

# Documento de Trabajo

## Working Paper

### A Preliminary View of Obama's Future Energy Policy

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## Summary

This analysis previews the likely contours of President-elect Barack Obama's future energy policy and assesses the potential ramifications.

Barack Obama has been elected on a platform which includes the most ambitious new energy and environmental policy changes ever contemplated by the US. The numerous energy and climate-change goals elaborated by Obama and his advisors would imply the wholesale transformation of the US energy economy and a staged, but significant and challenging, reduction in US dependence on fossil fuels, particularly oil but potentially also coal. The current financial and economic crisis makes the challenge even more difficult, adding to traditional resistances to change in the energy realm.

Given Obama's enormous political capital, however, and the growing sense of crisis –even emergency– that has gripped the country, the current difficult circumstances might provide the new Administration with even more political room for manoeuvre than has typically been the case to use government guidance and funding to stimulate significant changes in the energy reality of the US. The most likely policy outcome will be one of the most ambitious changes in energy policy ever witnessed in the US, with the very real possibility that the US will reassert its international leadership on energy and climate change issues. The challenge for Obama will be to integrate his energy and climate change ambitions with the numerous other pressing priorities facing the US, both domestically and internationally.

## Introduction

For the first time since the late 1970s, the issue of energy came to dominate the 2008 presidential campaign –at least until the onset of the financial crisis–. Still, energy policy remained a key component of the Presidential debates, even after the initial financial tremors began in September. Throughout the campaign and transition, Obama has insisted that a new, ambitious policy to transform the energy economy --and free the US of its dependence on carbon dioxide-emitting fossil fuels, particularly imports from unstable sources or potentially hostile producers– would be a top priority of his Administration.

In late October, as the financial crisis deepened, Obama told *TIME Magazine*: 'The engine of economic growth for the past 20 years is not going to be there for the next 20. That was consumer spending. Basically, we turbocharged this economy based on cheap credit... (Now) there is no better potential driver that pervades all aspects of our economy than a new energy economy... That's going to be my No. 1 priority when I get into office' (Joe Klein, 'Why Obama is Winning', *TIME*, 22/X/2008).

So what is likely to happen in the realm of energy policy as of 20 January 2009? What will the new Obama energy and environment team try to achieve? What obstacles lie in their path? How will these hurdles and other resistance be overcome? What will their potential impact be?

## Limits and Possibilities

While the energy challenge has always been immense, it is even more so now, in the midst of a global economic crisis that threatens to eclipse all recessions since the Great Depression of the 1930s. Congress recently earmarked US\$750 billion (and disbursed half already) for rescue packages aimed at the financial sector, while President Bush also approved US\$17 billion in emergency assistance for the automobile sector as well. Furthermore, the US government budget deficit is now projected to approach 10% of GDP by the end of 2009, the largest since World War II. In response, much of orthodox and popular opinion anxiously claims that the Obama presidency may not be able to afford its ambitious energy programme, to say nothing of its health care or education plans.

Meanwhile, the onset of global recession has rapidly pulled down the price of oil from an all-time high (in both nominal and real terms) of US\$147/bbl, reached in July, to less than US\$50/bbl today, a mere 30% of the peak level. Petrol prices in the US are also now falling towards a very comfortable US\$1.00 per gallon (with the early January average around US\$1.70 a gallon). The upshot of all this is that the combined effect of severe recession and significant oil-price slump might make the energy issue, at least in the short run, seem far less urgent to many Americans. To make matters more difficult, investment funds for renewable energy, low-carbon solutions and other green-economy investments are drying up as the global credit crunch stubbornly resists the frantic efforts to unravel the knot it has tied around the global economy. At first glance, then, the current situation seems to suggest that Obama's energy ambitions might fall prey to 'political and economic realities'.

That would be the conventional wisdom, appropriate perhaps for conventional times. But these are not conventional times. Indeed, the current crisis potentially opens up enormous opportunities that could be boldly seized, and there are a number of signs that Obama will not abandon his energy and climate policy ambitions.

The first is that Obama seems intent on taking advantage of the quasi-emergency economic scenario –which actually gives him more room to manoeuvre than otherwise might be the case– and his enormous political capital –perhaps more than any new President has enjoyed upon entering office since Franklin Roosevelt– to achieve a truly transformative Presidency. The Obama economic team is now discussing with allies in Congress an ambitious economic stimulus package –the American Recovery and Reinvestment Plan– that could range up to US\$850 billion in size, while Obama himself has emphasised that such a package would include the largest public works programme since the creation of the US Federal Interstate Highway System in the 1950s, and would be specifically targeted to create or defend at least three million jobs.

He has also continued to mention the transformation of the energy economy and the creation of green jobs –a new Green Economic Recovery Program has been elaborated by the Center for American Progress and the Political Economy Research Unit at the University of Massachusetts– as an integral component, along with investment in healthcare and education, of any such stimulus package. And if the private sector is now pulling back from once appetising green investment, then Obama and his economic advisors could easily decide that the government must fill the void. Indeed, preliminary discussions of the new stimulus package that the Obama team would like Congress to pass in January include significant levels of government expenditure for 'weatherisation' programmes and other efficiency investments, along with significant tax credits for the use of renewable energies. Indeed, in a *Washington Post* article on Sunday, 28 December 2008, Obama's new head of the White House Economic Council, Lawrence Summers, claimed that '... in key sectors such as energy, Obama is pushing for both public investments and the removal of barriers to private investment'.

All the current signs, furthermore, point to a continued loosening of fiscal policy and to nearly complete monetary accommodation, through ‘quantitative easing’ and perhaps even unprecedented ‘monetization’ of federal debt. However, given the intensity of the projected US recession (and the concomitant decline in government revenues), along with a potential slide of the economy into price deflation (against which the Fed seems determined to fight), the budget deficit is set to increase significantly whether or not the government engages in Keynesian fiscal stimulus, and whether or not the Federal Reserve continues to accommodate it.

For this reason, a very large fiscal and monetary stimulus, which in normal times would be considered economically dangerous and politically difficult to achieve, could easily be beneficial in the current recessionary environment. As Summers wrote: ‘... economists across the political spectrum recognize that it is far less risky to stand firmly against the forces propelling our economy downward than to be timid in the face of a mounting crisis’. If it could be designed to also transform the US economy’s structural weaknesses –fossil fuel dependence, insufficient healthcare coverage and rapidly rising healthcare costs, plus an eroding educational and infrastructure base– the resulting stimulus would be not only efficient in macroeconomic terms over the lifetime of the economic cycle, but also productive in microeconomic terms over the long run.

This seems to be what Obama has in mind. In television appearances on Sunday, 28 December, David Axelrod (perhaps Obama’s closest advisor) elaborated on the philosophy of the stimulus plan: ‘We want to do it in a way that leaves a lasting footprint, by investment in energy and health-care projects, and refurbishing the nation’s classrooms and labs and libraries so our kids can compete, and rebuilding our crumbling roads and bridges and waterways... And, in this way, we’re not only just – we’re not only creating work, but we’re laying the foundation for the future of our economy’. In a speech given at George Mason University on January 8, Obama himself spoke of how he would channel a significant portion of his energy plan through the pending stimulus package: “To finally spark the creation of a clean energy economy, we will double the production of alternative energy in the next three years. We will modernize more than 75% of federal buildings and improve the energy efficiency of two million American homes, saving consumers and taxpayers billions on our energy bills. In the process, we will put Americans to work in new jobs that pay well and can’t be outsourced – jobs building solar panels and wind turbines; constructing fuel-efficient cars and buildings; and developing the new energy technologies that will lead to even more jobs, more savings, and a cleaner, safer planet in the bargain.”

And what of the objections heard in conservative circles? On the one hand, it is argued that such a massive increase in government spending – whether for the stimulus package or for subsequent energy legislation -- will only stifle economic growth through increased taxation to finance the enlarged deficit or through heightened borrowing which might ‘crowd out’ private investment. All the signs point to a lowering of taxes in the coming year, particularly on middle- and lower-income families –the 95% of all taxpayers alluded to by Obama during the final months of the campaign– while even Obama’s campaign proposal to raise taxes on individuals with incomes over US\$200,000 might fall by the wayside in a conciliatory gesture to garner sufficient consensus. The most recent discussions on Capitol Hill suggest that as much as US\$300 billion, or some 40% of the entire stimulus package, will come in the form of tax cuts.

With respect to the ‘crowding out effect’: such concerns might be legitimate during normal times, or at least when economic output is near or approaching its potential. It is a completely different matter, however, when yields on much government debt are approaching zero, the economy is slipping into what could be the most pronounced downturn in at least 30 years, wholesale and consumer prices have been falling and unemployment is on the rise. Potential investment capital is idle, seeking shelter in havens and the cost for the US to borrow from abroad is now at its lowest in years, while the dollar remains the world’s central reserve and trading currency. In this context, the government is the only investor with an appetite and could easily tap into the flood of funds seeking

the safety of government paper. Under the current circumstances, it should be considered a blessing to be potentially facing the ‘crowding out’ problem to which some people continue to allude.

On the other hand, it is true that a large stimulus package will significantly increase an already large national debt (some US\$6 trillion at the end of the last fiscal year), possibly even threatening the dollar’s stability and its structural privilege as the world’s central currency. The economy’s contraction will be even more pronounced, however, if the short-term deficit is not increased as the result of federal tax cuts and new spending. It is therefore more than likely, as Summers suggested above, that the long-term increase in the national debt will be even larger –and more damaging to the US economy and living standards– if there turns out to be no stimulus plan, or one that is too timid, too small, too late or too temporary. . In other words, the threat to the dollar -- both in terms of its exchange rate and its central position as the world’s dominant trade and reserve currency – may even be greater if the US government, in an attempt to limit the deficit and stem the accumulation of debt – adopts only a small stimulus package, or even none at all.

An erosion of US economic, political and military power, relative to other traditional or rising national powers, may or may not be inevitable – with or without the demise of the dollar -- but the chances of preserving that relative power to the highest possible degree depend on three factors: (1) generating an economic recovery as quickly and dynamically as possible –highly unlikely without a large government stimulus–; (2) achieving a transformation of national energy policy and constructing, as rapidly as possible, a ‘green’ economy; and (3) restoring US influence in the world –even if more constrained by a multilateral framework– by implementing a far-reaching climate policy, the single bold initiative that could most repair the country’s damaged international reputation, prod China and India into implementing their own carbon dioxide emissions trading systems, and give the world its only chance to have a global price of carbon and, with it, a global set of incentives to transform the world’s energy economy and avoid irreparable climate change. If in his response to the economic crisis, Obama is forced by Congress to limit spending in the face of fears of higher debt, or into postponing or watering down his ambitious energy and climate plans, then it would be unrealistic not to expect a long-term deterioration of living standards in the US, a permanent loss of international prestige and influence, and rising political instability – even physical danger -- around the world.

### **Obama’s New Energy Team**

After appointing a number of centrist figures to run his economic and national security policy teams –many of whom are either Republican or come from the previous Clinton Administrations of the 1990s, and many of whom, too, have not been well received by the more liberal and progressive elements of Obama’s electoral base– the President-elect has recently added a number of names to his energy and environment teams which suggest that he remains serious about energy and climate change policy.

The Nobel Prize-winning physicist Steven Chu, current Director of the Lawrence Berkeley National Laboratory, has been nominated as Secretary of Energy, while Lisa P. Jackson, the Chief of Staff to New Jersey’s Governor Jon S. Corzine and former head of the New Jersey Department of Environmental Protection, has been nominated as the new Administrator of the Environmental Protection Agency (EPA). Both Chu and Jackson have reputations for being strong and vocal proponents of creating a low-carbon energy economy.

Obama has also appointed Carol M. Browner –the EPA Administrator for eight years under President Clinton– the new Assistant to the President for Energy and Climate Change, a kind of Energy Czar. Nancy Sutley, Deputy Mayor of Los Angeles for Energy and Environment has been nominated as the Chairperson of the White House Council on Environmental Quality. If Browner represents the calming orientation of experience and leadership, Chu represents the scientific rigour, drive and vision behind a renewed push to transform the US energy economy.

In addition, just before the names of the new energy and environment team were announced, Obama and Vice-President-elect Joseph Biden also met with Al Gore, former Vice-President under Bill Clinton, and currently a kind of self-appointed, independent emissary on global climate change issues. Although there have been no explicit signs that Gore will take up an official position with the new Administration, his clout and prestige in the climate change realm are such that many interpreted the meeting as signalling not only the seriousness of Obama's commitment to energy transformation but also the likelihood that Gore himself will remain involved, at least informally, with any new Obama policy on energy and climate change.

## A New 'Apollo Project'?

Obama and his circle of advisors have often likened their energy and climate change proposals to a kind of new 'Apollo project', an ambition that they believe will never be realised if left to the private energy sector alone. Invoking Kennedy's famous marshalling of US political will in the Cold War effort to surpass the Soviet Union in scientific and technological prowess, Obama has framed the energy and climate change question as the major long-term challenge of our times. In practical terms, the mustering of political will in the US to transform the energy economy and drastically cut carbon emissions may even be more critical than the lunar missions were in the 1960s.

At the most basic level, Obama's energy policy has coalesced around a series of campaign promises that now take the shape of concrete targets. These objectives are designed to send a signal of serious and positive commitment to the world, particularly the EU, which already has adopted its very demanding '20-20-20' objectives (20% reduction in carbon emissions from 1990 levels, 20% of the energy mix from renewable energy and a 20% increase in energy efficiency, all by 2020), and the large emerging market economies, like China and India. In this equation, the latter are especially critical actors, for while they have contributed very little to the stock of greenhouse gas emissions currently in the atmosphere, they are now projected to contribute the lion's share (approximately two-thirds) over the coming decades.

## Obama's Targets

### *The Electricity Mix*

The **first such goal** applies to the deployment of renewable energies in the realm of electricity production and sets the concrete target for the US to generate at least 10% of its electricity from renewable energy sources by 2012, and 25% by 2025. Excluding hydroelectric power, less than 3% of US electric power is currently generated by renewable energy, and the most optimistic current projection from the US Department of Energy's Energy Information Agency (EIA) is that only 12.5% of electricity will come from renewable energy by 2030. In practical terms, then, Obama's target would require more than doubling renewable energy's rate of penetration into the electricity mix.

### *The Transport Sector*

A **second goal** has been set for the transport realm and consists of a number of concrete objectives. The first is that at least one million, 150-mile-per-gallon, electric 'plug-in' hybrids be on US roads within six years, and that all new vehicles by the end of Obama's first term (ending in 2013) be of the 'flex-fuel' variety (capable of running on either gasoline/diesel, biofuels or electricity). A related objective is to double total automobile fuel efficiency by 2025, increasing fuel economy standards for vehicles by 4% per year – saving a half trillion gallons of petrol and 6 billion metric tons of greenhouse gases in the process – and providing loan guarantees for domestic auto plants and parts manufacturers to build new fuel efficient cars (a goal which might easily interlock with the government rescue plan for the automobile industry as it evolves during the early period of Obama's Presidency).



Finally, Obama has set a further objective to produce at least 60 billion gallons a year of advanced biofuels, like cellulosic ethanol, by 2030 (and some 2 billion gallons a year by 2013). A related goal also implies that 10% of the country's fuel supply also be provided for by renewable fuels such as ethanol and biodiesel by 2012 and 25% by 2025, mirroring the target for renewables in the future electricity mix.

### *Energy Efficiency*

The **third goal**, at least partially dependent on achieving the aforementioned targets, is to increase overall energy efficiency some 50% by 2030, including augmenting new building efficiency by 50% and existing building efficiency by 25% over the course of the coming decade. This would include the 'weatherisation' of some one million homes, along with other measures to reduce the US's energy intensity by half before 2030.

### *External Dependence*

Achieving these previous goals would feed the progress towards two more. The first lies in the realm of external energy dependency and perceived 'energy security': the elimination of all current US oil imports from the Middle East and Venezuela within 10 years, or the savings of an equivalent amount of oil consumption, so as to reduce US oil consumption by at least 2.5 million barrels per day (mbd). The US currently consumes over 20 mbd and imports approximately 12 mbd (more than 60%, or nearly two-thirds of the total) to meet domestic demand. Because most petroleum products in the US are used for fuel purposes, achieving this goal implies either a major electrification of the automobile fleet, a massive expansion in the use of biofuels, or both.

### *Carbon Dioxide Emissions*

The **final goal** –also at least partially dependent on all the previously mentioned targets– is perhaps the most challenging of all: to reduce carbon emissions to 80% below their 1990 levels by 2050.

In recent years, the scientific evidence pointing to fossil-fuel-induced global warming has been stacking up rapidly. Most recently, in September, scientists announced that man-made carbon emissions rose by 2.5% last year, four times faster than a decade ago, and faster than the worst-case scenario previously foreseen. These unexpected increases have been fuelled mainly by increasingly rapid growth in emissions released by China and India.

UN climate scientists claim that global emissions must peak by 2015 and drop by at least 50% by 2050 to limit temperature rises to 3.6 degrees Fahrenheit, the threshold where some of the most extreme impacts could begin. Given the projected shift in the proportion of future carbon emissions coming from the large emerging-market countries, such thresholds would require an even deeper cut to be made by 2050 on the part of the advanced developed economies.

## **Obama's Policy Mechanisms**

What policy mechanisms will the new Administration likely use to achieve these objectives?

### *Production Tax Credits*

The first policy mechanism would be to extend or make more permanent –at least through the middle run of five to 10 years– the government's **production tax credits (PTCs)** for wind and solar energy, and for other efficiency measures. Just before the election, the current Congress passed legislation which renewed the PTCs for solar energy for another eight years, but only extended the PTCs for wind energy for a single year.

While the effectiveness of PTCs –particularly during a period of scarce credit and falling profits– remains debatable, it is clear that they can only realise their potential if they are considered stable and guaranteed over a sufficient time frame. For this reason, and given that it was part of the

Obama campaign platform, it seems likely that the Obama Administration will request that Congress extend a much longer and more secure PTC to renewable energies and investment in efficiency. Indeed, deeper and longer PTCs for renewable energy has been mentioned as a key component of the stimulus plan currently being designed by Obama economic advisors and which the President-elect wishes to sign into law upon taking up the office. Obama advisors have recently revealed the the stimulus package might include PTCs which are ‘refundable’ or applicable retroactively against past taxes, given that many financial firms which provided capital for such projects no longer have taxable income due to the recession and as such cannot use tax credits in their current form.

#### *Feed-in Tariffs?*

It is also possible that more consideration will be given to so-called ‘feed-in tariffs’, more widespread in Europe, particularly Spain, where their use has been accompanied by a very rapid roll-out of renewable energy, especially wind power. The ‘feed-in tariff’ –or *prima*, as it is known in Spain– provides for a guaranteed supplemental price above and beyond the standard electricity tariff for those producers supplying to the grid electricity generated from renewable energy. Such a mechanism has helped Spain become, in a relatively short time, a world leader in both installed capacity from wind and solar power (third in the world in both categories) and in the manufacture of wind and solar energy components. It is possible that this type of policy mechanism could become more widespread in the US as dialogue on energy policy and practices between the US and Europe deepens under the new Obama Administration.

#### *Tax Credits for Plug-In Hybrids*

A related policy mechanism –affecting the transportation sector’s contribution to the energy mix, and also promised by Obama– would be the enactment of tax credits (US\$7,000 for each individual) for purchases of plug-in-hybrid vehicles, which could also be extended in the future to flex-fuel vehicles (which would be able to run on either petrol/diesel or biofuels) once they become commercially available. Of course, plug-in hybrids only help with regard to climate change if the share of carbon-emitting coal in the power generation mix is significantly cut; if not, plug-in hybrids could actually make matters worse.

#### *Federal Renewable Portfolio Standards*

Another policy mechanism –and one with potentially more long-term significance– would be to mandate federal **renewable portfolio standards (RPSs)** for the states. The campaign suggested that a new Obama Administration would mandate that each state meet a target for renewable energy to account for 10% of its electricity mix by 2012 and 25% by 2025. Such a move would take its cue from the EU, which has recently mandated that each of its member states (with EC sanctioned divergences for individual countries, in line with their initial position and ultimate potential) achieve an overall energy mix in which at least 20% is provided for by renewable energy by 2020.

A related measure in the realm of transport fuels, and a complement to more aggressive fuel economy standards, would be Obama’s proposed National Low Carbon Fuel Standard (LCFS), which would be designed to accelerate the introduction of low-carbon non-petroleum fuels. The standard requires fuels suppliers in 2010 to begin to reduce the carbon content of their fuel by 5% within five years and 10% within 10 years. The Administration will also likely provide further incentives for private sector investment in advanced low-carbon fuels and elaborate a sustainability provision to ensure that increased biofuels production is compatible with environmental sustainability.

RPSs have the advantage of stimulating a diversity of renewable energy sources for electricity generation while avoiding the potential risks –inherent in PTCs– implied by the federal government intervening in the market to ‘pick winners’ from among various options, each with distinct development, cost and deployment curves, and each at a different point along those curves.



Rigorously enforced RPSs would force the market into action to pursue a more efficient mix of renewable energies. In the very least, RPSs would provide the legal baseline necessary to supplement PTCs which, during an economic downturn, lose their relative attractiveness for investors who now have less income and profit to shelter from taxes than during more normal times.

‘Other forms of stimulating renewable electricity generation, such as through the tax code, can help, and they have helped, but by themselves they cannot do the job that is needed’, said Senator Jeff Bingaman (D-NM), the Chairman of the Senate Energy and Natural Resources Committee, in address at the Center for Strategic and International Studies in Washington DC on 17 November 2008. He added: ‘The tax incentives, in particular, have been too intermittent and short-lived to send the consistent signal that electricity resource planners and investors need. The shortcomings of a tax-only strategy are being highlighted by the current recession and credit crunch. Tax credits have less value when there are no taxable profits against which they can be used’.

Some 26 states have already enacted their own renewable portfolio standards for electricity generation, ranging from a 10% to 15% renewable energy requirement for electricity mixes by various dates. A federal RPS would place a floor beneath this patchwork of scenarios and reward those states pioneering the most ambitious standards by eliminating much of the incentive for business and investment to flee the states with more rigorous requirements and seek the haven of those that have none. In addition, a federally-mandated RPS would undercut the local NIMBY (‘not in my backyard’) resistance to many forms of urgently needed energy infrastructure investments around the country.

Most signs point to the Obama Administration enacting some form of federal RPS, which would provide the additional benefit a sending a signal to the world that the US is now on the same page as its European allies and is serious about transforming its energy economy and cutting back on carbon emissions. A recent Washington Post-ABC News poll also revealed that 84% of Americans want the new Administration to require electricity companies to increase the use of renewable sources of energy, and a substantial majority (some 55%) want them to enact such requirements right away.

#### *Federal Clean Energy Technology Fund*

But even with ambitious renewable portfolio standards –and the political will to rigorously enforce them– the investment must come from somewhere. With the economic climate darkening, however, the credit for renewable energy projects and other green investments is rapidly drying up. This makes the logic for Obama’s proposed **Clean Energy Technology Fund** even more compelling. The idea is for the federal government to jump start the faltering economy (together with more spending on infrastructure, health, education, unemployment benefits and transfers to cash-strapped states) and to spearhead the investment effort –catalysing private investment– in renewable energy and other clean and green projects with federal spending of US\$150 billion over 10 years, or some US\$15 billion per year.

Such a fund could be structured in a number of ways. It could have a venture capital component in which the government provided seed money for promising green economy investment proposals. It could directly finance research and development, either partnering up with private R&D initiatives or significantly expanding public sector energy and climate technology R&D. It might provide loans and/or loan guarantees to private renewable energy and other green ventures. It might also provide funds for a number of transitional programmes designed to ease the economic pain of required efficiency investments –like Obama’s proposed expansion of the LIHEAP (low-income home energy assistance) and the home weatherisation programmes– or to facilitate ‘green’ retooling in the automobile, auto-parts and other key industries –with loans or loan guarantees similar to those recently contemplated by the US Congress and decreed by the White House– or to give grants

to states for the adoption of more efficient building codes and retrofits, including incentives for states to require and develop smart metering and changes in rate structures so as to decouple profits from power sales and stimulate rate structures that encourage efficiency investments.

Obama has claimed that spending by such a fund would create 5 million new 'green' jobs, very much in line with the objectives of his overall stimulus package. A number of current estimates have claimed that every US\$1 billion in infrastructure spending creates some 40,000 jobs, while the estimates implicit in the Green Economic Recovery Program, developed by the Center for American Progress and the Political Economy Research Institute at the University of Massachusetts, would suggest that every billion dollars of spending on Green Initiatives (including building retrofitting, mass transit and freight rail, smart grid electrical transmission systems, wind energy, solar energy and advanced biofuel investment) would create approximately 20,000 jobs. Critics argue, it is worth noting, that wind and solar technologies have so far created only 2.4 million jobs worldwide, and only 250,000 in the US, and that in order to meet Obama's goals the government would have to spend two or three times the amount proposed.

Perhaps potential job creation has been overestimated. Given the recent change in circumstances, however, such criticism appears less relevant than it might during more normal times. Obama's initial US\$150 billion Clean Energy Technology Fund was proposed before the financial system began to collapse and recession became inevitable. Having just earmarked US\$700 billion for rescuing the financial sector, and with the economy in dire need of significant spending stimulus, why would we worry about spending even US\$500 billion on transforming the energy economy, particularly if it redressed important structural deficiencies in the US economy and created a market in renewable energy and green technologies which could assist the rest of the world in their efforts to avoid cataclysmic climate change?

Again, all signs point to the likelihood that Obama will create a Clean Energy Technology Fund and channel federal spending through it into the renewable and green sectors, into large-scale energy and climate research, and into the effort to transform, deepen and expand the country's electricity grid. Indeed, the creation of a national digital 'smart grid' –an infrastructure project of Tennessee Valley Authority proportions– would be a key prerequisite for fully taking advantage of the vast potential of renewable electricity sources.

Nevertheless, the stimulus package is still in the design stage, while much emphasis is being placed on choosing spending components that will likely have the most rapid impact on aggregate demand in the economy. The weatherisation of buildings and other efficiency investments have been mentioned as key targets for infrastructure spending, as have the rebuilding of roads and bridges, the modernisation of schools and medical technology, and the expansion of unemployment and food stamp benefits. But so far, while PTCs for renewable energy have been consistently identified as a key component of the plan's tax cuts, new spending for energy R&D and renewable energy roll-out has not always been mentioned as a part of the eventual stimulus package.

This reflects a vibrant internal debate within Obama circles as to where the bulk of the plan's spending should be routed. Into traditional stimulus channels (conventional transport infrastructure projects, like roads, and general tax cuts) thought to be more successful in generating immediate increases in demand and job creation? Or into key areas of productive transformation, like energy, health and education? Such areas may not generate quite as much short-term stimulus as the conventional forms (although this is still open to debate), but would do much more to improve productivity and job creation over the longer run, and to correct a number of structural deficiencies of the US economy. Depending on how this debate ultimately plays out for Obama and the new congress, it is possible that much of the green spending contemplated in the Clean Energy Technology Fund will only be considered after a new stimulus package has become law.

Nevertheless, Obama advisors have recently revealed that the stimulus package may include the establishment of a federally funded National Clean Energy Lending Authority. This new agency, a kind of ‘green bank’ already proposed by some lawmakers on Capitol Hill, could receive as much as US\$10 billion to US\$20 billion and extend low-interest loans or guarantees to renewable energy projects in an effort to mobilize private capital.

#### *National Cap-and-Trade Carbon Emissions Regime*

A final policy mechanism that President-elect Obama has claimed he would implement is a national **cap-and-trade system** which would set limits on carbon-dioxide emissions by energy producers and heavy industries, and auction off a limited amount of emissions credits to producers and manufacturers. Those emitters who prove capable of reducing their emissions to below the limits would be able to sell such credits on the secondary market (providing some financing for their own carbon-reducing investments) to others who still emit beyond the limit.

A state-wide cap-and-trade system which requires cuts in emissions to 1990 levels by 2020 was recently passed by the California State Legislature and approved by Governor Arnold Schwarzenegger. Similar targets and emissions reductions schemes have been adopted in a number of other states as well. Nevertheless, a national emissions reduction target, together with a national cap-and-trade system, will offer the same benefits and impetus to state efforts that would a Federal Renewable Portfolio Standard in the realm of renewables expansion.

Obama has pledged to place a ‘hard cap’ on all carbon emissions at a level that scientists say is necessary to curb the worst aspects of human-induced global climate change, achieving an 80% reduction from 1990 levels by 2050. Unlike his former electoral opponent John McCain, Obama has argued in favour of auctioning off all emissions permits (with the proceeds financing other aspects of his energy and environmental proposals), as opposed to giving them away in quantities equivalent to current emissions levels (as in the original European experience, which initially generated carbon prices too low to provide an incentive to shift to carbon-free practices) and only then very gradually reducing their free availability to companies, forcing them to cut emissions or buy offsets in a more moderately phased manner. On the other hand, Obama has called for the incorporation of international offsets –whereby investments which either cut carbon emissions or take carbon out of the atmosphere earn companies more emissions credits– into the cap-and-trade scheme, but only after having reached verifiable international agreements and only once reliable reporting procedures and enforcement mechanisms are in place. In this regard, Obama has also favoured linking deforestation activities and sustainable forestry practices to international climate policy.

The objective of such a scheme would be to create a market price for carbon emissions, along with a thriving and efficient secondary market in emissions credits. This kind of scheme, already in effect in the EU, where it has had an encouraging if chequered track record –and which a US scheme might improve upon– should have the ultimate impact of raising the costs of producing fossil fuel-based energy as well as the price for consuming it. Critics argue that increasing the price of energy during an economic recession will only make the downturn worse. They point to the EU, which is considering delaying its planned aggressive emissions cuts in response to the economic crisis. One estimate used by critics suggests that if the price of emissions credits were to settle at the levels currently seen in Europe (around US\$30-35/ton), petrol prices in the US would rise by US\$0.35/gallon while electricity prices would increase by US\$0.03/kw/hr.

Meanwhile, the current economic environment has seen the price of oil fall more than 70% in less than six months, while the price of petrol in the US has tumbled from over US\$4.00/gallon to nearly US\$1.60 today. With this kind of volatility already absorbed by the American economy and its consumers, certainly an increase in gasoline prices to US\$2.50/gallon –equivalent to a price of carbon double the current European level (according to the above estimate)– could be tolerated by

the economy and accepted by the electorate. Surely an increase in electricity prices of US\$0.03/kw/hr would not be the critical factor tipping businesses or households into bankruptcy. Indeed, one of the great benefits of the great oil price spike of 2008 is simply that oil at US\$100 or petrol at US\$3.00 no longer seem as expensive to Americans as in the past. Furthermore, the Obama energy plan also contemplates the initial use of tax rebates (US\$500 for an individual and US\$1,000 for couples), and eventually, permanent tax relief (US\$1,000 per family) to offset the impact of higher energy prices.

Another problem with the critics' 'excessive cost' argument is that they used it even when the economy was booming and energy demand was soaring, only then it was couched in different terms. Before the global economic boom lost steam, critics argued that a cap-and-trade system (to say nothing of the more economically-efficient carbon or fuel tax) would damage national economic competitiveness, accelerate the movement of investment and manufacturing activity abroad, and undermine the relative attractiveness of the US economy, potentially sending it into long-term decline. While there may be a grain of truth to this argument, it mistakes a tree for the forest, and merely highlights the global nature of the climate change challenge, while turning a blind eye to the key issue: that US leadership on energy and climate change is essential not just for global success but also for the renewal of American economic competitiveness.

Fortunately, Obama strongly advocates that the US re-engage the international community through the UN Framework Convention on Climate Change in Post-Kyoto efforts, and that a new global energy forum made up of the 15 or so largest emitters (including the large developed economies plus China, India and other large emerging markets) be created to work collectively on emissions control and offset agreements, and in the pursuit of technology cooperation and transfer. The implementation of a serious cap-and-trade system in the US would be the single most effective message that the Obama Administration could send to the rest of the world –particularly the large emerging economies like China– that the US is serious about reducing its future carbon emissions. Such a message is also essential if the US holds out any hope that China will also begin to seriously engage with the Post-Kyoto process and to cut its own emissions. Without China –along with the US, the other ultimate linchpin in the fight against climate change– effectively engaged in this global effort, further erosion of economic competitiveness will be the least of our worries.

The recent Washington Post-ABC News poll found that three-quarters (75%) of Americans favour the implementation of policies to fight against global warming. Nevertheless, only 40% believe that such policy should be enacted immediately. This suggests that –like the planned new spending on the Clean Energy Technology Fund– a cap-and-trade system could take a back seat in the legislative agenda to the stimulus plan and other efforts to mitigate that 2009 recession.

## **Other Energy Policy Issues**

### *Offshore Oil Drilling*

Obama does not oppose the opening up of oil and gas drilling on the Outer Continental Shelf (OCS). His tolerance for increased offshore drilling, however, is purely tactical: he will only support it if necessary to generate a consensus broad enough for getting a comprehensive energy package –one that includes efficiency measures and renewable energy projects– through Congress. During the campaign, Obama insisted that the drilling issue was only marginal, if not irrelevant, to the big picture for energy policy in the long-run, particularly given that offshore drilling does imply some environmental risk and, at the same time, is unlikely to reduce the world price of oil more than marginally and temporarily, if at all.

The US possesses less than 3% of the world's proved conventional oil reserves (30bn bbl of a total 1.2trn bbl), yet it consumes nearly 25% of the world's oil daily (20.5mbd of a total world demand of approximately 85mbd). Some estimates claim that an additional 90 billion barrels of oil could be

added to US proved reserves (quadrupling their current size) from exploratory drilling and future production in the offshore regions of the country. However, the EIA estimates that only 18 billion barrels might be added (only 60% of the current level of reserves) by opening up all offshore areas –including the Arctic National Wildlife Refuge (ANWR), which the Obama Administration will not allow– to drilling and production.

Even such a radical embracing of offshore drilling, according to the EIA, could only produce an additional 1mbd, at most (slightly more than 1% of the current world demand), before peaking and trailing off, with no likely effect on prices, however marginal, for at least a decade. Indeed, in a 2007 study the EIA claims that opening up the OCS would not have a significant impact on domestic crude oil and natural gas production or prices sooner than 2030.

On the other hand, Obama has advocated a ‘Use it or Lose It’ approach to existing offshore leases. Oil companies currently have access to 68 million acres of land –and over 40 million acres offshore– on which they are not drilling, even though drilling in open areas could significantly increase domestic oil and gas production. It is likely that the Obama Administration will require oil companies to diligently develop these leases or turn them over so that other companies might. But with oil prices now at less than US\$40/bbl, some 70% below their July 2008 peaks, much of the (admittedly spurious) logic for pushing to open the OCS to drilling has diminished.

#### *Enhanced Oil Recovery and Carbon Capture and Storage*

A far higher priority of the Obama Administration will be to develop a national Enhanced Oil Recovery (EOR) Program, in order to get more from existing US oil fields. Nationally, experts believe that up to 85 billion barrels of technically recoverable oil remains stranded in existing fields (nearly the same as the most optimistic estimates of US offshore oil reserves). Enhanced oil recovery (EOR) using carbon dioxide offers an immediate- to medium-term opportunity to produce more oil from existing fields. In the EOR process, large quantities of CO<sub>2</sub> can be sequestered underground, helping to ameliorate global warming. The carbon cap-and-trade bill which the Congress will likely pass under the new Administration will provide an incentive for emitters to capture their CO<sub>2</sub> and send it to old oil fields for EOR, thereby providing economic benefits while also stimulating additional domestic oil and gas production.

To accelerate such a process, the Obama Administration will likely earmark significant amounts of the new Clean Energy Fund for further R&D into carbon capture (or sequestration) and storage (CCS/CSS), the mapping of stationary CO<sub>2</sub> sources and the development of a database to help industry calculate the most cost effective oil field destination for each source’s CO<sub>2</sub>. Furthermore, the new Administration is likely to fund the development of clean coal technologies. Even the most optimistic estimates, however, see CCS available on a commercial scale no fewer than 10 years into the future. For this reason, and given that conventional coal-fired plants emit twice the weight in CO<sub>2</sub> emissions as that of the coal burned, the Obama Administration is likely to limit –if not ban outright– the construction of any new traditional coal-fired power plants unaccompanied by CCS technology.

#### *Nuclear Energy*

Then there is the vexing question of nuclear energy, which already accounts for about 20% of the US electricity mix (having risen from 11% in the mid-1980s). Obama accepts nuclear energy as part of the energy mix, and has admitted that it is unlikely that the US can cut greenhouse gas emissions sufficiently without at least some reliance on nuclear power. He therefore does not advocate shutting down nuclear plants, and is not opposed to extending their licences, at least in certain cases. But he does not view nuclear power as the optimal energy replacement for coal, or as a panacea for the energy challenges of the US or the world. Furthermore, he still maintains that there is ‘no future for *expanded* nuclear power’ without first finding and developing a safe and sustainable solution for the disposal of nuclear waste.

Obama's adopted Illinois has more nuclear power plants than any other state, and during the campaign he received at least some campaign donations from the company that operates Illinois' reactors. In his acceptance speech in August at the Denver Convention he vowed to 'find ways to safely harness nuclear power'. Still, he does not support the storage of spent nuclear fuel under Yucca Mountain near Las Vegas, the only site that the Department of Energy and other federal agencies are preparing for permanent storage.

Furthermore, nuclear energy is not yet –and may never be– fully and truly economically competitive, and therefore cannot be financed solely by the private sector. On the contrary, nuclear investment must be backed by government guarantees (like taxpayer-backed and government-guaranteed loans) and subsidies, in order to coax the private sector into investing in nuclear projects. The Bush Administration's Energy Policy Act of 2005 called for the construction of new nuclear energy capacity and provided for numerous financial incentives for nuclear investment. Yet the Bush incentives for nuclear power remain ineffective. No new plants have yet been started.

Any new federal funds for nuclear power, while potentially available through a new Obama Clean Energy Technology Fund, would compete with investment funds for efficiency measures, less problematic renewable sources like wind and solar, and other climate mitigation actions. The Congressional Budget Office (CBO) has estimated that any such government loans would be so risky that 50% of them would default. Given the current negative investment climate, and given that Obama would have a different priority for the use of such limited resources to stimulate production of new clean energy, nuclear power will in all likelihood remain a very limited source for expanded energy supply.

But many of the existing nuclear plants are old and will have to be decommissioned as fast as new ones could possibly be built, making it unlikely that there will ever be any net additional increase in nuclear power production. On the contrary, nuclear power's contribution, particularly in relative terms, is very likely to erode in the future, even if Obama were more enthusiastic (as was his campaign rival, John McCain) about attempting to aggressively expand nuclear power.

## Other Reflections

### *The Fight against Climate Change versus the Quest for Energy Independence*

During the campaign, Obama seemed just as concerned as his rival, John McCain, with the steadily increasing wealth transfers to supposedly unsavoury leaders or hostile regimes around the world. All throughout 2008, the legendary oilman and financier T. Boone Pickens repeatedly claimed that "US\$700 billion are leaving this country to foreign nations every year – the largest transfer of wealth in the history of mankind". Both McCain and Obama echoed this sentiment of concern, and cited the same figures throughout the campaign (even though the US\$700 billion number is grossly exaggerated, given that in 2007 the US only imported some US\$330 billion in crude and other petroleum products), and both called for a renewed push for US energy independence, an old political quest that has been repeatedly invoked by American Presidential candidates and then repeatedly abandoned by American Presidents.

This hapless pattern has developed partly due to the fact that public concern for energy policy tends to move in parallel with the price of oil and gasoline. For 20 years (roughly from 1985 to 2004) oil prices remained relatively low, and as a result there was little concern for US dependence on oil in general, or on oil imported from perceived problematic parts of the world –even despite the intensity of the previous energy crisis of the 1970s–. However, as soon as oil and petrol prices broke their historic records, set during the early 1980s, US public opinion once again began to demand a new energy policy for achieving energy independence. Now that oil prices have dramatically fallen once again, and look set to remain subdued for some time, it is not clear what will become of the US public's concern with the energy issue.



But another reason behind the perennial failure in the US's pursuit of its eternal goal of energy independence –the quest for which President Jimmy Carter once called the ‘moral equivalent of war’– is due to the simple, if misunderstood, fact that ‘... there is no special magic about energy independence’. The sad truth is that as long as energy prices remain low, the public perceives no security threat from high levels of external energy dependence. As long as prices rise, however, the first reaction is to blame foreign countries perceived to be actively hostile to the US and believed to be using their power to ‘illegitimately’ manipulate the world’s energy markets in order to ‘punish’ the US. The second reaction is to clamour for any policy that will reduce external dependence which, erroneously, is believed to be the source of energy price instability.

However, this view –dominant among the public and policymakers throughout the Western World– is based on fallacies and gross distortions. As Roger Sant and Michael Kinsley recently wrote in the *Washington Post*, ‘The goal (of energy independence) is not so much a mistake as it is a muddled concept and a red herring... The only way the United States alone can weaken the economic and political power of oil is to reduce the amount we use, regardless of where it comes from. So consuming less oil –as opposed to replacing imported oil with domestic supplies– should be the goal’ (‘Why “Energy Independence”? We’re Focusing on the Wrong Goal’, *Washington Post*, 14/XII/2008, p. B7).

This is because oil is a ‘fungible’ product, traded in a deep and liquid global market. Replacing foreign oil with domestic oil might redistribute some profits from foreign producers to domestic producers, but it will not reduce consumer vulnerability to volatile world oil prices or to abrupt reductions in the global supply of oil, whatever their causes. Nor would it address what is the major problem, by far, associated with the consumption of oil and other fossil fuels, particularly coal, whatever their geographic origins: the emission of greenhouse gases like carbon dioxide which contribute to global warming and climate change.

For the same reason, most of the perceived threat associated with the possibility that hostile producers might cut off the flow of oil to particular importing countries, like the US, for political motivations, are unfounded. When Hugo Chavez threatens to cut off Venezuelan oil exports to the US, Americans have a tendency not only to lend too much credence to the threat, but also to exaggerate the potential impact, with the resulting distortion of US public opinion and government policy.

If Venezuela (to take that example, but the same would apply to other oil exporters) were to merely divert oil from the US markets to others, like China (as it has threatened to do), the Chinese market would need less oil from other sources, like the Middle East, at any given moment in time, while Middle East producers would simply divert their excess supplies to the US where unmet demand would rapidly take it up. On the other hand, if Venezuela were to cut off its exports to the US (even in a coordinated effort with other producers) and keep them off the world market altogether, not only would Venezuela (and the others) be forced to forego the associated export income, the effect of this cut-off to the market would be to raise oil prices (more in a tight market, less in a flush market) across the world, negatively impacting all consumers and all net-importing economies, and thus blunting the potential for Venezuela to specifically target US consumers. All consumers would be affected, particularly the poor, around the world, and the opportunity cost for the Venezuelan government (and many other oil producers) stemming from large domestic energy price subsidies to their own populations would rise.

All of this leads to some further reflections. First, there is an interesting paradox underlying the way in which the US and Europe frame their respective energy policies and present them to their voting publics. In the US, the major concern motivating changes in energy policy has been the fear that external energy dependence might undermine national security. In Europe, on the other hand, the principal motivating factor behind the attempt to create a vigorous EU energy policy has been the

spectre of fossil fuel-induced climate change. The paradox is that the US actually faces less security threats stemming from its external energy dependence (which is lower than in Europe and heavily concentrated in oil, the very product which is less vulnerable to security threats stemming from political manipulation) than does Europe (where higher external dependency is also significantly concentrated in natural gas imports, most of which come from Russia or Algeria). In Europe, where a potential security threat might actually exist, given the relatively inflexible nature of the continent's large dependency on imported natural gas through rigid pipeline infrastructures from Russia, energy policy has been largely channelled through climate change and other environmental policy (although this is in part also due to the fact that the legal basis for a EU-wide energy policy is weak and underdeveloped).

In the US –which does not rely to a large extent on imported pipeline gas from a potentially hostile neighbour, but which does contribute significantly to global climate change– security concerns trump climate change worries as the major framing and motivational force behind potential changes in energy policy. On the other hand, in Europe, where far greater progress has been made in reducing greenhouse gas emissions, the only way that the European Commission has been able to forge ahead in efforts to try to reduce dependency on fossil fuels has been through the appeal to climate change mitigation, as opposed to energy security or energy independence, even though there is a more sound case in Europe for emphasising energy security and external vulnerability.

Secondly, even if a rhetorical focus is maintained in the US on energy independence and the dangers stemming from foreign oil and gas suppliers, the real policy emphasis should remain, if possible, on reducing the consumption of fossil fuels themselves (foreign or domestic) and reducing US emissions of greenhouse gases. This is particularly true given that the US has the highest per capita emissions of carbon-dioxide in the world and will necessarily have to be the key world leader on climate change policy. Without clear, visible and decisive action on climate change from the US, there will be little prospect that China –the key future actor on the climate change horizon– will commit itself to act in a way consistent with ensuring that global climate change does not become irreversible and existentially threatening.

Finally, placing the energy policy emphasis on achieving energy independence not only clouds the true nature of the challenge, it also risks having energy policy confused with protectionism and a new withdrawal of the US from the global economic integration project. If the US continues to place the emphasis on eliminating or reducing economic income flows to oil and gas producing countries, it also risks sending a message to the world that its interests are not compatible with –or are even hostile towards– those of key oil and gas producing states. In the current geopolitical atmosphere, this would be nearly as bad as pursuing trade protectionism itself, unleashing a perceived zero-sum economic and political competition between major state actors on the international stage. Such an error would imply repeating the mistakes of the Great Depression and the trade wars of that period that led us into World War II.

#### *Special Interests, Ideological Resistance and the Role of Congress*

Special interest resistance (on behalf of the oil and coal industries, for example) to important changes in US energy policy will no doubt continue to exert their influence on policy. Political opposition in Congress will channel any such special interest agenda, even providing its own less-than-coherent ideological resistance to overarching change of the US energy economy, independent of particular special-interest pleading. Republicans in Congress and beyond will almost certainly try to paint any meaningful energy and climate policy changes as dangerously hostile to business interests, economic growth and national competitiveness, regardless of longer-term interests and a big-picture analysis.

Any wholesale change in US energy policy will also doubtlessly provoke significant income and wealth redistribution, along class, regional and international lines, which surely will generate widespread resistance to any ambitious energy and climate change policies. The jockeying for access to stimulus package money, both within and beyond the energy industry, will also provide the new Administration with more than a few headaches and a number of dilemmas to resolve. Given the perceived need to design the stimulus package in a way that maximises its own possibilities for reinvigorating the economy as quickly as possible, it is possible that much energy spending on R&D and renewable energy investment will be left by the wayside, although one could not be completely sure of this at this point.

Whatever form it finally takes, the bulk of Obama's energy plan is likely to be considered in the House Energy and Commerce Committee and the Senate Energy and Natural Resources Committee. The renewable energy tax incentives will be considered by the House Ways and Means committee and the Senate Finance Committee. The House Natural Resources Committee will also have some input with respect to energy development on federal lands.

A Senate cap-and-trade bill was withdrawn last summer before a final vote, after most Republicans and some Democrats, particularly from Midwest and Southern states that still rely heavily on coal, objected to its perceived impact on growth and energy costs. The EIA estimated that the bill would reduce GDP by 0.2% to 0.6% by 2030, and could raise electricity prices by 11% to 64%, and petrol prices by 22 to 49 cents per gallon.

Two House Democrats –the then Energy and Commerce Committee Chairman John Dingell (D-Mich) and Rick Boucher (D-VA)– then released a discussion draft of a new cap-and-trade bill that proposed less aggressive short-term cuts in emissions than last summer's Senate bill –a 6% reduction from 2005 levels by 2020– but with deeper cuts in later years to reach an 80% reduction by 2050.

Soon after Obama's electoral victory, Congressman Henry Waxman (D-CA) replaced John Dingell (D-MI) as the Chairman of the House Energy and Commerce Committee. Waxman has long been a strong advocate for both stricter automobile fuel efficiency standards and more rigorous climate-change legislation. He has often battled over these issues with the former House Energy and Commerce Committee Chairman, John Dingell, who typically has been viewed as defending the interests of the automobile industry in his home state of Michigan. Waxman's victory over Dingell in the House vote to determine the Committee Chairmanship has been interpreted as a victory for the Obama energy circles, signalling a greater likelihood that Congress will accommodate more bold Obama energy and climate change proposals.

Meanwhile, in the Senate Jeff Bingaman (D-NM) will continue to chair the Energy and Natural Resources Committee. Chairman Bingaman has made it clear that he hopes to work in the new Congress on bipartisan energy legislation, as he has put it recently, with the goal of 'rescuing energy from partisanship'.

With the Democratic majorities in both Houses increasing significantly in the November elections (+7 or +8 in the Senate and +21 in the House), the window of opportunity for Obama –opened up by the current economic crisis and his ample political capital– to successfully propose aggressive energy and climate change legislation, has only widened further. Nevertheless, Republicans still hold just enough seats to frustrate the Obama Administration's legislative agenda, should they choose to do so. Recently, the Senate Minority Leader, Mitch McConnell (R-Ky) has expressed scepticism about the cost, scope and timetable of the proposed stimulus plan, while centrists in the Senate are signalling that the ambitious climate change legislation the Administration desires will not have enough votes to pass. Adding to the uncertainty surrounding both the stimulus package and Obama's energy policy ambitions, conservative Democrats (a grouping of 47 fiscally-

conservative House Democrats known as the Blue Dog coalition) want to put budget balancing mechanisms into the statutory wording of any stimulus package legislation, including ‘pay-as-you-go rules’ (although possibly with a clause to allow for emergency exceptions, which could easily apply to the current scenario).

Senator Bingaman might wish to pursue bipartisan energy legislation, and the new President may wish to end the recent partisan stalemates, but it will not be easy. The previous Congresses of the last 15 years have all been marked by extreme partisanship. Because most of the current members of the House and Senate were first elected during this period, the paralysing atmosphere of partisan feuding –which has reduced Congress’s output to a bare minimum of essential measures– is the only legislative atmosphere that they know. Party-line voting peaked during the Bush Administration, while legislative output dropped off sharply. In 2008, the Senate voted the lowest number of times since 1951.

If the new President Obama is to have any chance of achieving a stimulus package that is large enough to minimise the current recession and includes enough investment spending on energy and other long term structural vulnerabilities, to say nothing of having success in passing other independent energy and climate change packages later on, he will certainly need to employ a new, more pragmatic and inclusive governing style than any President in recent memory has been known to master.

## Conclusions

What does seem clear, however, is that meeting Obama’s energy and climate change targets would imply an enormous transformation of the US energy economy, unlike anything ever before experienced. The intensity of the effort involved to effect a shift from fossil fuels (which currently account for upwards of 80% of the US primary energy mix) to other cleaner alternatives would almost certainly require not only steadfast commitment from the US government but also various forms of economic intervention (to overcome the economic path dependency which fossil fuels have established) over an extended period of time. According to the International Energy Agency (IEA), fossil fuels will maintain their relative share of the world’s energy mix all the way to 2030 under a ‘business as usual scenario’. Even the IEA alternative policy scenario (in which all currently conceived alternative energy projects and policies are implemented) foresees only a minor alteration in the world energy mix’s contribution coming from fossil fuels.

The conclusion that can be drawn from this is that only a significant change in energy policy sustained as a top priority from the government over decades would be capable of achieving the kind of energy economy transformation consistent with achieving Obama’s targets. Whether or not his Administration will be capable of sparking and sustaining such a revolution is not yet clear, and the historical record would not offer much solace. However, the historical record does reveal that there has never been an Administration in waiting more committed to this goal than that of President-elect Barack Obama. Never before, too, has public opinion signalled such a strong willingness to back the President and his government on such a transformative energy and environmental agenda.

The stakes, and the hopes, are high. But the US can scarcely afford to try to protect itself from the disappointment that would come from having those hopes dashed.

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