E3G

WWF

Economic/climate recovery scorecards

How climate friendly are the economic recovery packages?

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GERMANWATCH

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1. Summary and conclusions

The economic recovery packages put forward by many countries amount in total to a large amount of money, some of which may have a beneficial impact on greening the global economy. But many packages are woefully small, few contain adequate detail for full assessment and some indeed are actually counter-productive if the aim is to move rapidly to a low carbon economy in the face of the climate crisis.

The long term impact of these packages on greenhouse gas emissions can be beneficial where governments set clear policy goals and back them with smart investment in key sectors such as buildings, transport networks, energy grids and clean energy supply. Governments must seize this opportunity.

There is a growing recognition of the need to put climate and energy security at the core of the economic recovery, truly integrating economic and environmental issues. By responding to this need with packages that are well designed and rapidly implemented governments can accelerate the global transition to a low carbon economy and reduce the risk of another oil price spike when the recovery begins. This will also strengthen the prospects for a global climate deal in Copenhagen in December 2009.

Recent publications have compared the climate friendliness of the economic stimulus packages in various countries by calculating the low carbon share of the total package as a proportion of national GDP (reports by HSBC, 2009 and Edenhofer and Stern, 2009). In these publications fiscal measures are judged to be either climate friendly or not, solely on the basis of the area of investment such as energy efficiency or renewables.

This is useful but not adequate. It considers a dollar spent on renewable energy to be on a par with one spent on energy-efficient cars without taking into account the impact on emissions of each dollar spent. It also does not consider whether the money is invested directly or indirectly through instruments such as tax incentives or research and development.

Likewise it does not take into account the potential negative impact of the recovery packages from investments that raise greenhouse gas emissions such as new fossil-fuelled power stations or building new roads.

WWF and E3G asked Ecofys and Germanwatch to develop a methodology that takes into account these considerations to give a more sophisticated picture of the climate impact of the various economic recovery packages. This has been used to evaluate the packages so far put forward by a number of countries, assessing the share and impact of the climate-friendly stimulus as well as that of new measures that will drive emissions in the wrong direction.

The result is a very mixed picture.

Where possible each individual measure of the packages was analysed and climate relevant elements identified. The effectiveness of the measures was rated using standardised effectiveness factors for each area of investment and for the different policy instruments used (see Table 1 - 1). Ultimately a full quantitative assessment of the absolute effect of each measure on greenhouse gas emissions would be desirable, but that is beyond the scope of this study (see Houser and Mohan, 2009, and ICF, 2009, for examples focusing on individual countries).

Table 1 - 1 Effectiveness factors

Category	Effectiveness factor	Instrument	Effectiveness factor
Renewables	1.2	Low interest loans	2
Efficiency buildings	1	Government guarantees / insurance	1.5
Efficiency consumer goods	1	Direct investment of government	1
Efficiency industry	0.8	Research and development	1
Waste (landfills and recycling)	0.8	Tax incentive / subsidy	0.8
Local public transport	0.8		
Efficient vehicles	0.6		
Rail and waterway infrastructure	0.6		
Electric grid infrastructure	0.6		
CCS	0.4		
New roads	-1		
Fossil fuels	-1		

For each investment area the effectiveness factor includes considerations of both short-term and long-term criteria: emissions reduction potential, marginal abatement costs, positive lock-in effects, removal of barriers to implementation, the degree to which dependency on fossil fuels is reduced and potential rebound effects, such as measures that lead to an increase in energy demand which therefore partially reduces the calculated emissions reduction.

Nuclear energy could have a positive effect on emissions but has an associated security risk and the question of toxic waste disposal remains unresolved. For that reason it has not been included as climate friendly in this study.

We aimed to be as objective as possible in determining the effectiveness factors of each investment area and policy instrument, but also acknowledge that a certain degree of subjective judgement remains.

As a final step we multiplied the actual investment per area by the two effectiveness factors to obtain an 'effectiveness adjusted expenditure' figure and compared this with the national GDP.

The results illustrate the wide variation from country to country both in the overall structure of their recovery packages and the extent to which they support climate goals.

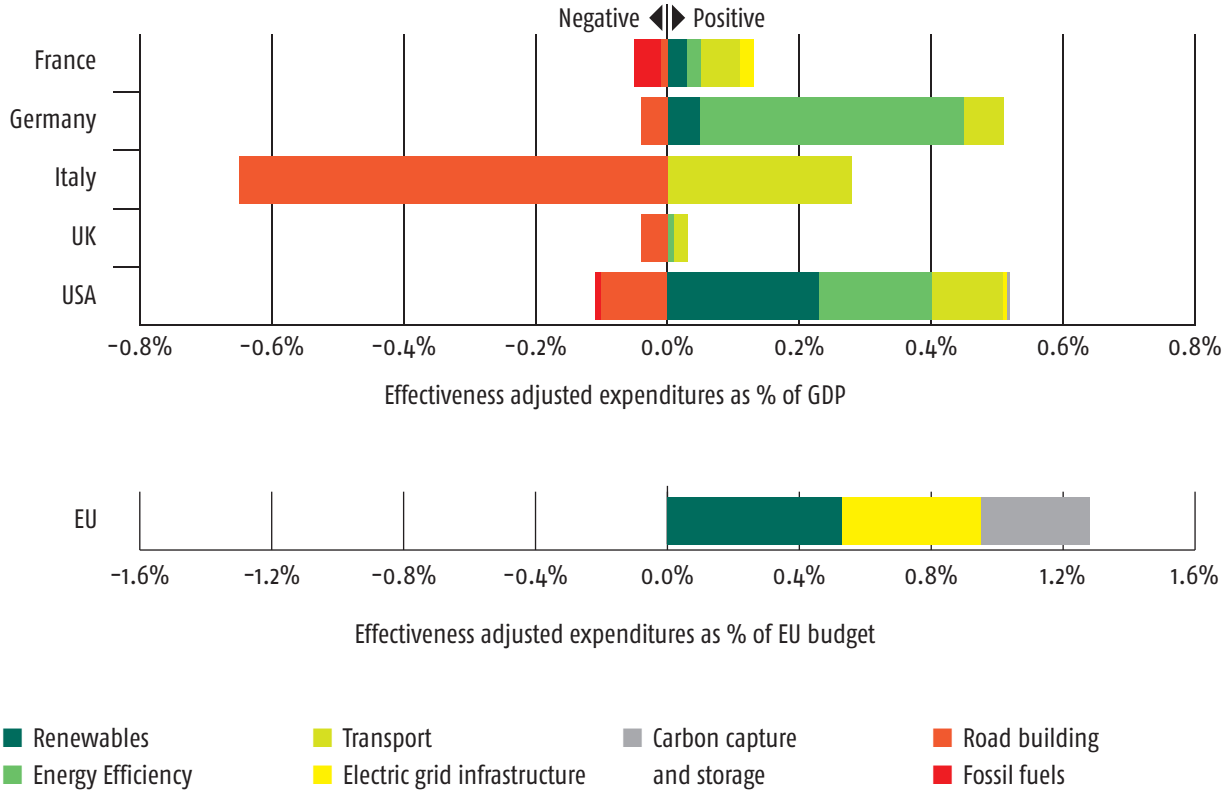
The study aimed to be comprehensive and to cover as many countries as possible. However, not all countries have published sufficient information on the detail of their recovery packages to make this possible. For China, Japan and South Korea only broad spending categories have been made available, with little detail on how the money will be allocated. Further information is expected to be published soon.

Our hope is that as more countries come forward with more details this study can be expanded and improved. In the meantime this publication is a first attempt at an in-depth analysis of recovery packages announced in Europe and the United States, highlighting their relative strengths and weaknesses.

We hope that countries will use this analysis and our findings in their work to update or renew their economic recovery packages over the months ahead.

The final results of the assessment of the climate friendly stimulus measures are summarised in Illustration 1 - 1.

Illustration 1 - 1 Effectiveness adjusted expenditure as a percentage of national GDP by investment area (as EU expenditure is additional to that of individual Member States, the effectiveness adjusted expenditure is displayed as a share of the EU's annual budget)



To conclude, the following main points can be drawn from this study.

- There is a need for far greater clarity and transparency from countries with respect to the climate friendly measures included in their stimulus packages. We recognise that some measures have not yet been finalised or formally presented and we aim to include these in future updates to these scorecards. The US has launched a website (www.recovery.gov) enabling the public to follow where the money from its package is going. This approach should be extended with a specific focus on tracking climate friendly investment and avoiding "greenwash".

- While some countries have devoted a share of their packages to climate friendly stimulus, it remains too small. Stronger leadership is needed from the US and from large EU economies to set a positive example for other countries. The major developed countries must shoulder their historic responsibilities and commit a far greater share of their stimulus packages to climate friendly measures so as not to burden the developing world with a massive climate debt on top of the current financial crisis.

- Failing to take action now risks locking the world into a high carbon future instead of moving it quickly and smoothly onto the low carbon path that is necessary to sustain future prosperity and security. The current packages, even with additional expenditure on regular climate policy, are not sufficient to keep global temperature increase below two degrees Celsius. Latest estimates suggest that reducing global emissions at the necessary scale and pace would require annual investment of between one and three percent of GDP from regular climate policy and economic recovery together.

- For some countries, the positive climate friendly stimulus in areas like buildings, efficiency and transport is outweighed by negative stimulus spending in areas like new roads. This is the case for example in Italy. For most countries the climate friendly component is very small compared to the overall size of the packages. In short, the opportunity for a global green recovery is being missed. What is needed is much more money, more quickly and with preferably at least half of each package devoted to low carbon investments.

- Most countries focus their activities on only a few sectors, often energy efficiency in buildings and cars, ignoring opportunities in other equally important sectors such as renewables or the electricity grid. For example the option to provide guarantees for renewable energy projects is missing from most of the packages that have been analysed. Countries such as Italy and the UK have yet to include any investments at all dedicated to renewable energy in their packages.

- The overall effect of these packages on greenhouse gas emissions will depend in part on how they are implemented. But for many measures there are no detailed environmental criteria for assessing how funds are used. An example is the huge variation between countries on schemes to promote switching to newer, cleaner cars. Italy's scheme contains detailed conditions whereas in France the conditions are far from ambitious and there are no conditions at all in Germany. The climate impact could be significantly improved if strong environmental conditions were implemented consistently for car switching schemes.

2. Introduction

2.1 Objective of the report

The economic recovery packages put forward by many countries amount in total to a large amount of money, some of which may have a beneficial impact on greening the global economy. But many packages are woefully small, few contain adequate detail for full assessment and some indeed are actually counter-productive if the aim is to move rapidly to a low carbon economy in the face of the climate crisis.

The long term impact of these packages on greenhouse gas emissions can be beneficial where governments set clear policy goals and back them with smart investment in key sectors such as buildings, transport networks, energy grids and clean energy supply. Governments must seize this opportunity.

There is a growing recognition of the need to put climate and energy security at the core of the economic recovery, truly integrating economic and environmental issues. By responding to this need with packages that are well designed and rapidly implemented governments can accelerate the global transition to a low carbon economy and reduce the risk of another oil price spike when the recovery begins. This will also strengthen the prospects for a global climate deal in Copenhagen in December 2009.

WWF and E3G asked Ecofys and Germanwatch to develop a methodology that takes into account these considerations to give a more sophisticated picture of the climate impact of the various economic recovery packages. This methodology has been used to evaluate the packages so far put forward by a number of countries, assessing the share and impact of the climate-friendly stimulus as well as that of new measures that will drive emissions in the wrong direction.

The objective is to enable an objective comparison of the packages announced by these countries and to provide recommendations for improving the positive climate impact of future economic recovery measures.

2.2 Method

Recent publications have compared the climate friendliness of the economic stimulus packages in various countries by calculating the low carbon share of the total package as a proportion of national GDP (reports by HSBC, 2009 and Edenhofer and Stern, 2009). In these publications fiscal measures are judged to be either climate friendly or not, solely on the basis of the area of investment such as energy efficiency or renewables.

This is useful but not adequate. It considers a dollar spent on renewable energy to be on a par with one spent on energy-efficient cars without taking into account the impact on emissions of each dollar spent. It also does not consider whether the money is invested directly or indirectly through instruments such as tax incentives or research and development.

Likewise it does not take into account the potential negative impact of the recovery packages from investments that raise greenhouse gas emissions such as new fossil-fuelled power stations or building new roads. We assessed the share of each package devoted to energy efficiency, renewables and other climate relevant sectors using effectiveness factors. We also considered measures that potentially increase emissions, with a similar effectiveness factor.

The effectiveness factor includes two issues: the effectiveness of different investment areas and the effectiveness of different policy instruments.

Effectiveness of investment area: The investment area factor includes a number of short-term and long-term criteria. The short term perspective is taken by the short-term emission reduction potential (relating to the size of the reductions) as well as the marginal abatement costs (relating to the costs). The long-term perspective is taken by the long-term emission reduction potential (e.g. for renewables) and a positive lock-in effect. Other factors include removal of barriers to implementation, the degree to which dependency on fossil fuels is reduced and any potential rebound effect (undesired side-effects of a measure, leading to an increase in energy demand, thereby partially undoing the estimated emission reductions). The factors are presented in Table 2 - 1 to Table 2 - 3.

Table 2 - 1 Effectiveness factor for renewables and efficiency

Argument	Renewables		Efficient buildings		Efficient industry		Efficient consumer goods	
	Impact	Factor	Impact	Factor	Impact	Factor	Impact	Factor
Short term emission reductions potential	+	0.2	+	0.2	+	0.2	+	0.2
Marginal abatement costs	+	0.2	++	0.4	+	0.2	++	0.4
Long term emission reduction potential	++	0.4	+	0.2	++	0.4	+	0.2
Positive lock in effect	+	0.2	+	0.2	+	0.2	+	0.2
Barrier removal	0		0	0.2	0		+	0.2
Reduction of dependence on fossil fuels	+	0.2	0		0		0	
Rebound effect	0	0	-	-0.2	-	-0.2	-	-0.2
Global factor		**1.2**		**1**		**0.8**		**1**

Table 2 - 2 Effectiveness factors for categories in transport

Argument	Efficient vehicles		Local public transport		Rail and waterway infrastructure		New roads*	
	Impact	Factor	Impact	Factor	Impact	Factor	Impact	Factor
Short term emission reductions potential	+	0.2	+	0.2	0		0	
Marginal abatement costs	0		0		0		0	
Long term emission reduction potential	+	0.2	+	0.2	+	0.2	–	-0.4
Positive lock in effect	+	0.2	+	0.2	+	0.2	–	-0.4
Barrier removal	+	0.2	+	0.2	+	0.2	0	
Reduction of dependence on fossil fuels	0		0		0		-	-0.2
Rebound effect	-	-0.2	0		0		0	
Global factor		**0.6**		**0.8**		**0.6**		**-1**

* Maintenance of roads is rated neutral

Table 2 - 3 Effectiveness factors for other investment areas

Argument	Electric grid infrastructure		Waste (landfills and recycling)		Fossil fuels		CCS	
	Impact	Factor	Impact	Factor	Impact	Factor	Impact	Factor
Short term emission reductions potential	0		+	0.2	-	-0.2	0	
Marginal abatement costs	0		++	0.4	0		0	
Long term emission reduction potential	+	0.2	+	0.2	-	-0.2	++	0.4
Positive lock in effect	0		0		-	-0.2	-	-0.2
Barrier removal	++	0.4	0		0		++	0.4
Reduction of dependence on fossil fuels	0		0		–	-0.4	-	-0.2
Rebound effect	0		0		0		0	
Global factor		**0.6**		**0.8**		**-1**		**0.4**

Nuclear energy could have a positive effect on emissions but has an associated security risk and the question of toxic waste disposal remains unresolved. For that reason it has not been included as climate friendly in this study.

Effectiveness of policy instrument: Some policy instruments may be more effective than others. This is considered in using the policy instrument effectiveness factor as described in Table 2 - 4.

Table 2 - 4 Effectiveness of policy instruments

Instrument	Effectiveness factor	Reasoning
Low interest loans	2	• Higher than default, due to leverage effect in triggering additional investments
Government guarantees / insurance	1.5	• Lower than default, since it may not be spent • Substantially higher than default, since it can have a significant leverage effect if successful
Direct investment of government	1	• Default value of 1
Research and development	1	• Lower than default, since the decision on the area of research can be wrong and research may not be successful • Equally higher than default, since effect can potentially be high in the future if the research is successful
Tax incentive / subsidy	0.8	• Lower than default, due to free rider problem (no additional action is taken)

An example calculation would be as follows: a country provides US$100 million for low interest loans (effectiveness factor 2) for energy efficient buildings (effectiveness factor 1). The total climate friendly stimulus adjusted for effectiveness would be US$100 million times 2 times 1 equals US$200 million.

We aimed to be as objective as possible in determining the effectiveness factors and the effectiveness of the measures, but also acknowledge that a certain degree of subjective judgement remains.

This method
- Is relatively simple,
- Is transparent as we state all factors (see detailed calculations in the technical annex),
- Includes how effective each dollar spent is at reducing emissions,
- Includes negative effects of the package,
- Concentrates only on the climate impacts and does not assess the impact on stable economic growth or jobs.

It would be desirable to calculate the effect of a package on emissions and divide this effect by total national emissions (see Houser and Mohan, 2009, and ICF, 2009, for examples for individual countries). Advantages could be:
- It can directly show the positive and negative effect on emissions.
- It can show the size of the stimulus impacts in relation to national emissions.
- It is also comparable between countries.

But such an approach has several methodological difficulties:

- The effect of measures on emissions can only be estimated making many assumptions and requires the existence of comparable datasets and methods across countries.
- The short term effect on emissions (e.g. immediate reduction through efficiency measures) needs to be combined with the long term effect on emissions (e.g. support to bring renewable energy into the market to reduce emissions substantially in the future).

We therefore conclude that calculating the absolute effect of the recovery packages on greenhouse gas emissions across countries would be desirable but is beyond the scope of this study.

2.3 Selection of countries

The study aimed to be comprehensive and to cover as many countries as possible. However, not all countries have published sufficient information on the detail of their recovery packages to make this possible. For China, Japan and South Korea only broad spending categories have been made available, with little detail on how the money will be allocated. Further information is expected to be published soon.

Our hope is that as more countries come forward with more details this study can be expanded and improved. In the meantime this publication is a first attempt at an in-depth analysis of recovery packages announced in Europe and the United States, highlighting their relative strengths and its weaknesses.

We hope that countries will use this analysis and our findings in their work to update or renew their economic recovery packages over the months ahead.

3. Economic/climate recovery scorecards

3.1 European Union

EUROPEAN UNION

Summary

- The focus of the climate friendly stimulus is on renewables, the electric grid and CCS.
- Of this relatively small package, a relatively high share is devoted to climate change.
- Obvious negative elements are not included.

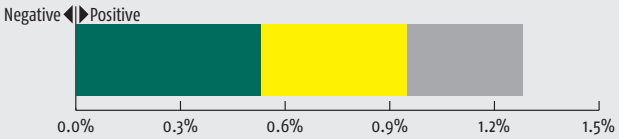
Effectiveness adjusted expenditures

- US$2,419 million
- 1.3% of the EU budget
- 33% of total package

General information

Size of Package: €5,000 million
US$7,357 million
3.9% of EU budget

Timeline: 2009–2010



Effectiveness adjusted expenditures as % of GDP

- Renewables
- Energy Efficiency
- Transport
- Electric grid infrastructure
- Carbon capture and storage
- Road building
- Fossil fuels

Extra information

- The economic stimulus of €5 billion of the European Union was agreed on the spring summit of the European Council in March 2009.
- A large share (€1,440 million) of the package is devoted to the development of international gas pipelines. We have considered it as neutral, as on the one hand it supports fossil fuel use but on the other hand also supports the production of biogas and can possibly store energy in a limited scale.
- The increased lending of the European Investment Bank for climate change related purposes was not included here, since details on this programme were not available.
- The EU has no budgetary sovereignty. Relating the size of the stimulus to the GDP is not representative. We therefore used the budget of the European Union for the comparison.

Possible future improvements

- The EIB should set up clear rules for credits within the energy and climate package, especially in the case of credits for car manufacturers.

Category	Description of measures	Size as described in package (million US$)	Effectiveness adjusted expenditure (million US$)
Renewables	Investments in connections and new turbines, structures and components of offshore wind projects	831	998
Energy Efficiency			
Waste (Landfills and Recycling)			
Transport			
Electric Grid Infrastructure	Investments in international interconnectors	1,339	803
Carbon capture and storage	Support for European CCS demonstration projects	1,545	618
Road building			
Funds for fossil fuel power plants			
Total		**3,715**	**2,419**
Percent of EU budget			**1.3%**

3.2 France

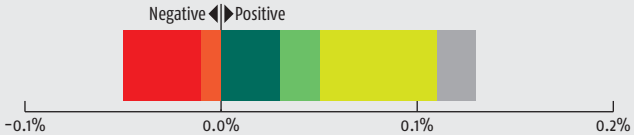
FRANCE

Summary

- Positive incentives are to a large part offset by negative incentives.
- Overall share of climate friendly stimulus in the package is small.
- The climate friendly stimulus is covering all major sectors.
- Several measures are considered here as neutral, but they could also have significant negative effects depending on their implementation. In this case negative incentives would be larger than positive incentives.
- "Pragmatic" strategy: acceleration of existing projects.

Effectiveness adjusted expenditures

- US$2,528 million
- 0.08% of GDP
- 6% of total package



Effectiveness adjusted expenditures as % of GDP

- Renewables
- Energy Efficiency
- Transport
- Electric grid infrastructure
- Carbon capture and storage
- Road building
- Fossil fuels

General information

Size of Package: €26,500 million
US$38,991 million
1.4% of GDP

Timeline: 2009-2010

Extra information

- Source of information: "Plan de relance de l'économie – Dossier d'information"; Décret n° 2009-203 du 19 février 2009.
- The premium for scrapping an old and buying a new car was not considered climate friendly. It includes the requirement that new cars emit less than 160 gCO_2/km, which was the average for new cars in 2005. This level is well above 120 gCO_2/km, which were agreed to be met by car manufacturers for 2008.
- The €600 million support for the electricity grid were rated as climate friendly, to ensure consistency with the other countries. However, the French grid extension is primarily focussed on integrating more nuclear energy, which in this study is not rated as climate friendly.
- €1 billion for nuclear energy was not rated as climate friendly.
- €1.3 billion for car manufacturers and subcontractors were rated as neutral but could have significant negative effects.

Possible future improvements

- Future efforts to support the economy could include substantially more climate friendly elements and refrain from negative elements.
- Future effort could include increased support for renewables as well as public transport and rail.
- The premium for new cars include a very low emission standard as condition.
- Implement measures from the Grenelle de l'Environnement.

Category	Description of measures	Size as described in package (million US$)	Effectiveness adjusted expenditure (million US$)
Renewables	Investment in photovoltaics	647	777
Energy Efficiency	Mainly investment in energy efficiency of buildings	585	585
Waste (Landfills and Recycling)			
Transport	Very differentiated investment in local public transport and railway infrastructure	2,998	1,799
Electric Grid Infrastructure	Investment in quality and security of electricity distribution and regional electricity grids	883	530
Carbon capture and storage			
Road building	New roads planned	294	-294
Funds for fossil fuel power plants		1,015	-1,015
Total		**6,422**	**2,381**
Percent of GDP			**0.08%**

3.3 Germany

GERMANY

Summary

- The major climate friendly part of the German stimulus is conducted to energy efficiency in both private and public buildings.
- Expenditures on renewable energy are relatively small since feed-in tariffs have already fostered growth in renewables in the past.

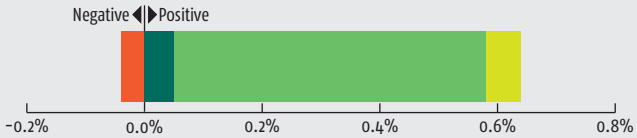
Effectiveness adjusted expenditures

- US$17,468 million
- 0.5% of GDP
- 15% of total package

General information

Size of Package: €81,490 million
US$119,899 million
3.3% of GDP

Timeline: 2009-2010



Effectiveness adjusted expenditures as % of GDP

- Renewables
- Energy Efficiency
- Transport
- Electric grid infrastructure
- Carbon capture and storage
- Road building
- Fossil fuels

Extra information

- The German cash for clunkers scheme is not considered to be a climate friendly policy, because the award for a scrapped car is not directly linked with the purchase of an efficient car. Such criteria are included, e.g. in the Italian scheme.
- A €100 billion guarantee package was not included above as its rules were not clear. If it were included, the share of the effectiveness adjusted expenditure of the total package would be only 8%. The German government has confirmed that also renewable energy projects, especially offshore wind and geothermal projects can utilise these guarantees.
- Outside of the official recovery package, the German government extended the maximum size of low interest loans for off-shore wind parks. This measure was included in the calculations.
- The investment program for educational institutions of €6.5 billion was only rated half as climate friendly, because energy efficiency measures are only one part of the investment.
- The German economic recovery plan is laid out in two major stimulus packages. The first was concluded in November 2008, the second in February 2009.

Possible future improvements

- Future efforts to support the economy could include substantially more climate friendly elements and refrain from negative elements.
- Future efforts could include local public transport which has been explicitly excluded from the current German economic stimulus packages.
- Although the German economic stimulus marks a large amount of the package "particularly for energetic retrofit" of public buildings, clear rules have to be established that safeguard the use of the money for climate friendly purposes.

Category	Description of measures	Size as described in package (million US$)	Effectiveness adjusted expenditure (million US$)
Renewables	Extended loans for offshore wind projects and insurance for geothermal drilling	721	1,695
Energy Efficiency	Direct investment and low interest loans for retrofit of schools and other public buildings accompanied with a household insulation program	10,299	14,713
Waste (Landfills and Recycling)			
Transport	Maintenance and new infrastructure for railways, waterways and intermodal freight transport and research and development program for efficient vehicles, mainly hybrid and e-mobility	3,973	2,383
Electric Grid Infrastructure			
Carbon capture and storage			
Road building	Maintenance and new road building of highways and major roads	1,324	-1,324
Funds for fossil fuel power plants			
Total		**16,317**	**17,468**
Percent of GDP			**0.5%**

3.4 Italy

ITALY

Summary

- Positive incentives are outweighed by negative incentives (new roads).
- Overall share of the climate friendly stimulus in the package is small.
- The climate friendly stimulus is only covering the transport sector.

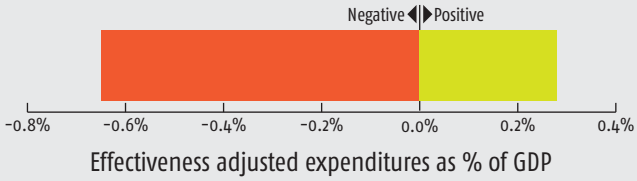
Effectiveness adjusted expenditures

- Negative US$8,382 million
- Negative 0.4% of GDP
- Negative 6% of total package

General information

Size of Package: €99,800 million
US$146,746 million
6% of GDP

Timeline: 2009-2011 some beyond 2011



- Renewables
- Energy Efficiency
- Transport
- Electric grid infrastructure
- Carbon capture and storage
- Road building
- Fossil fuels

Extra information

- The incentive package for new cars was not inlcuded as climate friendly as it is based on 140 gC02/km for gasoline-powered vehicles and 130 gC02/km for diesel-powered vehicles. These levels are above 120 gC02/km, which were agreed to be met by car manufacturers for 2008. The Italian package includes additional support of alternative technology including methane electricity and hydrogen.
- Source of information: Three separate (and subsequent) legislative acts form the recovery package: Law 28 January 2009, no. 2; Support to industrial sectors affected by the crisis: Law decree 10 February 2009, no. 5; Public Works Projects: CIPE (Interministerial Committee for Economic Planning) Resolution 10 March 2009.

Possible future improvements

- Support for renewables, energy efficiency and other sectors.
- Link existing tax deductions for the purchase of electric household appliances to energy efficiency requirements.

Category	Description of measures	Size as described in package (million US$)	Effectiveness adjusted expenditure (million US$)
Renewables			
Energy Efficiency			
Waste (Landfills and Recycling)			
Transport	Investments in local public transportation systems, improvement of railway system including fleet and water ways; subsidies for efficient vehicles with less emissions	10,011	6,450
Electric Grid Infrastructure			
Carbon capture and storage			
Road building	Investments in new roads (including extensions of existing roads)	14,832	- 14,832
Funds for fossil fuel power plants			
Total		**24,843**	**-8,382**
Percent of GDP			**-0.4%**

3.5 United Kingdom

UNITED KINGDOM

Summary

- Positive incentives (energy efficient buildings and rail infrastructure) are offset by negative incentives (new roads, R&D in fossil fuels).
- Overall share of climate friendly stimulus is small.
- The climate friendly stimulus is not covering all major sectors.

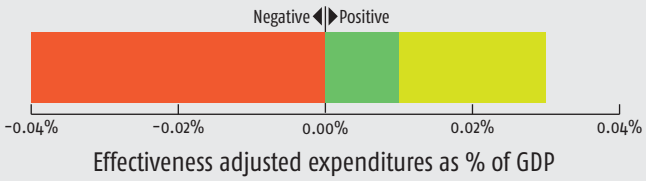
Effectiveness adjusted expenditures

- Negative US$91 million
- Negative 0.003% of GDP
- Negative 0.2% of total package

General information

Size of Package: £20,000 million
US$37,100 million
1.4% of GDP

Timeline: Most spending was brought forward from fiscal year 2010 to 2008 and 2009



Extra information

- Source of information: Pre-Budget Report of November 2008
- Additional pledges have been made that were not included in the calculations due to lack of detail:
  - November 2008: Department for Transport announced an extra £165m for new road link to Manchester Airport (negative), £54m to enhance rail freight capacity (positive), and £90m to improve road access to ports (positive).
  - January 2009: Department for Transport announced £250m for ultra low-carbon vehicles, no details provided.
  - January 2009: Secretary of State for Business and Enterprise announced loans or loan guarantees to support of up to £1bn of lending for lower carbon initiatives of UK car makers. No detailed environmental conditions provided.

Possible future improvements

- Future efforts to support the economy could include substantially more climate friendly elements and refrain from negative elements.
- Future effort could include energy efficiency in buildings and increased support for renewables.
- Future efforts could stimulate accelerated investment in electric grids (onshore and offshore, including interconnectors to rest of Europe as a step towards supergrid).
- Future efforts could support infrastructure for electrification of transport.

Category	Description of measures	Size as described in package (million US$)	Effectiveness adjusted expenditure (million US$)
Renewables	Mainly tax incentives and guarantees, but also Renew-ables		
Energy Efficiency	Grants for building insulation and improved heating systems	390	312
Waste (Landfills and Recycling)			
Transport	Public investment in trains and rail network, waterways	566	339
Electric Grid Infrastructure			
Carbon capture and storage			
Road building	Advance existing plans to increase capacity on the motorways and other critical highways	742	-742
Funds for fossil fuel power plants			
Total		**1,697**	**-91**
Percent of GDP			**-0.003%**

3.5 United States of America

UNITED STATES OF AMERICA

Summary

- Positive incentives are partly offset by negative incentives (new roads, R&D in fossil fuels).
- Overall share of climate friendly stimulus is small.
- The climate friendly stimulus is covering all major sectors.

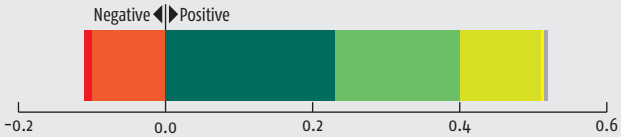
Effectiveness adjusted expenditures

- US$59,227 million
- 0.4% of GDP
- 7.5% of total package

General information

Size of package: US$787,000 million
5.5% of GDP

Timeline: 2009 – 2019



Effectiveness adjusted expenditures as % of GDP

- Renewables
- Energy Efficiency
- Transport
- Electric grid infrastructure
- Carbon capture and storage
- Road building
- Fossil fuels

Extra information

- In October 2008 the Troubled Assets Relief Program (TARP) contained additional US$185 billion of tax cuts and credits that could be counted as part of the total stimulus package. We did not include it in the calculations due to lack of detail available.
- Main sources of information: American recovery and investment act of 2009; DB Advisors, Global Climate Change Regulation Policy Developments: July 2008– February 2009.

Possible future improvements

- Future efforts to support the economy could include substantially more climate friendly elements and refrain from negative elements.

Category	Description of measures	Size as described in package (million US$)	Effectiveness adjusted expenditure (million US$)
Renewables	Mainly tax incentives and guarantees, but also loans, grants for construction of facilities and R&D for all renewables	24,463	32,193
Energy Efficiency	Tax incentives and investment for buildings & smart appliances and R&D, grants, loans and investment in general efficiency measures	21,570	24,487
Waste (Landfills and Recycling)		0	0
Transport	Mainly investment in rail and local public transport, also tax incentives, loans and grants for efficient vehicles	23,056	16,251
Electric Grid Infrastructure	R&D for the Smart Grid Investment Program	1,100	660
Carbon capture and storage	Investment in CCS projects and R&D for the clean coal initiative	1,550	620
Road building	Investment in road (new construction)	13,750	−13,750
Funds for fossil fuel power plants	R&D for fossil fuels	1,233	−1,233
Total		**86,722**	**59,228**
Percent of GDP			**0.4%**

4. Technical annex

European Union

- **Source:** Note from the Presidency to the European Council 7848/09, Council of the European Union 19th March 2009 http://www.endseurope.com/docs/90316c.doc
- **Exchange rate:** 1.47 US$/Euro (average of 2008) interbank rate 2008 http://www.oanda.com

France

- **Sources:**
  - The official government of France website http://actualites.relance.gouv.fr/pdf/CIACT_020209_CartesTransport_OUT.pdf
  - "Plan de relance de l'économie – Dossier d'information", Lyon Feb 2nd 2009, which you can download via following link http://actualites.relance.gouv.fr/pdf/CIACT_020209_CartesTransport_OUT.pdf
- **Exchange rate:** 1.47 US$/Euro (average of 2008) interbank rate 2008 http://www.oanda.com

Germany

- **Sources:**
  - Beschäftigungssicherung durch Wachstumsstärkung – Maßnahmenpaket der Bundesregierung, BMWi+BMF 5th November 2008 http://www.bmwi.de/BMWi/Redaktion/PDF/W/wachstumspaket-breg-november-08,property=pdf,bereich=bmwi,sprache=de,rwb=true.pdf
  - Gesetz zur Sicherung von Beschäftigung und Stabilität in Deutschland, Bundesratsbeschluss 13th February 2009 http://dip21.bundestag.de/dip21/brd/2009/0120-09.pdf
- **Exchange rate:** 1.47 US$/Euro (average of 2008) interbank rate 2008 http://www.oanda.com

Italy

- **Sources:**
  - Law 28 January 2009, no. 2 http://www.parlamento.it/leggi/09002l.htm (in Italian)
  - Law decree 10 February 2009, no. 5 http://www.governo.it/GovernoInforma/Dossier/auto_sostegno/DL5_10022009.pdf (in Italian)
  - CIPE (Interministerial Committee for Economic Planning) Resolution 6 March 2009 http://www.cipecomitato.it/storico_sedute/146/esito.pdf (in Italian)
- **Exchange rate:** 1.47 US$/Euro (average of 2008) interbank rate 2008 http://www.oanda.com

UK

- **Sources:**
  - HM Treasury, Pre-Budget Report: Facing global challenges: Supporting people through difficult times, November 2008, http://www.hm-treasury.gov.uk/prebud_pbr08_index.htm
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  - Department for Transport press release, 15 January 2009 https://nds.coi.gov.uk/content/detail.asp?ReleaseID=389762&NewsAreaID=2&NavigatedFromSearch=True

- Department for Business, Enterprise and Regulatory Reform press release, 27 January 2009 https://nds.coi.gov.uk/content/detail.asp?ReleaseID=390928&NewsAreaID=2&NavigatedFromSearch=True
- **Exchange rate:** 1.855 US$/GBP (average of 2008) interbank rate 2008 http://www.oanda.com

USA

- **Sources:**
  - United States Department of Transportation – Federal Highway Administration, Distribution of Highway Funds under American Recovery and Reinvestment Act of 2009, http://www.fhwa.dot.gov/economicrecovery/arardistribution.pdf
  - DB Advisors, Global Climate Change Regulation Policy Developments: July 2008- February 2009, for Deutsche Bank Group http://www.db.com/usa/download/Global_Climate_Change_Regulation_Feb_2009.pdf
  - The American recovery and investment act of 2009
  - Robins, N.; Clover, R.; Singh, C., 2009, A Climate for Recovery – The colour of stimulus goes green

5. Related literature

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