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BRIEFING PAPER, December 2013

Public support, competitiveness and growth: Why energy efficiency is a key component for making the 2030 package work

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1. The end of the era of cheap energy

Across Europe energy costs are rising. While there have been multiple innovations on energy efficiency policy at EU and national level, to date the policies both planned and in place have only just managed to keep up with rising demand. This is evidenced by the fact that from 1990 (when 1076 Mtoe final energy was used) to 2020 (when 1078 Mtoe final energy use is projected) absolute energy consumption has remained almost static, despite the raft of policies put in place[1].

With average electricity and gas prices having increased across Europe by more than 30% and 40%, respectively, in the past 10 years[2] more needs to be done to manage their impact on consumer energy bills, national government balance of payments and industry competitiveness. To date European governments have resorted to various means to reduce the burden of rising energy prices on business and consumers. While an attractive short-term fix, this has led to additional complications for Governments. For example regulated energy prices for consumers in Poland means the burden of rising costs falls in industry instead. In Germany the reverse is true: in 2012, tax exemptions for energy-intensive industries amounted to about €13 billion, 33% higher than in 2005[3]. The costs instead were borne by householders and less energy intensive businesses. In Spain the Government has accumulated €26bn in debt through not passing on the cost of feed-in-tariffs to support

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[1] Eurostat data
[2] Eurostat data
[3] See Küchler, S. (2013) Ausnahmeregelungen für die Industrie bei Energie-und Strompreisen, Forum ökologischsoziale Marktwirtschaft, available on http://www.foes.de/pdf/2013-09-Industrieausnahmen-2005-2014.pdf

renewable energy to electricity consumers[4]. Such short-term fixes are not sustainable. The era of cheap energy is over - and whether you believe in a high or a low carbon future for Europe, energy prices will only continue to increase.

The primary driver of increasing energy costs in Europe is rising global energy demand. This in turn is driven by the increasing global population (which has increased by 32% since 1990 to almost 7bn people in 2010[5]) and a desire by those in industrialising countries to have the same living standards as those in developed countries. For example, China, which has overtaken the US as the world's leading energy consumer, is projected to account for the largest share – 40% - of the growth in global energy consumption over the next 30 years, with its natural gas consumption expected to rise by more than 360%[6]. In the UK, 54% of electricity price increases in the past few years have driven by increases in gas prices not green policies[7]. Both in the UK and in Germany the price paid by the average household for natural gas for heating has increased by ~130% and ~30% respectively between 1996 and 2010[8].

EU energy import dependence has increased rapidly since 1990, when it stood at 40% compared to 53.8% in 2011[9]. In 2011 ~900 ktoe of the EU's energy was imported, equating to 6.2% of EU GDP[10]. Some believe that shale gas represents an alternative source of cheap fossil fuels. But a review of the economic case underpinning the US 'Shale Gas Revolution' shows the sector is heavily reliant on Government subsidies. In 2012 the capital costs of maintaining production in more than 7,000 wells was US$42 billion per year. In comparison, the value of shale gas produced in 2012 was only US$32.5 billion[11], and was a main driver for producers seeking lucrative export markets such as the UK. This casts doubt on the long-term economic viability of the sector. Additional concerns arise from the fact Europe lacks both the infrastructure and the legal framework (in the form of property rights) needed to stimulate demand and facilitate investment - and the simple facts of the different European geology and a more densely populated landmass in Europe will further challenge its ability to deliver at scale.

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[4] http://www.ideal.es/agencias/20130925/economia/soria-advierte-deficit-tarifario-2013_201309251141.html

[5] UN Department of Economic and Social Affairs World Population prospects: The 2012 revisions See http://esa.un.org/unpd/wpp/Excel-Data/population.htm

[6] US Energy Information Administration, International Energy Outlook 2013, http://www.eia.gov/forecasts/ieo/

[7] UK regulator OFGEM calculated that between 2004 and 2011, £35 of the £65 increase in the average UK electricity bill was due to gas price increases.

[8] See http://www.theccc.org.uk/wp-content/uploads/2012/12/1672_CCC_Energy-Bills_bookmarked.pdf

[9] http://www.iiea.com/blogosphere/eu-energy-import-dependence and http://ec.europa.eu/energy/observatory/countries/doc/key_figures.pdf

[10] Calculated using $111 bbl (average spot price of Brent in 2011). Data sources Eurostat, EC Economic and Financial Affairs, EIA, BP

[11] Ibid

2. The 2030 opportunity

The 2030 energy and climate change package represents an opportunity to start to turn this situation around, weaning Europe off increasingly expensive fossil fuel purchase and refocusing capital allocation toward low carbon energy options. In an era of scarce public resources, the priority focus of Government must be on designing new policy and regulatory frameworks that can redirect this flow of capital out of the European economy toward internal infrastructure investments that instead will drive growth, contribute to mitigating climate change and at the same time help manage the impact of rising energy costs on the European economy. Without it, the continued competition for limited and increasingly expensive fossil fuel resources will threaten the pillars of European prosperity.

The current piecemeal approach to driving energy efficiency uptake in Member States has not been robust enough[12]. Energy efficiency – which for the purposes of this briefing paper is taken to mean demand side management technologies and materials ranging from insulation and low energy light bulbs through to a broader suite of smarter 'supply side' technologies including district heating and smart grids - represents a core element of enabling successful and affordable delivery of Europe's low carbon transition. Demand side measures are necessary for two key reasons:

- Minimising the cost of delivering greenhouse gas (GHG) reductions, by helping to define and in doing so minimising the amount of energy infrastructure (including renewable energy) that needs to be built.
- Managing the impact of renewable energy intermittency on the broader energy system, for which demand side measures such as smart grids, along with greater European grid connectivity, are key[13].

The 2030 framework should set a clear pathway to unlocking this potential and delivering a low carbon, competitive Europe with energy efficiency at its core. It will be crucial to take into account three elements when building this pathway: (1) energy affordability, (2) competitiveness and (3) demand side management as a growth opportunity. Each is explained below.

(1) ***A long term plan for energy affordability is key to maintaining public support*** - The increasing price of energy means that in many Member States, people are starting to see their standard of living falling as it becomes increasingly difficult to heat homes properly, afford to fill vehicles with fuel and use electricity services to the extent desired. For

[12] EEA (2013)Tracking progress towards Europe's climate and energy targets until 2020 states that energy efficiency is the worst performing area in the 20:20:20 EU climate and energy objectives

[13] Greater connectivity and demand responsiveness is critical to managing costs: as an example in Summer 2013 wholesale power prices fell to negative €200/MWh in France due to low demand and high renewables output, yet the UK carried on burning imported coal and gas as we had insufficient grid connections to take advantage of the free power See http://ec.europa.eu/energy/observatory/electricity/doc/20130814_q2_quarterly_report_on_european_electricity_markets.pdf

example, heat and electricity bills now account for a growing share of the average expenditure of households, varying between 7% and 17% including private transport costs. Poorer Europeans are faced with energy expenditures of 22% of total expenditure in some Member States[14]. In the UK, research has shown that one in five UK households live in fuel poverty[15], with alarming consequences for health impacts and winter deaths[16]. A recent survey found 57% of those polled believed energy efficiency in homes should be the UK's top infrastructure priority – above power and rail investments[17]. In Bulgaria the Government fell in 2012 as a result of concern about unaffordable energy prices[18]. Even in Germany, the most recent analysis shows over 13% of households living in fuel poverty[19]. Some more cynical politicians are blaming rising energy costs on 'green levies' and using falling living standards as a reason to abandon support for the low carbon transition. But this misrepresents the facts. In Germany in 2010, the renewable levy accounted for only 8.8% of total electricity costs, whereas power generation and distribution costs accounted for 55% of costs. In the UK the situation is similar with costs for supporting cleaner energy accounting for only 4% of an average household energy bill in 2013 whereas wholesale and supplier costs accounted for 66%[20]. Quick fixes such as slashing green levies will only exacerbate the problem longer term – pushing the EU to more and more dependence on fossil fuel imports. A long term solution is needed: the EU needs to adapt to this new set of circumstances by ensuring the population is properly able to measure and therefore manage what they use through behaviour change and to ensure that energy is used more productively through ramping up investment in energy efficiency measures. A particular priority needs to be placed on ensuring access to affordable energy and to warm dry homes. There is increasing evidence showing the impacts of inadequately heated homes on health and quality of life, particularly for children, the elderly and those living with disabilities[21]. In a modern society this should be unacceptable.

Recommendation: A priority needs to be placed on ensuring that while prices increase per unit of energy generated, fewer energy units are used to deliver the same services. In this way the energy bills of householders can be stabilised. It will require a strong focus on

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[14] EC Energy challenges and policy (2013) Commission contribution to the European Council of 22 May 2013

[15] Meaning they spend 10% or more of their income on energy

[16] See the Energy Bill Revolution at www.energybillrevolution.org

[17] See http://www.bbc.co.uk/news/science-environment-25238766

[18] See http://www.economist.com/news/europe/21572252-bulgarian-prime-minister-unexpectedly-resigns-power-protests

[19] Using the latest availabe data – 2008, given rising energy costs it is likely the number is higher now. German Parliament (2012), Energiearmut erkennen und Lösungen anbieten, Antwort der Bundesregierung auf die Kleine Anfrage der Abgeordneten Bärbel Höhn, Markus Kurth, Daniela Wagner, weiterer Abgeordneter und der Fraktion BÜNDNIS 90/DIE GRÜNEN, Drucksache 17/10582 17. Wahlperiode 30.08.2012

[20] Financial Times (2013), Why green taxes are less than they seem, http://blogs.ft.com/off-message/2013/10/23/why-green-taxes-are-less-than-they-seem/

[21] See ee EBR and ACE (2013) *Families and fuel poverty*, Energy Bill Revolution and Association for the Conservation
of Energy, http://www.energybillrevolution.org/wp-content/uploads/2013/02/ACE-and-EBR-fact-file-2013-02-Families-and-fuel-poverty-final.pdf

driving energy efficiency uptake in the housing stock – through deploying a suite of demand side measures including smart metering, biomass district heating and insulation measures. There would be particular value in introducing a target on heat demand in buildings as a way to drive investment in this sector forward. As this sits outside the EU emissions trading scheme (EUETS) remit it would not impact on the carbon price.

2) Concerns about competitiveness must be addressed – One of the arguments vested business interests use most in their attempts to dampen ambition in the second climate and energy package it that it will damage European competitiveness. For example, Business Europe has noted in its May 2013 report *Lessons Learnt from the Current Energy and Climate Framework* that "industrial energy prices in the US are on average significantly lower than in Europe. There are indications that especially lower prices for gas and coal are the main drivers for this cost advantage. Therefore, US industry already has a "head start in global markets – this means that any additional cost burden on the European industry will impact its competitiveness". Other industry groups claim shale gas offers a new route to cheaper energy. However both these sets of claims are misleading and a gross simplification of the actual economic picture and of market dynamics.

These business assessments rest to a large extent on a single key assumption: that the US and other part of the world, including Europe and China, will experience a sharp increase in output through the exploitation of shale gas and oil through hydro-fracking. However, the economics of the US 'Shale Gas Revolution' are increasingly being thrown into doubt, as is the extent to which reserves of unconventional oil and gas around the world are commercially viable since they have yet to be systematically explored. Currently shale gas accounts for 40% of US natural gas production. However, a closer examination of the headlines indicates that shale gas may well not be a cheap 'third way' for Europe that some claim. One immediate concern noted above is that the shale gas industry is substantively underpinned by Government subsidies[22]. These subsidies could perhaps be justified on the basis of job creation: however there is no evidence that the number of jobs created in shale gas is any larger than those that could be created in other parts of the economy as a result of a similar subsidy regime[23]. In addition two-thirds of current volumes of gas are sourced from only three sites that are now showing steeply decline recovery rates and decreasingly attractive economics and – as noted above - has lead US producers to seek more lucrative export markets such as the UK to recoup costs.

This scepticism about concerns over competitiveness issues are further backed up in recent KfW Bankengruppe report[24]. The report notes that for businesses in the USA, the cost of industrial gas has indeed fallen by around 30% and electricity costs by around 1% since 2010.

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[22] Deborah Rogers (2013) Shale and Wall Street: Was the decline in natural gas prices orchestrated?, Energy Policy Forum

[23] J. David Hughes (2013) Drill, Baby, Drill – Can unconventional fuels usher in a new era of energy abundance?, Post Carbon Institute

[24] https://www.kfw-ipex-bank.de/International-financing/KfW-IPEX-Bank/Presse/News/Newsdetails_27781.html

Conversely in Germany business have seen gas prices increase by 15% and electricity by 10% over the same period. The key question with regards to competitiveness then becomes whether lower comparative energy costs in the US have enabled US companies to produce their goods at a lower cost than German ones. The KfW analysis finds that this is not the case: the producer price indexes for both countries have shown similar trends in 2010. This is due to the relatively low share of energy costs in German company costs – and the report concludes that energy price rises in Germany has had only a very minor impact on producer prices and thus ultimately on competitiveness. The analysis does acknowledge that for some energy intensives - such as the production of glass and ceramics, paper production, metal making and the chemicals industry - for which energy costs have a higher share of total costs – there will be more of an impact. But it goes on to state that they have insufficient economic weight within Germany (contributing less than one-third to the manufacturing sector) to influence the competitiveness of an entire economy on their own.

A clear conclusion from this is that a strong focus on increasing the energy efficiency of European businesses represents a clear opportunity for European business. Data from the EU Chemical Industry Association also backs up this point: it shows that EU chemicals industry grew by 1.6% pa over the past 10 years despite economic crisis and US shale gas competitive advantage. In the US, chemicals industry shrank during the same period. Similarly a recent OECD analysis shows that robust implementation of energy efficiency measures enhances the competitiveness of European business and of energy intensive industry in particular. As an example, taking value-added as a proxy for profits, the analysis indicates that profits in the European iron and steel sector will increase by 0.5% by 2035 as production shifts from least developed countries to the EU as a result of reduced production costs[25].

Furthermore, there is a risk of job loss and competiveness by not investing in energy efficiency. In the UK, for example the government recently announced that it planned to scrap an energy efficiency measure called Energy Company Obligation (ECO). This is affecting business confidence in the sector and in the UK there are now almost 7,000 fewer people working in insulation businesses than this time last year. The reason is falling demand for insulation in the buildings sector. It is a simple fact: companies build factories and invest in R&D where there is demand. Without a certainty over the likely future demand for energy efficiency products, companies will not have the certainty needed to invest and expand to build a world-beating industry in Europe.

Thus, both empirical analysis and scenario modelling demonstrate that claims from some sectors of industry about so-called competitiveness losses due to a robust implementation of a 2030 climate package are both an oversimplification and misrepresentation of the true picture. Where businesses have focused on retaining productivity levels in the face of rising

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25 OECD (2013) Economic implication of the IEA Efficient World Scenario. It is important to note that the findings of the OECD analysis are predicated on the phase out of subsidies to fossil fuels – which currently amounted to EUR 26bn in 2011. See http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+WQ+P-2013-008112+0+DOC+XML+V0//EN

energy costs they remain competitive with US counterparts. Looking forward, the EU economy stands to gain further in terms of competitiveness gains if a stronger focus is placed on improving the efficiency of energy management and use.

Recommendation: The debate needs to be refocused away from how a single cost input (energy) will impact on the overall cost structure of businesses in Europe to the real issue at hand: how European governments will create long term solutions to enabling industry deal and benefit a world with rising energy costs. Mandatory obligation should be considered for improving industrial energy efficiency. Industry forms part of the EUETS traded sector, so the level of obligation can be informed by the desired contribution from industry to meeting that overall GHG target. The carbon price combined with requirements on efficiency standards can be used drive uptake. This will help deliver a competitive industrial base but also create demand from those sectors of industry that manufacture these technologies (in some cases these are the same companies who argue they will lose out), creating further opportunities for innovation and growth.

(3) ***Using incentives and regulation to improve demand side management and capture energy efficiency gains as a growth opportunity*** - While energy efficiency is the most cost effective way to reduce GHGs, experience shows it will not 'just happen by itself'. The investment opportunities are often hidden and the transaction costs, compared to the scale of each individual investment, can be high[26]. This means that greater effort will need to be made by Governments to secure this opportunity. There needs to be a strong focus on interventions that reduce transaction costs and help accelerate market creation. One approach could be to introduce a demand side feed in tariff. But regulation as well as incentives will be important. As an example, the single biggest driver of efficiency gains in Europe thus far has been the CO2 in cars regulation: there needs to be a focus on tightening standards in order to assist ordinary consumers struggling with rising energy costs.

Finally, the backward-looking view of organisations such as Business Europe fails to take into account the constantly evolving nature of business and industry, which must constantly adapt to changing business environments and seize new growth opportunities. Europe's low carbon transition represents significant new commercial opportunities for heavy industry – as it will require increased amounts of cement, plastics, steel, chemicals and so on to deliver the technology and infrastructure investment needed. Taking a more specific look at energy efficiency, the recent 2013 IEA Energy Efficiency Market Report highlights that in 2011 investments totalled $300bn globally – this represents a very significant and growing market opportunity for businesses. The value added of this investment is, of course, energy saved. For example a Bank of America Merrill Lynch US study showed that for every dollar spent on

[26] I. Holmes & R. Mohanty (2012) The Macroeconomic Benefits of Energy Efficiency. E3G IEA (2007) Mind the Gap.

energy efficiency appliances, buildings, equipment and expenditures avoids more than US$2 of investment in electricity supply, and saves up to US$4 in lifetime energy expenditures[27].

Recommendation: Governments should consider regulation as well as incentives and additional institutional capacity to help improve the energy efficiency of all sectors of the economy and to enable those businesses providing the technologies to reduce energy demand to grow further.

3. Moving forward: building energy efficiency into the 2030 framework to deliver ambition

Currently there is a huge amount of debate on whether any targets beyond an overarching GHG target should be included. Confounding factors blocking ambition in these discussions are very serious and include:

- lack of clarity on what levels of energy efficiency are possible, in part driven by shifting baseline assessments of the potential in this same model;
- an inherent inability of the model underpinning the 2030 Impact Assessment being undertaken by the European Commission to model more than 45% overarching GHG reduction – leaving little/no room for a ramp up of ambition in renewable and energy efficiency. For example the reference scenario assumes there will be no ambitious energy efficiency policies in place (with less than 1% annual improvements made per annum);
- the need to 'save' and reform the EU's flagship policy for GHG reductions EU Emissions Trading Scheme and fear that moving much beyond business as usual levels of investment in renewable energy and energy efficiency will undermine the EUETS;
- the belief in some Member States that efficient markets will deliver the GHG reductions at least cost without the need for further intervention, again reinforcing a single target approach;
- the wish by some Member States to simply repatriate energy policy, and achieving this by dropping renewable energy targets set at EU level.

GHG targets are important. They set the level of ambition for emissions reductions and place a price on carbon. Alone, however, carbon prices have not been and will not be an efficient or wholly effective driver of investment in low carbon technologies. In the case of energy efficiency there are multiple non price-related market barriers that need to be addressed, indicating a need to move beyond GHG targets to unlock this potential. Similarly in the EU it is technology-specific incentives such as feed-in tariffs that have driven renewables uptake – not carbon prices. Recent analysis by E3G indicates the optimal carbon prices to drive

[27] BoAML – Less is more, Global energy efficiency

investment are country specific and, even for a single country, can vary enormously depending on the circumstances. This underscores the point that even with a strong carbon price, additional instruments will be needed at national level to deliver investment and energy security[28].

Clearly more time than is currently allocated to the political process is needed to consider these issues fully and come up with and agree a package that can deliver ambition. However there is an opportunity to look again at the potential for energy efficiency to raise levels of ambition and address concerns about affordability. The Energy Efficiency Directive (EED) Review in 2014 will be an important tool to assess the EU energy savings potential and – if written into the forthcoming European Commission Communication on 2030 – provides an opportunity to bring forward further legislative proposals in 2015 to deliver an energy efficiency package that supports ambition in 2030.

Recommendation: To keep the option for ambition in 2030 open, it will be crucial to create a 'placeholder' to enable the re-evaluation of the contribution of energy efficiency to the 2030 package in light of the latest savings potential that the EED review will provide. This can be achieved by setting out in the European Commission's 2030 Climate and Energy Package Communication (due to be published in January) that based on the findings of the EED there will emerge in 2015 a legislative proposal on a binding package of energy efficiency measures for 2030. In addition a statement should be made in the Communication that linked to the emergence of these proposals a further option will be held open to increase ambition in the 2030 GHG target. This will 'lock in' the potential to come back to energy efficiency as part of the package and to use its increased contribution to further raise ambition overall.

It also creates time to design a package of measures that are fit for purpose and work with – not against – GHG targets and carbon prices. It would make sense to consider setting a 2030 'efficiency budget'. The size and allocation of the 2030 'efficiency budget' could be set based on the findings of the EED review and have the potential to include mandatory sectoral objectives on heating (mainly in buildings) and on industrial efficiency, since these two areas are where the greatest energy savings opportunities lie. In addition further measures (rather than further targets) should be considered for driving efficiency across transport, appliances and the power sector.

Second, policies related to structural reforms will be key to unlocking further energy efficiency potential. This includes deploying a suite of measures that includes market reform of the power sector to unlock demand side potential, market reform of the construction services sector to enable innovative companies to operate across the EU, increased institutional capacity to deliver energy efficiency within Member States and additional finance-related reforms including for example changes to how energy efficiency-related investment in accounted for.

[28] http://e3g.org/showcase/risk-managing-power-sector-decarbonisation/

With this type of approach we have the opportunity to get the 2030 discussion back on a high ambition track and make Europe a global leader in energy efficiency.