



**A Clean Energy New Deal:
Ensuring Green Growth in a Time of Economic Crisis**
International Energy Agency, December 2008

- In recent months, global developments – namely, lower oil prices and the financial crisis – may have eclipsed the public’s focus on critical energy and climate change challenges. The current turmoil in markets is nothing short of critical. But IEA analysis highlights the importance of also maintaining a focus on the medium to longer-term target of achieving a cleaner, more sustainable energy future. **And this longer term objective requires both careful planning for the future as well as substantive action now.**
- The *World Energy Outlook 2008 (WEO 2008)* identifies a clear need for investment in energy supply infrastructure to meet growing global energy demand and stabilise markets. Simply to meet a business-as-usual pathway, investment of USD 26 trillion will be needed to 2030, or over USD 1 trillion per year. But project delays and cancellations are becoming increasingly common. This creates the real risk of an energy supply crunch that could choke off economic recovery once demand rebounds. At the same time, governments have recognised that a business-as-usual pathway for the global energy system is not sustainable. In a business-as-usual scenario, energy-related carbon dioxide (CO₂) emissions will increase by 45% from 2006 levels by 2030.
- Accordingly the *WEO 2008* also puts forward policy scenarios to stabilise greenhouse gas (GHG) concentration at 550 and 450 parts per million (ppm) of CO₂-equivalent. **These lower carbon scenarios would require a substantial shift in investment patterns and a major transformation of the way investment decisions in the energy sector are taken** – requiring additional investment in power plants and more energy efficient energy-related capital stock. Such a greening of the energy system would require additional investment of USD 3.6 trillion in power plants and USD 5.7 trillion in energy efficiency over the period 2010 to 2030 in the 450 ppm scenario. These additional investments correspond to 0.55% of GDP per year, but they bring energy bill savings to consumers of USD 5.8 trillion from 2010 to 2030.
- Meanwhile, the IEA’s *Energy Technology Perspectives 2008 (ETP 2008)* identifies 17 key low carbon technologies and the role they could play in helping us to reduce our emissions by 50% from 2005 levels by 2050. **ETP 2008 highlights that achieving a sustainable low emissions energy pathway will be difficult but is possible. And that action must commence now.**
- So can we address the current global economic troubles while also maintaining our focus on key climate change and energy challenges? The IEA thinks so. And is urging governments to do just that. **Economic stimulus packages provide an excellent opportunity to ensure greener and more sustainable growth in the energy sector – both through upfront measures with impacts in the near term, and longer term investment decisions.**
- Such measures can not only help to foster economic growth; they should also form part of our global response to climate change and efforts to address energy security, by helping to diversify supply, reducing dependence on fossil fuels and shoring up much-needed sources of supply into the long term.

What Can Governments Do?

There is a significant number of steps governments can take. These include the following.

1. Upfront actions with long-term impacts – energy efficiency measures

General Energy Efficiency Policy

- The IEA has demonstrated the cost-saving characteristic of a range of **energy efficiency policies** that should form the bedrock of any government energy sector strategy. Some are already in place, but even those could be implemented more broadly or enhanced to deliver the full measure of energy and cost savings.
- As most energy efficiency measures require upfront investments to reap longer term benefits, they will stimulate growth in the short term while reducing energy expenditures in the long term once the economy has picked up.
- The IEA has identified 25 energy efficiency best policy practices that can be implemented immediately at low or negative cost and that could have impacts both on economic activities now and on consumers' energy bills in the near term. These include measures in the buildings, transportation, appliances, industrial and lighting sectors. See: http://www.iea.org/G8/2008/G8_EE_recommendations.pdf.

Buildings

- **As reduced activity in the construction sector is a key component of the current economic slowdown, a support package that raises activity here deserves special attention.**
- Renovation of buildings to high energy efficiency standards and replacement of outdated heating systems could be a key component of such an initiative.
- In order to respond most quickly, governments should start with investments in the publicly owned building stock.

Households

- In many cases, **households** face increasingly difficult economic conditions and need advice on cost-saving measures. Many such measures also improve health, energy security and lower GHG emissions, and would attract the attention of consumers to more rational energy choices, a prerequisite to an effective response to climate change.

Industry

- Governments are also being called on to support **industries** that are severely hit such as the automotive sector.
- In providing such support, it is vital that governments trigger the energy revolution that climate change goals require, to avoid locking in choices which, if only marginally more efficient than yesterday's, would not stand the test of today's – and tomorrow's – climate goals. Often, such support measures could include conditions on energy efficient or clean choices.

Transport

- Support for the auto industry could include incentives for the development of more fuel efficient, electric and hybrid vehicles.
- Governments may wish to encourage consumer spending through tax rebates or exemptions – such support can be directed toward the most fuel efficient vehicles.
- As mentioned on page 3, longer term infrastructure planning should also focus on green urban mobility systems and public transportation.

2. Investing now for a long-term transition - energy infrastructure and technology

- A key aspect of many economic stimulus packages is support for infrastructure projects. Such investment decisions are central to the climate change challenge as they will have huge implications for the profile of emissions: decisions taken now about long-term infrastructure involve the danger of “emissions lock-in” for decades to come if the wrong choices are made.
- This is no more important than in the **power sector: ageing capital stock in industrialised countries and unprecedented capacity additions in developing countries provide a golden opportunity to make major emission cuts**. The IEA encourages governments to support power sector infrastructure development and refurbishment projects that will provide for a more secure and cleaner energy future. Significant investments are needed in the transmission and distribution grid, electricity storage and other elements of the network to accommodate new, clean sources of generation and to guarantee smooth operation.
- As investments in new capital intensive power plants are postponed in order to improve the cash position of companies, government equity may help to reverse this response. Timing such investments to take advantage of lower costs as the slowdown in economic activity eases manufacturing bottlenecks makes good sense. The benefits will be reaped for decades to come.
- Additionally, economic stimulus packages **could include direct support or fiscal incentives for cleaner energy technologies**, such as wind, solar, biomass, gas fuel switching, super critical or IGCC coal power plants with carbon capture ready technology, and nuclear. The IEA, through its *Energy Technology Perspectives* team, is developing roadmaps for many of these key technologies, identifying the barriers to, and opportunities for, greater deployment. **In some cases (for example CCS), investment in demonstration projects is a major bottleneck and governments can support the development of demonstration projects now.**
- Beyond just the power sector, when considering infrastructure projects, **governments should also seek to support greener urban mobility systems and public transportation infrastructure**. Again, while such decisions may be being taken in the short term to address current financial conditions, in reality, these decisions will affect emissions levels for decades to come.

What Would this Mean for Economies?

- Recent estimates of global GDP losses in 2030 attributable to reaching a 450 ppm scenario range from 0.5% to around 3%. However, GDP losses are highly dependent on the type of policy implemented, how revenues from emissions trading are redistributed, the effectiveness of financing mechanisms and the trajectory of the decarbonisation path during the transition. As noted, the *WEO 2008* calculates the additional energy related investment costs of the 450 ppm scenario as being 0.55% of GDP. But USD 5.8 trillion is saved on energy bills, among other savings (see *Chapter 19 of WEO 2008*).
- Many components of plans needed to stabilise GHGs at 550 ppm or 450 ppm would stimulate the economy and generate growth in skilled jobs. For example, in the 450 ppm scenario:
 - Annual investments in renewable energy between 2012 and 2030 amount to USD 300 billion, including USD 95 billion for wind technology and USD 55 billion for solar power plants. UNEP has estimated worldwide employment in the wind energy sector could amount 2.1 million in 2030 and 6.3 million in solar photovoltaics (UNEP et al, *Green Jobs: Towards Decent work in a Sustainable, Low-Carbon World* (September 2008)).
 - Every year from 2012 to 2030, a huge amount of new energy infrastructure would have to be built including 20 nuclear plants each of 1000 MW. Each plant would require 4,000 skilled workers during its peak construction period and approximately 250,000 permanent jobs would be created by 2030 for plant operation, assuming 700 workers are required to operate each new reactor (*WEO 2008*).
- The IEA looks forward to providing further analysis and policy insights on these challenges.

Annex I: Non-Exhaustive List of Examples of Green Growth Measures in Recent Stimulus Plans (October – December 2008)

Germany

- Includes a tax exemption for the purchase of motor vehicles complying with Euro 5 and Euro 6 standards.
- Supports improved energy efficiency in homes by allocating an additional EUR 3 billion to the CO₂ building renovation programme run by KfW Bank.

UK

- GBP100 million allocated to insulate low-income homes.
- Acceleration of GBP 535 million of capital spending on residential energy efficiency and rail transport among others. The government estimates this will help sustain and expand the approximately 350 000 jobs in the domestic low-carbon sector.

France

- Aims to stimulate the auto industry through fiscal measures, but has also indicated the government will invest to encourage development of electric and hybrid vehicles to adapt industry to future market conditions.

EU

- EU stimulus plan: contains special provisions to boost clean technology and energy efficiency. Presents detailed proposals for partnerships between the public sector and private sectors to boost clean technologies through support for innovation. These include a European green cars initiative with combined funding of at least EUR 5 billion, a European energy efficient buildings initiative worth EUR 1 billion, and a “factories of the future” initiative targeting the manufacturing sector, estimated at EUR 1.2 billion.

US

- The US Emergency Economic Stabilisation Act and related legislation included provisions for energy development and improvement:
 - Extended renewable energy production and investment tax credits due to expire at the end of 2008. For several technologies, it increased the amount of credit, and to ease financing it made available USD 800 million in new Clean Renewable Energy Bonds.
 - Similar amendments for energy efficiency, extending and in some cases increasing tax credits for commercial buildings, builders of energy efficient homes and manufacturers of energy efficient appliances.
 - Revived tax credits for households installing energy efficient equipment.
 - A new tax credit was created for plug-in hybrid electric vehicles, electric charging stations, and tax exemptions provided for idle reduction technologies and advanced insulation installed in trucks.
 - To facilitate financing, the bill authorised USD 800 million in Qualified Energy Conservation Bonds, which will be issued by state and local governments.
 - Tax credits per ton of CO₂ captured and transported were also enacted, and USD 1.5 billion in new tax credits provided for the creation of advanced coal electricity projects and certain coal gasification projects that demonstrate the greatest potential for CCS technology.
- There has been discussion of modifying an existing DOE USD 25 billion loan programme to automakers and component manufacturers for improved energy efficiency as the basis for the bailout deal (The Advanced Technology Vehicles Manufacturing Loan Program, approved December 2007 as part of the Energy Security and Independence Act). This might suggest that improved efficiency and low-carbon innovation will be incorporated into the final bailout plan.

Spain

- EUR 800 million for the automotive industry, part of which will be earmarked for stimulating innovation, particularly electric vehicles.
- EUR 8 billion to local authorities for infrastructure investment, which will include measures to promote energy savings and environmental improvements, and measures to improve sustainable mobility. Of this EUR 1.1 billion is to be distributed in 2009 to stimulate job creation, and one of the measures is to reduce social contributions from employers for new jobs in certain target sectors, including renewable energy and environmental activities.