Heroes and villains?

The US has been cast in the role of villain for their rejection of Kyoto on economic grounds by the rest of the world. But are these fears completely justified and does Europe need to rethink its position?

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ON BOTH SIDES of the Atlantic, the world's two largest economies continue to grapple with concerns about the potential impact of climate change on the environment. This concern is spurring large outlays of public and private resources by both the EU and the US in order to study climate science and discover new and better ways to produce, consume, and conserve energy.

While the EU and US share common goals of economic growth, sustainable energy supply and environmental health, they do not share a common approach to address climate change, differing policies have resulted in misunderstandings and friction between long-time allies at a time when close co-operation is essential to address threats to global prosperity and security. So why have they chosen different strategies to address climate change?

Firstly, the US made an early effort to measure the impact of Kyoto and more stringent targets on its economy. Secondly, the EU and US disagree about how fast alternative technologies, including carbon sequestration and renewable energy, will become available. Thirdly, the EU and US also disagree about how to involve developing countries in the global effort to slow the growth of greenhouse gas emissions. And finally, the EU's well organised and powerful environmental community plays a primary role in the climate change debate and influences policy.

The economic impact of Kyoto

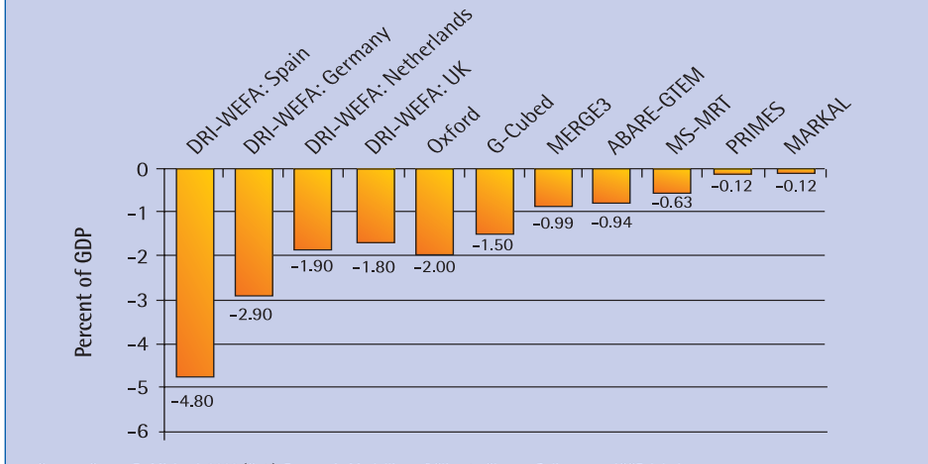
As a recent study by Dr. Michael Canes at the Logistics Management Institute in Virginia illustrates, an accurate portrayal of the costs of complying with greenhouse gas emission reduction targets depends largely on choosing an economic model that captures all the short and medium-term costs of adjusting to higher energy prices or regulatory mandates on the economy as a whole.

For example, models such as the PRIMES model used by EU environmental agencies are designed only for measuring sectoral effects, not economy-wide effects. PRIMES, a partial equilibrium model, is primarily designed to show the effect of policy changes on energy markets. It can calculate the direct cost implications of reduced energy use, but not the economy-wide impact on GDP, employment and investment. Thus, the results of this model, which show a reduction of only 0.12 per cent in GDP to the EU in 2010 from complying with Kyoto, are not an accurate measure of the total costs.

Such reliance on results from PRIMES, which is a useful tool for understanding the impact of changes on energy markets but does not give the 'big picture,' has led Europeans to believe that the costs of achieving Kyoto targets will be relatively small.

This is inaccurate. General equilibrium and macroeconomic models paint a very different picture of the impact of Kyoto on GDP levels in the EU. General equilibrium models measure the 'big picture' impacts on an economy after it has had time to adjust, perhaps over three or four decades, to higher energy prices and regulatory mandates. General equilibrium models, such as MERGE3, ABARE-GTEM or MS-MRT, show GDP losses of about 1 per cent per year in 2010 in the EU as a result of Kyoto.

Impact of Kyoto Protocol on GDP levels in the EU in 2010 (alternative model forecasts)



Source: Canes, E., Michael. 2002 (Oct.). Economic Modelling of Climate Change Policy. www.ICCFglobal.org

Macroeconomic models provide an assessment of the overall costs of meeting emission targets where the short-term, frictional costs of adjustment are included. These models, which US scholars and climate policy modelers began using in the early 1990s to measure the impact of Kyoto on the US economy, quantify the impact on employment, investment, budget receipts and GDP growth when an economy is 'shocked' by having to make quick changes in its capital stock, production processes and lifestyles.

Results of macroeconomic models show that Kyoto would have negative effects on the US economy in the range of 2 per cent to almost 4 per cent of GDP in 2010. When macroeconomic models are used to measure Kyoto's effects on the EU, the impacts are greater – 1.8 to almost 5 per cent less GDP in 2010 – than those derived from sectoral models like PRIMES. For some countries like Spain, the GDP loss due to reduced energy use will be severe – 2010 GDP is about 4.8 per cent smaller.

The post-2012 carbon emission targets, such as the 60 per cent reduction by 2050 target being considered by the UK or the 90 to 100 per cent being discussed by other EU member governments and EU Commission officials will require additional sacrifice of investment, jobs and GDP. To see why, one only has to look at the emission trajectories of these alternative scenarios. If the UK adopts this target of reducing CO_2 emissions by 60 per cent, the gap between the baseline, without Kyoto, or even the Kyoto level of emissions becomes very large, very quickly. Germany, which is considering an even more stringent target – a 40 per cent reduction by 2020 – will also face slower economic growth and be forced to make hard choices. The International Energy Agency predicts strong increases in CO_2 emissions in the EU over the next two decades.

The Bush Administration has called for 18 per cent reductions in energy intensity per dollar of GDP over the next decade. This approach will allow continued US economic growth while encouraging a slowing of the growth rate in CO_2 emissions. Because of economic modelling carried out in prior years, US policymakers are cautious about committing to targets and timetables for future CO_2 reductions beyond this reduction rate for a fear of negative impacts on economic growth.

Speed of technological change

EU policymakers have projected a more rapid development of renewables and alternative technologies than the US. For example, the UK

government's recent White Paper calls for a large increase in renewable energy. By 2010, 10 per cent of the electricity supply is supposed to come from wind, solar and biomass or other renewables; by 2020 the renewable target is 20 per cent.

Many believe the UK exaggerats the near-term benefits of renewables. Wind power, which has been singled out for major expansion in a report by the UK government's Performance and Innovation Unit, is not a very viable option because, as the new Royal Academy of Engineering report, 'An Engineering Appraisal of the Policy and Innovations Unit's Energy Review' notes, in the UK there is a sizeable probability of no or very little wind blowing across the entire country. Regarding biofuels, the report also states that, "it would require the whole of Kent to be covered with coppiced willow, for example, to replace the output of Dungeness B [nuclear] power station on the Kent coast."

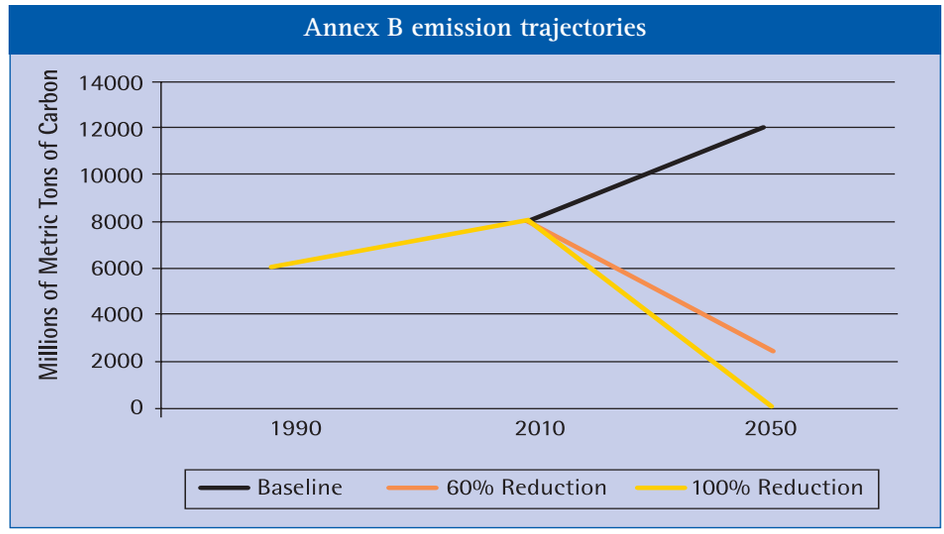
A recent article in *Science Magazine* points out that the alternative approach chosen by the US requires a major commitment to a long-term R&D programme for alternative energy sources for electricity and transportation.

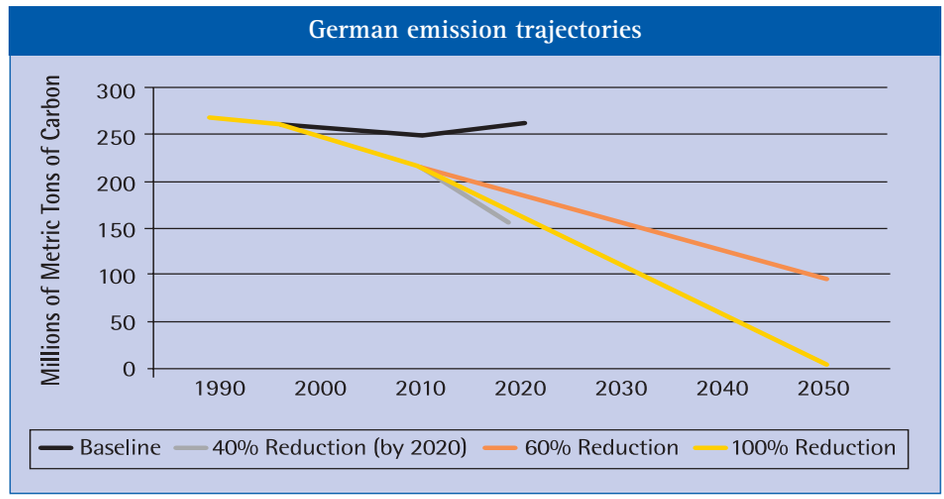
Candidates include solar, wind and biomass, nuclear fission, fusion, and fossil fuels from which carbon has been sequestered. Efficiency improvements, hydrogen production, superconducting global electric grids and geo-engineering also hold great promise for reducing the growth in CO_2 during the 21st century.

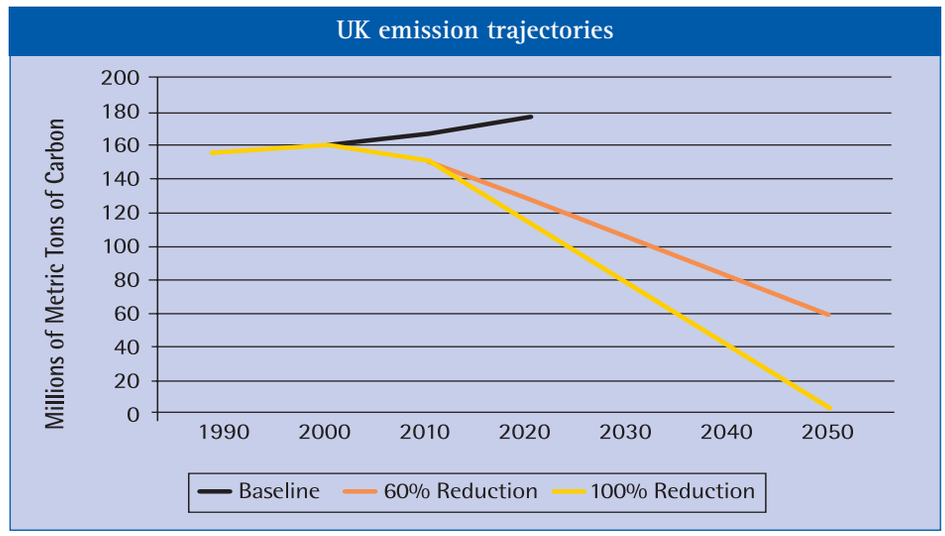
Commercially viable technologies able to wean the world from fossil fuels are still a long way off. Achieving major advances in energy technology will require both serious government and private sector investment in R & D.

The Bush Administration's 2003 budget has substantially increased its spending plans on energy technology. A major new private sector research initiative, directed by Stanford University and supported by a consortium of international companies including GE, ExxonMobil, Schlumberger and Germany's E.On, is an example of the type of partnership likely to produce the suite of new technologies needed to reduce CO_2 emissions while maintaining strong economic growth. The Stanford research programme on alternative energy sources is funded by yearly grants of $250 million from participating companies.

Given that the evidence suggests the EU approach to tackling climate change will harm its economy, such a major investment in technologies that could offer a viable long-term energy alternative may prove to be a wise move for the US.







Engaging the developing world

Different approaches between the EU and US as to how to engage the developing world in reducing emissions growth also are evident in the positions outlined by policymakers on both sides of the Atlantic. EU officials have taken the position that if developed economies sign up to reduce emissions, the developing world – where the real growth in emissions will occur over the next century – will sign up to reducing energy use too. In contrast, US policymakers are engaged in a process of bilateral and trilateral climate change partnerships with both developing and developed economies to transfer existing technologies, such as clean coal, combined heat and power, and others, that will enable those countries to 'grow' their economies. As plans for COP9 proceed, it would be a positive step if both the EU and US could accelerate efforts to alleviate global poverty and increase the developing world's access to cleaner energy sources.

Conclusion

Differences between the political climates that shape the approaches toward climate policy should not be allowed to undermine the fundamental similarities of values and culture. The strength of the Green Party and other environmental groups in the EU makes policymakers in the member countries much more inclined to adopt measures that they know intuitively will tend to impede investment and hinder industrial competition. In the US, by contrast, the environmental movement, while as important, is not as large a political factor. US policymakers try to balance the 'push' they get from environmentalists for a rapid reverse of CO_2 emissions growth with the strong 'pull' of continued growth in productive jobs, investment and GDP. POWER

Biography

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Dr. Michael Canes' paper is available at www.iccfglobal.org