



Europe must complete its low carbon transition

E3G Briefing Paper

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Climate change has become a macroeconomic challenge for Europe

With Europe's most visible economic project in crisis there is an understandable lack of confidence among politicians in the ability to deliver other ambitious initiatives. But it is also still true that without a common purpose Europe as a political project will fail. There is another economic arena where a renewed sense of common purpose is urgently needed to preserve European prosperity and security: completing the economic architecture needed to underpin the shift to a low carbon European economy.

Unlike the Euro, the impetus for Europe's low carbon transition has not been based in theoretical approaches to improving economic efficiency, but on decades of hard scientific research. Science that shows climate change represents a remorseless external security threat to Europe. Science that continually discovers additional evidence on the need for urgent action if we are to limit dangerous climate risks to Europeans.

But while European leaders understand climate change as an environmental challenge, they have yet to fully absorb the economic reforms needed to deliver a low carbon economy. Among economic policy makers who control the levers needed to deliver the low carbon transition, tackling climate change is still too often seen as either peripheral or actually damaging to economic growth. There is an on-going battle inside every EU Member State between finance and environment ministries over the pace of low carbon action.

This attitude is out of date and does not reflect the real economic risks in European markets. The shift to a low carbon economy is now a major economic factor shaping real investment decisions across all the major sectors of the European economy: from energy to infrastructure; from housing to agriculture. Unless economic policy makers understand this, and help build the necessary regulatory and financial architecture to underpin the low carbon transition, Europe will face significant short term risks to its energy and economic security.

The view that climate change policy is at best peripheral to macroeconomic policy making is in many ways the fault of environmental advocates. By focusing on the long term net costs

of climate action of 1-2% of GDP by 2050, climate policy was deliberately presented as marginal given an expected quadrupling of global GDP over the same period¹.

But these numbers mask much larger and more immediate investment shifts. Moving to a low carbon economy involves replacing decades of future payments for fossil fuels with up-front investment in low carbon technologies. This produces an immediate “pulse” of additional investment in sectors such as electric power and energy efficiency. Building a low carbon economy also requires investment to shift from well-understood technologies like coal to new sectors where financial models are immature like offshore wind power. Europe will need at least €2.5 trillion of investment in such immature low carbon sectors just to meet its 2020 targets.

Europe needs stronger low carbon regulation to avoid energy investment shortfalls

Europe needs this increase of investment into new and risky sectors at the same time as it managing the consequences of the financial crisis. A collapse in investment levels in all sectors has already happened across Europe, and is most extreme in countries like Spain and Italy. The regulatory response to the financial crisis is also slowing flows of infrastructure finance by forcing banks to raise capitalisation levels and reducing their appetite for debt financing.

Some European politicians have suggested responding to these challenges by following America’s lead and freezing climate change policy. But in fact the consequences of such a policy would raise political risk and would be economically disastrous. Rolling back Europe’s climate commitments would actually decrease the rate of investment and growth in these sectors.

The impact of the low carbon transition on investment risk is largely independent of immediate climate policies. No logical investor is going to risk billions of Euros by building an unabated coal power plant in Europe in the hope that it will avoid serious carbon constraints on its earnings over the next 40 years. Given the scientific reality of climate change what serious investor would therefore act on a temporary shift in climate policy by changing their investment behaviour towards high carbon assets? The fact is that such a shift in climate policy would merely raise investment risk even further, and discourage the flows of private capital which are desperately needed to refurbish Europe’s aging energy infrastructure.

It is not politically credible that Europe could truly rollback its carbon or renewable energy targets in the short term as this would involve too much unpicking of European law. Even a failure of the international climate negotiations would not remove commercial investment risks. Countries would continue to move towards a lower carbon future, even if this is slower than needed to prevent high levels of climate disruption. For example, China has made a

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¹ For example, analysis in the Stern Review and by McKinsey and Co in 2009.

significant bet on a clean energy pathway as a vehicle to build its high-tech manufacturing export sector and has matched EU levels of investment in renewables in its latest 5 year plan². Countries like Korea, Mexico, Australia, Indonesia, Chile and South Africa along with many US states are taking similar steps. These efforts are driven by multiple motivations including economic modernisation, energy security and tackling climate change. They will not evaporate overnight.

Governments cannot unilaterally revoke the science of climate change or the investment risks an active climate policy unavoidably brings. Political risk cannot be magically removed from energy markets when they must deliver the public goods of sustainability and security. Europe must take the harder path of actively risk managing the process of decarbonisation based on the reality of how markets, politics and technology interact.

But neither is the reverse true. Just because investors are not willing to bet against Europe moving to a low carbon economy doesn't mean they are yet ready to invest the billions of Euros needed to maintain energy and economic security. In most of Europe climate change policy is not clear or long term enough to deliver an adequate balance of risk and reward to investors³. But this is not just a public policy failure. Even without the financial crisis the companies and financial structures in the energy sector would have been insufficient to support the scale and pace of low carbon investment. This is why the private financial sector in the UK has supported the creation of a dedicated public Green Investment Bank to directly tackle these market failures⁴. **Europe has yet to construct a sustainable economic architecture capable of delivering the low carbon transition.**

Outside heavily incentivised areas, such as some forms of renewable energy, private investors are looking to delay investment⁵. They are hedging their bets by moving more strongly into short term options like gas power stations, because this minimises their long term capital exposure to climate policy risk. But an over-reliance of gas power exposes Europe to short term price volatility and energy security risks, while failing to deliver a robust pathway to a decarbonised economy beyond 2020.

In extreme cases some companies are discussing whether to move large parts of their investments portfolios to countries outside Europe like Turkey where economic growth is higher, future demand more certain and political risks are perceived to be lower.

Europe cannot afford to end up with a half-decarbonised system that fails to deliver the investment needed to keep the lights on in the later part of this decade. Ironically the energy

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² For a comparison of China's 5 year plan with Europe's decarbonisation plans see <http://www.e3g.org/programmes/europe-articles/chinas-12th-five-year-plan-engaging-the-world-on-the-low-carbon-race/>

³ For policy analysis of these issues in the EU power sector see <http://www.e3g.org/programmes/europe-articles/delivering-a-zero-emissions-power-sector-policy-challenges/>

⁴ For an analysis of these issues in the UK see http://www.e3g.org/images/uploads/Unlocking_investment_to_deliver_Britains_low_carbon_future_-_Green_Investment_Bank_Commission_Report_June_2010.pdf

⁵ For example see <http://www.environmental-finance.com/news/view/1838>

and economic regulators who have often been the biggest sceptics of decarbonisation now must take the lead in ensuring it works in order to maintain energy security. This dilemma is most starkly seen in Poland where these risks mean that energy security is unlikely to be secured through private investment in building new coal power stations without carbon capture and storage. Poland will need to instead reform its domestic policies and markets in order to aggressively drive investment energy efficiency, renewables and interconnectors in order to maintain supply as its ageing infrastructure begins to fail.

But climate change advocates should not find satisfaction in this. If Poland does experience serious energy security problems many will doubtless point the blame at European green policies. It would be hugely damaging if the low carbon transition was blamed for blackouts.

The components of dynamic low carbon energy markets are already being developed

So it is in the interest of actors on all sides to see an immediate response to these real investment risks. This must focus on strengthening policies and recasting regulation in order to give an adequate risk/reward balance to investors in the context of Europe's low carbon transition. In Europe's liberalised and privatised energy markets companies cannot be compelled to invest without destroying the benefits generated by market liberalisation. The transition to a low carbon economy in fact requires more of the most innovative and dynamic global companies to be attracted into the EU. The low carbon economy requires a stronger focus on generating real competition and providing the space for disruptive new business models to emerge, not just designing theoretically free markets. Europe needs to invent the policy and regulatory structures for a competitive low carbon liberalised energy system.

This economic logic has already been recognised by policymakers in the UK and Germany and several other countries. They are beginning a process of policy strengthening, market reform and financial innovation to address these challenges⁶, though often in the face of serious resistance from finance ministries. This process needs to spread across Europe and be complemented by further action at European level.

This task of regulatory reform and market (re-)creation is extremely daunting. It is not surprising that many in the energy sector want to try and remove the complications of decarbonisation given the existing difficulties of renewing Europe's energy infrastructure in the middle of a sustained economic and financial crisis. Hence the promotion of the alternative scenario that Europe can follow a decarbonisation path which is dominated by gas power for the next two decades; thus delaying fundamental choices on technologies and market reform. But this is an unrealistic, risky and potentially expensive option.

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⁶ For a discussion on the necessary elements of electricity market reform see <http://www.e3g.org/programmes/europe-articles/politically-robust-package-of-power-market-reform/>

Countries such as the UK and Germany, who have already developed detailed strategies for decarbonising their economies out to 2050, already know the strategic dangers of relying too heavily on gas. In balancing the economic and technology risks of moving to a zero carbon economy the early decarbonisation of the power sector gives valuable flexibility by enabling the option of largely electrification in the building and transport sectors. This looks likely to be far less costly than relying on biomass-based alternatives in a world with sharply growing competition for different uses of agricultural land.

The UK government has estimated that this implies them delivering an effectively zero carbon power sector by 2030⁷. While the time for complete power sector decarbonisation will differ in other countries depending on the age of their existing power stations, it is clear from this work that gas will remain a limited part of the low carbon transition unless carbon capture and storage (CCS) can be deployed at scale across Europe from the mid-2020s⁸. The uncertainties in demand, technology, cost and geological storage around CCS means that commercial risk around investment in new gas power stations will begin to rise quite soon.

Luckily the fundamental choices for Europe as whole are not as difficult as those for individual investors. Moving to a low carbon economy will be complex and require fundamental change, but it also presents huge benefits and opportunities under all possible future scenarios. If Europe's leadership on climate change continues to drive action globally then economic damages from climate change and the costs of managing climate risks will be dramatically lower. Europe will also reap even higher benefits from its current technological and business leadership in global low carbon markets. If global action on climate change is much slower than hoped this will result in high and volatile fossil fuel prices. Investment in a low carbon pathway will help protect Europe's economy from these systemic risks. In most studies the cost of going low carbon in Europe is zero when oil moves above around \$100bbl. Even delivering the modest Europe 2020 targets would see Europe saving €300bn from a three year oil price shock in the early 2020s⁹. **There is no low cost, high carbon future for Europe**

In the next decade Europe needs to drive the necessary investment for energy security while keeping on a reliable and efficient low carbon path. The planning horizon for major infrastructure and technology development means that this requires setting a trajectory and building options for the low carbon economy of the 2020's and beyond. Different countries and companies will continue to take different bets on low carbon technologies based on their economic assessments, natural endowments and national preferences. But the economic architecture needed to underpin the transition from a fossil fuel based system into a high capital, high efficiency system is the same whether it is mainly based on off-shore wind, CCS, solar or even nuclear energy.

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⁷ For official analysis of UK power sector trajectories see <http://www.theccc.org.uk/reports/fourth-carbon-budget>

⁸ See <http://www.roadmap2050.eu/> for a discussion of the role of CCS in EU power sector decarbonisation

⁹ See <http://www.roadmap2050.eu/attachments/files/Macro-economics.pdf>

Europe needs to implement a comprehensive package of reforms in the next 5 years

To deliver the low carbon economy European governments will need to take more risk out of private markets through regulation and direct financial interventions. This de-risking must be carefully designed, targeted and will often be temporary. It needs to tackle existing oligopolies by strengthening the competitive and market incentives needed to promote new entrants. A critical focus must be active intervention to construct the new markets and business models needed to drive the energy efficiency revolution needed across Europe.

Risk needs to be actively managed across four areas: politics; finance; technical capacity and market opportunities.

Politically, investors need to have increased confidence in the enduring trajectory of European climate and energy policy. This could be done by increasing the ambition of European action to 2020 by raising the carbon reduction target to 30%¹⁰ or by tightening up the targets in the emission trading system (ETS) through a set-aside of ETS permits¹¹.

As important as stronger targets is the need to increase investor perceptions that European renewable energy and climate targets are politically sustainable during a time of falling real incomes and rising energy prices. The best way to achieve this is by reducing consumer bills in the short term through a massive increase in residential energy efficiency investment. Currently Europe is delivering under half of the energy efficiency needed to deliver its carbon targets; despite much higher than anticipated energy prices¹². More countries should adopt the successful German model of supporting consumer efficiency by blending low interest rate loans and targeted subsidies funded from ETS auctioning revenues¹³.

Financially, power sector investors need to see greater certainty from reformed electricity markets which are moved away from commodity market structures and onto systems of long term contracts. Reducing price risk will allow a greater diversity of companies to enter the market for both centralised and distributed power investment. Market reform also needs to set a sustainable path for future gas investment and ensure efficient purchasing of system stability services from thermal power stations, demand side reductions or imports.

National public banks such as KfW Bankengruppe in Germany, Caisse des Dépôts et Consignations (CDC) in France, Bank Gospodarstwa Krajowego (BGK) in Poland and in the UK

¹⁰ For a detailed discussion of the economics of moving to a 30% target see <http://www.e3g.org/programmes/europe-articles/eu-should-raise-its-emissions-reduction-target-latest-e3g-briefing/>

¹¹ For details of the ETS set-aside issue see <http://www.clientearth.org/reports/clientearth-legal-briefing-ets-cap-and-set-aside.pdf>

¹² See http://www.roadmap2050.eu/contributing_studies for analysis of EU energy efficiency

¹³ For details of how such schemes could be applied see http://www.e3g.org/images/uploads/E3G_Financing_the_Green_Deal_May_2011.pdf

the new Green Investment Bank can play a critical role in the low carbon transition¹⁴. Priorities should be providing additional risk management instruments in immature sectors like offshore wind and low cost finance for residential energy efficiency. Alongside the EIB, national banks could help grow the European market for green infrastructure bonds, which would allow these sectors to tap into the €18 trillion in assets held by global pension funds. Pension funds are looking for long-term inflation linked assets but are currently under-investing in infrastructure due the immaturity of the bond market and perceived policy risks. Smart intervention could overcome these barriers.

Technically, there is a need to strengthen European electricity infrastructure so that the large amounts of different renewable energy resources that exist at the periphery of the continent (wind in the North Sea, solar in the Mediterranean, hydro and biomass in the East) can be efficiently connected to major EU demand centres. Strategic infrastructure would lower risks to project developers that there is a reliable market for renewable power. European leaders should spend as much diplomatic energy on ensuring electricity inside Europe and the near neighbourhood as they have on projects like Nabucco. Delivering an effective European grid will also require agreement to the infrastructure regulatory package and the Connecting Europe Facility proposed by the Commission.

Perceptions of future market opportunities need to be strengthened if companies are to direct investment into EU markets. To maintain investment in renewable energy beyond 2015 suppliers will need to have greater visibility of demand into the 2020's. Otherwise they will build supply chains and factories elsewhere. The same holds for the energy efficiency industry which needs much more clarity on forward demand before companies will invest in building new businesses at the scale needed. Greater certainty can be delivered by setting goals for renewable energy to 2030 alongside a clear trajectory for decarbonising national power sectors; this could also include a progressively tightening emission performance standard for new power stations based on CO2 emissions per unit electricity produced.

The majority of these instruments need to be deployed at national level and designed based on the precise structure of national energy economies. European action should focus on critical international actions such as ETS set-aside, facilitating rapid development of grid infrastructure and driving faster deployment of energy efficiency. European institutions can also play an important supporting role in providing the necessary finance through the EIB, European budget and innovative instruments such as European Project Bonds which are under discussion in 2012.

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¹⁴ For a review of current public financing of low carbon infrastructure across a range of Europe countries see <http://www.e3g.org/programmes/systems-articles/european-perspectives-on-the-challenges-of-financing-low-carbon-investment/>

Economic policymakers must support radical reforms to deliver the low carbon transition

The vital need for direct financial intervention raises the importance of the initial dilemma of resistance to the low carbon agenda among European economic policy makers. Currently, many finance ministries are resisting innovative financial instruments, such as national efficiency financing and European project bonds, on the grounds of fiscal discipline. They argue that launching a new class of financial instruments will undermine restrictions on public debt brought in after the crisis and damage market confidence in fiscal consolidation.

While understandable these fears are dangerous for the European recovery. Underinvestment in EU energy assets will undermine European economic recovery and fiscal stabilisation in the later part of this decade. Conversely, sensible reforms which kick off a wave of productive infrastructure investments in the low carbon economy would help drive recovery and job creation across Europe. The economic reforms outlined above do not put financial risk onto taxpayers, but rather onto energy consumers who will pay to support the transition over a forty year period. It is a matter of record in all European countries that people are more likely to pay their electricity bills than their taxes, so if well constructed these mechanisms should be financially sustainable and low risk.

The fate of the low carbon economy has largely shifted from the hands of environmental policy makers to energy and economic decision makers. The stakes are high and failing to take tough and necessary decisions will result in serious economic and energy security problems beyond 2015. We cannot afford the comfortable delusion that the economic models of the past will deliver if only we could remove the uncomfortable implications of climate change. We have to deliver prosperity and security while solving both the climate and financial crises. Individual Member States are beginning to lead the way in developing the necessary regulatory and financial models. We now require concerted and cooperative action to implement these reforms across Europe.

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