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Response to the EU Commission Green Paper

"A 2030 Framework for Climate and Energy Policies"

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Introduction

We welcome the opportunity to comment on the EU Commission Green Paper "A 2030 Framework for Climate and Energy Policies". As an academically-based network, *Climate Strategies'* role is to offer new thinking and ideas into the policy debate. The 2030 package offers an opportunity for the EU to examine in depth lessons learned and to re-establish a strong policy basis that can address the conjoined challenges of emerging from the EU's recession, and reinvigorating decarbonisation.

We are convinced that these two goals can and should be addressed jointly, in mutually reinforcing ways. The EU roadmaps suggest that the EU energy sector requires around €1trn investment to the end of this decade. Such a level of investment could make a material contribution to renewed economic growth. As argued in a recent report by the UK House of Lords European Affairs Committee, this will only be possible if there is a robust 2030 package in place which reassures private investors that Europe offers a safe and stable framework within which to make large-scale low carbon investments.

Climate Strategies hosted a workshop on interactions amongst targets in Berlin in June 2013. The three authors of this submission have also recently completed a major book (to be published this autumn) which assesses lessons learned from the last two decades of energy and climate policy, and conjoined academic research, and consider their implications for future directions. In this submission we draw upon the frameworks developed and apply it to the challenges facing the EU 2030 package.

Our core conclusion is that there are fundamental economic reasons to maintain a three pillar approach to EU targets to 2030, whilst the EU needs to learn major lessons concerning the setting of targets and design of implementation mechanisms.

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A. Targets

CondocQ1. *Which lessons from the 2020 framework and the present state of the EU energy system are most important when designing policies for 2030?*

From the current difficulties, some analysts and governments are drawing the conclusion that having multiple targets is problematic and - whatever the case at the time for the 2020 package – consequently that the 2030 package should not replicate multiple targets. We are concerned that this is drawing the wrong conclusion. A deeper analysis of the range of economic and decision processes and the diversity of decision-makers makes it clear that multiple targets are needed to drive key components of a transformative process; moreover that three distinct areas are needed at the EC level, resting on different and complementary policy goals and economic foundations.

The right lesson is that the framework must better understand how these may interact and how to make an overall package more robust in the face of uncertainty in delivery of different components and the wider macroeonomic context. Our submission outlines the different policy targets and domains involved and corresponding pillars of policy, and suggests some more specific implications for the EU 2030 package that flow from this.

CondocQ3. *Have there been inconsistencies in the current 2020 targets and if so how can the coherence of potential 2030 targets be better ensured?*

The main inconsistencies were setting three targets without sufficiently clear articulation of the different goals of the different targets, in the expectation that the GHG target would be tightened, and without sufficient appreciation of the uncertainties and potential for overdelivery of some components.

The case for multiple targets needs to be grounded in their different roles. Ensuring their coherence then requires fuller analysis of their interactions, better understanding of the intrinsic nature of uncertainties, and more robust design of key components.

CondocQ4. *Are targets for sub-sectors ... appropriate?*

Policy targets can be seen as an interface between political objectives and specific policies and programs (Figure 1): [4]

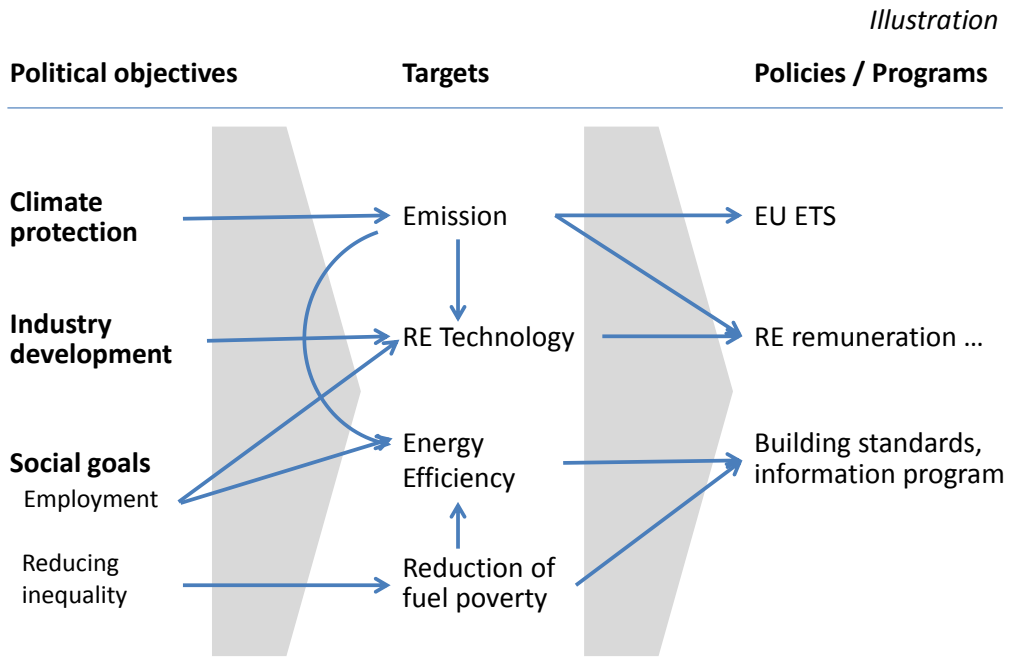

Figure 1: The role of targets as interface between political objective ad policies and programs

Societies pursue multiple policy objectives, of which climate only is one aspect. Typically, objectives like securing economic development, creating employment opportunities and addressing social hardship are of very high priority for policy makers. One motivation for the formulation of multiple targets as part of the EU 2030 package is the need to reflect these multiple policy objectives.

A second rational for the use of multiple targets relates to their specific role in the policy process. Targets provide guidance for policy makers to implement and manage policies and programs and offer visibility for companies to inform strategic and investment choices. In the remainder of the submission we discuss the type of policies that are required and the implication for the type of targets needed.

[4] Enquete-Kommission "Nachhaltige Energieversorgung unter den Bedingungen der Globalisierung und der Liberalisierung" des 14. Deutschen Bundestages: Endbericht. Drucksache 14/9400. Bonn: Bundesanzeiger Verlagsgesellschaft, 2002.

B. Instruments

Many of the questions in the consultation document are interrelated, but our response covers principally the following ones.

- *Are changes necessary to other policy instruments and how they interact with one another, including between the EU and national levels?*
- *How should specific measures at the EU and national level best be defined to optimise cost-efficiency of meeting climate and energy objectives?*
- *How can fragmentation of the internal energy market best be avoided particularly in relation to the need to encourage and mobilise investment?*
- *How can EU research and innovation policies best support the achievement of the 2030 framework?*

There is a clear mapping between these policy targets, and underlying economic processes and associated instruments. As a consequence of the range of policy objectives inherent in the climate discussion, it is not sufficient to focus only on a greenhouse gas target. In addition to a trajectory or milestones, these objectives may also need targets to ensure key social concerns are addressed and the necessary transformational activities are pursued and coordinated.

Figure 2 structures policies in three groups. These policy pillars are based on deeper levels of different economic processes – three domains - as developed and analysed in our book; the underlying theoretical bases are indicated in column 4 of the Figure.

To a first approximation one might link energy efficiency targets to the policies and programs under pillar I, the emission target and price formation embedded in EU ETS to pillar II, and renewable energy targets to pillar III.

Pillar of policy/ response	Dominant timescale / Domain	Decision framework	Field of theory	Mitigation economic process	Realm of opportunity
Standards and engagement (Pillar I)	Short term – *Ignore / satisfice*	Diffident or disempowered	Behavioural & Organisational	Move closer to the 'best practice frontier''	'Smarter choices'
Markets and pricing (Pillar II)	Medium term – *Optimise*	Costs / impacts are tangible and significant	Neoclassical & Welfare economics	Make best trade-offs along the frontier	Substitute cleaner production and products
Strategic investment (Pillar III)	Long term – *Secure/ Transform*	Transformational risks and opportunities	Evolutionary & Institutional	Evolve the frontier	Innovation and infrastructure

Figure 2: The 'policy pillars' required to exploit the realms of opportunity, based on fields of theory[5]

[5] Grubb, Hourcade and Neuhoff, Planetary Economics and the Three Domains of Sustainable Energy Development. London: Routledge. Forthcoming October 2013

The limitations of single pillar policies

Since the characteristics of energy systems and climate change span all three domains, changing course will involve working across all three pillars of policy simultaneously. Indeed, relying on a single pillar is ultimately self-defeating:

A focus purely on increased efficiency is clearly inadequate: it basically makes it cheaper to do things that consume energy or emit carbon, with the consequence of 'rebound'.

Relying on price alone is the favoured tool from the classical perspective, it maximises the efficiency of market transactions but assumes conditions which do not apply in the First or Third domains, and political obstacles have hugely constrained the pace of introducing price measures. The short-run response of energy use to price increases, without complementary measures, is weak, and the timescale of response in the energy supply system is decadal. Moreover the failures in the innovation chain blunt any innovation response. Relying on price alone risks generating more resistance than positive action.

Purely technology-driven approaches without other measures are also self-defeating. A key lesson is that successful innovation requires a mix of push and pull forces. The low level of R&D spend in the energy and construction sectors signify structural failures in the innovation chain which cannot be fixed by carbon pricing. But if there is no market-based pull, technology programmes will have to be entirely driven by government. The technology pillar involves targeted efforts on both push and pull: without a market, innovation will either wither, remain confined to the laboratory, or totally dependent on subsidy. But successful policies on the other pillars are ultimately are required to complete the transition

We need, in other words, to work with all three domains and the corresponding pillars, to meet the different policy goals, at the same time.

Interactions between policy instruments

This will be all the more effective – and compelling - if we also understand more clearly the interactions between the Three Pillars, as summarised in Figure 3.

We can start at almost any point and work around the diagram. Starting with Pillar I: behavioural/organisational measures in the 'satisficing' domain will tend to improve energy efficiency, and thereby reduce the adverse impacts of Pillar II action (pricing) on consumer bills. 'Nudging' consumers should also make them more responsive to rising energy prices.

If the scope of Pillar 1 polices also engages individual preferences from an environmental perspective, this may also be a lever for innovation. The role of consumer and leading public figures in opening up the market for hybrid cars is an iconic example. Consumer interest in efficiency and environmental benefit – especially if aligned with style – may thus have an important potential to increase the effectiveness of Pillar III policies.

Moving to Pillar II – pricing – the interactions are even more striking. Rising prices will raise attention accorded to energy wastage (First Domain), thus reinforcing the effectiveness of related Pillar I policies. The revenue from economic instruments can also help to fund energy efficiency programmes, which for reasons elaborated under Pillar I can be highly cost-effective, but still require public funding – as with street-by-street programmes for building insulation, for example, along with social joint benefits.

Pricing also has multiple roles in relation to innovation. One is its obvious potential incentive role: if carbon intensive energy is going to get more expensive, there is potential economic gain to investors in low carbon innovation. As illustrated by all the energy innovation literature (and Chapter 9 in our book), this incentive is however seriously incomplete especially in electricity, construction and some heavy industry sectors. Consequently, there is also an important role for funding of innovation, including the expensive processes of scale-up to accelerate the passage of big technologies through the innovation chain.

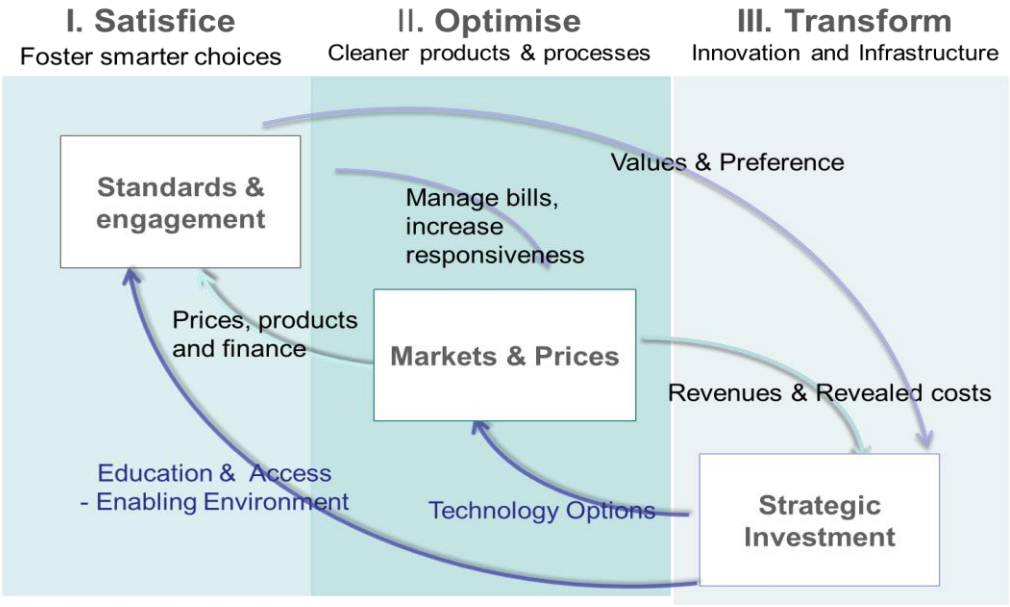

Figure 3 Interactions between the three Pillars

Finally, Pillar III policies feed back to other policy domains in numerous ways. Better, more efficient, cleaner energy technologies will help consumers respond more effectively to energy efficiency

policies (Pillar I), and expand their range of options to respond to prices (Pillar II). All this helps to keep down bills and negative economic impacts, whilst creating clear potential for economic benefit as low carbon industries grow in scale. Indeed, innovation is at the heart of managing the long run costs of tackling a problem as profound as climate change.

The infrastructure dimension of Third Domain processes are also crucial. Infrastructure can broaden the capacity to reach cleaner energy resources, and expand the capacity to integrate renewables at large scales. Institutional innovations can increase investor confidence, and thereby attract long-run capital. It is also a realm of long-term thinking, including education which can help people understand the issues and become more informed about both the problems and responses, which in turn can feed back to individual preferences and social norms – ie. to First Domain behaviour.

Combining instruments

This lays the intellectual foundations for thinking more clearly about why and how different policy instruments should be combined in relation to the EU's 2030 pacakge. As indicated, multiple instruments make sense because the different economic processes they leverage involve different entities taking different types of decision. The Three Domains provide a natural framework also for thinking about this, as illustrated in Figure 4, which depicts three 'archetypal' classes of decision-makers:

- individuals, and consumer-facing organisations – those typically for which energy consumption is a trivial cost, easily eclipsed by what their customers want (many public organisations in the service sector also fall into this class);
- most other corporations, typically earlier in supply chains, many of which have higher energy intensity and are more detached from the final consumers; and
- public authorities, charged with making decisions and policies in the public interest.

		Type of investment		
		Organisational or behavioural change	Product/Project	Strategic
		Principal decision factors		
Decision-maker	Individuals and consumer-facing organisations	Attention, habits, anchoring	Price & payback, Values or Brand	Expectations
	Corporate	Outside drivers (Consumer, competitor, regulator)	Price & payback time / market discount rates	Strategic competition / market trends and scale expectations
	Public authority	Political priorities, targets or legal mandates	Price, hybrid public-private discounting	Strategic targets, public discounting or sustainability assessment

Figure 4 Different classes of decision-makers, investments, and drivers

The correlation with the three domains is obvious. And across the top of the table are three different kinds of investment decision that these entities can take:

- investing effort in behavioural or organisational change;
- investing in specific products (purchases) or projects; and
- strategic investments in a direction of travel or future options.

These different types of decisions, obviously, broadly correlate to the Policy Pillars. Note in particular that across the matrix, price and quantity play different roles for differ entities taking different types of decisions. This is another reason why the economic debate on '*price vs quantity*' is fundamentally misguided; both are required, because they perform different and often complementary roles for different decisionmakers taking different decisions.

A final, and tangentially-related implication concerns the design of economic instruments. A submission by one of us (Grubb) to the ETS Structure Reform consultation summarised a case for a 'hybrid' approach, combining a quantity goal expressed through cap-and-trade, with a price floor or corridor or similar adjustment mechanisms. The main argument there concerned increasing robustness in the face of external uncertainties, to reduce risks for investors.

Stepping back to consider the role of prices and quantities across the three pillars shows multiple additional reasons for hybrid price-and-quantity instruments. The approach reduces price volatility and thus enhances revenue stability, and sets a minimum base which is essential if governments are to budget and plan rationally to make the best use of revenues. The price element – if stabilised - is most relevant to product and project investments. But the quantity element is more relevant to strategic investments – how big the market may be for low carbon innovations, whether to invest more in grid infrastructure to accommodate a projected scale of renewables, for example. However targets on their own lack credibility, without an implementation mechanism that can ultimately translate them to economic signals: a cap-and-trade system *gives market credibility* to targets.

Finally, considerations of uncertainty work in both directions, and across all pillars. In a hybrid instrument, the quantity goal does not only act as strategic guidance, and to enhance confidence as compared to a pure carbon tax (which can be more easily revoked in budget cycles). It is also an insurance against delivery uncertainties in the other domains. If energy efficiency or technology-pull policies deliver more than expected, a price floor has set a bottom line level of reassurance to other low carbon investors; and if other policy pillars deliver less than expected, this will be compensated by a rise in the carbon price required to ensure that the economy remains on a pathway to the long term goal. A hybrid design of economic instruments within a broader policy package across all three pillars is thus not only the most effective, but the most robust in the face of multiple uncertainties.

C. The 2030 package in context of the European economic crisis

We believe that the Energy and Climate Package will only gain the level of political support required if it is set within the wider context of the European economic crisis. Europe is a free trade zone, but the capacity to shape investment for long term growth resides with individual Member States. As long as it could be assumed that the two were largely synonymous – that free markets deliver optimal investment and growth – this did not matter. But at least for the big infrastructure-based sectors like energy, Second Domain economics do not support strategic investment. Both the decision to launch a single currency without common fiscal mechanisms, and the idea that the EU ETS could - on its own and in its current form - provide a platform for hundreds of billions of Euros of low carbon investments, are traceable to this fundamental intellectual mismatch.

The irony is that in principle climate policy and the EU ETS offer instruments that could aid European recovery: principally, to create an attractor to the huge volume of surplus savings in strategic investment ('institutional') funds, so as to secure that investment into the European energy sector (production and efficiency of use) in ways that could utilise the still-growing pool of underemployed resources currently languishing in Europe.

Europe currently risks a 'lost decade' of economic progress stemming in part from a lack of confidence about future direction for the European economy, and financial retrenchment in the aftermath of the debt crisis. Huge pools of private capital sit in funds, earning paltry rates of interest around 2%/yr or less, whilst the real economy is desperate for investment. As a recent report from the UK House of Lords noted, in principle the economic conditions are uniquely favourable for infrastructure investment – both to stimulate to economic demand, and to increase the future supply potential of the European economy.[6]

The energy sector accounts for the majority of infrastructure investment – buildings and transport are the other big ones. All are relevant to climate change. And two things we can be certain of is that we will still be consuming energy in the coming decades, and that the relative value of energy efficiency and low carbon energy should rise for as long as we remain so far adrift from the scientific necessities.

The European Commission estimates that institutional investment funds in Europe amount to around €14 trillion.[7] The European decarbonisation roadmap estimates that investments for a low carbon economy could amount to €1 trillion over this decade. Compared to European GDP totalling over €100 trillion over the decade, €1 trillion may not be enough on its own to pull Europe out of its trap, but it would be a big help.

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[6] House of Lords, European Union Committee,14th Report of Session 2012–13, *No Country is an Energy Island: Securing Investment for the EU's Future*, 2nd May 2013. HL Paper 161: "The time is right for infrastructure investment, including in energy, because it can have a multiplier effect, it can provide secure energy at a stable cost and it can boost technological advance. Low carbon generation and system infrastructure in particular can provide domestic energy production for decades at low and stable operating costs but at a high capital cost. We conclude that such investment is particularly appropriate at a time of historically low interest rates and recession … Institutional investors hold €13.8 trillion of assets but, in order to invest in energy projects, even at a time of historically low interest rates, they need confidence in policy. That is why agreement on a 2030 policy framework, by 2015, must be a priority for the EU. Without that clarity and investment, the EU will be uncompetitive and over-dependent on elsewhere to meet its energy needs, and it will fail to seize an opportunity to make a material and enduring contribution to European economic recovery."

[7] EU Green paper on long term financing

Against this European economic backdrop, our analysis of the Three Domains points to a policy architecture based around the three Pillars along the lines summarised in Table 5. Whilst each involves many levels of potential detail, the broad elements could be as follows.

Pillar 1: Enhanced energy efficiency policy for employment and cohesion. The EU Energy Efficiency Directive (2012) and Ecodesign Directives (2009) create a European framework, with the major implementation responsibilities resting with the Member States. In addition to the energy and climate contributions, strong implementation has the potential to help stimulate the construction sector across Europe, and help in particular the central European EU Member States to address the daunting social issues arising from the combination of their poor building stock, severe winters, lower incomes, and high dependence on fossil fuels. The evidence accumulated around First Domain principles and policies (chapter 4 and 5 respectively) help to inform the effective tools for delivering these gains. As well as drawing on the insights from behavioural economics, the policies could usefully be extended to include supply chain, embodied carbon, and materials efficiency.

Pillar II: Strategic reform to stabilise the EU ETS and turn it into an instrument that can support investment. The EU Emissions Trading System now carries such a huge surplus of emission allowances that there is a strong case to 'set aside' some emission allowances and implement a structural reform that strengthens the targets to 2020 and beyond, but this will not be sufficient. Any revision based purely on quantities would not address the high uncertainty in carbon prices – particularly given the scale of uncertainties facing the European economy - and thus will not restore its credibility for investment. Moving to widespread auctioning from 2013, however, enables a simple mechanism for implementing a price floor through an agreed Europe-wide reserve price on the auctioning of emission allowances. It has also created the only negotiated EU-wide instrument that could (and was originally expected to) raise hundreds of billions of Euros for Member States out to 2020.

To fulfil its potential the ETS needs some such mechanism to reduce volatility, reassure investors, and enable governments to budget for effective use of the revenues. Clarification of goals for 2030 is also an urgent need, though this may take longer. In the context of a 3-pillar approach for 2030, a reformed ETS with a target consistent with Europe's long term climate goals would not only help reduce investment risks, but insure against under-delivery in other domains, enhancing market credibility to the overall long term direction. Also by helping to stabilise revenues, it will both stabilise the instrument politically and help to provide the financial links across to other domains.

Pillar III: Multi-sector strategies for innovation and low-carbon transformation. First steps in this direction have been taken with the EU's Strategic Energy Technologies plan, and sector-specific roadmaps. These provide the background to guide innovation and infrastructure policy. For example in the power sector, the targets for the deployment for renewables by 2020 provide the basis for corresponding grid developments, and inform government and regulatory choices on planning systems, market design and remuneration mechanisms.

In looking to 2030, the energy framework would need to encompass more fully the role of 'smart and integrated' networks, to better engage consumers (establishing a link to First Domain processes) and to make the best use of Europe's renewable resources – both remote, and embedded. The EU also needs to develop a transformative strategy for heavy industry, with more clarity on technology potentials and related supports to help EU industry innovate and enhance its competitiveness. For the 'big six' this might need to be linked with ETS reforms to shift the carbon price towards consumption-based principles, to avoid discriminating against domestic production and avoiding the risk of relocating in the face of rising carbon costs. In transport, policies on e-mobility, fuel efficiency and network investments could accelerate innovation and transformation. Particular emphasis rests on the combination of innovation funding, e.g. through the SET- Plan and national policies, with deployment policies as reflected in e-mobility schemes and investments in transport infrastructure.

	Pillar I: Standards and Engagement for smarter choices	Pillar II: Markets and prices for cleaner products and processes	Pillar III: Strategic investment for innovation and infrastructure
Foundations in economic theory	Behavioural and organisational economics	Neoclassical and welfare economics	Evolutionary and institutional economics
Archetypal policy instruments	Efficiency standards Information Reporting requirements	Fuel excise duties Emissions pricing through taxation or cap-and-trade	Innovation chain funding Infrastructure investments and network regulation
Principal potential co-benefits in Europe	Direct and transaction cost reductions Health benefits (eg. buildings, urban air quality) Other benefits of improved energy efficiency - reduced domestic energy cost impacts particularly in less energy efficient / lower income parts of EU	Reduced exposure to fuel price volatility Enhanced investment due to stabilising price expectations at time of very low interest rates Demand stimulus in underemployed economies Health benefits (eg. regional pollution) Revenues and linked dividends	Accelerated innovation in low-innovation sectors Efficiency gains from improved coordination and infrastructure Greater energy integration of central and east European economies Growth in economic supply potential from low marginal cost domestic energy sources
Key policy instruments with view towards '2030 package'	Implement commitments in *i.a.* European Energy Efficiency and Eco Design Directives More consistent use of behavioural insights beyond purchase decisions to energy use patterns Supply chain carbon accounting and labelling for embodied carbon	Structural reform of European Emissions Trading System, combining set-aside of accumulated surplus with mechanisms to stabilise price eg. price floor component Move towards consumption-based (leveling) framework for big six' energy intensive sectors Progress EU Energy Tax directive to support energy and carbon taxation in other sectors	Codify strategic 2050 goal, and derive GHG target for 2030 with indicative framework of sectoral / Member State distributions Establish EU funding mechanisms for the Strategic Energy Technologies programme Clarify goals for key sectoral / industrial transitions eg. renewables target for power, low carbon vehicles *Finance:* Pilot EU LTCFI* built on project bonds, &/ or basis for strategically rising floor price

Figure 5 Summary: Application of Three Pillars in European context [8]

[8] * LTCFI = Long term carbon-based financial instrument, eg. carbon bonds, built on through European Investment Bank pilot programme of project investment bonds