



The cuts won't work

Why spending on a Green New Deal will reduce the public debt, cut carbon emissions, increase energy security and reduce fuel poverty

The second report of the Green New Deal Group

This report is the second publication of the Green New Deal Group.



Meeting since early 2007, its membership is drawn to reflect a wide range of expertise relating to the current financial, energy and environmental crises. The views and recommendations of the report are those of the group writing in their individual capacities. The report is published on behalf of the Green New Deal Group by **nef** (the new economics foundation).

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The opportunity for action is even more pressing than it was when President Franklin Roosevelt instigated his bold New Deal programme that touched almost every aspect of economy and society. The timescale is limited by the urgent need to stabilise concentrations of greenhouse gases in the atmosphere before the risk of uncontrollable global warming increases significantly. Today, there is a plan on the table that could revitalise our damaged economy and radically restructure it for a low carbon future. Now the vision is needed to implement it before it is too late.

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Executive summary

The stock market has risen by 50 per cent. House prices are up. City bonuses are back. With the prospect of growth in the economy for the first time in 18 months, there is a palpable sense of relief that the world can return to business as usual. The new mood of optimism is both misguided and premature. Central bankers and finance ministers have spent trillions of pounds, dollars, euro, yen and renminbis keeping the global economy alive, but the underlying problems – an unbalanced global economy and inadequately controlled financial markets – remain untackled.

There are three reasons for concern. The first is that the recovery will stall once the artificial stimulus from low interest rates, quantitative easing and record levels of borrowing is withdrawn. A glance at the history books shows that Roosevelt wrongly believed in 1936 that the US economy was strong enough to withstand cuts in public spending, and plunged America back into recession in 1937 as a consequence.

The second problem is that the first glimmers of recovery lead to a sharp increase in commodity prices – especially oil and industrial metals – and these in turn sow the seeds of the next downturn. Oil prices have doubled since the start of 2009 amid growing evidence that supplies of crude cannot keep up with demand. In the first Green New Deal report, we warned that the financial collapse was part of a triple crisis that had to be addressed.¹ Peak oil and climate change were the other two legs of the stool; neither has been addressed.

Finally, there is the danger of complacency. The notion that the most acute financial crisis since the Great Depression is now a thing of the past sounds unerringly like the politicians who, in August 1914, promised that the Great War would be all over by Christmas. Instead, it was the start of a 30-year crisis that embraced two world wars, an economic slump unrivalled since the dawn of the industrial age, and the rise of brutal totalitarian governments.

Just as in 1914, the global balance of power is changing, with China threatening America's hegemony in the way that America and Germany rivalled Britain a century ago. Just as in 1914, an established economic order has been uprooted. Then it was the Gold Standard, free trade and unrestricted capital flows. Today it is the dollar, free trade and unrestricted capital flows.

Add in the new ingredients – the battle for control over resources and global warming – and everything is in place for a prolonged period of upheaval. There will be periods, similar to that in the middle to late 1920s, when the global economy goes through a benign patch, but the respite will be brief. Even feeble economies show occasional signs of health if they are provided with enough support. But make no mistake: what we have now is a zombie economy that inhabits a netherworld between life and death.

Yet the past also provides potential ways out. The so called 'golden age' of 1945 to the late 1970s showed that damaged economies could be rebuilt if policies were enacted with the clear end goal in sight i.e., ensuring that the

financial sector was regulated to finance the rebuilding of the economy, improving social conditions and the maintenance of full employment. The Green New Deal programme is an updated version of this, tackling as it does the triple crunch of the economic crisis, climate change and the need for decarbonised energy security.

This means that cutting spending now will make the recession worse by increasing unemployment, reducing the tax received, and limiting government funding available to kick-start a Green New Deal while there is still time. In fact, as we set out in this report, now is the time for spending, not cutting.

As unemployment rose in the 1980's the Thatcher government was able to offset cuts in public expenditure with rising revenues from North Sea Oil and Gas.(see Appendix 3) Now the opposite is true. As North Sea oil and gas supplies decline, present and future governments will experience declining revenues. That is why it is critically important that we manage the downturn now to prepare for the future.

This report proposes that the government extends quantitative easing by £50 billion in the short term to finance expenditure under the Green New Deal. In this way, quantitative easing could be used to increase long-term, sustainable economic activity and with it a huge growth in jobs.

To illustrate the potential, new calculations produced for this report reveal that:

- A sample investment of £10 billion in green quantitative easing invested in onshore wind could increase wind's contribution to total electricity supply from its current 1.9 per cent² to 10 per cent (39 TWhe)³ and create over 36,000 jobs in installation and direct and indirect manufacturing. This is a total of 180,000 job-years of employment, here we have described each 'job' as providing stable employment for an average of five years;
- This investment would also create a further 4,800 jobs in the operations and maintenance and other direct employment⁴ related to the installed capacity over the 20 year lifetime of the installation (equivalent to 96,000 job years) If this directly replaced energy from conventional sources, it could reduce emissions from the power sector by up to 16 Mt CO₂e each year;⁵
- £10 billion in green quantitative easing could create 60,000 jobs in the energy efficiency sector (or 300,000 job-years of employment), reducing emissions by a further 3.96Mt CO₂ each year. This could also create public savings of £4.5 billion over five years in reduced benefits and increased tax intake alone;
- An investment of £10 billion could re-skill 1.5 million people, bringing 120,000 people back into the workforce, and increasing the earnings of those with a low income by a total of £15.4 billion.

This is not the only use green quantitative easing could be put to. We also argue that green quantitative easing could be used to finance a new green infrastructure bank.

Once spending on the green economy of the future has breathed life back into the deflated economy, the Green New Deal will require a whole new savings and investment infrastructure to meet the long-term investment needed to underpin the Green New Deal and to meet the needs of a new generation of investors who are fed up with all that has gone before. We have also suggested a range of new measures to help public borrowing and encourage public investment by individuals, local authorities and companies in greening and reviving the economy. The foundations for these must be laid now. These include:

- **Green bonds**, which will be issued by the government with the explicit guarantee that the funds raised will be invested in new green infrastructure for the UK. The bonds will carry conventional rates of return for bonds.
- **Local authority bonds**, to invest in energy efficiency and provide renewable energy for each of the country's three million council tenants, as well as for all other local-authority-owned or -controlled buildings, such as town halls, schools, hospitals and transport infrastructure.

- **Tax incentives on green savings and investment**, so that future ISA (Individual Savings Account) tax relief – costing more than £2 billion a year – is only available for funds invested in green savings (tax relief for ISAs was more than the whole green stimulus package announced in the 2009 Budget, estimated to be worth just £1.4 billion).
- **A general tax-avoidance provision** to end the abuse of tax allowances. If just half of the tax avoidance in the UK was stopped by this provision, it would raise more than £10 billion a year.
- **A Financial Transaction Tax**, commonly known as a “Tobin Tax”. Such a tax, applied internationally at a rate of about 0.05 per cent has the potential to raise more than £400 billion a year.⁶ This could be the basis for a Green New Deal in the Global South, playing a significant role in enabling the majority world to adapt to climate change as well as breaking the carbon chains of fossil fuel dependence.
- **Green New Deal Investment Bank**, a publicly owned bank to hold and disburse capital provided by ‘green quantitative easing’. It will be used exclusively to fund companies and projects designed to accelerate the transition towards a low carbon economy.
- **Carbon linked bonds**, to align investment returns with carbon saving and create a significant body of investors who will take the risk on there being carbon savings that can be secured.
- **Treasury Deposit Receipts**, like those issued during the Second World War, a mechanism whereby banks were forced to use their ability to create credit to lend to government.

Despite the appearance of calm, the need for the implementation of the proposals set out in the Green New Deal reports is greater than ever.

When we launched the first report, new analysis suggested that from the end of July 2008 there were only 100 months, or less, to stabilise concentrations of greenhouse gases in the atmosphere before we hit a potential point of no return. The climate clock is still ticking and nothing like the scale of reform needed to rapidly re-engineer the economy has been implemented, anywhere.

The Green New Deal outlined in this report is not a return to business as usual. Far from it. It is an interlinked package that recognises the need for targeted public spending in a downturn. Not to further fuel an economy hard-wired into ever increasing use of fossil fuels, but to reinvigorate the productive economy and lay the foundations of the low-carbon infrastructure of the future.

Foreword

The era of procrastination, of half measures, of soothing and baffling expedients, of delays, is coming to its close. In its place, we are entering a period of consequences.

Winston Churchill, 12 November 1936

Back in July 2008, before the collapse of Lehmann Brothers, a small group of experts in finance, energy and the environment published a report called *The Green New Deal*.⁷ We outlined policies to finance investments that would tackle the 'triple crunch', which we described as economic failure, climate change and peak oil.

The phrase we used – the Green New Deal – spread rapidly around the world. Governments the world over have announced 'green' stimulus packages. But so far, no government anywhere in the world has re-engineered its economy on the scale we need to tackle the problems. We believe the current financial crisis still presents a unique opportunity to re-engineer the economy. There is still time, if we choose to act.

The trouble is that the opportunity for action is even more pressing than it was when President Franklin Roosevelt instigated his bold New Deal programme that touched almost every aspect of economy and society. The timescale is limited by the urgent need to stabilise concentrations of greenhouse gases in the atmosphere before the risk of uncontrollable global warming increases significantly.⁸

Now, when we can least afford it, there is a new threat to achieving these goals – the growing clamour to cut government indebtedness. Our second report, *The cuts won't work: why spending on a Green New Deal will reduce the public debt, cut carbon emissions, increase energy security and reduce fuel poverty*, rebuts this approach.

Cutting spending now will make the recession worse by increasing unemployment, reducing the tax received, and limiting government funding available to kick-start a Green New Deal while there is still time.

Our report also details how a programme of green quantitative easing, rather than simply propping up failing banks, could begin the process of transforming the UK economy. We also show how private savings can be another major source of finance to decarbonise our economy. There is still time, and our analysis still stands. The question is: will our governments choose to implement a 'real' Green New Deal?

The Green New Deal Group, December 2009

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Section 1: Introduction

To paraphrase a great wartime leader, never in the field of financial endeavour has so much money been owed by so few to so many. And, one might add, so far with little real reform.

Mervyn King, Governor of the Bank of England, 20 October 2009

Practical men, who believe themselves to be quite exempt from any intellectual influences, are usually the slaves of some defunct economist.

John Maynard Keynes, 1936

The credit crunch

Last year's massive bail-out of the banks has had consequences for the economy, and this year we appear to be on the edge of a new Age of Austerity.

The Green New Deal report in 2008 predicted rising unemployment, and it is certainly rising across the world, as a direct result of the banking crisis.⁹ This report asserts that society *can* afford to spend and invest in a Green New Deal. It will demonstrate that society, and the ecosystem, can hardly afford *not* to.

The financial crisis has blasted a crater out the global economy, of collapsed private sector output and trade, rising unemployment and homelessness. There has been repeated talk of 'green shoots' since March 2009, but these are merely the consequences of government intervention which have served to keep the patient inflated, but have not addressed the root causes of the problems. They show that intervention can succeed, but it has been gravely inadequate and poorly targeted.

The purpose of the original report, *The Green New Deal*, was to argue that government spending should be targeted at the environmental transformation of the UK economy and investment in our long-term future. We do not promote the debt-laden levels of private consumption common before the credit crunch, but we challenge the apparent political consensus that the gravest crisis facing the world is the scale of government debt. Instead, *The cuts won't work*, tackles misguided economic theories that are driving the demand for cuts in government spending. It also makes the case that, given the interlinked nature of the crises we face, it matters not just that government spends, but that a significant proportion of government investment is used to kick-start the low carbon infrastructure and skills needed to meet the challenges of climate change and peak oil.

We repeat our call that the finance sector should act as servant to the economies in which it operates. We need a system of domestically determined, localised and sustainable economic activity.

In the following pages, we outline the Green New Deal and explain why only spending now on the Green New Deal can reduce the public debt, insulate us against the worst impacts of the current recession and lay the foundations for the post-carbon economy of the future.

The course of action outlined in our report represents a set of linked policies for mobilising the funds we need to de-carbonise and localise the economy and to help society mitigate climate change before we reach a point of no return. They remain essential to both the recovery of the economy and to preventing irreversible climate change.

The climate crunch

Despite international focus on the need to reduce emissions of carbon dioxide if the world is to avoid irreversible climate change, there has been no sign that their growth has been slowing down. Research published in late 2009 by the Global Carbon Project – an international collaboration between leading climate research institutions shows that CO₂ emissions grew by an average of 3.4 per cent each year between 2000 and 2008, compared to an average of one per cent during the 1990s.¹⁰

The global recession has offered, at best, some short-term relief in this long-term growth trend.¹¹ One study broke down the emissions growth rate between 2000 and 2006 (an average of 3.3 per cent) into three key drivers.¹² Their results suggested that the surge in emissions growth is primarily due to increases in economic activity. While the growth rate of CO₂ emissions includes carbon-cycle feedbacks (the decrease in the effectiveness of the land and ocean to remove human driven CO₂), over half of all emissions growth is due to an increase in economic activity.

This means that each time governments congratulate themselves for achieving record levels of economic growth, carbon levels in the atmosphere heave upwards. In other words, taking the economy back to business-as-usual will speed up the level of greenhouse gases in the atmosphere, unless we change the way we fuel the economy and how we measure progress.

All this means that the UK needs to rapidly decarbonise the energy supply if any long-term and meaningful reductions are to be achieved.¹³

The oil crunch

The first Green New Deal report warned of a 'triple crunch' facing the global economy, consisting of a credit fuelled financial crisis, accelerating climate change and rising energy prices underpinned by an encroaching peak in oil production. The financial crisis is clear and present, and the climate crisis is accepted by a huge majority, but there is still much debate about peak-oil. The core of the disagreement is the point at which the world pumps as much oil in a day as it is ever going to pump. Beyond the peak, or plateau perhaps, lies a descent that will pose huge challenges for oil-dependent economies.

There is a grave danger that this will happen much earlier than widely expected, even within decades. In the words of the UK Industry Taskforce on Peak Oil and Energy Security (ITPOES), in a report published a few months after the Green New Deal report: "*The risks to UK society from peak oil are far greater than those that tend to occupy the government's risk-thinking, including terrorism.*"¹⁴ ITPOES fears this is because of over-estimation of reserves by the global oil industry, underinvestment in exploration and production, or a combination of the two. Whatever the cause, once the descent begins, the realisation would sweep the world that another leading industry has its asset assessment systemically wrong. The danger is that producing nations then start cutting exports. At that point, for some oil-consuming nations, energy crisis becomes energy famine. In total contrast, a well known oil-industry consultancy has recently produced a report saying that global oil supply can grow to 115 million barrels a day in 2030, up from around 85 today.¹⁵ Beyond that point, the report claims, production will stay on an undulating plateau through 2050.

There is one main similarity between the next oil crisis, which will be peak-oil driven and the financial crisis, and one main difference. These two things tell us a lot about the role of culture in precisely how our modern version of capitalism plays out. The similarity is that two massive global industries – investment banking and oil – have their asset assessment systemically, and ruinously, wrong. The difference is that few people or organisations were warning about the credit crunch as it approached. A host of people – many of them in and around the oil industry – are shouting a warning about the oil crunch, and so too are a good few organisations. In the case of the International Energy Agency, it is as though the World Bank were warning about the credit crunch a few years before it hit. They are not alone. Concerned companies now span British industry.

In November 2008 a UK Industry Taskforce on Peak Oil and Energy Security chaired by Virgin, with members including Scottish and Southern Energy, Arup, Stagecoach, Foster and Partners and Solarcentury, released its first report at the London Stock Exchange. The report concluded that peak oil poses a grave risk to the global economy, with the most likely year for peak being 2013.

The subsequent recession, and temporary decrease in global oil demand, may have bought us a little time, but has deepened the crisis that is to come. The central problem is that underinvestment by the oil industry today will play out as a tighter crunch in the middle of the next decade. It takes an average of six and a half years from finding an oilfield to bringing it onstream as useful capacity, and in the case of the rare finds of giant fields, often more than ten years.

Why haven't more people in government, and the oil industry itself, seen what is coming? Why aren't they acting proactively to soften the blow? The same questions can be asked, with hindsight, of the people who gave us the credit crunch. Gillian Tett of the Financial Times, a trained anthropologist, describes in *Fool's Gold* how the banking elite achieved "ideological domination" ahead of the financial crash. Elites do this to maintain their power, she explains. Effectively, they decide what is talked about and what is not. Hence there was a major "social silence" around the epidemic growth of derivatives.

In the 2008 International Energy Agency (IEA) World Energy Outlook, the IEA conducted an oilfield-by-oilfield study of the world's existing oil reserves for the first time. (One might reasonably ask why they had not done so before.) The average depletion rate of 580 of the world's largest fields, all past their peak of production, is 6.7 per cent a year. Without investment in enhanced oil recovery (the various techniques petroleum engineers have of boosting recovery factors in their oilfields), the figure is 9 per cent. In a key chart in the IEA's report, crude production begins a steep descent in 2009, falling steadily from about 70 million barrels a day to below 30 by 2030. The depletion factor might better be called a fast-emptying factor.

This is doubly alarming because, even with demand for oil falling in the west as recession bites, the IEA expects the rate of demand growth – led by China and India – to be so high that the world will need to be producing at least 103 million barrels a day (of crude plus unconventional and other sources of oil) by 2030. The recession means this estimate will probably need downward revision, but not by much. To reach this level of production would require adding 64 million barrels a day of totally new production capacity within 22 years. That, the IEA points out, is six times the production of Saudi Arabia today.

The oil industry is not discovering giant oil fields at anything like the rate it did in the 1960s – the peak decade for discoveries – even with recent successes. This is the case even with much better equipment for exploration today, and even after four years of rising oil prices from 2004 into 2008, when the high oil price meant exploration was not hampered by lack of funds for investment. When the oil companies do make big discoveries, the lead times from discovery to first new oil delivered to market are long: often more than 10 years. The biggest discovery this century, the Kashgan field found in 2000 in the Caspian Sea, was expected at the time to produce its first oil by 2005. Today, after endless delays, it is not due to come on-stream until 2013.

Meeting anything approaching 100 million barrels a day, even if desirable from a climate perspective, which it isn't, could only be achieved if massive investment was thrown at the challenge of making up the shortfall, especially by the OPEC nations. The IEA and others have warned regularly in the last two years that investment levels fall far short of those required. As a consequence, the IEA sees the potential for a global oil-supply crunch within just five years, and ITPOES agreed in its 2008 report. The crunch could happen by 2014 if global growth returns to 5 per cent a year, IEA executive director Nobuo Tanaka said recently.

How many people are really watching the detail in the peak oil debate, though, is an open question. Collectively, we prefer to believe BP and others when they assure us that the oil can keep pumping at growing levels for decades. Of course, we also preferred to believe the investment banks' assurances that complex derivatives

really were a source of wealth worth having. Those of us who worry about peak oil fear that the payback for our faith is likely to be the same in each case.

Sequencing the Green New Deal

As the range of proposals set out in this report demonstrates, there are many green and equitable solutions to our current financial and economic crises: so many solutions in fact that we think it important to suggest a sequence in which they are used. This sequence is vital because we need find both short-term and long-term finance mechanisms to tackle the public deficit, insulate against the worst impacts of the downturn whilst also underpinning the low carbon transformation of UK infrastructure. We suggest this phased approach:

- 1 First, now the wrong time for cuts in government spending. Cuts now would increase unemployment, lower government revenues and increase spending on benefits. An increase in unemployment would reduce the amount of money circulating in the economy and in so doing increase the vulnerability of the economy;
- 2 Now is the time for green quantitative easing. A programme of green spending that kick-starts the shift to green energy will produce countless new jobs, and keep money circulating in the economy where it is needed most, when it is needed most. This is a programme that can be put into action even as the programme of quantitative easing for the banks is wound down;
- 3 Next, planning must begin now for all of the new forms of bond finance described in this report to ensure long-term stable funding for the long-term transformation of infrastructure. This will begin with energy, but must also extend to transport, agriculture, and resource-use, and to finance investment as the green quantitative easing is reduced, as employment is restored.
- 4 Those who are raising concerns about the level of public debt and its effect on future sales of UK government bonds have tended so far to support extra quantitative easing. The present operation of quantitative easing has not led to a collapse in sterling or of national credit. Yet the approach has at best staved off collapse. Green quantitative easing and the other measures in this report promise a far more substantial economic recovery by directly stimulating productive activity. It is only through recovery that the national credit and underlying strength of sterling can be restored. With this process underway, the worries about adequate investors in the UK government bond market, whose major concern is the strength of the economy, will be allayed.
- 5 Throughout this period the programme of tax reform has to take place. Much of it is aimed at tackling existing abuses and redistributing the burdens of taxation within the current tax system. To the extent that this is the case there is a net social benefit from undertaking these actions. And since many will take time to implement, the time for action to begin on them all is now.

Section 2: Spending away debt

Look after the unemployment, and the budget will look after itself.

John Maynard Keynes, January 1933

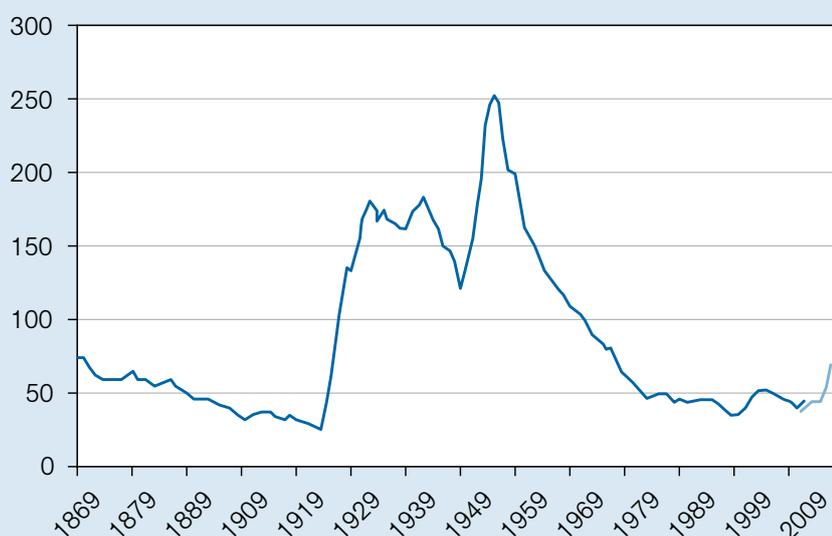
There are several reasons for believing that full employment will be easier to attain in a SSE [steady state economy] than in our failing growth economies... the policy of limiting the matter-energy throughput would raise the price of energy and resources relative to the price of labour. This would lead to the substitution of labor for energy in production processes and consumption patterns, thus reversing the historical trend of replacing labour with machines and inanimate energy, whose relative prices have been declining.

Herman Daly, 1973

The public has woken up to the terrifying scale of private indebtedness. (see Box 2). Encouraged by the commentators in the media, the same fears are now directed at the public debt. These fears are effectively deployed against any initiatives based on public expenditure.

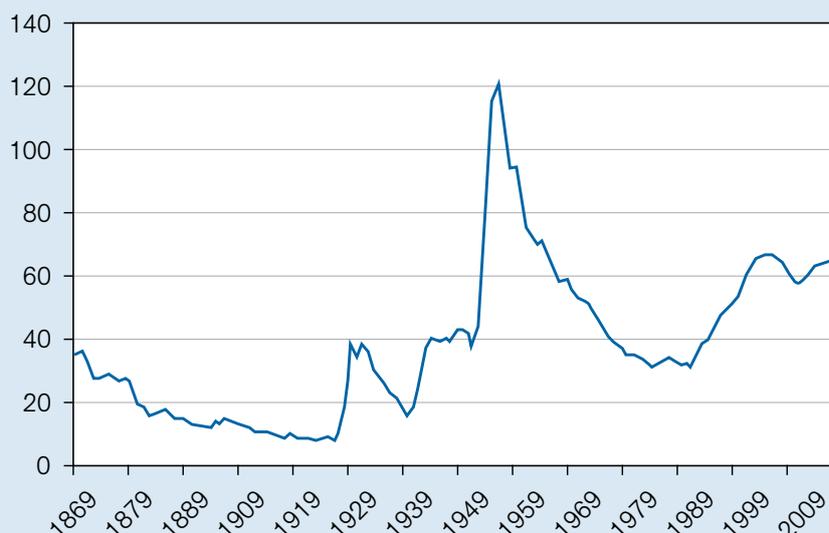
In reality, these fears betray how much they misunderstand our predicament and the limited thinking of those responsible for dealing with it. We will show here that the public debt is an outcome of policy, not a constraint on policy. At present total public debt is growing fast. As we all now understand, the British economy has been reliant to a foolish extent on the financial sector. Our tax revenues have fallen with the collapse of finance and the growth of unemployment. Our public liabilities have increased because of the bank bail-out, which has caused most of the rise in the Government's debt.

Figure 1. UK public sector debt as a percentage of GDP.



Source: HMT Public Finances Database, table A10; Darker line: UK Maastricht Deficit and Debt Statistical Bulletin and Budget 2009

Figure 2. US public sector debt as a percentage of GDP.



Source: US Bureau of the Public Debt and author calculations <http://www.treasurydirect.gov/govt/reports/pd/histdebt/histdebt.htm>

In 2008/2009, national debt was 52.4 per cent of GDP. Without the financial sector interventions, it was 42.9 per cent of GDP. The increase in debt from 2006/2007 excluding interventions was about £100 billion, or about £250 billion including the financial interventions. The public debt is growing, but, as we will show, this is no barrier to action. Instead, as we will show, an active programme of productive investment is the only way to reduce the public debt.

As Figures 1 and 2 demonstrate, in the latter part of the nineteenth century both the UK and the USA began with debt on similar downward trajectories. But the financial impact of the First World War differed vastly. The US debt increased only to 40 per cent and then improved as the economy entered the great expansion that came before the Great Depression. In the UK, debt rose massively. A good part of the rise actually happened after the war had finished, as recession took hold and the government implemented deliberate austerity measures (the so called 'Geddes Axe'). There were only very modest reductions in debt over the late 1920s.

Box 1: The Geddes Axes

Sir Eric Geddes had been Director-General of Munitions and Railways in World War I, and Minister of Transport (1919–1921). In 1921, David Lloyd George asked him to take the chair of a committee which would suggest reductions in public expenditure. The report of the Geddes Committee, dubbed the 'Geddes Axe', recommended savings of £86 million. The Axe effectively scrapped plans for education reforms, and abandoned proposed compulsory education after the age of 14 in schools. It also ended planned housing reforms.

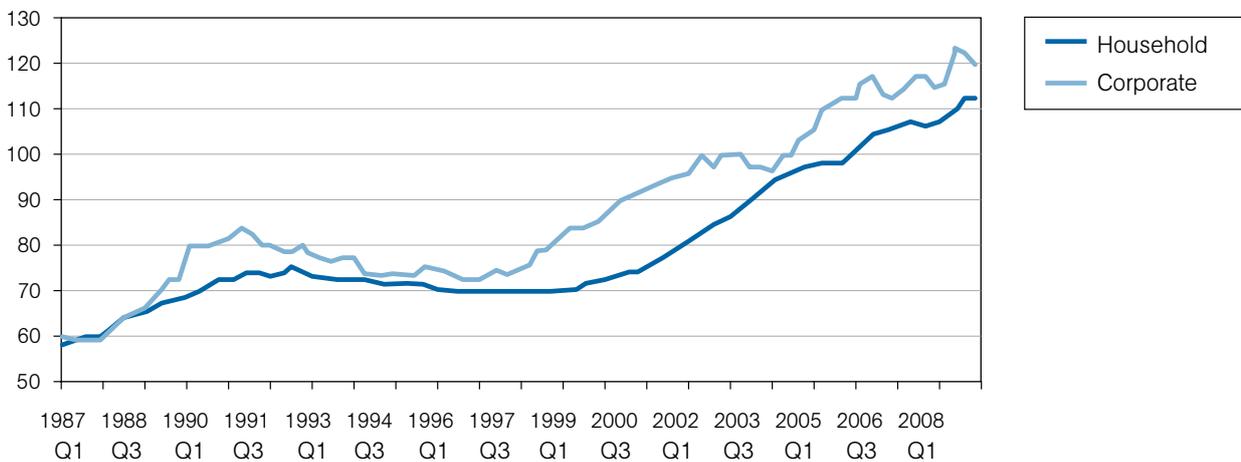
It abolished a wide range of government posts and some departments, such as transport, plus reductions in salaries for police, teachers, and others. The report provoked an outcry and some recommendations were rejected, so that the eventual reduction in the 1922 budget was £64 million. Education had initially been marked for savings of £18 million – the final figure was around £6 million, but it still suffered, especially through the cutting of continuation schools. In fact, the Axe was aimed mainly at the armed services, which Geddes had successfully portrayed as profligate spenders.

These cuts were on top of the initial cuts in public expenditure that moved the economy from a war to normal footing (current expenditure was cut back from £1.8 billion in 1918 to £0.5 billion in 1920). The Geddes Axe led to government final expenditure (including investment) falling from £648 million in 1921 to £483 million in 1923. GDP collapsed, and in 1924 earlier improvements in unemployment were arrested. The cash level of public debt was virtually unchanged. As a share of GDP it rose from 150 to 180 per cent.

Box 2: The global deflation of private debt

The world economy is in a debt-deflationary spiral. Over the past twenty years, businesses and households have seen indebtedness steadily rise probably to a more severe extent than in the 1930s, when US economist Irving Fisher coined the phrase.¹⁶

Figure 3: UK Debt as a share of GDP



Source: UK Economic Accounts tables A57 and A64; corporate debt is shorthand for non-equity liabilities of private non-financial corporations

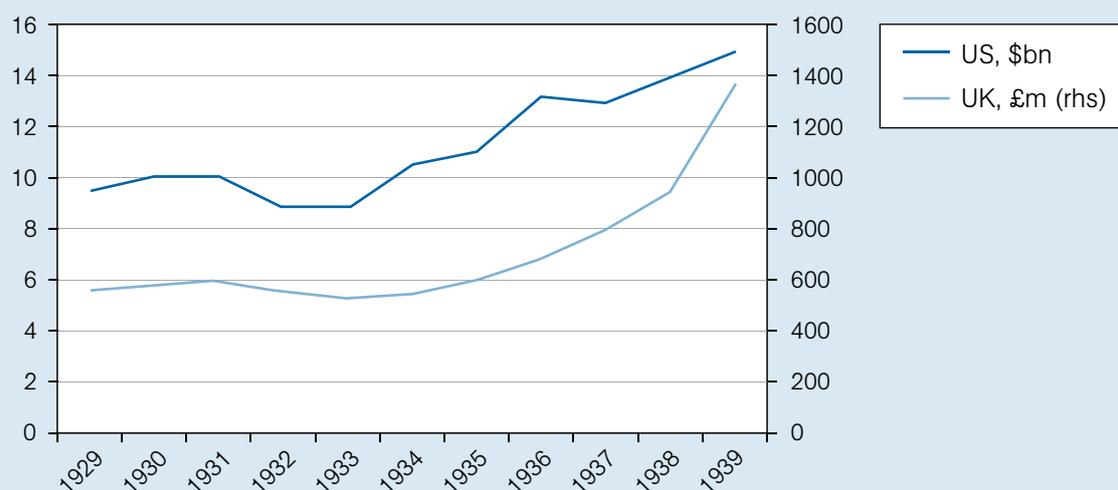
After the corporate excesses of the late 1990s, collapse was averted by the deliberate fostering of household and wider speculative excess in commercial and residential property, and by the rapid expansion of complex financial instruments. As Figure 3 indicates both corporate and household debt doubled as a share of income (GDP) in the twenty-year period from 1987 – 2008. *The Green New Deal: Joined-up policies to solve the triple crunch of the credit crisis, climate change and high oil prices*, explained why this could not have gone on forever.

The 'credit crunch' signified the moment this debt creation or debt inflation stopped, when the severity of the situation dawned. Businesses had no choice but to cut intermediate inputs, scrap investment plans, reduce wages, make redundancies and at worse go bankrupt. Households had to confront the reality of their debts, especially as house prices collapsed and jobs were lost. Employment across the world has collapsed. This is the price of debt deflation, as liabilities are met or written off through cutting jobs. In *The debt-deflation theory of great depressions*, Fisher warned of a vicious cycle. As a result of rising unemployment, fears of unemployment and awakening to the reality of debt, household incomes and spending power are drastically reduced, which in turn affects the demand for the goods and services produced by businesses, further adding to the pressure on the corporate sector.

Policymakers have been running to catch up ever since the 'credit crunch' hit. Central banks were astonishingly slow to cut discount rates, and resisted more radical measures for too long. With the inevitable failure of discount rate cuts to stem rises in interest rates in the market, the need for quantitative easing was accepted. There was less reticence about the government directing taxpayer support to the financial sector.

Celebrations of 'green shoots' become more muted as each week goes by, but policymakers have nothing else to offer. They are rabbits frozen in the glare of the headlights of the debt deflation that they scarcely recognize. Certainly interest rate cuts are absolutely vital for recovery, but the most basic and simple lesson of the great depression was that cuts in interest were far less effective in a recession than rises in interest rates in a boom. Massive transfers of funds from the taxpayer to the finance sector have supported the financial sector's assets on a temporary basis only. As the additional transfers to Lloyds and RBS have shown, they do nothing to permanently improve the underlying strength of the economy. By contrast this is exactly what the Green New Deal programme with its emphasis on productive activity can achieve.

Figure 4. Government expenditure at current prices.



Source: C. H. Feinstein (1972), *National Income, Expenditure and Output of the UK 1855-1965*, Cambridge, CUP, tables 2 and 39; Bureau of Economic Analysis

The Great Depression set public debt in both the USA and the UK back on an increasing path. But then, rises in debt were halted by expansionary monetary and fiscal policy (government spending and taxation). When public spending rose, especially in the UK, debt began to fall.

Franklin Delano Roosevelt's New Deal began in 1933. There is much discussion about how big this was, but there should be no doubt that it constituted government intervention on an unprecedented scale, and was a political achievement of the highest order. Peter Fearon, a historian of the Great Depression, illustrates some of the expenditures of the Works Progress Administration:

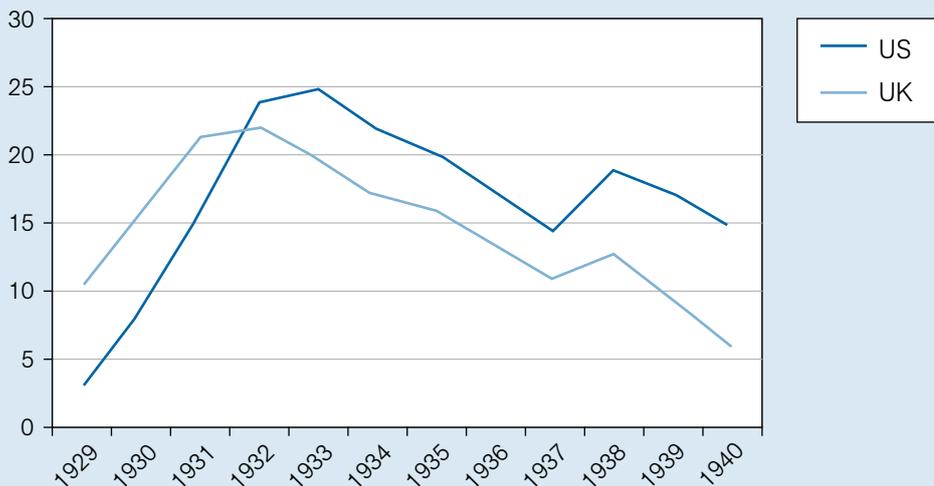
- 644,000 miles of roads
- 122,760 bridges
- 38,800 schools
- 2,300,000 public toilets
- 8,000 swimming pools

He estimates that \$21.1 billion was spent on public relief and federal works programmes between January 1933 and December 1940. This is equivalent to 3 per cent of total GDP over the same period. In today's prices this would be \$420 billion a year in the USA and £42 billion in the UK.

In the UK, debt peaked in 1933. This improvement coincided with a great relaxation in monetary policy (interest rates and money supply), as the UK had come off the gold standard and tried to carve out some space for independent action from the dictates of international finance, by using capital controls. But, although it did so on a smaller scale than the USA, Britain had also begun to increase public expenditure.

In both countries, policy-makers confronted with the Depression began with austerity measures. As Figure 4 shows, government expenditure was held low or reduced until 1933. Such cuts inhibited recovery and failed to reverse the deterioration in the public finances. Then, from 1933 in the USA and from 1934 in the UK, governments began to spend.

Figure 5. Unemployment rates, %.



Source: C. H. Feinstein (1972), *National Income, Expenditure and Output of the UK 1855-1965*, Cambridge, CUP; US Bureau of the Census (1976) *The Statistical History of the United States from Colonial Times to the Present*, New York: Basic Books Inc.

In Britain, these increases grew steadily from year to year. They surged ahead in 1939 as the government realised that war was inevitable. In the USA, expenditure was more erratic, but showed significant increases. In both countries, unemployment began to fall (See Figure 5). But then, in 1937, in spite of the success of the New Deal, Roosevelt cut spending.

Roosevelt has received a good deal of criticism for his role in creating the recession that followed, which some call the 'Roosevelt recession'. Donald Winch outlines eventual spending cuts following pressure from decisions taken by other people. In the 1936 election, Roosevelt promised only 'to balance the budget in the near future'. But once the election was won, Congress voted a bonus to soldiers over Roosevelt's veto. 'At much the same time the government was deprived of anticipated receipts from a processing tax which was ruled to be unconstitutional by the Supreme Court,' writes Winch. These manoeuvres led to pressure on other programmes, and forced cuts in New Deal spending.

The Federal Reserve tightened monetary policy at the same time. It was inevitable that the Depression should return.

At the end of 1937, the New York Stock Exchange suffered its worst day since 1929. The Dow Jones dropped 40 per cent between August and October, and industrial activity fell more sharply than at any time in US history. In the last four months of 1937, more than two million people lost their jobs, followed by a further two million in the first three months of 1938. If unemployment had continued to rise at that rate throughout the year, the country could have lost almost two-thirds of the jobs created by the New Deal's work programmes since 1933.

But the wider population was left in no doubt of the brutal consequences of cuts in public expenditure. On 14 April 1938, Roosevelt submitted a large spending and lending programme to Congress amounting to US\$3.75 billion, as well as measures to expand credit. The result was that, by the end of the year, employment had risen by two million, factory jobs by 26 per cent and steel production by 127 per cent.¹⁹

Spending carefully targeted at job creation had turned the US economy around. As Winch observed: 'The expansionist fiscal policy thus inaugurated was continued right up to the beginning of the Second World War.'²⁰

In this way, both Britain and the USA approached the war with public expenditure increasing, their economies on the road to recovery, and public debt well under control.

But the expenditure increases needed for war were of a scale that debt inevitably increased again. In the USA, the public debt burden rose above 100 per cent of GDP. In the UK, the war began with public debt still at around 120 per cent of GDP and debt rose to 250 per cent of GDP. In each of the great democracies, the whole population was mobilised to fight fascism with a debt burden far greater than it is now. Unemployment fell to nearly zero.

The level of UK national debt peaked at the end of the war in 1946. The following year, under a Labour government programme that included the introduction of the welfare state and NHS, national debt began to fall. Over the era commonly associated with pro-public sector and anti-private sector policies, when contemporary belief would lead us to conclude that the public debt must have steadily risen, it actually fell just over 200 percentage points to 50 per cent, roughly 7 percentage points a year.

Since the early 1970s, UK national debt has not improved. It has fluctuated according to the state of the business cycle, at around 50 per cent of GDP. From 1991 to 1996, under a Conservative government, debt rose from 32 to 50 per cent of GDP, after the excesses of the Lawson boom turned into a slump. From 2002, the Labour government presided over rises in the public debt, after the collapse of the so-called dot-com or new economy boom at the end of the 1990s.

The truth is that public debt does not behave as conventional wisdom says it does. In general, and with the exception of wartime, our public debt has gone down after periods associated with more interventionist policies. It has also gone up when spending is cut and matters are left to the market. The answer lies in the nature of macroeconomic systems.

Public expenditure in recession

Why does debt behave like this? What Lord Keynes realised in the early 1930s, in the wake of the Great Depression and over a decade of economic failure in the UK, was that the amount of activity, and employment, in an economy depended on what he called 'aggregate demand'. Aggregate demand is made up of household spending, business investment, government spending and exports to meet overseas demand. It is met by domestic production and foreign production (imports). The modern understanding of gross domestic product (GDP) began with this idea.

A recession or depression was characterised by a collapse in aggregate demand. This decline in demand starts a vicious cycle; firms go bankrupt or cut costs and spending. This leads to cuts in employment, which lead to further reductions in demand as the income and spending power of citizens goes down. This leads to reduced revenues and more pressure on firms and the cycle goes round again.

The aim of policy under such conditions must be to restore aggregate demand. The conventional approach is through monetary policy. Central banks cut their discount rate. This feeds through to reductions in interest rates paid throughout the economy, which in turn encourages more borrowing and spending. But in a recession, this is not such a simple task. For one thing, in financial crises, interest rate cuts don't always feed through to lower interest rates for consumers and businesses. Also the level of debt worries both borrowers and lenders. The credit crunch was the result of a widespread realisation that there is too much private debt. Both households and companies realise they have to get their finances in better order. Finally, there tends to be a wider collapse in confidence that makes businesses frightened of any kind of expansion.

For these reasons, cutting interest rates may not be enough to restore demand or to increase employment. This may still be the case even after more extreme action along the same lines, like quantitative easing or protecting the value of financial assets on the balance sheets of the banks.

Under such circumstances, the only possible way of increasing demand is through government action. Public works spending is the most attractive

option because this goes straight to help employment and companies, but also because the projects can add to the well-being of the nation. In the case of green expenditure, spending can be deliberately directed at a reducing carbon emissions and redressing the depletion of natural resources.

In a recession, spending less and saving more is exactly the right thing to do for individual households and firms in financial difficulties, but it will also damage the economy as a whole.

That means a recession is not the time for public retrenchment. The public sector has to take up the slack with public works that are financed by loans. It should only start retrenchment when private demand has been restored. There is no reason why public works programmes should be permanent. And, since the programme of works set out in the Green New Deal are explicitly designed to transform the energy infrastructure of the UK to meet the challenges of climate change and peak oil, they would not need to be. The whole point now is to revive aggregate demand and economic activity while simultaneously preparing for future shocks. As demand is restored, and employment goes up too, the revenue from taxes comes back up and the cost of benefits comes down, and only then can public spending be cut.

Investment in infrastructure projects, such as renewable energy and making buildings energy efficient, fit this bill perfectly. That is why we propose it now. Keynes argued that spending would pay for itself. This argument was asserted even before the 1930s, with the Liberal Party arguing in their manifesto for the 1929 general election: 'We are ready with schemes of work which we can put immediately into operation. These plans will not add one penny to national or local taxation.'

This is one of the fundamental propositions of Keynes's economics, yet the economics profession today remains silent about it, even those who advocate public works. Keynes is not about borrowing in the bad times and repaying in the good; the borrowing in the bad times pays for itself.

The multiplier and saving

To make their case, Keynes and his associates developed the theory of the multiplier.²¹ (See Appendix 1 for a full explanation.) The principle underlying this theory was that any new spending had a series of 'repercussions' through the economy. This meant that the aggregate impact would be far larger than the original expenditure.

The direct effects of government spending on a wind farm will first benefit the companies that produce the relevant equipment, their existing employees, and those who benefit from the new jobs created as a result. But the increase of employment doesn't stop there. There will also be a number of secondary repercussions.

The extra wages and other incomes paid out are spent on extra purchases, which in turn leads to further employment. So the workers on the wind farm stimulate more demand for food, entertainment, clothes and so on. 'If the resources of the country were already fully employed, these additional purchases would be mainly reflected in higher prices and increased imports,' wrote Keynes. 'But in present circumstances this would be true of only a small proportion of the additional consumption, since the greater part of it could be provided without much change of price by home resources which are at present unemployed.'²²

But the process continues: 'The newly employed who supply the increased purchases of those employed on the new capital works will, in their turn, spend more, thus adding to the employment of others; and so on.'²³ These cumulative repercussions are a virtuous reverse of the vicious cycle introduced at the start of this section.

The logical consequence of the repercussions is spending spiralling upwards with no limit. But at each stage of the process there are leakages. Households don't usually spend all their extra income. Some government spending goes to meet profits and other costs of firms. Some demand is met by overseas producers

(imports), and some goes into higher prices rather than higher production. These make sure that the process is contained.

The public finances

It should be obvious that any new employment will lead to more tax revenue. Equally, those who take up work no longer claim benefits. The scale of these gains to the exchequer depends on aggregate tax rates and how high the benefits are which are paid to the unemployed. Calculations are hypothetical and only intended as indicative. But if government expenditure on implementing public works is £1 billion, the multiplied impact on national income is £1.5 billion, which accrues to households as income.

If the total share of taxation is assumed to be 35 per cent, then £525 million will be paid in taxation. The benefit saving depends on the number of new jobs created. Average earnings in the UK is about £25,000, so we should assume that the full cost of the government creating one job (involving no capital expenditure) is £40,000, to take into account profits and other costs. The total number of jobs created will then be about 35,700 from the initial investment of £1 billion.

The cost of supporting one unemployed person is about £12,000, so the total saving in benefits will be £450 million.

Therefore the total saving to the public finances is the increase in taxation of £525 million plus the saving on benefit of £450 million, equal to £975 million, just short of the original outlay in expenditure.

There will be other flows that can't be quantified, not least some corporate taxation. There will also be the wider effects from a general improvement in confidence, which may even outweigh the impact of the initial expenditure. Confidence will lead to increased production and increased employment which will lead to more taxation revenues and benefit savings. The purpose of this example is to show *how* public works spending *can* pay for itself. The uncertainties involved mean that exact calculations are simply not possible.

This logic only works when there are people out of work who would really much rather have a job and who will, as a result, take a job, pay tax and save benefits if they get the chance to do so. This situation only exists in large numbers during a recession so, once the recession is over, public works spending has to be scaled back or withdrawn. If it isn't, then it can become inflationary. Until that point, this is exceptionally unlikely: when there are large numbers of involuntarily unemployed people, the pressure on wages to rise is very low indeed, as we are seeing now. The risk of inflation from this policy is, therefore, effectively non-existent.

That is the theory, but the evidence of historical experience is very compelling. In the 1930s, public works aided recovery from the Great Depression. In the USA, rising public debt was stabilised and in the UK the public debt fell as a share of GDP. Inflation was restrained throughout. We may stand some 80 years from the start of the Great Depression where contemporary challenges necessitate a different package of investments, but the underlying symptoms of the decline are the same. There is no reason why the consequences of spending on public works now should be very different.²⁴

Section 3: The Green New Deal proposals

In the same way we cannot review carefully the history of our industrial advance without being struck with its haphazardness, the gigantic waste with which it has been accomplished, the superfluous duplication of productive facilities, the continual scrapping of still useful equipment, the tremendous mortality in industrial and commercial undertakings, the thousands of dead-end trails into which enterprise has been lured, the profligate waste of natural resources.

Franklin D. Roosevelt, Oglethorpe University Commencement Address, 22 May 1932

In the original *Green New Deal* report,²⁵ we argued that the finance sector was the root cause of the present crisis and recommended:

- A package of financial innovations and incentives to mobilise billions of pounds needed to de-carbonise the economy.
- De-merging the big banks.
- Tighter controls on credit.
- Low rates of interest for individuals and companies to ease the financing of investment in de-carbonisation.
- Clampdowns on tax havens and corporate tax evasion.
- A low carbon energy system that would make 'every building a power station'.
- More realistic fossil fuel prices.

Since our report appeared, there have been extraordinary changes in the attitude of the authorities towards tax havens. Our call for country-by-country reporting by multinational companies has support from the UK Prime Minister Gordon Brown and French President Sarkozy and the OECD is exploring the proposal in greater depth. The G20 tackled tax havens. They didn't do this firmly enough – they are not demanding automatic information exchange – but this is a start. The UK is tackling abuse in its own tax havens and has come down hard on the Cayman Islands and the Crown Dependencies in particular.

The UK has also begun to restrict some generous allowances for the wealthiest – limiting personal allowances and pension relief – and has introduced a 50 per cent per cent tax rate on high earners.

But while the economic crisis presented a 'window of opportunity' to lay the foundations for a low carbon economy, this is no shortage of evidence that many of the stimulus packages, particularly in Europe have fallen short of this potential.²⁶ Green spending in Europe is considerably smaller than what is widely acknowledged as necessary and is dwarfed by green investments seen in other regions of the world, such as Asia and the Americas. For example, South Korea's green recovery package was 30 times greater than the UK's.²⁷ Given that a second

wave of stimulus packages may be necessary – it is essential that this second (and given the timeframe within which change must happen probably last opportunity) is not wasted.

Research by **nef**'s climate change and energy programme showed that new and additional green spending included in the green stimulus package of the UK government's pre-budget report was astonishingly small compared with other recent spending commitments, at just 0.6 per cent of the UK's £20 billion recovery plan. This key element makes up just 0.0083 per cent of UK GDP, yet in the wake of the banking crisis nearly 20 per cent of UK GDP has been provided to support the financial sector. This is a stark contrast to recommendations made by consultancy Ecofys and Germanwatch that at least 50 per cent of stimulus packages should be directed towards low carbon investments.²⁸

Since November 2008, the UK has also allocated just under £535 million in new and additional green spending as part of its overall stimulus package. At most this is only 1 per cent of the £50 billion or more that we identified in *The Green New Deal* report to shift our energy system to a low carbon future. This ambitious carbon reduction programme was based on research by the Institute for Public Policy Research (ippr).²⁹

The ippr research concluded that it is cheapest and easiest to de-carbonise electricity supply first, provided this was matched by increased efficiency and conservation for both suppliers and users. This involved, for example, a massive increase in offshore wind and decentralised renewable, such as solar photovoltaics (PV).

Another key sector is buildings, responsible for 40 per cent of emissions. It was these two sectors that formed the bulk of the first investments we suggested should be facilitated by the Green New Deal.

The ippr proposals would cost between £50 billion and £70 billion per year – roughly two-thirds of the present NHS budget of £105 billion every year. To put these figures in perspective, the government receives £46 billion per year from gilts (bonds issued by the government), national savings and so on, and pension funds receive in the region of £70 billion in new contributions annually.³⁰

To achieve this investment, the Green New Deal called for the re-regulation of finance, fairer and greener taxation, and a public and private spending programme to slash fossil fuel use and dramatically increase energy efficiency and renewables in every building in the country. This was designed to open up a huge range of new business opportunities in places where people actually lived and required a new carbon army to fill the countless green collar jobs. For interest, the latter call to create a 'carbon army' has been actively taken up by one of the UK's biggest conservation organisations, the British Trust for Conservation Volunteers (BTCV).

This all-encompassing programme, focusing initially on the goal of 'every building a power station', involves traditional energy-saving measures such as insulation through to large-scale combined heat and power and a greatly accelerated uptake of renewable technology.

It was designed to generate high-skilled jobs in energy analysis, design and production of hi-tech renewable alternatives, and large-scale engineering projects such as combined heat and power and offshore wind. Lower-skilled work will include loft lagging, draft stripping and fitting more efficient energy systems in all the UK's homes, offices and factories. Those made redundant from financial services could be retrained for the carbon finance sector that will be needed to publicise, advise, and put into practice the range of funding packages proposed in the Green New Deal.

This hugely ambitious and transformational programme will, of course, require a legislative framework backed up by price signals adequate to accelerate the shift to a low carbon economy. Germany has already started down this path.

It provides low-interest loans for older properties to reach new-build energy standards. Its feed-in tariff programme makes sure that anyone generating electricity from solar PV, wind or hydro gets a guaranteed payment of four times the market rate. This has created 250,000 jobs and demand is such that Bavarian farmers, with large barn roofs and fields, are now the biggest customer group for solar PV in the world.^{31,32}

A report by the Economic and Social Research Council and the Technology Strategy Board has shown that if the government is to meet its carbon targets, virtually all of the UK's 24 million existing homes would need to reduce their carbon emissions significantly.³³ Over the next 40 years, this will mean refurbishing a city the size of Cambridge every month. That involves approximately 23,000 teams of people working on each building for a two-week period, and keeping that rate of refurbishment going non-stop for the next 500 months.

Of course, the reality is that huge work programmes will need to be done over the next 100 months to cut the carbon in time. That is around 115,000 such teams, a huge employment and business generating potential. If all the other commercial buildings and factories are included then 'every building a power station' could play a massive role in the sustainable regeneration of the UK economy.

Government action

The first thing that the government needs to do is to set out a national plan for a low-energy future and its provision on the ground. There is no such plan at present: no risk analysis of the peak-oil threat and no contingency plan for what would happen if oil or gas supplies collapsed rapidly. The lack of such a plan leaves the nation very vulnerable. Such a plan would include oversight and co-ordination for generating funding from the government, the energy industry, and a range of private savings vehicles for investment.

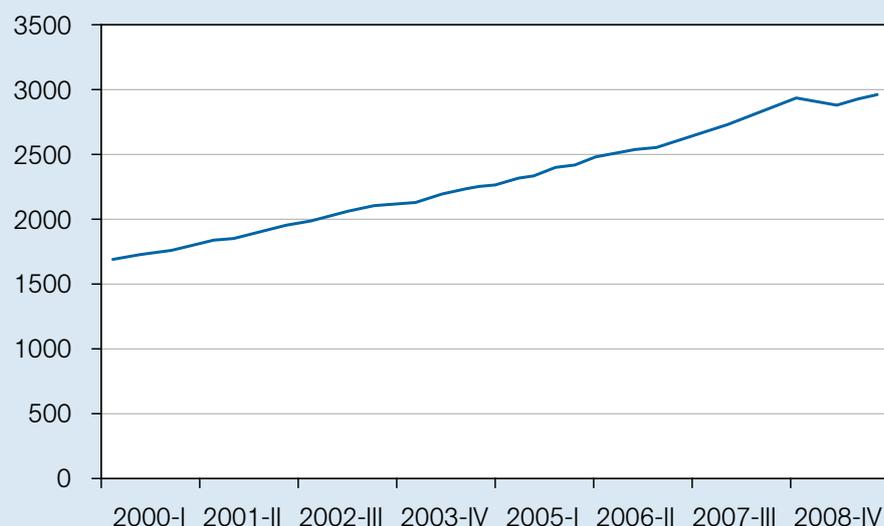
There will be a need for a training, education, research and development programme for the 'carbon army' of workers needed to bring about a low carbon future. To reduce carbon dramatically will require expertise ranging from energy analysis, design and production of hi-tech renewable alternatives, large-scale engineering projects such as combined heat and power, and offshore wind at the high skilled end. It will need medium and unskilled work to make every building energy tight, and to fit more efficient energy systems in homes, offices, and factories. A carbon finance sector will be needed to publicise, advise, and put into practice the range of funding packages inherent in the Green New Deal.

The advantage of the massive scale of this energy transition will be the scale of job creation. Thousands of new and existing businesses and services will benefit, and a large increase in tax revenue will be generated for the government from this new economic activity.

There will be vital resource-planning roles for government on a scale only previously seen in war-time. Rapidly decarbonising the national economy will, in the long term, maximise energy security in the UK. But the initial national planning for such a programme will have to consider whether there will need to be a guaranteed allocation of fossil fuels, to make sure there is enough energy to power the transition to a low carbon economy.

This will include energy for the production of the enormous amounts of materials, from steel to pipes, needed for renewable energy generation and energy-saving products. It will also include making sure there is enough energy to create a new regional grid system, ranging from large-scale wind, wave and tidal electricity to decentralised energy systems that increase domestic and local energy production. The same strategic allocation and reserve process might be needed to guarantee adequate supplies of the raw materials needed, such as iron and aluminium. We propose that a £50 billion programme of public works spending on green initiatives should be implemented immediately. It should be repeated in 2011, though the amount of expenditure should be adjusted in the light of experience.

Figure 6. US government consumption expenditures and gross investment, \$ billion.



Source: Bureau of Economic Analysis; seasonally adjusted at annual rates

The scale of spending

In the 2009 Budget, the Treasury estimated a 3.5 per cent decline in GDP during the year. Mapping the decline directly onto cash values, this is equivalent to a fall in GDP of about £50 billion. With multiplier effects, Green New Deal expenditure of just £30 billion will come close to undoing this decline, and according to the calculations in Box 4 such a first phase of spending would create between 39,000 and 120,000 new jobs (measured in five person-years of employment) for a sample investment of £10 billion in green infrastructure. Spending of £50 billion would more than compensate for the decline in GDP, creating further employment. (The figures on the multiplier effect are given in rounded terms and are estimates.)

The IMF has suggested fiscal packages equivalent to 3 per cent of GDP. As we argued in *The Green New Deal*, this level of spending will allow us to make serious progress with addressing climate change.

Green New Deal spending is very different to the fiscal policies implemented by most countries. As a recent study by the Washington-based Brookings Institute shows, a good share of government action has concentrated on tax cuts.³⁴ The most eye-catching – and probably the most expensive – initiative has been the motor vehicle scrappage schemes. Both policies are less effective than the Green New Deal. They concentrate on supporting the existing system and are not efficient. Tax cuts may well not be spent, given household retrenchment, and scrappage merely brings forward consumption which, lacking any meaningful environmental criteria could see emissions of greenhouse gases rise rather than fall. It is unlikely that either initiative will lead to the significant and sustained recovery in demand that is desperately needed.

National accounts figures indicate that the amount going to pure public works programmes has not involved any step change from previous expenditure, even in the USA (Figure 6). The schemes miss the opportunity for programmes that will have a lasting benefit to society and to the environment. The failure to take bold, decisive action to date, will almost certainly have stored up bigger challenges for the future.

Despite these shortcomings, the scrappage schemes have had an undeniable impact on economic activity, causing some improvement in GDP and mitigating declines in unemployment. They indicate what might be achieved with a bolder programme. They also indicate how wedded policy-makers are to the status quo.

Section 4: The Green New Deal, finance and monetary policy

“The sense of responsibility in the financial community for the community as a whole is not small. It is nearly nil.”

John Kenneth Galbraith, *The Great Crash*, 1929

We argued in our first report, *The Green New Deal*, that the finance sector was responsible for the present crisis, and most people accept that.³⁵ Over the past year, finance has finally come in for a good deal of scrutiny and some very hostile criticism. While we welcome this, present events exemplify the need to address the role of government. Deregulation was put into effect by a series of governments of all shades, and governments have celebrated and sought kudos for their role in this process. Even after the banking collapse, and in spite of the public outcry, the Brown and Obama administrations have protected the financial sector from effective reform. The influence of financial services over policy at the very highest level is a matter of such concern that even the Governor of the Bank of England, and the Chairman of the Financial Services Authority find themselves at odds with the government.³⁶

In our first report, we expressed alarm at the prospect of a £50 billion bail out for the Royal Bank of Scotland. The Governor of the Bank of England, Mervyn King, has recently estimated that the state support for the financial sector now amounts to £1 trillion. ‘Never in the field of financial endeavour has so much money been owed by so few to so many,’ he said. ‘And, one might add, so far with little real reform.’³⁷

Ministers feign humility, and understand that the public might find such largesse hard to swallow. We were told that these bail-outs were absolutely necessary as the only possible way to prosperity, that there was no alternative. Economic recovery required a resumption of bank lending, and this couldn’t happen without the state support. Yet £1 trillion later, growth in lending to companies and households has not resumed.

The only section of the economy to recover has been the finance sector itself. The newspapers tell how vintage champagne is selling again, and the boatyards are looking forward to the return of the bonus culture. With its prosperity seemingly assured, the finance sector is now turning on its benefactors and is adding its voice to the demands for public sector retrenchment. The public debt is regarded as unsustainable, and savage cuts in expenditure are prescribed. Alarmist commentary warns that further rises in the public debt threaten the value of sterling and the national credit itself. The Conservative Party and even the Liberal Democrats have decided to align themselves with this view. We are told not only that we must brace ourselves for an era of stagnation, unemployment and uncertainty, but we must also brace ourselves for cuts in the services that have underpinned our lives for much of the post-war era. There will be misery for the many to serve the prosperity of the few.

The Green New Deal included a fuller discussion of the role of the financial sector in the crisis and proposals for reform.³⁸ In this report, we are concerned primarily with the loans necessary to finance Green New Deal spending. Section 3 has shown how public works will pay for themselves. But we still need finance to bridge the gap until the savings arrive from the creation of new jobs.

Our proposal is that the Green New Deal should be initially financed through a re-deployment of quantitative easing.

It is a misleading oversimplification that quantitative easing is simply a process to inject money into the economy to foster activity. In reality, quantitative easing is partly aimed at reducing interest rates, but also is crucial to the financing of government borrowing. It is also a short-term expedient in the absence of the wider reform of the financial sector that we maintain is necessary in amended form to help achieve a sustainable economic activity and a just society.

Green quantitative easing

Our objective is helped by the fact that, over the past few months, the financial authorities have acknowledged the central truth about modern banking systems.³⁹ This is that the modern banking system creates credit, rather than redistributing it. Quantitative easing involves little more than the central bank deciding it will create money that the commercial banks in its economy can use. It happens using exactly the same processes that those commercial banks use to make money, and which they do every day of every year.

Box 3: Making money

'The bank hath benefit on the interest on all monies which it creates out of nothing'

The Bank of England's Royal Charter, 1698.

'The process by which banks create money is so simple that the mind is repelled. Where something so important is involved, a deeper mystery seems only decent...'

John Kenneth Galbraith

How does a bank create money? It isn't as conventional wisdom has it. Most people think when they ask a bank for a loan that the money they receive comes from money paid in by other bank customers. That is not accurate.

In a revealing interview on the CBS news show, 60 minutes, Ben Bernanke, the Governor of the Federal Reserve, was asked where the money to finance the Fed's commitment of trillions of dollars in rescue packages had come from. Bernanke replied: "It's not tax money. The banks have accounts with the Fed, much the same way that you have an account in a commercial bank. So, to lend to a bank, we simply use the computer to mark up the size of the account that they have with the Fed. Its much more akin to printing money than it is to borrowing."⁴⁰

What the bank does is, in effect, a conjuring trick. It agrees to give you a loan. It does so by opening two accounts for you. One is a current account (unless you already have one). If the loan is for £10,000, the bank marks your current account as having £10,000 in it. You are now free to spend that cash however you like. The lending bank also marks your loan account as having £10,000 in it. You now owe that to the bank.

Add the two together though and they add up to nothing. One sum is apparently owned by the you, the borrower (the current account) and the other is apparently owed (the loan account). But if you decided to cancel the deal there and then you could straight away repay the loan using the current account and there would be nothing left. Which is why we mean the two accounts add up to nothing and have been created out of nothing – or virtually thin air, if you like.

Now the bank charges interest for the benefit of having created that money. Even though there is no money as such, it charges as if there is. Unsurprisingly, lending is highly profitable. First, it creates the money loaned out of thin air, then it charges interest for having done so.

In public, the financial services industry maintains that banks are merely humble intermediaries between one customer who has surplus funds to lend, and another customer who desires to borrow. Interest is charged to the borrower to recompense the lender. But if the money is created from thin air, there is nobody to reward. In reality, the vast share of the reward goes to the bank itself.

Using quantitative easing, the Bank of England has now created between £175 and £200 billion of new credit. As with all bank loans, the money did not come from anywhere. It was not borrowed from anyone, it was simply created. To start with, it just appears as a great extension of the balance sheet of the Bank of England.

This new money is used mainly to buy up gilts (government bonds) from investment banks. The banks receive new money (deposits) that has come into existence through the quantitative easing. The Bank of England sees the money setting activity into motion as follows:

Direct injections of money into the economy, primarily by buying gilts, can have a number of effects. The sellers of the assets have more money so may go out and spend it. That will help to boost growth. Or they may buy other assets instead, such as shares or company bonds. That will push up the prices of those assets, making the people who own them, either directly or through their pension funds, better off. So they may go out and spend more. And higher asset prices mean lower yields, which brings down the cost of borrowing for businesses and households. That should provide a further boost to spending.⁴¹

The process was originally announced on the 5 March 2009 when the amount earmarked was £75 billion, with another £75 billion available if needed. The US Federal Reserve followed less than a fortnight later, announcing £210 billion would be available over the next six months, and in May, the European Central Bank announced it would make €60 billion available.⁴² Yet the creation of new money does not guarantee recovery. Lending has not resumed adequately. The most important transmission mechanism may well be through low interest rates, but it is not clear that reductions in official rates are being passed on to private borrowers to a sufficient extent.

As households and firms retrench and try to manage the extent of their indebtedness, the problem is just as much about an insufficient demand for credit than problems with supply, no matter what the level of interest rates. Policy-makers and politicians appear to have failed to grasp the impact of recent economic changes on people's behaviour. Compared to 2007, households have shunned banks and the stock market. Cuts in mortgage interest rates have resulted in billions being spent, not so much in shopping malls, but in reducing the size of mortgages.

But the Bank of England fails to mention a third effect, which may yet be the most important to the prospect of economic recovery. Quantitative easing is helping to finance government borrowing. The public sector deficit is the difference between government expenditure and its revenue. When expenditure outstrips revenue, the government has to borrow and the public sector is in deficit. This has been so for some 40 years.

This borrowing is usually organised by issuing government bonds, which are bought by the financial sector. Under quantitative easing these bonds can then be bought by the Bank of England. The financial sector then becomes an intermediary between the government and the Bank of England, so that the credit created by the Bank of England is financing government borrowing. It is no coincidence that the size of quantitative easing so far bears a close relation to the projected size of the government deficit for 2009/2010, which is also £175 billion.

The process begs the question: why doesn't the Bank of England lend directly to the government?

That is exactly what we propose. We propose that the government extends quantitative easing by £50 billion to finance expenditure under the Green New Deal. Allowing for the multiplier effect of spending, even just £30 billion would compensate for the loss of national income forecast by the Treasury in the 2009 budget. We want to short-circuit the existing system, so that money goes directly from the central bank to the government. It is a fact of debt management policy that interest rates on long-term debt are higher than interest rates on short-term debt. At present, interest on gilts is about 4 per cent, when the central bank discount rate is half of one per cent.

Box 4: The employment creation potential of green quantitative easing

Unemployment in the UK reached 2.47 million by the end of August 2009.⁴³ In the United States, unemployment has increased by 6.1 million and stands at a minimum of 14.7 million. If those struggling to find work in the USA (because there is none in their area) are included; and those working part-time involuntarily added in, then the number rises to a staggering 25 million Americans – most without healthcare.⁴⁴ The International Labour Organisation predicts that global unemployment could increase by a 'middle scenario' of 39 million by the end of 2009.⁴⁵

Without dramatic increases in investment in greening the economy as outlined in this report, it is thought that given previous recessions job levels are unlikely to return to their pre-recession levels till at least 2016. This is particularly likely given the recent motors for employment growth- the public sector, the building and financial services industries building are likely to be severely constrained.

Shifting to a low carbon economy could provide significant economic benefits to the UK in increased employment, and therefore increases in tax revenue. Pound for pound, per unit energy, or per unit of investment, renewable energy and energy efficiency have the potential to create more employment opportunities than more carbon intensive industry. In Germany, for example, the renewable energy industries already employ more workers than the coal and nuclear sectors together and, by 2020, a total of 500,000 people will probably be employed in this sector.

Significant intervention is required in order to kick-start this transition to a low-carbon, job-rich economy. And, as we set out in this report, green quantitative easing could do just that.

What could we gain if, instead of piling up bank vaults, the money disbursed in quantitative easing had been put to productive use kick-starting the transformation of the energy infrastructure necessary for a low-carbon future? To illustrate the potential, we examine what would have happened if some of the total disbursed and committed through quantitative easing were invested in critical elements of the low-carbon infrastructure of the future.

On the basis of a range of research into the job creation potential of renewable energy and a range of data on emission reductions, £10 billion green queasing invested in each of, onshore wind, energy efficiency, combined heat and power, and a national re-skilling programme could:

- Increase wind's contribution to total electricity supply from its current 1.9 per cent⁴⁶ to 10 per cent (39 TWhe) and create over 36,000 jobs in installation and direct and indirect manufacturing (with each 'job' lasting an average of five years);
- Create a further 4,800 jobs in the operations and maintenance of the installed capacity and other related employment.⁴⁷ These would be sustained for the 20 year lifetime of the installation (equivalent to 96,000 person-years of employment) If this directly replaced energy from conventional sources, it could reduce emissions from the power sector by up to 16 MtCO₂e each year;
- Create 60,000 jobs in the energy efficiency sector (with each 'job' representing employment for five person-years), reducing emissions by a further 3.96MtCO₂ each year. This could also create public savings of £4.5 billion over five years in reduced benefits and increased tax intake alone;
- Create 45,000 jobs in the combined heat and power industry, with considerable reductions in greenhouse gas emissions. This is due to the higher efficiencies of co-generation at various scales, and potential for fuel switching;
- Re-skill 1.5 million people, bringing 120,000 people back into the workforce, and increasing the earnings of those with a low income by a total of £15.4 billion.

These benefits accrue, even before we take the environmental damage avoided by the reduction in emissions into account. For example, the investment in onshore wind energy here would reduce emissions from conventional sources by 16Mt CO₂e per year (or decarbonise the UK economy by 2.4 per cent).⁴⁸ If it directly replaced conventional sources, this corresponds to a £19 billion reduction in environmental damage.⁴⁹

Box 4 Continued

Table 1: Renewable energy: job creation and emission reductions for £10 billion invested

	<i>Number of jobs created (five person-years of employment)</i>	<i>Lifetime of the project (years)</i>	<i>Job years</i>	<i>Emission reductions, MtCO₂e / annum</i>	<i>Cumulative savings, MtCO₂e</i>
Onshore Wind (installation, direct and indirect manufacturing)	36,000	20	180,000	16	320
Operations and maintenance	4,800*		96,000		
Retrofitting	60,000	15	300,000	3.96	59.4
CHP	45,000	15	225,000	n/a	n/a
Total	160,200		801,000	>19.96	>379.4

Sources: Jobs and emission reductions created by £10 billion in investment to each of the following: onshore wind power, retrofitting or combined heat and power. For an explanation of the calculations and a full list of the sources see Appendix 2.

Table 2: Re-skilling: job creation and economic impact for £10 billion invested

<i>Number of jobs created (five person-years of employment)</i>	<i>Skills increase</i>	<i>Lifetime of the project (years)</i>	<i>Earnings impact</i>
120,000	1.5 million		£15.4 billion

Sources: Increases in jobs, skills and earnings created by £10 billion in investment in re-skilling of the labour force. Calculations draw on existing research by a range of authors including McIntosh: *A CBA of Apprenticeships and Other Vocational Qualifications*.

* This figure is based on the total number of job-years over the entire 20 year duration of the project.

To pay anything higher than the discount rate is unnecessary and stupid. Our proposal will cut out the middle man in the lending equation, and with him the excess interest paid under the present system.

In this way, quantitative easing could be used to increase long-term, sustainable economic activity and with it a huge growth in jobs. The Chancellor, Alistair Darling should announce in his pre-budget report that the extensions in quantitative easing would be used to fund a Green New Deal, as called for by Gordon Brown in the run-up to the G20 meeting.

There are historical precedents in crises for governments to generate debt-free money to fund massive projects, Abraham Lincoln paid for the American Civil War by printing \$432 million in new *greenback* bills, with Congressional authorisation. The French revolutionary government was financed by the creation of *assignats*.

Quantitative easing is happening now in the UK. Instead of aiming the money at the finances of banks and encouraging more reckless consumer spending, the government should be directing the money towards the environmental transformation required for a Green New Deal to address the triple crunch of climate, energy and economic crises.

Those who are raising concerns about the public debt have tended so far to support extra quantitative easing. In reality, the two processes are intimately related. The present operation of quantitative easing has not led to a collapse in sterling or of national credit. Yet the approach has at best staved off collapse. Green quantitative

easing promises a far more substantial economic recovery by directly stimulating productive activity that will underpin the transformation of the UK's energy system, and it is only through recovery that the national credit and underlying strength of sterling can be restored.

Monetary policy and the Green New Deal

Our first report outlined how the present crisis was caused by financial deregulation.⁵⁰ Deregulation of domestic credit and international financial markets began as long ago as the second half of the 1960s, and increased in intensity steadily until the moment the credit crunch arrived in 2007.

We emphasised that financial deregulation led to high interest rates. High interest rates are pernicious because they lead to reduced and volatile demand and unemployment. The fear of low interest rates among policy-makers tends to arise from a fear that households will not be able to control their borrowing and or their spending. But low interest rates allow firms to expand activity. It is more difficult to repay high interest rates than low interest rates. Yet since the start of the 1980s, under short-term pressures from competition and financial markets, many firms borrowed extensively at rates of interest that they could not possibly repay. Households can also be overburdened by high interest rates, with finance companies demanding chronic interest rates for borrowing on credit cards. The great inflation in house prices was achieved partly by increasing the multiples of income that financiers would lend for house purchase.

The result was the inflation of debt. The process was inherently unsustainable, because it was caused by loans that would not be earned and could not be repaid. The credit crunch signified the moment when financiers, businesses and households confronted the reality of their predicament.

In our 2008 report, we looked back to the post-war success in an era of greatly restricted finance and low interest rates, of lower unemployment and greater stability.⁵¹ Our longer-term proposals suggest ways we can go back to that economic environment, and to reverse financial deregulation. We urged a permanent low level of interest rates, and very much tighter control on the generation of credit. We suggested de-merging large banking and financial groups and more.

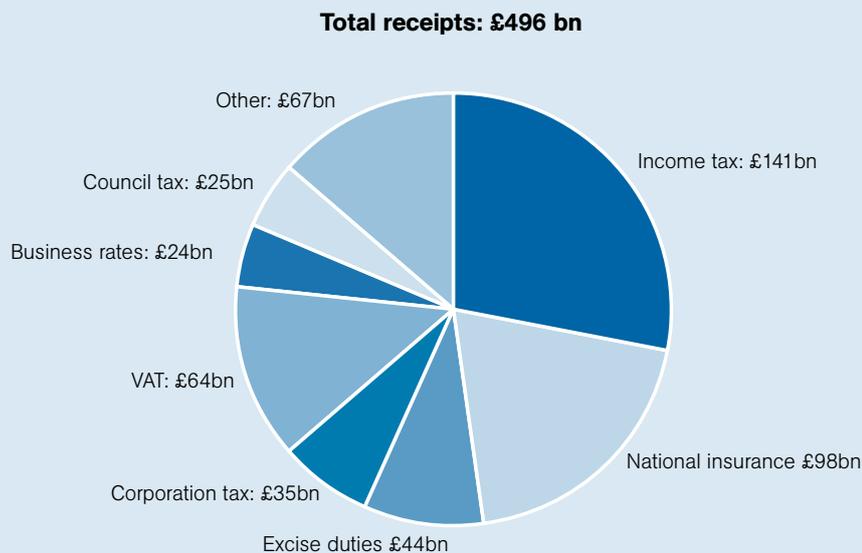
Our proposals also set out international action. Reintroducing capital controls is a priority to regulate the money that flows in and out of the country and currency, so that nations can become masters of their own interest rates. Since we published our first report, there have been periodic calls for a fundamental rethink of international exchange mechanisms, which are warmly endorsed by the Green New Deal Group. It isn't the purpose of this document to set out these proposals in detail again, but we believe that finance has to be servant to a system of domestically based and sustainable activity, and not the master of a global system that is excessively reliant on trade and speculation, and which is entirely negligent of the environmental consequences. Unless this happens, the prospect of saving the world from the disaster of global warming is limited.

The limitations of present monetary policy

We welcome the reduction in central bank discount rates over the past year. But this is regarded by the authorities as a temporary expedient and not a step towards the domestic monetary conditions that we envisage. The main objective is to return to business as usual, despite occasional rhetoric to the contrary.

This compromised monetary environment is very different to that following the actions taken by both the British and American authorities at the start of the Great Depression (see Section 2). It is also different to the measures they introduced at the outbreak of the Second World War. Keynes then helped devise a range of mechanisms to finance the war effort as an unpaid adviser to the Treasury. He campaigned publicly for the war to be financed at a long-term interest rate of 2.5 per cent; the authorities settled for 3 per cent. He developed various new instruments to aid public borrowing, of which Treasury Deposit Receipts (TDRs) were the most interesting.

Figure 7. UK revenue by source:



NB: This data reflects the economic downturn: before it, corporation tax and VAT receipts were much higher, for example.
Source: http://budget.treasury.gov.uk/where_taxpayers_money_is_spent.htm

These went one step beyond quantitative easing, and were a mechanism whereby banks were forced to use their ability to create credit to lend to government. These obliged banks to lend to government at a notional rate of interest (1.125 per cent). At the end of the war, outstanding TDRs were worth £1.8 billion.⁵²

The Labour government rightly celebrated the instrument as a revolution in fiscal policy. Banks were forced to lend to the public sector on terms dictated by the government. They were not popular with the financial authorities who tried to portray them as a wartime expedient and then phased them out after the end of the war.

The war was financed so easily, and with so little of the usual inflation that normally comes with wars, that the economic and financial achievements are normally overlooked. The greatest ever public borrowing in history was facilitated by the great advance in understanding of the nature of macroeconomic systems that Keynes had fostered. It was financed at the lowest interest rates in history.

If it can be done for war, it can be done for peace.

The Green New Deal and Tax

Other than electronically creating money out of thin air – through quantitative easing – and money raised by borrowing much of the money for government spending will have to come out of taxes. So it is essential that as much tax is raised as possible, with as little tax avoidance or evasion as possible when the time is right and the economy can sustain it. The taxation system must also be as fair as possible. This section explains how this can be achieved.

Tax is charged for four principle reasons: to raise revenue, to redistribute income and wealth, to reprice goods and services considered harmful by society and to reorganise the economy through public expenditure. Tax makes government action happen, and since the Green New Deal presumes government action in the economy, tax policy is an integral part of the Green New Deal.

The Green New Deal is based on a number of fundamental propositions: more revenue must be raised by any government adopting it; the redistribution of income and wealth is an essential part of the Green New Deal if its benefits are to be distributed fairly; taxes proposed by the Green New Deal have to promote green objectives, and fiscal policy – using tax and government spending to manage desirable economic outcomes – is a key element of the Green New Deal.

There are other objectives to add for Green New Deal taxes: any tax proposed by the Green New Deal must encourage appropriate investment in new technology; Green New Deal taxes must promote small and local enterprises; the Green New Deal must tackle the tax abuse that is prevalent in the existing tax system, and that wherever possible, reform should simplify the tax system.

The role of tax in funding the Green New Deal:

The Green New Deal proposes a package of government expenditure programmes. We suggest borrowing will pay for much of this programme – and that the programmes themselves will repay the debt via the tax revenue generated by the jobs and economic activity involved. But equally, we recognise there is existing debt accumulated as a result of the failure of our banks that has to be paid for. This will require new revenue to be raised as the economy moves out of recession. We suggest that the following proposals will provide the extra finance we need and provide the funding required to restore balance to the economy.

They are also designed to redistribute tax from those with resources to those in middle and low incomes. This has to happen because, as things stand, the top 10 per cent of income earners in the UK pay some of the lowest overall rates of tax. We also have to do this because green taxes, which we need for other specific reasons, tend to work in the opposite direction.

Together, these suggested reforms are a credible basis for government economic policy while simplifying taxes for many people, and especially for smaller businesses in the UK. We have grouped the proposals under a number of headings to show what they seek to achieve:

Beating tax avoidance

Implement a general anti-avoidance provision

Tax avoidance is estimated to cost the UK at least £25 billion a year.⁵³ This is probably an under-estimate, because some effects can't be measured. There can be no ethical justification for tax avoidance. Whilst it is technically legal, it is in the same category as those MP's expense claims which met the rules but were very obviously abusive. The very name 'tax avoidance' suggests that this is so: if you avoid something, you go round it. Tax avoidance is the process of getting around the law to make sure you save tax. Because one person doesn't pay their fair share of tax, then everyone else in society has to pay it. Tax avoidance is not a victimless activity.

A general anti-avoidance provision is one of a number of measures that the Green New Deal proposes be used to tackle this abuse. The provision says that, if any step is added into a transaction mainly for the purpose of reducing a tax bill, then it will be ignored for the purposes of calculating that tax bill. In other words: the moment someone tries to avoid tax, the power exists to ignore what they did.

Many countries, from Australia, to South Africa to tax havens such as Jersey use provisions like this within their own borders. Experience shows they can work. They also substantially reduce the complexity of tax law: this one anti-avoidance measure stops almost all abuse rather than requiring new law every time a new abuse is found, with the new legislation often providing yet another opportunity for the tax industry to abuse the law. If half the tax avoidance was stopped by this provision, it would raise more than £10 billion a year.

Adopt country by country accounting

The biggest abuse of corporation tax in this country arises because multinational corporations shift their profits out of the UK into tax havens, and countries like Ireland that offer low tax rates. It has been estimated that the UK loses several billion in lost tax revenue a year in this way. A recent report in the *Sunday Times* suggested that Google alone might save £100 million in UK tax just by doing this.⁵⁴

Country-by-country reporting is a new form of accounting that is now attracting support, including in the UK government. It will require multinational corporations to report their sales, costs, profits and taxes paid in each and every country in which they operate, so we would know just how much they do and do not pay

where. This is expected to have a massive deterrent effect on profit shifting, which would then come out into the open, and would therefore contribute significantly to corporation tax revenues. We estimate that between £2 and £3 billion a year might be recovered as a result.

End the abuse of tax allowances

One of the main reasons why the wealthiest ten per cent of the UK's population pay lower overall rates of tax than others in the country is because they make most use, by far, of the tax allowances that the current system provides. The allowances also give them bigger savings because the value of your allowances increases the higher your tax rate is.

The tax system offers allowances for good reason: usually to encourage certain sorts of behaviour, such as saving for a pension. Yet it is a perverse consequence that saving by those who are already wealthy is encouraged by the state at a cost to those with much less money. These allowances can also be abused.

The perverse consequences can be eliminated while leaving the benefits of allowances in place for those who really need them, who are those on more modest income. This can be done by setting minimum tax rates to be paid on gross income by those in the higher earning brackets.

Imagine that people earning more than £100,000 had to pay a minimum tax rate of 32 per cent on all their income, those on £150,000 had to pay at least 36 per cent, those earning £200,000 40 per cent, those on £250,000 paid 45 per cent and those earning £300,000 paid a tax rate of 50 per cent on all income. Three consequences would then follow. First, the vast majority of personal tax abuse would be stopped because access to the tax relief that permits it would be denied. Second, the tax system could be radically simplified. Lastly, much more tax would be raised. It is not possible to estimate exactly how much extra this might raise, but it is likely to be at least £10 billion a year.

Tax capital gains as income

In the 1980s, the Conservative government introduced a sensible reform of Capital Gains Tax. It allowed anyone an allowance of tax free gains each year, which has the benefit of considerably reducing the administrative burden of this tax which would otherwise apply to lots of small transactions from which very little tax would be collected. At the same time, it said that all remaining gains should be taxed as if they were part of a person's income, and income tax rates should apply to them.

The Labour Party removed this link and has offered rates as low as 10 per cent during its period in office. Under the Green New Deal, all capital gains above a basic allowance would be treated as income again. It is estimated that at least £2 billion of extra tax would be raised each year as a result.

Abolish the domicile rule

It has been estimated that at least £3 billion of tax is lost under what is called the domicile rule. This means that people who live in the UK who can claim it is not their permanent home need only pay tax on their UK source income, whereas people living in the UK pay tax on their worldwide income. There is a simple solution to this problem: we suggest that the domicile rule be abolished.

Impose National Insurance on investment income

There has been widespread abuse of limited companies in the UK by people who are either self-employed, and should be taxed as such, or who are disguising employments on which PAYE should be operated by supplying services as contractors through a limited company. The impact on revenues has been significant. This abuse is undertaken to avoid National Insurance Contributions on what should be treated as the payment of wages for an employment but which is instead paid as a dividend from a limited company. These do not attract National Insurance Contribution charges.

There is a straightforward way to tackle this abuse and to increase the fairness of the tax system at the same time. If National Insurance Contributions were applied to all investment income of people below statutory retirement age (those above

that age don't pay National Insurance Contributions) over an agreed limit – which we suggest should be the same as the annual personal allowance for income tax purposes – then extra income would be quite appropriately collected from those who currently don't pay National Insurance because their income is from investment sources. It will also mean there would be no incentive to recategorise earned income that should be subject to PAYE as investment income, by putting it through a company that can pay out dividends. It is hard to be sure how much extra tax any measure aimed at tackling tax avoidance would collect, but current estimates suggest it may be as high as £3 billion per annum.

Raising revenue from those who can pay

Make banks pay

There has been much debate about what caused the current financial crisis. What is beyond doubt is that banks played a role, and that banks have been the major beneficiaries of the enormous sums governments around the world have injected into their economies to avoid financial melt-down.

These financial injections into the world's major banks have been made because states have assumed they are 'too big to fail'. This meant that the consequences of their failing would be too disastrous to contemplate.

But if this means that the price of failure will always be paid by the state then that risk should be covered by a significant risk premium. We will call that risk premium an additional tax on the profits of such institutions over and above the rate which other companies, that impose less risk on society, might pay.

This is not without precedent; even the tax havens such as the Crown Dependencies charge a ten per cent tax premium on the profits financial services institutions.

That is small price to pay for the risk the state takes in supporting our banks. It will always remind them that most will only exist in the future as a result of the largesse of society at large.

Banks are major payers of corporation tax, despite which the total collected from them is relatively modest. This proposal might raise £2 billion of extra tax revenue a year.

Boosting the economy

Reform small business taxation

There is a fundamental flaw in UK business taxation. It assumes that all companies, from the very largest such as our multinational banks and oil companies, down to the one person companies that many self-employed people use, should be subject to the same basic laws of accounting and taxation.

This is an anachronism. It makes no sense to assume that these organisations are similar in structure and subject to similar taxation rules. The Green New Deal suggests that there should be a radical reform of the trading structures available to small businesses. We want companies suitable for the twenty-first century to be made available to the small business community to replace those currently in use which were designed in the nineteenth century, and which have caused so many problems for taxation purposes.

In particular, it is vital that small businesses can trade with limited liability but without the owner having to comply with employment law when they are the sole 'employees' of an entity and without employment taxation being applied to payments to the business owners, when in reality the relationship between the business and those owners is fluid, subject to rapid change, and incapable of being forced into the current, rigid, taxation regime designed for those in stable, long-term, employment.

This is why we suggest that the model of limited liability partnerships, which currently exists in the UK, but which has been far too little used, should be widely adopted. We will require that all current small limited companies (approximately

two million of them) should re-register in this form unless they want to subscribe a minimum of £50,000 of share capital. The vast majority would not, particularly if National Insurance Contributions were introduced on dividend income (see above). Limited liability partnerships (LLPs) do not pay dividends, their members are taxed as if they were self-employed.

This would reduce the administrative and tax burdens for many small businesses at little or no increased tax cost. We believe that this is a pre-condition of creating the right business environment in which new small businesses can grow – and they are an essential part of the Green New Deal.

Boosting international development

Create a Financial Transactions Tax

There is widespread international agreement that the world's financial system is too volatile. There is also widespread international agreement that if there is to be a greening of the economy then this is an issue for the world as a whole, and not just for one country at a time.

The call for a financial transactions tax (commonly, a "Tobin Tax") is a response to these demands. Such taxes can be created in a number of different ways: that most popular at this time is a tax on all speculative financial transactions including those in currencies, financial securities, derivatives, credit default swaps, and more besides. The aim would be to reduce the volatility of international trading whilst allowing real trades to take place by setting a rate low enough not to impede them.

The suggestion is that such a tax, applied internationally at a rate of about 0.05 per cent has the potential to raise more than £400 billion a year. This could, if used to fund green development in the poorer nations of the world, be the basis for their Green New Deal, which is why it has to be part of the proposal for a Green New Deal for the UK.

Section 5: The role of private savings

'Yours is not the task of making your way in the world, but the task of remaking the world which you will find before you. May every one of us be granted the courage, the faith and the vision to give the best that is in us to that remaking.'

Franklin D.Roosevelt, Oglethorpe University Commencement Address, 22 May 1932

Government spending and borrowing is not the only way of financing the Green New Deal. Despite the recession, UK resident savers have an enormous stock of financial assets. According to the Halifax, net financial wealth and net household wealth were both higher in 2006 than they were in 1996.⁵⁶ These also need to be mobilised to support the Green New Deal by encouraging people to lend their savings to reform the economy.

Personal wealth in the UK from 2000 to 2006

An update to those figures, published jointly by the Halifax and the BBC published in September 2009, appears the most up-to-date estimate available. It says that overall wealth at the end of 2008 was £5,921 billion, of which £3,453 billion represented total household financial assets.⁵⁷

These assets are not now being exposed to stock market risk in the way that was commonplace a few years ago. For example, the insurance group Aviva saw its sales fall by a quarter in the third quarter of 2009, as customers close to retirement stopped buying annuities, while pension savers stopped or reduced their monthly payments.⁵⁸ Instead households have held cash and or used it to repay mortgages. Mortgage repayments exceeded new mortgage advances in July 2009, for the first time since records were kept.

The data shows the clear confusion in the savings market, none of which is helping the UK economy. Savings are being hoarded in cash but, as bank lending shows, that cash is not being lent on. The impact is a net withdrawal of cash from the economy increasing the impact of the recession. Savers are not willing to commit to conventional savings which they, quite reasonably, consider have failed them. The consequence is a shortage of cash for investment just at a time when it is badly needed.

Table 3. UK Household wealth, 2007

	1996	1198	2000	2002	2004	2006
Value of Residential Properties	1,196	1,505	1,968	2,568	3,221	3,781
Less Mortgage Loans	410	457	536	675	878	1,079
Net Housing Equity	787	1,048	1,431	1,893	2,344	2,702
Total Household Financial Assets	2,088	2,660	3,130	2,699	3,152	3,846
Less Consumer Credit Loans Outstanding	79	106	135	168	199	213
Net Financial Wealth	2,009	2,554	2,995	2,530	2,954	3,634
Net Household Wealth	2,795	3,602	4,427	4,423	5,297	6,336

Source: ONS, Bank of England, Halifax estimates

We have already argued that this shortfall of funds for investment can be made good by the banking system and government in the short term, and that government spending pays for itself. Nothing we say here changes that analysis. But as the economy moves towards full employment over time, resources for the continued investment that the Green New Deal requires will still need to be found. That need must be prepared for in advance. Now is the time to create new and more durable savings products that can channel the funds needed for the Green New Deal, when that funding is needed.

Given the sheer scale of financial assets owned by those in the UK, there is no reason for all future investment not to be green. In 2008/2009 the government subsidised the cost of pension saving by £21,220 million.⁵⁹ Much of this relief was given to companies; it is unlikely that tax relief was given at more than 30 per cent on this cost on average, implying gross pension contributions of in the region of £70 billion in that year.⁶⁰

It so happens that this is exactly the same amount that needs to be spent each year to green the UK economy.⁶¹ This is a significant coincidence. It means this level of investment is possible, especially when pensions are not, by some way, the largest part of the financial assets of households in the UK. Cash, insurance policies, and direct investments also enjoy inflows of funds in most years.

We believe it essential that part of this wall of money, much of it saved in funds that create no new investment in the economy, has to be used more constructively to create a Green New Deal. This requires that several objectives for investment are fulfilled:

- The investment has to be green.
- It has to be comprehensible.
- It must be capable of paying real rates of return.
- It must be safe.
- It must be liquid so that people can buy in, knowing with confidence that they can get their money back when they want.

In 2008/2009 net investments in National Savings were £12.5 billion, more than double that of 2007/2008.⁶² We suggest this was for a combination of some of these reasons – but, unfortunately, there was no guarantee that green benefit resulted. That is why the Green New Deal requires the creation of a whole new savings and investment infrastructure to meet the demands of a new generation of investors who are fed up with all that has gone before, and whose investments can be put to productive use underpinning the transformation of the infrastructure of the UK needed to meet the challenges of climate change and peak oil.

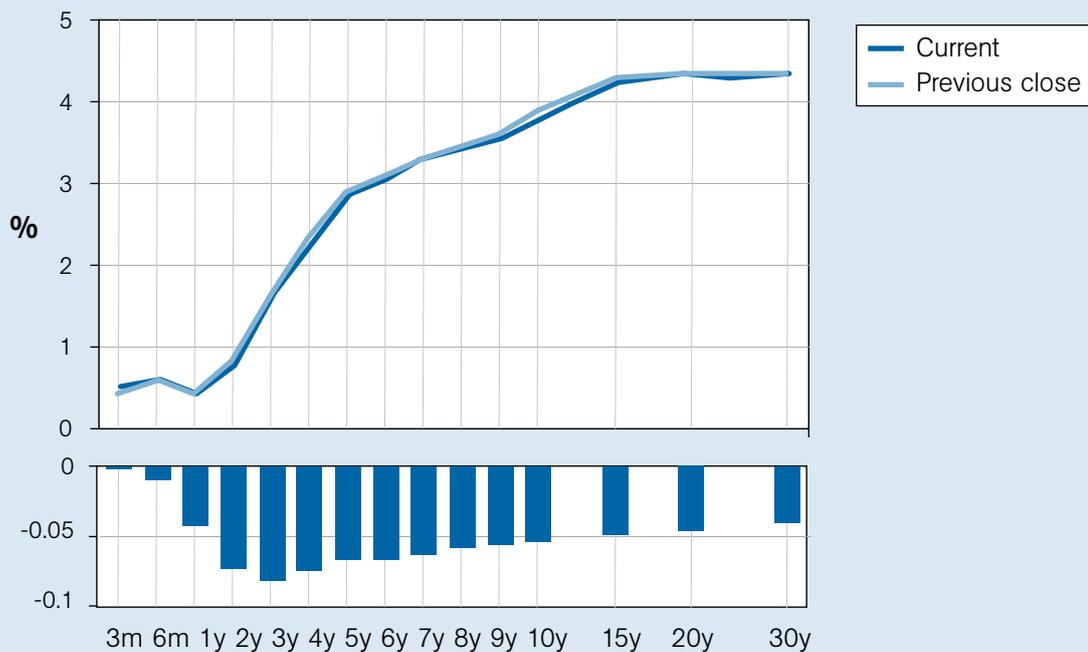
Carbon savings

The Green New Deal seeks to train and release a carbon army of people to transform the UK economy, delivering a low carbon future. Even though as we have stated the initial funding could be provided by green quantitative easing. There is no doubt that eventually this investment could be funded by existing and new savings if the right products were offered and the right savings incentives were given. In what follows, we consider what those products and incentives might be.

Bonds

The UK government is issuing more bonds now than it has ever done before: it is UK government bonds that underpin the current government deficit. There is also a ready market for these bonds. One minor exception apart, which was largely the result of technical issues, all sales of UK government bonds to fund the deficit have been put on the market without difficulty and there is no indication that this will change for the foreseeable future, as long as interest rates and the prospects for inflation remain low.

Figure 6. UK government bonds



Source: <http://www.bloomberg.com/markets/rates/uk.html>

But these bonds are not being bought by individuals; they are being bought by institutions. This, of course, meets the government’s immediate funding objectives, but it means that almost no connection is being made by the people of the UK and the government about how the deficit is being paid for. This is hard to explain: when the financial crisis arose in 2007, the first demand was for a guarantee on bank deposits to protect individual savers. Government bonds do already have that implicit guarantee, and without limit. Second, these bonds are funding what people actually want – the investment that is saving their jobs. It seems obvious to exploit these inherently attractive qualities of government-backed bonds and enhance them to meet the different needs of savers.

Research done by the Green New Deal Group already indicates that there is significant demand for green bonds. This demand is almost wholly unmet at present. Our first and most obvious suggestion is, therefore, that the UK government issues green bonds.

Green bonds: Green bonds will be issued by the government with the explicit guarantee that the funds raised will be invested in new green infrastructure for the UK. The bonds will carry conventional rates of return for bonds, which vary depending on the time scale over which the bonds are issued (Figure 6).

The significance will be that they will be sold to individuals, will come with an entitlement to a report on how the funds are used, just as any major corporation reports, and will be sold in relatively low-priced units in post offices making them ideal as savings products. Some could be branded, for example, to make them ideal savings products for children and families – all of whom would then have vested interests using carbon saving technology.

Carbon linked bonds: For many years, the government sold index-linked bonds that paid a low nominal rate of return and an extra return based on the rate of inflation. These provided security to those looking for long-term returns in periods of uncertainty. The attraction was obvious when inflation was a significant risk.

Inflation is not a serious risk at present. Global warming is. There is a need for a new index-linked bond that pays returns based on the effectiveness of carbon reduction in the economy.

Carbon reduction makes economic sense: it is about our long-term future, but also our shorter-term economic security. Carbon-linked bonds will pay low guaranteed rates of return and extra returns based on carbon saved, either in the economy overall – which would be viable for central-government-issued bonds – or for the direct savings in carbon generated from specific projects. This second type of bond might be especially suited to local authorities.

In both cases, the idea is to align investment returns with carbon saving and create a significant body of investors who will take the risk on there being carbon savings that can be secured, which is why they will want higher overall rates of return. They will also need to be willing to hold both central and local government to account for delivering those savings.

We believe such a relationship is central to the spirit of the Green New Deal. It is about the partnership between state and locality, government and individual, savings and investment, individual and community need, the short term and long term and much more besides. The Green New Deal Group will be undertaking more work on these bonds over the coming months.

Local bonds: Local bonds could be a major component in delivering a Green New Deal. In the USA, there is a \$2 trillion (£1.3 trillion) municipal bond market. Apart from Transport for London's (TfL's) recent successful £600 million bond issues, such bonds are virtually non-existent in the UK, largely because of government policy from the early 1980s. Yet this source of funding could be promoted relatively easily if the returns on the money saved from the low carbon investments, minus their cost, were used to repay the bonds.

There are no legal constraints on local authorities raising funds through issuing their own bonds. In November 2004, the Treasury authorised TfL to issue bonds as part of its £2.3 billion borrowing to improve transport infrastructure. TfL is, in legal terms, a local authority. The first issue of the TfL bond in December 2004 easily raised the £200 million required and, in March and December 2006, two more bonds of £200 million each were issued at very competitive rates as the market became more accustomed to such issues.

The funds raised from issuing local authority bonds could be spent on energy efficiency and providing renewable energy for each of the country's three million council tenants, as well as for all other local-authority-owned or controlled buildings, such as town halls, schools, hospitals and transport infrastructure. Local authority bonds can be an investment route for pension funds and individual savings to help fund such a crash programme. In 2008, local authorities themselves had £120 billion in their pension schemes and so could be well placed to invest some of their funds locally.⁶³

The private sector will need to be encouraged by subsidies towards the costs of energy efficiency measures and installing renewables, or tax breaks to carry out such work.

Tax incentives for green saving: Tax incentives are used to induce a great deal of saving already. Pensions and ISAs attract tax relief in the UK. In the USA, local authority bonds pay tax free income. We believe that an incentive to save in green bonds will have a wider benefit. For that reason, we suggest that future ISA tax relief – costing more than £2 billion a year – should only be available for funds invested in green savings. Extraordinarily, the tax relief for ISAs was more than the whole green stimulus package announced in the 2009 Budget, and was estimated to be worth just £1.4 billion at the time. Green savings can have a huge impact on green investment if this kind of encouragement was available.

Green New Deal Investment Bank

We suggested earlier that a significant proportion of the quantitative easing programme should go, not to the banks – because this has failed so far to induce them to lend more – but to rebuild the economy so that we can adapt in time. It should also be used to capitalise a Green New Deal Investment Bank

Box 5: Global climate bonds

It has been estimated that approximately \$10 trillion around the world will be needed in the coming decade to fund the transition to a low carbon economy, at a pace rapid enough to head off runaway climate change.⁶⁵ The Climate Bonds Initiative believe has set out a plan to achieve this by capitalising the low carbon industries required at annual growth rates averaging 25 per cent per year and that this can be in place by 2014. The amount of investment required is large: about \$1 trillion per year.⁶⁶

Climate bonds are tailored specifically for financing climate solutions. The capacity of government to directly fund the transition to a low carbon economy from current revenues and taxation is limited. But, with some \$120 trillion of institutional funds such as pensions under management, plus retail investor and corporate funds, adequate capital resources do exist. Institutional investors will invest in long-term climate bonds given adequate and secure returns.

Pension funds in particular understand the importance of supporting the shift to a low carbon economy. But they also have to make sure there are secure returns for their members. Long-term bonds are very suitable for financing long-payback-period energy projects and providing pension funds with secure returns over the longer term.

For investors, climate bonds will simply be a new set of fixed interest opportunities, packaged to be more attractive than many existing options. Given of the scale of likely offerings, they can be expected to become a new asset class. Because climate bonds will be novel at first, and because of the large scale of bond issuance required, government contingency guarantees backing repayment of climate bonds will be essential.

While capital may be available, the challenge is to construct opportunities that will allow investors to get the returns they need while funding the essential low energy transformation. This will involve aggregating individual carbon saving initiatives for example, in energy efficiency and renewables in buildings, into larger-scale opportunities for investment. It will require a close engagement between government, investors and industry.

Renewable energy generation costs have been coming down for the past 20 years. Generation costs will continue to decline, eventually being lower than fossil fuel energy costs, thanks to the economies of scale of larger-scale developments. Bonds can be used to borrow against these longer-term cost reductions and pay for the scale of investment required in the immediate future.

This would be a publicly owned bank to hold and disburse capital provided by 'green quantitative easing', it would be used exclusively to fund companies and projects designed to accelerate the transition towards a low carbon economy.

The Green Alliance has proposed a similar type of initiative and has listed some of the roles it could fulfil:⁶⁴

- Help to structure, in partnership with the private sector, the financing of major projects to deliver the energy, transport and other infrastructure investment necessary to enable the delivery of the Low Carbon Transition Plan.
- Provide some initial capital or guarantees, as part of multi-bank project financing for major renewable energy, if it is clear that the private capital markets are unwilling to take on the whole risk.
- Work closely with government policy makers and the investment community to come up with innovative ways to finance the major investment in energy efficiency, renewables, grid improvements and public transport links that will be required to deliver the Low Carbon Transition.
- Provide loans, equity or venture capital to companies which want to launch proven and demonstrated low carbon technology, projects or services.

Section 6: Conclusion

“Knowing is not enough; we must apply. Willing is not enough; we must do.”

Johann Wolfgang von Goethe

The first Green New Deal report, published in July 2008, called for the re-regulation of finance, fairer and greener taxation, and a public and private spending programme to slash fossil fuel use and dramatically increase energy efficiency and renewables in every building in the country. This was designed to open up a huge range of new business opportunities in places where people actually live and required the raising of a carbon army to fill the countless green collar jobs. This all-encompassing programme, focusing initially on the goal of ‘every building a power station’, involved traditional energy-saving measures such as insulation through to large-scale combined heat and power and a greatly accelerated uptake of renewable technology.

The Green New Deal rhetoric was taken up all over the world, including by the UK government, but has barely scraped the surface of what is needed.

Part of the confusion has been the panic among economic commentators about the level of national debt after bailing out the banks. But public debt does not behave as conventional wisdom says it does. In general, our public debt has decreased after periods associated with more interventionist policies. It has also increased when spending is cut. The evidence of the Great Depression is that spending on public works pays for itself during a recession, just as our Green New Deal spending proposals will pay for themselves

In the 2009 Budget, the Treasury estimated a 3.5 per cent decline in GDP during the year. That is the same as a fall in GDP of about £50 billion. With multiplier effects, Green New Deal expenditure of just £30 billion would come close to undoing this decline. According to our calculations, every £10 billion invested in Green New Deal expenditure could create between 40,000 and 120,000 new jobs (expressed in five-person years of employment) while also kick-starting the transformation of the UK energy supply.

This scale of spending is not out of line with other proposals. The IMF has suggested fiscal packages equivalent to 3 per cent of GDP. As we argued in our 2008 report, this level of spending would allow us to make serious progress with addressing climate change.

But while it is on a similar scale to the IMF proposals, Green New Deal spending is of a very different nature to the fiscal policies implemented by most countries. Tax cuts and vehicle scrappage schemes are both less effective than the Green New Deal. They concentrate on supporting the existing system and are not efficient. Tax cuts may well not be spent, and scrappage merely brings forward consumption. It is unlikely that either of these will lead to the significant and sustained recovery in demand that is desperately needed.

National accounts figures indicate that the amount going to pure public works programmes has not involved any step change from previous expenditure, even in the USA. The schemes also miss the opportunity for programmes that will have a lasting benefit to society and to the environment.

This report proposes that the government extends quantitative easing by £50 billion to finance expenditure under the Green New Deal. We want to short-circuit the existing system, so that money goes directly from the central bank to the

government. It is not necessary, and therefore inefficient, to pay anything higher than the discount rate.

Our proposal will cut out the middle man in the lending equation, and with him the excess interest paid under the present system. In this way, quantitative easing could be used to increase long-term, sustainable economic activity and with it a huge growth in jobs.

But the Green New Deal also requires the creation of a whole new savings and investment infrastructure to meet the demands of a new generation of investors who are fed up with all that has gone before. The foundations of this need to be laid now. We have also suggested a range of new measures to help public borrowing and encourage public investment by individuals, local authorities and companies in greening and reviving the economy. These include:

- **Green bonds**, which will be issued by the government with the explicit guarantee that the funds raised will be invested in new green infrastructure for the UK. The bonds will carry conventional rates of return for bonds.
- **Carbon linked bonds**, to align investment returns with carbon saving and create a significant body of investors who will take the risk on there being carbon savings that can be secured, which is why they will want higher overall rates of return.
- **Local authority bonds**, to invest in energy efficiency and provide renewable energy for each of the country's three million council tenants, as well as for all other local-authority-owned or -controlled buildings, such as town halls, schools, hospitals and transport infrastructure.
- **Tax incentives on green savings and investment**, so that future ISA tax relief – costing more than £2 billion a year – is only be available for funds invested in green savings (tax relief for ISAs was more than the whole green stimulus package announced in the 2009 Budget, and was estimated to be worth just £1.4 billion).
- **A general tax-avoidance provision** to end the abuse of tax allowances. If just half of the tax avoidance in the UK was stopped by this provision, it would raise more than £10 billion a year.
- **A Financial Transaction Tax**, commonly known as a "Tobin Tax". Such a tax, applied internationally at a rate of about 0.05 per cent has the potential to raise more than £400 billion a year.⁶⁷ This could be the basis for a Green New Deal in the Global South, playing a significant role in enabling the majority world to adapt to climate change as well as breaking the carbon chains of fossil fuel dependence.
- **Green New Deal Investment Bank**, a publicly owned bank to hold and disburse capital provided by 'green quantitative easing'. It will be used exclusively to fund companies and projects designed to accelerate the transition towards a low carbon economy.
- **Treasury Deposit Receipts**, like those issued during the Second World War, a mechanism whereby banks were forced to use their ability to create credit to lend to government.

We believe the Green New Deal will need to be debated, campaigned for and introduced in the next year. This tight deadline is likely to become ever-more realistic because of the urgent need to deal with rising unemployment and the threat of deflation from the current economic downturn. Scientific opinion is now coalescing around the idea that we have less than a decade to start drastically reducing carbon emissions to prevent runaway global warming. So a crash programme of action needs to be put in place as quickly as possible. The quicker it can be launched, the bigger the chance of making a soft landing once the full force of the triple crunch washes over our economy.

This is also vital from a global perspective. Unless rich nations like the UK show that they can implement change at home, poorer countries are unlikely to make the shift. The Green New Deal is needed to set the economy, nationally and globally, on a path to live within its environmental means. It is also about fair play in a warming world. As set out in our first report, *The Green New Deal*, we urgently need new financial mechanisms to help the majority world adapt to climate change as well as breaking the carbon chains of fossil fuel dependence.

Change is built into today's consumer-based, hi-tech economy. But rapid change outside any meaningful human control is something different again. Responding to the need for such a rapid transition is an art in itself. This is what faces us in the multiple crises driven by energy shock, credit crunch, and climate change.

The scale of economic re-engineering we need to prevent catastrophic climate change is not quite unprecedented, but it usually only happens in wartime. Yet no other approach looks remotely capable of reducing emissions in the time needed. In that light, we can learn from war-time experiences, positively and negatively. The best of those lessons can then be translated into our contemporary circumstances. As Churchill said, it is not enough that we try our best: we have to do what is necessary.

Appendix 1

The mathematics of the multiplier process

The theory of the multiplier process can be illustrated by considering an increase in government expenditure of £1 billion, with leakages to saving only, and the assumption that households will spend 80 per cent of any increase in income.

The direct effect of the increase in public expenditure is £1 billion. The first repercussion of the increase in expenditure is that households spend 80 per cent of the additional income, equivalent to £800 million. The next repercussion is the expenditure of 80 per cent of the additional income of £800 million, and so on. The process is encountered in schools as the mathematics of a geometric progression: $1 + 0.8 + 0.8^2 + 0.8^3 + \dots$ etc. The total of this process can be simply expressed as equal to $1 / (1 - 0.8) = 5$, so that the multiplier is 5, and the aggregate impact of an increase in government expenditure of £1 billion is £5 billion. Assuming that none of the increase goes to prices or imports, the total change in employment will be five times the direct increase in employment.

The whole of this £5 billion accrues to households, with £4 billion spent (80 per cent) and £1 billion saved, meaning that the amount saved is equal to the original amount of the expenditure. In this way Keynes also demonstrated that the original outlay in government expenditure matched the new saving of households, proving the critics that said government expenditure would divert funds from other productive uses in the private sector wrong. (He might also have added that in a recession almost by definition private companies don't demand funds.)

This example is entirely hypothetical and not realistic. In practice, any employment gain will be a far lower multiple of the original outlay, but the basic equality of the saving and new expenditure is true no matter what share of new income is spent by households.

Today, estimates of the multiplier can be determined from the National Accounts.

The multiplier can be obtained as $1 / (1 - c + m)$

where:

c is the share of an increase in aggregate income that goes to household consumption, or the marginal propensity to consume (mpc) (this approach should crudely account for any leakages to profits and other costs), and

m is the share that goes to imports, or the marginal propensity to import (mpi).

In the UK the mpc is about $2/3$ and the mpi $1/3$, so that the multiplier is 1.5. In the US the tendency is to consume more and import less, so that the multiplier is higher and closer to 2⁶⁸ There are concerns about the extent of leakages to price, but at times of high unemployment this is both unlikely and of limited consequence, given that a small rise in prices would also help company revenues.

Appendix 2

Methodological note: The job creation and emissions reduction potential of investment in renewables and re-skilling.

In all calculations, the benefits created through the stimulus were projected into the future according to the length of time for which the benefits would be directly felt. When assessing their economic value, a discount factor of 3.5 was used, in accordance with Treasury recommendations. For the economic valuation of greenhouse gas emissions, the £60 shadow price recommended by the Department for Energy and Climate Change (DECC) was applied.⁶⁹ All measures of employment effects were in person-years. One job created is a position for five years, or work of five person-years.

We have focussed on three key areas of the UK's renewable energy potential for illustration. Other underused resources include, but are not limited to: offshore wind, tidal power (at a variety of scales) geothermal heat, solar thermal (including ground source and air source heat pumps), and Solar PV.

Onshore wind

Wind energy could be a significant source of energy, and has an enormous job creation potential.⁷⁰ The UK holds 40 per cent of EU's total wind resources, yet only 4.2 per cent of its total installed wind power.⁷¹

The cost of new wind power varies according to capital costs, the size of the installations and the intensity of wind available at the site. Our analysis is limited to the cost of installation of new onshore wind capacity – not the returns on operation nor operational costs. According to the Government's Sustainable Development Commission, the average cost for installing 1 kW of onshore wind is £830.⁷² Given this, for each £1 million of investment, approximately 1.2MW of wind generating capacity could be installed. The capacity factor for wind is 30 per cent (the actual energy produced from the installed capacity), this translates into approximately 3.16 GWh of electricity per annum for each £1 million invested. An investment of £10 billion would therefore increase the installed capacity by 12GW, and generate 39TWh of electricity a year.

A recent study by the European Wind Energy Association surveyed a number of different estimates of the job creation potential from wind energy.⁷³ Their analysis showed that the supply of 1MW of onshore wind power could create up to 15.1 jobs years. These figures reflect the employment potential created through the whole supply chain of wind power in direct and indirect employment. Furthermore, each MW of installed capacity also created 0.4 jobs in operations, maintenance and other direct employment over the lifetime of the installation.⁷⁴ Since at present there is little wind turbine production in the UK, the employment benefits would not wholly be captured in the country at first. The industrial support that would come with the Green New Deal would be likely to strongly aid the growth of the industry in Britain. With this in mind, we have attributed the full-predicted employment potential to the investment into wind power.

Based on the UK's current energy mix, The Department for Environment, Food and Rural Affairs (Defra) estimates that for every GWh of electricity consumed, 507 tonnes of CO₂e will be emitted (note this is only from the combustion of fuel, not lifecycle emissions – i.e. transport of fuel, emissions associated with infrastructure, fuel processing etc.).⁷⁵

For the purpose of these calculations, we view this investment as part of a joined-up package of measures designed to transform the energy infrastructure of the UK, we assume that it is part of a managed transition of the UK's energy infrastructure where conventional energy is gradually decommissioned, we assume that the capacity directly replaces the existing supply with no additional demand. On this basis, each investment of £1 million would create a reduction of just over 1.6 kt CO₂e per year. Modern wind turbines are typically designed with a lifetime of about 20 years.

Retro-fitting

We based our analysis of the employment impact of retrofitting on a study by the Energy Saving Trust (EST).⁷⁶ This estimates the potential increase in employment brought about by retrofitting activities. The upper limit for jobs created without taking into account induced employment effect was 30 person-years per £1 million of investment, which we believe is an appropriate and conservative estimate.

The average cost-effectiveness for energy efficiency improvements in the case studies surveyed by The Energy Saving Trust was about 2.01 GWh per year for each £1 million invested. In accordance with the expectations of the EST study, we use an average of 15 years as the lifetime for the investment. Latest figures from Defra estimate that for each GWh of natural gas used, 184 tCO₂e are emitted.⁷⁷ Assuming that the buildings retrofitted all have gas central heating, and energy efficiency improvements are taken as savings (rather than increasing levels of thermal comfort) this could save up to 20 TWh or 3.69 MtCO₂e each year, reducing demand for gas in the domestic sector by 5.5 per cent.⁷⁸ The study did not take into account the potential economic savings created through reduced energy use, which could have been used to refund and expand the retro-fitting activities.

Combined heat and power

Previous research by **nef** has shown that every £30,000 investment in CHP creates work for one person-year.⁷⁹ With an inflation adjustment based on the retail price index, this corresponds to £43,000 in 2009.

Because emissions savings from CHP vary widely between the type of installation (e.g. small or large scale) and the fuel used within the system, we have not attempted to calculate emissions savings from a £10 billion investment. However, because CHP is much more efficient than a standard power station because the waste heat can be used for district heating or cooling, this investment would have a mitigating effect on climate change. For example, gas fuelled micro-scale CHP units can reduce household greenhouse gas emissions by up to 1tCO₂e each year.⁸⁰

Re-skilling

A study by think-tank the Institute for Public Policy Research (IPPR) into the skills required to drive low-carbon industry suggests that there are a range of jobs people could be trained for if they already have some level of vocational qualification. To measure the potential impact of investment in re-skilling, we modelled a programme that would target individuals with NVQ Level 2 qualifications, and applied the observed impact of Level 3 Apprenticeship education. Naturally the benefits could be much higher if the re-skilling programme were coupled with large public investment into low-carbon industries.

A Level 3 Apprenticeship costs £6,500,⁸¹ and increases the likelihood of future employment.⁸² Assuming that individuals already hold NVQ 2 qualifications, acquiring Level 3 apprenticeship qualifications increases wages on average by 13 per cent (the mean for both sexes).⁸³ As the average 30-34 year old with Level 2 NVQ qualifications earns £17,500,⁸⁴ we can expect the training to increase the earnings of its participants by around £2,275. Apprenticeship schemes also significantly increase the likelihood of future employment: A Department for Education and Skills (DES) study found a 10 per cent increase in the likelihood of full-time work.⁸⁵ 80 per cent of people taking part in apprenticeship schemes had been employed in the previous year. The employment rate after taking the apprenticeship would hence be 90 per cent.

People taking up the apprenticeships might simply displace other entrants to the labour market. And, when this is accompanied by large investments in infrastructure (such as wind power or retrofitting), the increase in employment might not be fully attributed to the re-skilling program, but would in part result from the other investments. When the employment effects of the different programs are examined separately, there is a danger of double-counting. However, the fact that the re-skilling would target low-carbon industries in general and not only the infrastructure projects we have considered, and would allow people to be employed in fully private enterprises, the impact of this would be limited. To take this into account, we applied a displacement factor of 20 per cent to the total increase in employment,

and lowered the 10 per cent increase in employment observed in the DES study, to 8 per cent. The employment rate after the apprenticeship would therefore be 88 per cent.

The total benefits of the apprenticeship scheme are the increase in the likelihood of being employed and gains in productivity. The increase in productivity was calculated as the difference in earnings, adjusting for the likelihood of being in work after the apprenticeship. This means applying the 13 per cent increase in pay over the whole benefit period, but taking into account the fact that the employment rate would only be 88 per cent, which amounts to a total of £2,000 in annual earnings per person per year.

We use this level of earnings observed for people after the apprenticeship scheme (£19,800) as a basis for calculating savings to the state created through increased employment. Assuming that the individual is single and pays £500 in rent, a person earning £19,800 a year pays about £7,700 in taxes through National Insurance, income tax, council tax, and taxes on consumption. If that person were unemployed, the state would spend about £9,300 a year on Jobseeker's Allowance and housing benefits. The taxes collected from that person's disposable income are about £1,800, so the net sum would be about £7,500. In total, having one person employed at this skill level saves the state £15,250.

Overall, spending £1 million on re-skilling would improve the skills of about 150 people. This leads to an increase in production to the value of about £315,000 per year. Moreover, the increase in overall employment from this investment brought about 15 people into employment that would otherwise have remained unemployed, which creates benefits of about £230,000 per year.

A benefit period of five years was used for the apprenticeship. It was assumed that after this period the individuals involved would either have received similar qualifications through other means or the beneficial impact of the training would have worn off.

Appendix 3

North Sea Oil and the 1980's recession

'The UK North Sea continues to play a highly important economic role in terms of employment, taxation and energy supply. The rapid production declines for both oil and gas have important social, economic and budgetary impacts. There remains a dangerous reluctance to face up to the consequences on the part of both the industry and government. Only by recognising what is happening and the speed of the declines will it be possible to limit the impact and disruption to the UK economy.'

UK Industry Taskforce on Peak Oil and Energy Security, October 2008

In accordance with her anti-interventionist views, Margaret Thatcher introduced cash limits on public spending and reduced expenditures on social services such as education (until 1987).⁸⁶ To mitigate some of the adverse effects of these limits and cuts in public expenditure the Thatcher Government was able to draw on, what where then, enormous revenues from North Sea Oil and Gas.

UK Governments have received over £271 Billion pounds (in 2008 prices) from oil and gas tax revenue since 1968. The Thatcher -Major Governments received the lion's share of around £180 billion while the Blair-Brown Governments have received around £90 billion. The Government is estimated to have received £13 billion in 2008/2009, but with lower overall oil and gas prices, total revenue in 2008/2009 is expected to be around £7 billion.)

North Sea revenues reached their apex during the Thatcher Government from 1981 to 1986. This coincided with the 1981 recession when unemployment rose to unprecedented official levels of 3 million, and remained stubbornly high until 1986, well into the economic recovery. In paying the benefits for the unemployed and economically inactive during this period, the Thatcher government was helped enormously by North Sea Revenues for 1981 to 1986 of over £112 billion.⁸⁷

High levels of unemployment are predicted for some time, but unlike the Thatcher era, present and future governments will not have rising North Sea oil and gas supplies, but declining supplies and therefore declining revenue.

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A Green New Deal

In July 2008, **nef** published the *Green New Deal: Joined-up policies to solve the triple crunch of the credit crisis, climate change and high oil prices* on behalf of the Green New Deal Group.



Britain faces a 'triple crunch,' a combination of a credit-fuelled financial crisis, accelerating climate change and soaring energy prices underpinned by an encroaching peak in oil production. These threaten to develop into a perfect storm, the like of which has not been seen since Great Depression. To help prevent this, a group of specialists in finance, energy and the environment, meeting since early 2007 came together to develop a proposal for a Green New Deal.

It is a massive environmental transformation whose economic boost will insulate us against recession, while delivering the rapid transition needed if we are to play our role in averting runaway climate change. International in outlook, the Green New Deal requires action at local, national, regional and global levels. Focusing first on the specific needs of the UK, the Green New Deal outlines an interlocking programme of action that will require an ambitious legislative programme backed by a bold new alliance of industry, agriculture, labour and environmentalists.



The Green New Deal Group: This report is the second publication of the Green New Deal Group. Meeting since early 2007, its membership is drawn to reflect a wide range of expertise relating to the current financial, energy and environmental crises. The views and recommendations of the report are those of the group writing in their individual capacities. The report is published on behalf of the Green New Deal Group by **nef** (the new economics foundation).

The Green New Deal Group is, in alphabetical order: Larry Elliott, Economics Editor of the *Guardian*, Colin Hines, Co-Director of Finance for the Future, former head of Greenpeace International's Economics Unit, Tony Juniper, former Director of Friends of the Earth, Jeremy Leggett, founder and Chairman of Solarcentury and SolarAid, Caroline Lucas, Green Party MEP, Richard Murphy, Co-Director of Finance for the Future and Director, Tax Research LLP, Ann Pettifor, former head of the Jubilee 2000 debt relief campaign, Campaign Director of Operation Noah, Charles Secrett, Advisor on Sustainable Development, former Director of Friends of the Earth, Andrew Simms, Policy Director, **nef** (the new economics foundation).

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