



Green Growth : Overcoming the Crisis and Beyond

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Introduction

Within the context of sustainable development, natural resources and ecosystem services provided by the environment are essential to support economic growth, social wellbeing, and human health. Inaction on key environmental challenges, such as climate change, could lead to severe economic consequences in the future. It is important that the measures governments are taking now to address the economic crisis are designed so that they support – and at least do not compromise – sustainable long-term, environmentally friendly growth in the future.

This discussion paper highlights some of the measures governments are already taking to “green” their approaches to economic recovery, and some of the key issues they may wish to further consider going forward regarding the impact of these approaches on the environment.

The crisis is no excuse to delay tackling climate change and other urgent environmental challenges

The current economic crisis is not an excuse to weaken long-term efforts to achieve low-carbon economic growth. Recent OECD analysis shows that ambitious policy action to address climate change makes economic sense, and that delaying action could be costly in both economic and environmental terms. Providing that governments send a clear policy signal now about their medium and long-term climate change objectives, the cost of climate policy measures could be kept quite low in the initial few years, while countries are still struggling to move out of the crisis. What is important is a clear long-term international signal, such as through a successful and ambitious outcome from the UNFCCC Climate Change Conference in Copenhagen in December 2009, supported by clear and predictable domestic policies to implement this outcome, in order to enable private investors and the public to start making climate-friendly investment and consumption choices. Delaying action to address other urgent environmental challenges, such as unsustainable water management, will also prove costly.

The crisis is also not an excuse to reduce international financing to support development and environment objectives or to reverse efforts to liberalise trade and open markets. The current global financial crisis is having a serious impact on low income countries. In the face of the crisis, OECD countries have reaffirmed their aid commitments. High level representatives of OECD Development Co-operation and Environment Ministries came together in May 2009 to highlight the importance of secure financing for key international environmental challenges, including climate change and water supply and sanitation. In the coming years, delivering enhanced support to developing countries will be essential to scale-up efforts to mitigate climate change and to adapt to the climate change impacts that are already locked in. As with other elements of the stimulus packages, “green” investments should also not be used as a cover for trade protectionist measures, for example by requiring nationally-produced construction materials.

Recession can also open up new opportunities – don't waste a crisis!

The *OECD Strategic Response to the Financial and Economic Crisis* is supporting countries to recover from the crisis and to create a stronger, cleaner and fairer world economy. Periods of economic recovery have often proven propitious to implementing structural reforms. The crisis provides both an opportunity and an incentive to improve efficiency in the use of energy and materials, and for the development of new green industries and businesses – developments that can benefit both the economy and the environment. Over the longer-term, moving towards a low-carbon economy can also help to increase energy security and reduce vulnerability to oil price shocks. New public and private sector investments will be needed to deal effectively with many of the most pressing environmental challenges, for example in innovative energy-efficient buildings and transport systems, alternative energy supplies such as renewables and “smart” electricity grids, pollution control, as well as investments in key environmental infrastructures, such as increased forest area and measures to protect coastlines or reduce flood risks. Investments will be needed to facilitate adaptation to the climate change that is already locked-in, to “climate-proof” infrastructure and protect urban areas. Investing in the environment is thus an important element of many of the stimulus packages being put in place by governments in OECD and emerging economies (see Table 1 of the Annex). Countries are also working to ensure that the right policy frameworks are in place to encourage private investments flows that support environmentally sustainable long-term growth.

The crisis can also be a spur to much needed structural reform, where there is an opportunity for both economic and environmental gains. It provides an opportunity to reform or remove policies that may be expensive, inefficient and environmentally harmful. Examples of immediate win-win policies that governments can take advantage of include:

- Reforming or removing environmentally harmful subsidies, such as to fossil fuels or to agricultural production, in both OECD and developing countries. *For example, new OECD analysis suggests that removing subsidies to energy consumption in a number of emerging and developing countries could both drastically reduce their greenhouse gas emissions, by as much as 30% in some regions in 2050 compared to business-as-usual, while also contributing to increased economic efficiency in these countries. Where these subsidies contribute to achieving a social objective, alternative forms of more direct transfer payments may be needed.*
- Cutting trade barriers to environmental goods and services. *For example, barriers to trade in more energy efficient equipment and technologies for generating electricity from renewable energy, as well as trade barriers to energy-efficient light bulbs, should be addressed urgently. Work is ongoing on this issue under the Doha trade liberalisation discussions.*
- Addressing market failures that prevent improvements in the energy-efficiency of buildings and transport systems. *For example, where these failures are not already addressed through other policies, governments should take measures to strengthen the environmental requirements such as through building codes or in standards governing household electric appliances.*

- Reforming policies that could achieve a given environmental objective more cost-effectively. *In this context, the long-term cost-effectiveness of some renewable energy support policies should be carefully assessed. Such support can be useful to encourage technology development and deployment, but can also prove unnecessarily costly. For example, OECD analysis suggests that policies to support current biofuels production in some OECD countries may cost as much as USD 1,000 per tonne of CO₂ emissions avoided – a high price to pay for these emission reductions.*
- Enhance green public procurement practices. *For example, through strengthening the environmental requirements for public procurement through environmental performance criteria and other incentives.*

Green innovation requires both getting the prices right and R&D investments

OECD's *Innovation Strategy* is looking in-depth at how government policies can best support innovation to address key challenges, including environmental challenges. Innovation in low-carbon sectors have the potential to lead to significant economic opportunities. But investors need a clear and credible price signal now to make the appropriate investment decisions for a greener future. OECD analysis clearly shows that better pricing will be one of the best triggers for the development and diffusion of greener technologies. New technologies, such as carbon capture and storage (CCS), will not be aggressively deployed in the coming decades without a clear and predictable carbon price. Even with such a price, the costs of some technologies may be very high initially, and government investments in demonstration facilities may be needed. Norway, for example, will invest close to NOK 1 billion through its stimulus package to cover the increased costs for a CCS project in a gas power plant at Mongstad on the Norwegian coast, while a combination of Spanish and EC funding will support a CCS project in León, Spain.

While private investment in R&D is essential, governments will also have to share the risk of research in new technologies with the private sector in some circumstances. Public R&D policies are particularly important now, when the private sector may have more difficulty making such investments. In the energy sector, public R&D has been falling since the early 1980s; this is an area where public spending could be significantly increased with a potentially high return on the investments which are often not taken up by the private sector due to market barriers or failures. A number of other measures are already being employed by countries to support environment-related research and development, as listed in Table 2 of the Annex, including: R&D tax credits and public procurement policies to help stimulate private investment; public-private collaboration on R&D projects, including through research clusters together with academic institutions; and selective targeted measures to support innovation in small and medium-sized enterprises (SMEs). OECD is working to identify the policy measures and frameworks that can best incentivise private investments in environment related R&D and climate-friendly infrastructure.

The role of “green” innovation

The development and wide deployment of new technologies will be critical for addressing a number of environmental challenges. Climate change is one area where new technologies and systems for production and consumption of goods and services can help mitigation and adaptation strategies, but technologies to improve the efficient use of water and other natural resources are also urgently needed. Developments that can contribute to improved environmental performance include nanotechnologies for clean water, biotechnology applications for detection, prevention, remediation and improved resource use, and ICTs as cornerstones of “smart” applications such as for energy efficiency in buildings, transport systems or new electricity grids.

Governments can take a number of approaches to help spur eco-innovation in the context of economic recovery, including to:

- provide a clear price signal to internalise the cost of environmentally harmful activities, in order to encourage innovation towards greater efficiency in the use of energy and natural resources, and reduced waste.
- develop proactive policies to support innovation and environment-related technological development and uptake, including investment in basic R&D, where there are market barriers which lead to under-investment by the private sector.
- apply technological impact assessments to assess the potential gains and risks of new technologies, including for the environment.
- identify the infrastructures needed to facilitate a move to a low-carbon and environmentally sustainable economy, and develop policies to encourage the necessary investments (public and private).
- develop international co-operation and collaboration for large-scale projects on clean technologies, as well as to facilitate international transfer and rapid uptake of new technologies, whilst taking account of the role of intellectual property rights (IPR).
- increase training and education to develop the new skill sets needed for green jobs, and raise consumer awareness to better reflect sustainability concerns in their daily decisions.
- ensure policy integration, benchmarking for performance, and evaluation of the approaches applied to check that they effectively help to develop and diffuse green technologies, while contributing to economic growth.

Inefficient policies must be avoided

Investments in energy production, buildings and transport infrastructure will stay with us for decades to come. It is important to ensure that economic stimulus packages do not lock-in inefficient or polluting energy technologies, or dirty modes of production and consumption. Over the long-term, these investments would impose a cost to the economy in terms of the health and other impacts of pollution, resource depletion and climate change. In this context, and reflecting general guidance for all major public investments and infrastructure developments, countries should undertake Strategic Environmental Assessments (SEAs) of policies and Environmental Impact Assessments (EIAs) of projects included in economic stimulus packages as relevant. Some of the major construction projects that could be brought forward for an earlier start date with support from the recovery packages are already likely to have environmental assessments available or under way, and other measures can be taken

to speed-up such assessments in order that these processes do not unduly slow the planned investments. In Canada, for example, the government is working to streamline federal processes to address potential environmental and other impacts of projects, as well as fast-tracking federal review and approval processes to get projects started sooner.

Many of the measures introduced in the stimulus packages are aimed at supporting the automobile industry or building roads (see Table 3 in the Annex), and the overall environmental consequences of these measures need to be carefully assessed. In some cases, these measures may lead to increased emissions and pollution, although if carefully designed they can be environmentally neutral or even beneficial. In order to address these concerns, a number of countries – including Australia, Brazil, France, Germany, Italy, Japan, Korea, Portugal, Spain, Sweden, United Kingdom, United States – have at least partially tied support for the automobile industry to the development of more environmentally friendly vehicles. Many countries are also putting in place financial compensation schemes to prompt businesses and households to discard or scrap old cars and buy new ones. While these measures can help to remove older, less-efficient, vehicles from the roads, they may also encourage greater material consumption, vehicle use, and ultimately increased emissions, thus offsetting the environmental benefits. Measures aimed at car-scraping or support to the automobile industry also have the potential to generate inter- and intra-sectoral distortions, and can act as protectionist measures. Thus, the economic, trade and the environmental impacts of these measures should be carefully assessed.

The economic crisis also poses a risk to ensuring efficient and effective environmental policies and to international co-operation to tackle global environmental challenges. It has often been difficult to introduce economic instruments for environmental policy because industries have argued that such measures would put them at a disadvantage with foreign competitors. This was seen last year, for example, in the discussions on the free allocation of permits for the EU Climate and Energy Package, and is a concern that is often raised in other countries considering cap-and-trade or carbon tax approaches to climate change. Despite OECD analysis indicating that the effects of climate policies on competitiveness are often quite small, it is clear that this is a major concern to many countries, and one that is likely to increase in the current economic situation. A gradual transition towards a more globalised carbon market, accompanied by short-term flanking measures to smooth the transition for affected workers or households, could help to address these concerns. To support countries in implementing efficient policies and in working towards a successful outcome from the international climate change negotiations, OECD is continuing to assess the impacts of climate policies on competitiveness and carbon leakage, and how concerns about these impacts can be addressed in the context of the political economy of reform.

It is also important to understand how different policy instruments interact together in the policy packages. Except for situations where mutual reinforcement between instruments is likely, or when the instruments address different dimensions of a given problem, the introduction of overlapping instruments should be avoided. For example, while setting quantitative targets on renewables in the energy mix can help to create a framework for private investments and innovation in renewable energies, these regulated targets may overlap with cap-and-trade systems that cover electricity generation. This can result in an increase the costs of action for producers and consumers, without necessarily leading to any additional emission reductions unless governments use the higher renewables penetration as an opportunity to more rapidly tighten the GHG emissions cap. Thus, the use of potentially over-lapping policy instruments should be limited to situations where they can be justified on other grounds, for instance as a way to boost innovation and technology deployment, or to improve energy security.

Creating green-collar jobs

As with other elements of the stimulus packages, some of the environmental measures governments are taking to spur growth will also contribute to the creation of new green employment opportunities. Some areas of renewable energy production, as well as implementation of energy efficiency measures in buildings, are quite labour-intensive across a wide spectrum of job skills compared with fossil fuel based energy production. As such, measures to move towards a low-carbon economy may help to sustain or stimulate employment, although their implications for productivity also need to be taken into account. Policies to promote “green” employment may help sustain employment in the short term, but the net employment effects across all sectors of the economy are more uncertain over the long-term, and should be carefully assessed.

A number of countries are emphasising the importance of employment creation with respect to the environmental measures in their recovery packages. For example, the Korean government hopes to create nearly one million jobs over the next four years in green technology and industry as a result of its “Green New Deal” economic stimulus package, which includes not only investments in environment-related infrastructure, but also in R&D and a range of tax breaks or loans to help households move towards less environmentally damaging consumption choices (see Table 2). In Japan, employment in environmental industries is expected to double to 2.8 million people by 2020. The UK is developing its Low Carbon Industrial Strategy, with the aim of realising a step-change in energy efficiency, low-carbon energy infrastructure, the development and production of low carbon vehicles as well as contributing to developing new skills.

Green recovery measures can also provide a critical source of revenues for the future

Given the economic crisis, countries will be even more aware now of the costs of any policy action, providing a strong argument for a least-cost approach to tackling climate change and other environmental challenges worldwide. In terms of reducing GHG emissions at least cost, the challenge is to put in place the right incentives to encourage investments in low-carbon economic growth and to move towards a global carbon price. Achieving this will require participation by as many countries and sectors as possible and “getting the prices right” by applying cost-effective mixes of policy instruments. Going forward, dealing effectively and efficiently with many environmental problems, not least climate change, will require the use of economic instruments such as environmental taxes or cap-and-trade schemes with auctioned permits.

The increased use of economic instruments to tackle environmental problems has the added benefit of bringing in revenues, a particularly important consideration in a situation where public finances are likely to be over-extended. These revenues could be used, for example, to help with fiscal consolidation in the future or, in the context of revenue neutrality, to offset reductions in taxes that have negative side-effects on the economy, such as labour taxes. A number of countries have already indicated a shift towards environmentally related taxation in the context of their approaches to economic recovery (see Table 2). These include plans in the Czech Republic to finalise their green tax reform, a comprehensive tax reform in Denmark that will reduce taxes on wages and increase taxes on pollution and energy consumption, intentions in Finland to partially shift the focus of taxation from income taxes to green taxes, the introduction in Germany of a new CO₂-component in automobile taxation, and measures in Sweden to use taxes and fees to internalise environmental costs and make green investments more attractive to the private sector. In the UK 2009 budget,

increases in fuel duty and the landfill tax over the coming years were identified in order to support public finances, while providing incentives to move towards a low-carbon and resource efficient economy.

As governments design the policies and instruments that they will put in place in the years to come to reduce greenhouse gas emissions as part of international efforts to address climate change, the revenue raising potential of different policy instruments to address environmental externalities should be kept in mind, as well as their effect on driving innovation and new technology development.

Going forward

OECD policy analysis has been at the forefront of understanding environment-economy linkages since the 1970s, and it will continue to support countries in identifying policies that can contribute to both economic growth and environmental improvements. OECD Delegates have suggested a number of areas of key value-added for OECD work on green growth, which might be considered by OECD Committees in the context of their programmes of work, including: comparative analysis of the environmental elements of country stimulus packages; analysis of the effects of environmental measures on economic growth, employment and other policy objectives; monitoring and assessing the impacts of these measures through peer reviewed processes; identifying lessons learned and best practice examples; and developing guidance and recommendations to support countries in identifying and implementing policies to green the economy.

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ANNEX: Information on green elements of country economic stimulus packages¹

Table 1. Direct investments in "green" infrastructure or R&D included in government economic recovery packages

Country	Measure	Investments				
		<i>In local currency</i>	<i>In EUR (exchange rates of 22 May 2009)</i>	<i>as % of stimulus package</i>	<i>[total stimulus package]</i>	<i>as % of 2008 GDP</i>
Australia	• Low emission energy technologies:					
	➢ Clean Energy Initiative	AUD 4.5 billion	EUR 2.5 billion			0.37%
	➢ Nation Building and Jobs Plan - Energy Efficient Homes	AUD 3.9 billion	EUR 2.2 billion			0.32%
	➢ National Energy Efficiency Initiative	AUD 100 million	EUR 56.1 million			0.01%
Belgium	• Green investments.		EUR 18.8 million	8.1%	EUR 232 million	0.01%
	• Investments in energy efficient public buildings.		EUR 100 million	43.1%		0.03%
Canada	• Green technology investments.	CAD 2.8 billion	EUR 1.5 billion			0.18%
	• The Green Infrastructure Fund (2009-2013) to support projects such as wastewater, green energy generation, green energy transmission and solid waste infrastructure.	CAD 1 billion	EUR 0.6 billion			0.06%
	• Investments in clean energy research and demonstration projects, including CCS (over 5 years).	CAD 1 billion	EUR 0.6 billion			0.06%
	• Investments to improve passenger rail services.	CAD 407 million	EUR 258.4 million			0.03%
	• Investments in clean water infrastructure					
• Infrastructure Stimulus Fund (2009-2010) to support projects focusing on economic stimulus, including water, wastewater, public transit.	CAD \$4 billion					
China	• Investments in environmental areas, such as energy conservation, emissions reductions, and ecological engineering.	RMB 210 billion	EUR 22.3 billion	5.25%	EUR 430 billion	0.76%

¹ These tables provide selected information on country stimulus packages, as provided by governments to the OECD secretariat. They are not necessarily comprehensive, but aim to provide an indication of the types and relative magnitudes of some of the environmentally relevant measures in stimulus packages.

Country	Measure	Investments				
		<i>In local currency</i>	<i>In EUR (exchange rates of 22 May 2009)</i>	<i>as % of stimulus package</i>	<i>[total stimulus package]</i>	<i>as % of 2008 GDP</i>
Czech Republic	<ul style="list-style-type: none"> Investments in environment-related R&D (2007-2013). Green investent scheme (2007-2012). Operation Program for Environment (2007-2013). PANEL program for energy efficiency in concrete-slab houses (up to 2011). 	CZK 691 million CZK 25 billion CZK 17 billion CZK 750 million	EUR 25.9 million EUR 0.9 billion EUR 0.6 billion EUR 28.1 million			0.02% 0.61% 0.40% 0.02%
Denmark	<ul style="list-style-type: none"> Green Transport Infrastructure Investment Plan (2009-2020): public spending on infrastructure investments will be brought forward by a total of DKK 5 billion during 2009-2010 compared to 2009 budget, for construction of new transportation facilities, and improvement and modernisation of existing facilities. It will include roads, trams, railways (signals), bicycle trails etc. with a clear emphasis on public transport. 	Additional DKK 94 billion over 2009-2020, of which DKK 5 billion in 2009.	Additional EUR 12.5 billion over 2009-2020, of which EUR 700 million in 2009.	10 % (2009)	DKK 180 bn. (2009)	0.2 % (2009)
EC	<ul style="list-style-type: none"> European Energy Programmme for Recovery, with various investments including in: <ul style="list-style-type: none"> Offshore wind energy carbon capture and storage (CCS) 		EUR 565 million EUR 1,050 million			
Estonia	<ul style="list-style-type: none"> Investments in water management infrastructure, energy saving measures for housing. 					
Finland	<ul style="list-style-type: none"> Green technology investments. 		EUR 38 million			0.02%
France	<ul style="list-style-type: none"> Green technology investments. Investments for 2009-2010 to support green growth (via MEEDDAT), including: <ul style="list-style-type: none"> Acceleration of railway development/ renovation projects Investments in maritime ports and river canal projects Energy efficiency investments in public buildings 		EUR 30 million EUR 5 billion EUR 320 million EUR 150 million EUR 200 million	39.3%	EUR 14.5 billion	0.00% 0.26% 0.02% 0.01% 0.01%

Country	Measure	Investments				
		<i>In local currency</i>	<i>In EUR (exchange rates of 22 May 2009)</i>	<i>as % of stimulus package</i>	<i>[total stimulus package]</i>	<i>as % of 2008 GDP</i>
Germany	<ul style="list-style-type: none"> Green technology investments. Investments in public buildings, including (amongst other things) aimed at climate protection and energy efficiency. 		EUR 5.7 billion EUR 20 billion		EUR 80 billion (2009-2010)	0.20% 0.80%
Israel	<ul style="list-style-type: none"> Investments in water desalinisation plants; railways. 					
Italy	<ul style="list-style-type: none"> Investments in public transport and railways. 		EUR 1.44 billion	3.60%	EUR 40 billion (2009-2011)	0.09%
Japan	<ul style="list-style-type: none"> Investments to support the "Low-carbon revolution", a part of the Policy Package to Address the Economic Crisis. (The "Future Development Strategy" and the "Innovation for Green Economy and Society" also include investments in environment.) 	YEN 1.6 trillion	EUR 12.3 billion	10.40%	YEN 15.4 trillion	0.37%
Korea	<ul style="list-style-type: none"> Investments in green transport (high speed trains; bus rapid transit systems; bicycle paths). Investments to secure alternative water sources (eg decreased drainage of rain water; dams; sea water desalinisation; facilities for advanced treatment of wastewater for reuse). Investment in waste recycling; waste-to-energy facilities; photovoltaic and biomass power facilities; eco-energy towns. 	KRW 11 trillion	EUR 6.4 billion	22%	KRW 50 trillion (2009-2012)	1.01%
		KRW 2 trillion	EUR 1.2 billion	4%	KRW 50 trillion (2009-2012)	0.19%
		KRW 3 trillion	EUR 1.7 billion	6%	KRW 50 trillion (2009-2012)	0.27%
Netherlands	<ul style="list-style-type: none"> Green governmental investments. Investments in spatial quality. 		EUR 232 million EUR 445 million			0.04% 0.08%
Norway	<ul style="list-style-type: none"> Green technology investments (including funding efficient energy use, CCS technology, electric vehicle charging stations, etc) Investments in railroads, foot and bike paths, infrastructure for electric and hybrid cars. 	NOK 1.6 billion	EUR 0.2 billion			0.06%
		NOK 1.85 billion	EUR 0.2 billion			0.06%

Country	Measure	Investments				
		<i>In local currency</i>	<i>In EUR (exchange rates of 22 May 2009)</i>	<i>as % of stimulus package</i>	<i>[total stimulus package]</i>	<i>as % of 2008 GDP</i>
Portugal	<ul style="list-style-type: none"> Investments in renewable energy (hydro-electric power dams, wind energy, bioass, solar energy, wave energy, biogas, and smart energy grids); investments in high speed railways and electric vehicle supply grid; modernisation of schools; water and residues treatment; urban regeneration of historical centres and in order to contain urban sprawl; restoration of three brownfield areas in the Tagus river estuary. Projects to protect four major coastal zones and develop coastal area management programmes. 		EUR 350 million			0.21%
Russia	<ul style="list-style-type: none"> Investments in energy efficiency. 					
Slovenia	<ul style="list-style-type: none"> Investments in energy-efficiency improvements in public buildings. Funds to support R&D. 		EUR 20 million EUR 98 million			0.05% 0.26%
Spain	<ul style="list-style-type: none"> Special state fund for environmental actions. CCS project in Compostilla, León. Energy efficiency and saving plan (2008-2011). Reforestation plan. Strategic R&D action in energy and climate change. 		EUR 575 million EUR 500 million EUR 241 million EUR 92 million EUR 54 million			0.05% 0.05% 0.02% 0.01% 0.00%
Switzerland	<ul style="list-style-type: none"> Investments in energy efficiency in buildings. Investments in renewable energy. Investments in flood protection, noise protection and revaluation of natural areas. Investments in rail infrastructure 	CHF 318 million CHF 60 million CHF 220.5 million CHF 252 million	EUR 209.5 million EUR 39.5 million EUR 145.3 million EUR 166 million			0.06% 0.01% 0.04% 0.05%
UK	<ul style="list-style-type: none"> Investments in infrastructure with respect to energy efficiency, rail transport and adaptation (eg flood defence, waterway protection). 		EUR 535 million			0.03%
US	<ul style="list-style-type: none"> Green technology investments. Energy initiatives, including smart power grid (USD 11 billion), smart meters, advanced battery technology, energy efficiency measures. 	USD 59 billion USD 30 billion	EUR 42.8 billion EUR 21.7 billion			0.41% 0.22%

Table 2. "Green" tax reductions, loans, or other measures in government economic recovery packages

Country	Measure	Total amount (est.)	
		Local currency	In EUR (exchange rates of 22 May 2009)
Belgium	<ul style="list-style-type: none"> Loans for energy efficiency improvements. Further tax reductions for investments in energy efficiency measures for buildings (eg insulation) 	EUR 200 million	EUR 200 million
Canada	<ul style="list-style-type: none"> Measures to support retro-fitting of homes for energy efficiency. Temporary tax credit for home renovations. Funding to support environmental assessments of the Mackenzie Gas Pipeline. Funding for management and assessment of federal contaminated sites, to facilitate remediation work of CAD 165 million. Funding for environment-related research and indicators/ reporting. Funding for National Parks. 	CAD 1.6 billion CAD 80.5 million (2009-2010) CAD 347 million (2009-2010) CAD 210 million (2009-2010)	EUR 1 billion EUR 51.1 million EUR 220.3 million EUR 133.3 million
Czech Republic	<ul style="list-style-type: none"> Support for exporting activities of Czech firms (including for green products), road tax exemptions for environmentally friendly cars, environment-related excise taxation, direct grant for trading in old cars. 		
Denmark	<ul style="list-style-type: none"> Additional public investments in green technologies and green growth in agriculture, including public support for green technologies. Tax agreement 2007: Labour income taxes were lowered in 2008 and 2009, partly financed by price-indexing energy taxes from 2008 onwards (approximately 1.8 % p.a.) Tax agreement 2009: Labour income taxes are lowered further from 2010 on, partly financed by increases in environmental taxes from 2010-2013 and forward, including: (i) Increase in taxes on electricity, energy for heating and cooling etc. for households and companies; (ii) Increase in pollution taxes on waste water, greenhouse gases, CFC-gases etc.; (iii) Introduction of a system of "green transport taxes" for road haulage; (iv) A number of changes in vehicle ownership and registration taxes for private households, company cars, taxis, vans etc to encourage efficient fuel economy, less pollution and emissions etc.; (v) Auctioning of CO2 quotas as opposed to present free allocation. 	DKK 750 million annually (2010-2015)	EUR 100.7 million

Country	Measure	Total amount (est.)	
		Local currency	In EUR (exchange rates of 22 May 2009)
Denmark continued	<ul style="list-style-type: none"> • Strategy on commercial aspects of climate change: Including possible initiatives within research and development. • Building repair and maintenance pool: Establishment of a fund to support investments in home renovations, with special incentives given for selected energy-saving renovations (improved insulation, solar cells etc.). Renovations with high energy/resource consumption (air conditioning, saunas, swimming pools etc.) are not eligible for support. 	DKK 1.5 billion	EUR 0.2 billion
EC	<ul style="list-style-type: none"> • Financing (loans) for energy efficiency, climate change, energy security and infrastructure investments via European Investment Bank and European Bank for Reconstruction and Development). 	up to EUR 11 billion per year	up to EUR 11 billion per year
France	<ul style="list-style-type: none"> • EUR 1000 tax rebate for trading-in cars over 10 years old. • Rehabilitation of polluted industrial sites. • Measures to increase energy efficiency in agriculture. • Funds to support energy efficiency investments in low income households. • Tax rebates of EUR 200-5,000 for purchase of low-CO2 emitting vehicles. • Eco-loans at 0% interest rates (éco-prêt à taux zéro) for energy efficiency building renovations. 	EUR 20 million EUR 30 million EUR 200 million EUR 220 million EUR 83 million (2009-2010)	EUR 20 million EUR 30 million EUR 200 million EUR 220 million EUR 83 million (2009-2010)
Germany	<ul style="list-style-type: none"> • EUR 2,500 tax rebate for those trading-in cars over 9 years old; new vehicle tax to be calculated based on emissions. • R&D targeting alternative mobility concepts (especially electro-mobility). 	EUR 1.5 billion EUR 500 million	EUR 1.5 billion EUR 500 million
Korea	<ul style="list-style-type: none"> • Investments in protection and enhancement of 4 major rivers and 100 urban streams. • Unified database on national spatial information. • Measures to promote green car purchases and renewable energy use by households. • Measures to improve forests as carbon sinks and expand use of forest resources, including through tree planting. • Support to build 2 million green homes; to green schools; to replace 20% of public sector lighting with LED lights. 	KRW 18.6 trillion KRW 0.7 trillion KRW 2 trillion KRW 3 trillion KRW 9 trillion	EUR 10.8 billion EUR 0.4 billion EUR 1.2 billion EUR 1.7 billion EUR 5.2 billion

Country	Measure	Total amount (est.)	
		Local currency	In EUR (exchange rates of 22 May 2009)
Italy	<ul style="list-style-type: none"> • Low interest rate loans to support no/low carbon technologies. • Income tax deduction for energy efficient building renovations. • Incentives to trade-in old cars; scrapping measures for high energy-consumption domestic appliances. • Renewable energy and energy savings in the convergence regions • Industria 2015: <ul style="list-style-type: none"> ➢ Projects for sustainable mobility ➢ Projects for energy efficiency 	EUR 600 million (2007-2009)	EUR 600 million (2007-2009)
		EUR 2,837 million (2007-2013)	EUR 2,837 million
		EUR 180 million	EUR 180 million
		EUR 200 million	EUR 200 million
Japan	<ul style="list-style-type: none"> • Tax measures to encourage green investment and purchase of green products as part of the Innovation for Green Economy and Society, including to accelerate development and deployment of photovoltaic power and next generation vehicles. • Eco-Point system to reward consumers with eco-points equivalent to YEN 3-36 K (that can later be exchanged for products) when they purchase energy-saving home appliances. • Financial support via "Local Green New Deal Funds". 	YEN 294 billion	EUR 2.3 billion
		YEN 55 billion	EUR 0.4 billion
Mexico	<ul style="list-style-type: none"> • Support for low-income households to replace electrical appliances with more energy efficient ones. • Financing to support poor households buy energy-efficient electric appliances. • Creation of jobs in forest fire prevention. 		
Netherlands	<ul style="list-style-type: none"> • Stimulation of sustainable entrepreneurship. • Stimulation of sustainable agriculture. • Energy saving in housing. • Stimulation for scrapping old cars. • Stimulating investments in wind energy. • Increase in green tax allowances. • Investments in energy innovation. 	EUR 60 million	EUR 60 million
		EUR 50 million	EUR 50 million
		EUR 320 million	EUR 320 million
		EUR 65 million	EUR 65 million
		EUR 160 million	EUR 160 million
		EUR 60 million	EUR 60 million
		EUR 103 million	EUR 103 million

Country	Measure	Total amount (est.)	
		Local currency	In EUR (exchange rates of 22 May 2009)
New Zealand	<ul style="list-style-type: none"> Government grants of up to NZD 1 800 for households to install better heating, such as heat pumps and wood burners, and insulation for ceilings and under floors. 180 000 homes will be eligible for help under the scheme. 	NZD 243.7 million	EUR 107.1 million
Norway	<ul style="list-style-type: none"> Funds to support increased energy efficiency, particularly in buildings. Investments in climate-related research and development of biofuels. Better management of protected areas and cultural heritage 	NOK1.2 billion NOK 125 million NOK 300 million	EUR 0.1 billion EUR 14.1 billion EUR 33.9 billion
Poland	<ul style="list-style-type: none"> Financial mechanisms to support investments in renewable energy sources. 	Approx. PLN 1 billion by mid-2010	
Portugal	<ul style="list-style-type: none"> Fiscal incentives for entrepreneurial R&D; support to investment in 2009; reduced VAT and municipal tax exemption for 5 years to support urban regeneration; tax benefits for purchasing electric vehicles from 2010; tax exemption for road circulation for electric vehicles from end of 2008. Bonus, fiscal benefits and preferential financial credit conditions for installation of solar panels in private buildings. Credit lines for firms, with special rates of interest on loans and part of risks guaranteed by the State. 	EUR 225 million EUR 2000 million	EUR 225 million EUR 2000 million
Slovak Republic	<ul style="list-style-type: none"> Pilot project to increase energy efficiency in public buildings or properties. Support to private sector loans for energy efficiency, renewables and energy security projects. Programme to support biomass and solar energy use in households. Programme to support home renovations. Reallocation of funds in the Operational Programme for R&D to the energy and environment sector. 	EUR 10 million EUR 115 million EUR 8 million EUR 10 million EUR 42 million	EUR 10 million EUR 115 million EUR 8 million EUR 10 million EUR 42 million
Slovenia	<ul style="list-style-type: none"> Co-financing (loans) for strategic investments in clean and technologically advanced industries. Green tax reform; improved spatial/ urban planning legislation, public procurement, etc. 	EUR 300 million	EUR 300 million

Country	Measure	Total amount (est.)	
		Local currency	In EUR (exchange rates of 22 May 2009)
Spain	<ul style="list-style-type: none"> • Support for the replacement of cars over 10 years old. • Building and housing sector plan, including energy efficiency measures. • Sustainable development investments. • Local investment fund to support sustainable development. • Clean bus financing scheme. • Tourism sector plan, including energy efficiency measures. 	EUR 1.2 billion EUR 4.1 billion EUR 20 billion EUR 5 billion EUR 360 million EUR 1 billion	EUR 1.2 billion EUR 4.1 billion EUR 20 billion EUR 5 billion EUR 360 million EUR 1 billion
Sweden	<ul style="list-style-type: none"> • Tax deductions and support for building energy-efficiency improvements; climate research; pilot and demonstration projects for 2nd-generation biofuels; measures to support sustainable cities; promotion of environmental technologies; green public procurement. • State credit guarantees to the automobile industry to support conversion to green technology. 		EUR 175 million (2009-2010) EUR 2 billion
Switzerland	<ul style="list-style-type: none"> • Loans for energy efficiency measures for buildings. 	CHF 45 million	EUR 29.7 billion
UK	<ul style="list-style-type: none"> • The 2009 budget sets the world's first carbon budgets and provides over GBP 1.4 billion of targeted support for low carbon sector, which together with announcements made since autumn 2008 will enable an additional GBP 10.4 billion of low carbon and energy investment for 2009-12. This includes: GBP 375 million to support energy and resource efficiency in business, public buildings and households; GBP 70 million for decentralised small-scale and community low-carbon energy; GBP 405 million to support low-carbon industries and advanced manufacturing; up to GBP 4 billion for UK renewable and energy projects (from EIB); support to enable GBP 9 billion investments to offshore wind; GBP 2.5 billion investments in combined heat and power; new funding mechanism for four CCS demonstration projects and GBP 90 million for preparatory studies; increase in fuel duty of 2 pence per litre on 1 September 2009 and 1 pence per litre in real terms every year in 2010-2013; increase in standard rate of landfill tax by GBP 8 per tonne on 1 April each year from 2011 to 2013. 	GBP 10.4 billion (2009-2011)	EUR 11.9 billion (2009-2011)
US	<ul style="list-style-type: none"> • Support and tax credits to low-income households to protect homes from weather. • Tax credit of up to USD 7,500 for purchase of plug-in hybrid vehicles. 		

Table 3. Measures with potentially counter-productive environmental impacts that should be carefully assessed

Country	Measure
Brazil, Canada, China, France, Germany, Italy, Japan, Portugal, Spain, Sweden, United Kingdom, United States	Finance and loans to support the automobile industry.
Australia, Canada, Indonesia, Switzerland (CHF 140 million), US, and various other countries	Investments in road building.
Italy	Reduced charges for gas use for low-income households; temporary suspension of highway toll increases.
Mexico	Freezing fuel prices; reducing by 10% LP gas prices; reducing commercial and industrial electricity tariffs by up to 20%*
Portugal	Credit lines to support exports from the automobile industry, fashion industries (EUR 850 million) and cork industry (EUR 180 million).
Various countries	Support to the agriculture sector

* These measures are temporary, expiring on 31 December 2009.

