preoccupied with confronting the twin crises of financial collapse and economic slowdown, and are responding with interest rate cuts, bank rescue plans and an array of fiscal measures to get demand moving again. More than 20 governments have introduced emergency economic stimulus packages to cut taxes and increase spending. Most of these efforts are inward-looking, focusing on expanding the domestic economy. But there is growing awareness of the need for international coordination, for example, through the Group of 20 leading economies who met at the London summit in April.

The International Monetary Fund has recommended that 'the optimal fiscal package should be timely, large, lasting, diversified, contingent, collective and sustainable'[2]. Others have shortened the list to a simpler trinity of 'targeted, timely and temporary' measures, highlighting the importance that government action should be seen as a passing phase in policy, which does not result in the build-up of unbearable levels of debt which would constrain medium-term prospects. When the IMF underscores the importance of the package being 'sustainable', it is not using the term in the environmental sense. Nevertheless, it does spotlight the value of 'a few high profile programmes, with a good long-run justification and strong externalities (for example, for environmental purposes) can also help, directly and through expectations'.

Past and projected global emissions (1970-2050) (GtCO2e)



Source: Netherlands Environmental Assessment Agency, IPCC SRES A1FI, HSBC

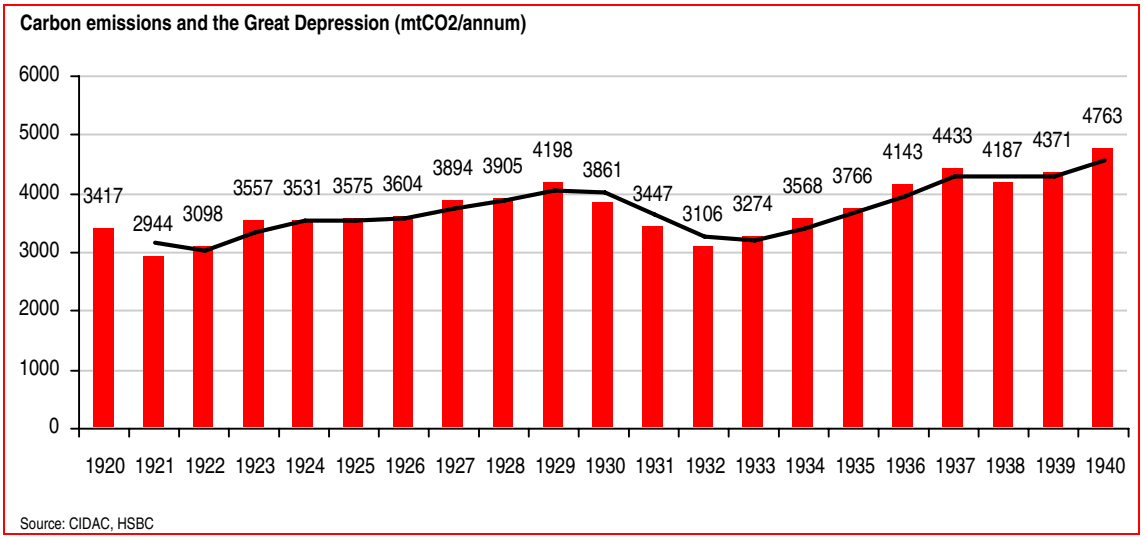
…and transformative

The long-run justification for determined action on climate change is clear. The globe's leading scientists concluded in 2007 that global GHGs – most notably carbon dioxide – would need to fall by 50-85% by 2050 from 1990 levels if the world was to stand a reasonable change of avoiding dangerous and irreversible impacts in the form of storms, floods, droughts, heat waves and sea-level rise[3].

The 2008 G-8 summit in Hokkaido committed the world's leading countries to hitting the lower end of this range. With Barack Obama now in the White House, the USA has pledged to cut its emissions by 80% by mid-century, reflecting the disproportionate share that the industrialised world must take as a result of their historic emissions and greater capacity to act.

[2] *Antonio Spilimbergo, Steve Symansky, Oliver Blanchard and Carlo Cottarelli, Fiscal Policy for the Crisis, IMF Staff Position Note, December 2008*

[3] *IPCC, FAR, 2007*



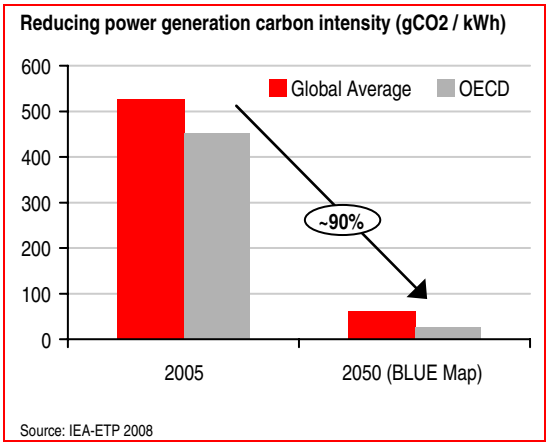
Hitting these targets is made all the more difficult by the fact that emissions of GHGs are heading in precisely the wrong direction. The UN Framework Convention on Climate Change (UNFCCC) was agreed in June 1992, and bolstered in 1997 with the Kyoto protocol, which set binding targets on the industrialised world to cut its emissions by 5% by 2008-12 from 1990 levels. But rather than stabilising and then falling, emissions have actually accelerated through a combination of a rapidly expanding world economy and increasing carbon intensity as coal plays an ever-larger role in the global energy mix, rising from 24% in 2002 to 29% in 2007.

The economic downturn is certainly set to slow this growth in emissions in 2009 and 2010 – a reality reflected in the precipitous fall in the European carbon price from EUR21 in February 2008 to just EUR8.4 today. But as evidence from the Great Depression shows, emissions will rise once again when the economy recovers, unless structural action is taken in the meantime to change the content of growth.

Changing course on climate change will require a transformation in the global economy, a transformation that is certainly unprecedented but one that is both highly achievable and comes with a suite of spin-off benefits in terms of security, innovation and growth. The International Energy Agency (IEA) has concluded that an 'energy revolution' is needed to halve emissions by 2050 through a mix of measures that cut the energy intensity of growth as well as the carbon intensity of energy[4].

To take one example, in the global power generation sector, the average carbon intensity of energy needs to fall by nearly 90% by 2050 from the current c500gCO2/kWh to just c60gCO2/kWh. In the UK, which has recently committed itself to an 80% emission cut by 2050, the consequences are even more profound. By 2035, emissions from power generation will need to fall from 560gCO2/kWh to 52gCO2/kWh, requiring a substantial boost to renewable power and heat as well as the roll-out of pivotal technologies such as carbon capture and storage (CCS).

[4] *IEA, Energy Technology Perspectives, June 2008*



Globally, the IEA estimates that annual investments in clean energy systems for electric power, heat and cooling, industry and transport need to surge 18 times from current levels to an average of USD1.3trn between 2005 and 2050. IEA also estimates that these investments will yield net fuel savings over the same period of USD5trn. The fear of energy policymakers, however, is that the current slowing of capital investments risks an energy supply crunch when growth rebounds. IEA estimates that if growth is restored on its carbon-intensive *status quo ante* then emissions would resume their upward path, reaching levels 45% higher than in 2006 by 2030.

The timing of climate investments is just as important as their scale and allocation. Scientists at the IPCC have indicated that global emissions need to peak by 2015, making action in the next few years vital to change the emission trajectory. This is the focus of the forthcoming Copenhagen climate summit, which aims to achieve an international consensus on the actions over the medium term to 2020 and long term to 2050. Key elements of a global climate strategy include:

- An effective price on carbon, for example, through emission trading and green taxes.
- Incentives for the expansion of low-carbon energy power such as renewables and CCS.
- Tighter standards for the energy efficiency of buildings, vehicles and appliances.
- Preventive investments to adapt to the impacts of climate change, particularly in developing countries.
- Policies to expand natural carbon sinks as well as reduce emissions from deforestation and degradation (REDD), especially in the tropics.
- Scaled-up financial support for developing, transferring and deploying clean technologies in emerging economies.

The UN estimates that more than 80% of required investments will normally come from the private sector such as consumers and business[5]. However, in the extraordinary circumstances of the current crisis, a higher proportion could well come from the state. Allocating extra public spending to green recovery plans should not be seen as a substitute for taking tough decisions about strategic policy frameworks. But this extra public spending can play a critical function in first ensuring that the positive momentum in climate investments is not lost in the recession, and second in 'building the foundations for sound, sustainable and strong growth in the future'.[6] The result could be akin to killing a flock of birds with one or two stones.

Climate categorisation

In the pages that follow, we analyse the "green" or climate change components of G20 economies recovery plans. To structure our analysis, we have used the 18 climate change investing themes

[5] *UNFCCC (2007), Investment and Financial Flows to Address Climate Change.*

[6] *Alex Bowen, Sam Fankhauser, Nicholas Stern and Dimitri Zenghelis, An outline of the case for a 'green stimulus', Grantham Institute on Climate Change and the Environment, February 2009.*

identified by the HSBC Climate Change Index and classified relevant expenditures accordingly.

The HSBC Climate Change Index identifies four main clusters of investment opportunity:

- Low-carbon energy production, including renewable sources such as geothermal, hydro, wind and solar, along with nuclear power.
- Energy efficiency & energy management, including goods and services that enhance building, industrial and transport efficiency (such as fuel-efficient vehicles and modal shift) as well as energy storage.
- Water, waste and pollution control, including water conservation, treatment and supply.
- Carbon finance, most notably associated with carbon markets.

We have found considerable diversity in the plans that been issued to date. Many of the plans have crucial details over timing and allocation still to be finalised. We have therefore attempted to be conservative in our analysis, and have produced a provisional set of estimates for the climate change dimension. We believe that these estimates will change as greater precision is given over the direction of the stimulus plans – and as the plans themselves are updated or superseded.

In our analysis, we have found a number of areas emerging as major beneficiaries. These include sub-themes such as rail infrastructure, which is part of the broader transport efficiency theme, as well as grid infrastructure, which is included in the Index's industrial efficiency theme. We have also identified areas of spending currently outside the Index, most significantly around carbon capture and storage (CCS). CCS is clearly a potentially pivotal technology, but is currently not included in the Index as it is not investable – in other words it is not yet at commercial scale and therefore is not associated with sufficient revenue generation. Finally, we have found no fiscal allocations at present to carbon finance.

Five questions for green deals

Overall, more than USD480bn, or approximately 15% of the total stimulus package (USD3.1trn), is allocated to climate change investment themes. For business, investors and taxpayers, five key questions need to be asked about the relationship between the current crop of economic recovery plans and climate change, for which we only have preliminary answers at present:

- Are plans allocating enough resource to the green stimulus? There is no magic proportion that should be targeted to climate change. The Grantham Institute in the UK has suggested a 20% benchmark, resulting in a "ball-park" figure of USD400bn of extra public spending on "green measures" over the next year or so. A report commissioned for the UN Green Economy Initiative has proposed that the G-20 should spend 1% of GDP on reducing carbon recovery over the next two years, equivalent to USD460bn.[7] These numbers are also in line with recommendations of the IEA's *2008 World Energy Outlook,* which estimates that clean energy investments of USD465bn per year need to be made from 2010-30.
- When is the green stimulus likely to materialise? Much is made of the need to focus on "shovel-ready" projects in a stimulus plan, and for investors, asset valuations of potentially affected sectors will depend on the precise timing of these measures taking effect. One concern is that fine-sounding plans could fail to have the desired impact in the implementation phase. This makes it imperative that governments are crystal clear about the administration of delivery.

[7] *Edward Barbier, A Global Green New Deal, UNEP, February 2009*

- How green is the Green New Deal? At this stage, our assessment has focused on scoping out the many contours of the global green stimulus. However, there is no necessary reason why a policy that is badged green will necessarily result in progress towards a low-carbon economy. Indeed, there is a risk of "green camouflage" with extra subsidies being targeted to industrial favourites without any real pressure for carbon transformation. We have, for example, excluded 'cash for clunkers' automobile scrappage schemes from our assessment. Equally, it is important that climate factors are integrated throughout economic recovery plans to ensure that good "green" measures are not blotted out by carbon-intensive spending elsewhere.
- How many jobs will be created in the short and medium term? Money invested in clean energy is estimated to create twice as many jobs per dollar invested compared with traditional fossil fuel-based energy[8]. What is important here is not just the job creation potential of "green" public works projects, which by nature will come to an end, but the degree to which the stimulus actually builds the base for sustained employment in low-carbon industries in the upturn[9].
- How effective is the green stimulus at mobilising private investment? Estimates vary of multiplier effects of government expenditure in the wider economy. The IMF cites existing studies that suggest a range of fiscal multipliers from less than one to more than four, depending on assumptions, type of policy and country. Germany's first stimulus package, for example, includes generous amortisation rules for companies and incentives for climate-friendly home renovation. Together, these will cost EUR12bn over two years and are expected to trigger EUR50bn in private investment, according to the IMF, implying a multiplier effect of 4x.

All five of these questions point to the need for the vast sums now being allocated to stimulus plans, green or otherwise, to be made to work hard for the economy, jobs and the environment. This is requires attention to detail as well as transparency – all of which is especially important as we believe that what has emerged to date is only the first instalment of plans for green economic stimulus through 2009 and 2010.

[8] *Center for American Progress, Green Recovery, September 2008*

[9] *UNEP, ILO, IOE, ITUC - Green Jobs: Towards Decent Work in a Sustainable, Low-Carbon World*

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Measuring the green stimulus

- Around the world, governments have allocated more than USD470bn in fiscal stimulus to key climate change investment themes. China and the US lead the way
- Key beneficiaries include rail transportation, water infrastructure, grid expansion and improved building efficiency. Renewable energy has received limited support to date, except in the USA
- Following the G-20 summit in April, Australia, Japan and the UK strengthened their 'green stimulus' plans. We believe that the first phase of linking strategies for economic recovery with climate priorities has ended, with a second phase starting in the run up to Copenhagen talks in December

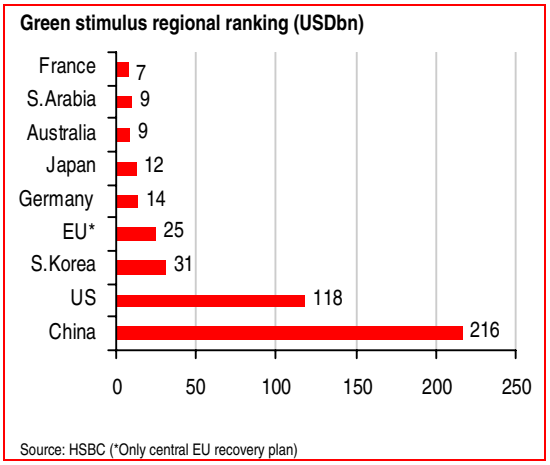
Money on the table

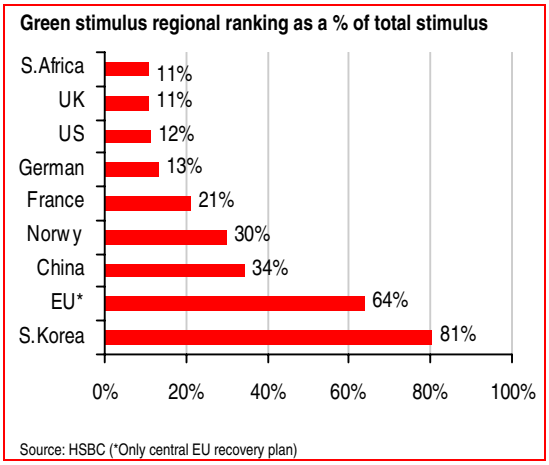
Governments are facing the triple effects of economic downturn, energy security and climate change. Across the world, they are responding by allocating a sizeable proportion of their fiscal stimulus packages to investments consistent with a low-carbon economy. We estimate that more than USD480bn out of nearly USD3.1trn in tax cuts, credits and extra spending can be categorised as "green", approximately 15%.

Even with this massive fiscal stimulus, the pace of decline in industrial production is on a par with the early months of the Great Depression. Our forecasts reflect this ongoing weakness. For the global economy in 2009, we are lowering our GDP forecast from -1.4% to -1.9%. For the developed world, we now expect 3.0% shrinkage compared with a fall of 2.5% previously. The emerging world is still expected to expand but at a paltry rate of 1.7% on the back of growth signs in China as the stimulus starts to trickle down. (HSBC *Global Economics, For those in peril, April. 09*).

China and the USA in the lead

China and the USA dominate the stimulus landscape in terms of both the size of their overall stimulus plans, as well as the extent of the green dimension.





With sizeable financial reserves and a tradition of long-term planning, in November 2008, China launched its RMB4,010bn (USD584bn) package. Almost 40% of this is allocated to "green" themes, most notably rail, grids and water infrastructure, along with dedicated spending on environmental improvement. Elsewhere in Asia, South Korea has introduced a dedicated Green New Deal, with more than 80% allocated to environmental themes.

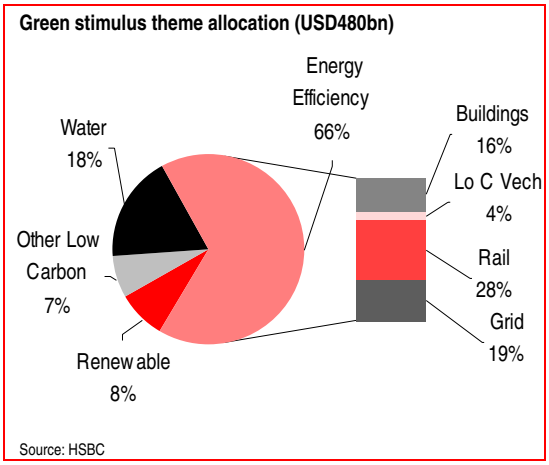
The Asia-Pacific region has the largest green stimulus packages in both percentage (close to 20%) and in absolute terms (cUSD295bn). As expected, the massive stimulus package offered by China gathers c50% of the total spending towards green.

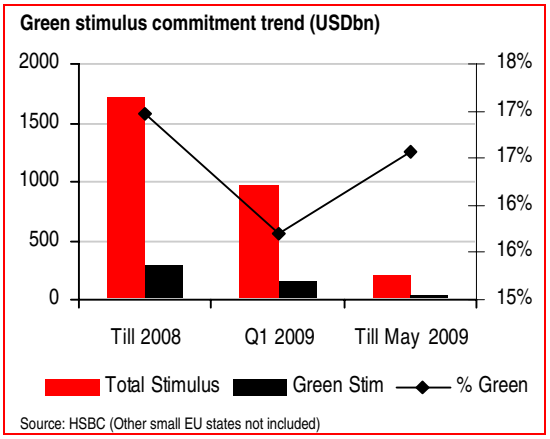
The new American Recovery and Reinvestment Plan commits USD787bn to kick-starting the economy, with USD94bn for renewables, building efficiency, low-carbon vehicles, mass transit, grids and water. Although the green component is smaller than China's, it is more broadly based, and the only plan with a real boost to renewables. The existence of substantial automatic fiscal stabilisers in Europe has meant that the EU stimulus is so far smaller in size.

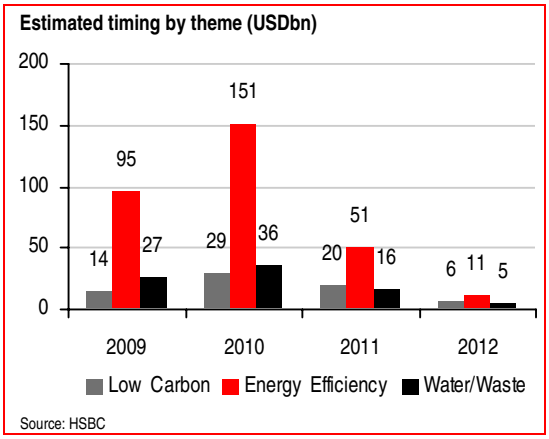
Boosting green infrastructure

Laying the foundations to underpin future growth is a core element of most stimulus plans, and the bulk of climate dimension is allocated to a suite of green infrastructure options, notably rail, grids, water and buildings. Low carbon power receives around 15% of the total, with renewables at 8%, and carbon capture and storage accounting for the balance; only one country – Canada – has allocated spending to the nuclear sector as part of its stimulus efforts.

Overall, we see the construction and capital goods sectors as the major beneficiaries, along with an indirect effect for power, rail and water utilities.







Timing the delivery

We expect the impact to be muted in the first half of 2009 – except in China – with a pickup in the second half. As a result, we estimate that three-quarters of green stimulus spending will be disbursed in 2009 and 2010, with the bulk impacting the economy in 2010. However, this timetable could slip in the implementation phase.

We have also observed that the total amount of stimulus spending has slowed as we approach the end of the first half of 2009. But the green proportion has recovered after a dip in Q12009.

Multiplying the impact

Typically, the range of multipliers for government spending varies from less than one to more than four, depending on economic assumptions, the type of fiscal policy and the country concerned. Multipliers also depend on country circumstances, including type of instruments used, trade openness, borrowing constraints, the response of monetary policy and long-term sustainability.

Multiplier effects of fiscal stimulus

Measures	Range	
	Lower	Upper
Tax cuts	0.3	0.6
Infrastructure investment	0.5	1.8
Other*	0.3	1

Source: IMF 2009, Group of Twenty Meeting of the Deputies Feb 2009; (* Transfers to state govt, assistance to small and medium sized enterprises and housing markets)

We have used these estimates from the IMF to analyse the green stimulus, and assumed an average multiplier of just over 1 for the total green component of the global stimulus package, leading to USD500bn in spending in the next two years, resulting in a total level of spending of some USD970bn.

The stimulus starts to stimulate

Signs are emerging that the stimulus packages announced last year have started to have an impact. In China, infrastructure investment surged by 70-120% y-o-y and credit growth rebounded to a 10-year high of over 30% y-o-y in March 2009. (See HSBC Research's, *China Stimulus Works*, Qu Hongbin et al, 3 April 2009).

In the USA, 'green stimulus' funds under the American Recovery and Reinvestment Act (ARRA) have also begun to flow. According to the US Department of Energy, recent allocations include more than USD3.3bn towards smart-grid technology development grants, with an additional USD615m for smart-grid storage, monitoring and technology viability.[10] This represents just c10% of the money to be deployed in 2009/2010 under the ARRA.

[10] *http://www.energy.gov/news2009/7262.htm; http://www.energy.gov/recovery/documents/DOE_Major_Communications_04172009.xls*

A Climate of Recovery? The Green Dimension to Economic

Country	Package	Date	Fund	Fund	Status	Period	Green Fund	% Green Fund	Low Carbon Power		Energy Efficiency (EE)				Water/ Waste
				USD bn		Years	USD bn		Renewable	CCS/Other	Building EE	Lo C Vech+	Rail	Grid	
Asia Pacific															
Australia	Nation Building and Jobs Plan	3-Feb-09	AUD 42 bn	26.7	Passed	2009-2012	2.5	9.3%	-	-	2.48	-	-	-	-
	Budget 2009-2010	12-may-09	AUD 22.5 bn	17.1	Pending	2009-2013	6.8	39.8%	1.40	1.77	0.17	-	3.46	-	-
China	NDRC Stimulus Package	9-Nov-08	RMB 4010 bn	586.1	Passed	2009-2010	200.8	34.3%	-	-	-	1.50	98.65	70.00	30.69
	Budget 2009	6-Mar-09	RMB 420 bn	61.4	Passed	2009	15.6	25.4%	-	-	-	-	4.95	-	10.63
Indonesia	Stimulus Plan	28-Jan-09	IDR 71.3 tn	5.9	Passed	2009	0.1	1.6%	0.07	-	-	-	0.03	-	-
Japan	Pckg to Safeguard People's Daily Lives	19-Dec-08	Yen 43 tn	485.9	Passed	2009 onwards	12.4	2.6%	-	-	12.43	-	-	-	-
	Countermeasures to economic crisis	10-Apr-09	Yen 15.4 tn	154.0	Passed	2009 onwards	23.6	15.3%	1.07	12.93	5.90	3.70	-	-	-
South Korea	Green New Deal	6-Jan-09	USD 38.1 bn	38.1	Passed	2009-2012	30.7	80.5%	1.80	-	6.19	1.80	7.01	-	13.89
Saudi Arabia	Budget 2009	23-Dec-08	SR 475 bn	126.8	Passed	2009	9.5	7.5%	-	-	-	-	-	-	9.45
*Sub-total Asia Pacific**				*1518.9*			*302.0*	*19.9%*	*4.3*	*14.7*	*27.2*	*7.0*	*114.1*	*70.0*	*64.7*
South Africa	Budget 2009-2010	11-Feb-09	R 78.5 bn	7.5	Passed	2009-2011	0.8	10.7%	0.00	0.00	0.10	0.00	0.61	0.00	0.10
Europe															
European Union**	Economic Recovery Plan-Only EU	26-Nov-08	EUR 200 bn	38.8	Passed	2009-2010	24.7	63.7%	0.65	12.49	2.85	3.88	-	4.85	-
Germany	Stimulus Plan	5-Nov-08	EUR 81 bn	104.8	Passed	2009-2010	13.8	13.2%	-	-	10.39	0.69	2.75	-	-
France	Revival Plan	10-Dec-08	EUR 26 bn	33.7	Passed	2009-2010	7.1	21.2%	0.87	-	0.83	-	1.31	4.13	-
Italy	Emergency Package	28-Nov-08	EUR 80 bn	103.5	Passed	2009 onwards	1.3	1.3%	-	-	-	-	1.32	-	-
Spain	Stimulus Package	27-Nov-08	EUR 11 bn	14.2	Passed	2009	0.8	5.8%	-	-	-	-	-	-	0.83
United Kingdom	Budget 2009 with Loan for cars	22-Apr-09	GBP 25.3 bn	34.9	Passed	2009-2011	3.7	10.6%	0.10	0.64	0.79	1.72	0.41	-	0.05
Other EU States	Stimulus Package	Jan-09	EUR160bn	207.1	Passed	2009-2010	1.9	0.9%	0.8	-	0.6	0.3	0.0	-	0.1
Sub-total EU				*537.0*			*53.4*	*9.9%*	*2.4*	*13.1*	*15.5*	*6.6*	*5.8*	*9.0*	*1.0*
Norway	Fisical Stimulus	26-Jan-09	NOK 20 bn	2.9	Passed	2009	0.9	29.7%	0.2	0.0	0.2	0.0	0.3	-	0.2
Sub-total Europe				*539.9*			*54.3*	*10.1%*	*2.5*	*13.1*	*15.7*	*6.6*	*6.1*	*9.0*	*1.2*
Americas															
Canada	Economic Action Plan	27-Jan-09	CAD 40 bn	31.8	Pending	2009-2013	2.8	8.7%	-	1.08	0.24	-	0.39	0.79	0.27
Mexico	Aggr for Home Economics & Emp	7-Jan-09	PESO 118 bn	7.7	Passed	2009	0.8	9.7%	-	-	0.75	-	-	-	-
United States	Emergency Economic Stabilization Act	3-Oct-08	USD 185 bn	185.0	Passed	10 Years	18.7	10.1%	10.25	2.60	3.34	0.76	0.33	0.92	0.52
	American Recov and Reinvestmt Plan***	15-Jan-09	USD 787 bn	787.0	Passed	10 Years	94.1	12.0%	22.53	3.95	27.40	4.00	9.59	11.00	15.58
	Budget 2010#	Mar-09	USD 4.9 bn	4.9	Pending	2010	4.9	-	-	-	-	-	1.00	-	3.90
Sub-total Americas##				*1024.1*			*121.2*	*11.8%*	*32.8*	*7.6*	*31.7*	*4.8*	*11.3*	*12.7*	*20.3*
Total				**3090**			**478**	**15.5%**	**39.7**	**35.5**	**74.6**	**18.4**	**132.1**	**91.7**	**86.3**

(*Includes Thailand and India stimulus; ** Only EUR30bn from direct EU contribution considered; *** USD700bn under TARP for bank bailouts not considered; # Includes only additional spending ; ## Includes Argentina and Chile stimulus; +Low Carbon Vehicles)
Source: HSBC

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