



E3G

Targets, Foundations and Transformation: Benchmarks for a Successful Copenhagen Agreement

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1. Introduction

The level of ambition of the Copenhagen Agreement² is now clear. The current offers on the table would represent a decisive move to a global low carbon economy, but even under the most optimistic scenarios they do not add up to a reliable pathway to limit temperature rise well below 2C. Even if the international community does take the extra steps needed to stay below 2C, the impacts of climate change present a huge adaptation challenge to vulnerable countries. The current proposals for adaptation suggest the Copenhagen Agreement will provide an inadequate response to these unavoidable changes.

Delivering the most ambitious outcome currently available, including substantial support for adaptation, would be an astonishing result given the political and economic backdrop. However, the atmosphere does not care about political achievements, only the impact on net global concentrations of greenhouse gases.

Global emission targets will need to be tightened in the next decade to ensure a reasonable chance of avoiding catastrophic climate change. Recent estimates put the lower thresholds for many key tipping points of the climate system in the 3-4 degree range³. Irreversible commitment to major sea-level rise due to glacial melting is likely to occur at temperatures above 1.5C. A concentration target of 450ppm CO₂e gives a 40% chance of entering a 3-4C temperature range in this century. The debate over climate goals will be driven by the increasingly visible impacts of climate change and the next IPCC Scientific Assessment Report in late-2013.

From a “climate realist” perspective Copenhagen must lay an effective foundation for the next stage of global decarbonisation by agreeing a framework which is:

- **Sustainable and scalable:** an agreement where all countries can see each others’ actions inside a legally-binding and harmonised reporting system. A system robust to the inevitable policy failures which will occur, and where commitments can be “turned up” to reflect the latest climate science.
- **Credible to Investors:** an agreement that is credible and ambitious enough to form a tipping point in investor and company perceptions on the inevitability of a low carbon economic future, and that results in supportive investor statements after Copenhagen and strong carbon prices..

¹ E3G is a non-profit organisation working in Europe, the US and China to accelerate the transition to sustainable development; see www.e3g.org for more details.

² At the time of writing it remains unclear what form agreement at Copenhagen will take. This note uses the “Copenhagen Agreement” as a generic term to describe whatever finally emerges from the process of negotiations.

³ See Allison *et al*, The Copenhagen Diagnosis (2009) http://www.ccr.unsw.edu.au/Copenhagen/Copenhagen_Diagnosis_LOW.pdf

- **Transformational:** an agreement that catalyzes the changes in long term investment, innovation systems and institutions in all major emitting countries which are needed to move to a reliable below 2C trajectory from 2015-2020.

A successful Copenhagen will be the “beginning of the end” of dangerous climate change. Copenhagen must keep open the option of a below 2C future by limiting emissions, laying the foundations of a sustainable climate regime and building economic momentum for fundamental changes. A new adaptation regime must effectively protect the most vulnerable from the worst impacts of climate change by improving country and community resilience.⁴

After Copenhagen the climate change debate must immediately move from the politics of the possible to the politics of necessity. Countries must move to implement transformational low carbon strategies, and targets must be increased by 2015 in the light of the latest climate science.

2. Targets

The success of Copenhagen cannot be gauged by adding up the tonnes of carbon it may save. If this is our metric then arguments over different ways of estimating reductions will cloud public understanding of the real implications of the agreement.

For example, differences in baseline global emission projections mean that Lord Stern⁵ believes that the current maximum abatement offers could be within a 450ppm pathway, while Project Catalyst's⁶ and Ecofys⁷ analysis suggests we are far from it. Emission estimates for 2020 differ by nearly 20% between well-regarded sources such as McKinsey&Co and the International Energy Agency.

Even the highest range of 2020 targets under consideration cannot guarantee the sustainable peaking of global greenhouse gas emissions by 2015-2020, but this is what is needed to deliver a potential 2C trajectory. Planned cuts in developed countries are not large enough to offset the continued rise in emissions in countries such as China and India. Many developing countries are actually nearer the necessary trajectory than developed nations; especially some emerging economies such as Mexico⁸. Finance and technology commitments from developed countries are inadequate to shift investment in these economies onto a long term low carbon path. The impact of targets in driving low carbon transformation could also be undermined by potential “loopholes” from land use change and forestry (LULUCF), surplus emission permits (AAUs) from the previous Kyoto Protocol reduction period and growing emissions from international aviation and maritime transport.

The economic recession has dramatically lowered developed countries emissions making it feasible for them to increase their emission reduction targets without increasing costs. In fact, a strong push on low carbon investment at this part of the economic cycle would be an efficient way to create jobs and help drive economic

⁴ This note focuses on benchmarks for staying well below 2C. Detailed assessment of adaptation issues is beyond the scope of this note. However, the climate regime has yet to seriously address the impact of climate change on security and social stability; see <http://www.e3g.org/programmes/foreign-articles/delivering-climate-security-international-security-responses-to-a-climate-c/>

⁵ <http://www2.lse.ac.uk/granthamInstitute/news/bridgingEmissions.aspx>

⁶ http://www.project-catalyst.info/images/publications/taking_stock.pdf

⁷ <http://www.climateactiontracker.org/>

⁸ http://www.e3g.org/images/uploads/G20_Low_Carbon_Competitiveness_Report.pdf

recovery. The EU should drive this process by moving immediately to a 30% target with the option of increasing its target to 40% if other countries improve their offers⁹.

Rather than just considering the proposed level of 2020 emission targets and reductions from reduced deforestation an additional set of benchmarks for a successful agreement are needed including:

- **Agreement on 2030 convergence of developed country emissions:** the Copenhagen agreement should agree that developed countries shall continue to reduce their emissions beyond 2020 on trajectories which continue to converge their respective emissions intensities and results in aggregate reductions of at least 50-60% below 1990 levels by 2030.
- **Additional Actions from China and India:** to achieve and sustain global peaking before 2020 will need stronger action by fast growing developing economies¹⁰. China needs to agree to a unilateral decrease in carbon intensity of at least 45-50% by 2020, and significant additional actions beyond this supported by international finance and technology cooperation. India should propose additional supported actions to decrease its carbon intensity by around 30% by 2020. Without this scale of movement neither country will be on an achievable and cost-effective investment pathway which is consistent with 2C beyond 2020¹¹.
- **Tight Rules on LULUCF and surplus AAUs:** current Kyoto Protocol rules could allow all of the Kyoto Parties commitments to 2020 to be met through “paper reductions” ascribed to land use and forestry and surplus “hot air” emission permits rolled over from the 2008-2012 commitment period. Copenhagen must close these loopholes by agreeing a firm historical base year for LULUCF, strict limits on the use of surplus AAUs, and rules to prevent the creation of more “hot air” beyond 2012.
- **Limits on international transportation emissions:** Aviation and maritime emissions are a small but growing share of global emissions and moving to a 2C world will not be possible unless these sectors are brought into the climate regime. Targets should be agreed for these sectors at Copenhagen and linked to a finance mechanism which supports developing countries.
- **Review of mitigation and financial commitments in 2015** to “turn up” the impact of the Copenhagen Agreement so it is consistent with the latest science on avoiding catastrophic climate change.

The need for innovative mitigation finance

A deal is possible in Copenhagen which just provides financial support for adaptation in poor countries and reducing deforestation, but this will not be a deal putting us on a pathway to below 2C. There will be no chance of delivering a 2C pathway without significant international support for additional mitigation investment in China, India and other fast growing economies. This is not philanthropy but a wise and cost-effective investment in our collective climate security.

⁹ <http://www.e3g.org/programmes/europe-articles/eu-should-raise-its-emissions-reduction-target-latest-e3g-briefing/>

¹⁰ Based on the assessment of developing country trajectories in <http://www.umweltdaten.de/publikationen/fpdf-l/3658.pdf>

¹¹ For an assessment of China's 2050 emission trajectory needed to reach 2C see <http://sei-international.org/?p=publications&task=view&pid=1325> ; For an assessment of accelerating Indian emission trajectories beyond 2020 see <http://moef.nic.in/downloads/home/GHG-report.pdf>

Mitigation finance will come through a mixture of expanded carbon markets and leveraged public finance and will need to be of the order of \$30-70 billion per year from 2012 onwards. Currently only the EU has proposed a mitigation finance package at anything like this scale. Given the political constraints on committing public finance directly to China and India in most developed countries, any deal in this area will have to rely on innovative sources such as revenues from aviation and maritime emission regulations (e.g. a fuel levy), financial transaction taxes or other methods¹². The swift G20 response to the global financial crisis showed that vast resources can be mobilised quickly if the political will exists.

Finance could be committed in three phases: immediate fast-start finance for 2010-2012; firm commitments of public funds plus bunker fuel revenue for 2013-2015; commitments and innovative sources for scaling up finance to 2020, the details of which would be finalised in 2010.

The Copenhagen Agreement should agree to start detailed work on innovative sources, and aim for agreement at the 2010 Spring Meetings of the World Bank and IMF where innovative financing for development is on the agenda.

2. Foundations of a Sustainable Climate Regime

The design and status of the Copenhagen Agreement will be as important as the targets and commitments it contains. To be sustainable a climate regime must be seen as legitimate, credible and effective to critical non-governmental constituencies: investors; companies; taxpayers; energy consumers and citizens. Without their on-going support at national and international level the Agreement will fail to achieve its goals, and in the worst case could collapse under mutual recriminations of inequity, inefficiency, corruption and non-compliance.

The foundations of an effective regime rest on three interlinked but distinct pillars: legally-binding agreement(s); mandatory reporting systems; and compliance systems which invoke subsequent consequences. These elements constitute a hierarchy and not all will apply to all countries or all commitments. For example, a country may agree to an emission limitation commitment inside a legally binding regime, face mandatory reporting requirements on progress towards it, but face no compliance proceedings or consequences if it is not delivered.

Reciprocal legally binding agreement(s)

The commitments agreed at Copenhagen must be legally binding; either as a single new agreement or a twin-track approach involving a continuation of the Kyoto Protocol and a new protocol under the UNFCCC. Given the complexities of creating a completely new agreement, a “two protocol” approach is the most reliable and practical way to ensure a robust regime going forward.

The need for legally binding status is not for symbolic reasons but because this is critical to effective implementation. As with trade agreements, international commitments help countries drive through domestic reforms against entrenched special interests by clarifying the reciprocal actions this will deliver from other countries. A binding treaty also helps give the certainty new investors need. This cannot be achieved through a bottom-up “pledge and review” system which is

¹² More detail can be found at http://www.e3g.org/images/uploads/E3G_Towards%20a%20Global%20Deal%20on%20Climate%20Finance_Nov%2009.pdf

vulnerable to changes in governments, but requires a “top down” system of commitments for all countries measured against necessary environmental outcomes. The consequences and implications of these legal commitments will vary between different groups to reflect the principle of “common but differentiated responsibilities and capabilities” but must deliver this fundamental certainty.

The Copenhagen Agreement must be incorporated into a legally binding form by June 2010 at the latest. In a two Protocol approach the second commitment period of the Kyoto Protocol must be linked to completion of a new legally binding instrument which has equivalent obligations for the United States, locks in meaningful mitigation commitments by developing countries and financial and technological support commitments of developed countries. Otherwise there will be a danger of Kyoto Protocol countries “jumping” over to a weaker regime.

Mandatory, transparent and robust reporting

The central cooperation dynamic of the climate regime is “I will if you will”. All countries must have confidence that everyone else is fulfilling their promises in order to retain domestic support for action. Reporting must be comparable, transparent and reliable for all countries, even though some details differ between developed and developing Parties. The Copenhagen Agreement must include:

- **common accounting rules:** to ensure a “tonne is a tonne” in every countries’ greenhouse gas monitoring system.
- **common offsetting rules:** to ensure that emission trading does not allow poorly monitored emissions reductions to be counted towards emissions targets in another country.
- **support for developing country reporting systems:** establishing robust greenhouse gas monitoring and reporting systems is a complex and expensive task. Fast-track finance should be available to establish systems in developing countries which build on existing national approaches¹³.
- **binding reporting rules:** all countries - except the Least Developed - must agree to be legally bound to report their emissions and actions on a regular basis. Repeated failure to report on time or accurately should result in withdrawal of key benefits such as access to financing or carbon trading.
- **public access to data:** following from Principle 10 of the 1992 Rio Convention, it is critical that the global public have access to all the data – including that on financial transactions – controlled by the Agreement. This will be fundamental in ensuring trust in the regime in the long term.

These rules should be mainly based on existing Kyoto Protocol procedures, but reformed to take account of the lessons of the first commitment period.

Compliance and Consequences

Countries who fail to deliver on their commitments must face consequences. Consequences will differ between developed and developing countries and between different types of commitments. The Kyoto Protocol requires developed countries to make good any underperformance on delivery of their targets in the subsequent commitment period plus a “penalty payment” of delivering additional 30% reductions.

¹³ E3G commissioned a case study for China of the type of changes needed to national reporting systems which can be found at http://pdf.wri.org/working_papers/china_mrv.pdf

However, this enforcement process is the final stage of a facilitative process that aims to spot early signs of non-compliance and help countries change course to meet their commitments.

As with most international law there are no binding penalties which can be imposed inside the UNFCCC structures if a country chooses to ignore them. However, wilful refusal to abide by international commitments could leave countries open to unilateral trade sanctions which would be legal under WTO rules. Further escalation to bodies such as the International Court of Justice or UN Security Council is also possible¹⁴ - if unlikely except in the most extreme cases.

Compliance with the Copenhagen Agreement will ultimately rest on countries seeing this as a fair agreement which is in their national interest. The option of applying sanctions should be reserved for “rogue states” which have shown wilful and long term non-compliance. The Kyoto Protocol approach that prioritises “facilitative compliance” to restore the environmental integrity of each country is the right foundation for all developed countries, including the US, to accept in the climate regime.

Developing countries should not face consequences for failing to meet voluntary commitments; though these should be registered and recognised in a legally binding agreement. In contrast actions supported by international finance and technology mechanisms must be subject to ex-post verification. If supported actions have not been successful due to matters reasonably under a country’s control, and after facilitative support to solve problems, then a range of responses could follow. Countries may become ineligible for further support until they have demonstrated better management systems, could be obliged to carry out equivalent actions at national expense or provide finance for emissions reductions in third countries.

The details of how these mechanisms will work will be decided in the process of negotiating legally binding instrument(s) in the first half of 2010. However, the Copenhagen Agreement should specify some principles for their operation.

Managing Trade Tensions

While a legitimate case can be made for applying trade sanctions as a last resort to “rogue” countries which consistently refuse to meet their international obligations, they should not become a standard part of the climate change regime. In both the US and EU there are proposals to use “border adjustments” to deal with competitiveness concerns in energy intensive domestic industries. Extensive empirical research shows these measures are neither economically necessary nor politically effective in driving global agreement.

Energy intensive industries exposed to international competition – steel, cement, chemicals - are a very small part of developed country economies; accounting for 1% of EU GDP and 3% of US GDP. In the move to a low carbon economy these industries will grow faster as they supply the low carbon infrastructure which displaces fossil fuel use¹⁵. Modelling suggests that even if developed countries acted unilaterally to achieve current targets, this would result in only a 1% increase in

¹⁴ For a legal analysis see Christopher K. Penny , ‘Greening the security council: climate change as an emerging “threat to international peace and security”’, *International Environmental Agreements*, 2007

¹⁵ See joint industry/thinktank study <http://www.iddri.org/L%27iddri/Fondation/Joint-Research-Project-Carbon-constrained-scenarios>

developing country emissions¹⁶. The reason for this small effect is that emerging economies only export a small amount of energy intensive goods to developed countries; they make up 5% of China's trade with the US and Europe (9% for the EU; 3% for the US) and even less for India. Trade restrictions are an ineffective – and illegitimate - stick with which to try and force major economies into a climate deal¹⁷.

Border adjustment mechanisms also have economic and political costs. By focusing on perceived losses from the low carbon transition they promote a defensive and closed economy approach to decarbonisation. China and India could also retaliate against border measures in developed countries by raising tariffs on imports; 25% of EU exports to China are in high carbon sectors. This will raise costs, slow innovation and lower the dynamic benefits of the global economy. Companies such as GE are already warning of the negative impacts of closed low carbon markets¹⁸.

Unilateral trade restrictions are ineffective in achieving environmental goals, and quickly raise political tensions on both sides of the argument. The best outcome would probably be for the Copenhagen Agreement to leave trade measures to be disciplined under WTO rules. Additional restrictions could be applied in the UNFCCC but are likely to prove difficult to negotiate.

3. Low Carbon Transformation

Marginal increases in efficiency and the use of low carbon energy are not enough to move the world onto a below 2C trajectory. To be consistent with the latest science, by 2050 the global energy economy will need to be essentially carbon-neutral, with any remaining atmospheric space reserved for agriculture, defence (the US military uses 1% of national energy) and perhaps aviation. Under some high climate sensitivity scenarios there will need to be net negative emissions from 2050; requiring large scale use of technologies such as biochar and perhaps biomass power with carbon capture and storage¹⁹.

Copenhagen must lay the foundations for these radical transformations. Industrialised and emerging economies need to develop strategies to 2050 for transforming all sectors of their economies. These strategies will allow countries to plan for least-cost decarbonisation, avoiding lock-in to long lived high carbon infrastructure and maximising the economic and energy security opportunities of moving to a low carbon economy. Prototype strategies are already being developed in countries as diverse as South Africa, Mexico, Indonesia, the UK and some Chinese provinces²⁰.

Incentivising ambitious Low Carbon Growth Plans

Developing countries should be incentivised to move quickly to implementing transformational low carbon growth strategies. The faster they start designing these strategies the better. This is not conditionality, but an innovative enabling process designed to catalyse high value public-private investment. Experience from early strategies in developing countries shows that this is a useful and manageable task.

¹⁶ Aditya Matto et al. (2009), 'Reconciling Climate Change and Trade Policy', CGD Working Paper 189, <http://www.cgdev.org/content/publications/detail/1423204>

¹⁷ http://www.e3g.org/images/uploads/Ten_Reasons.pdf

¹⁸ GE attacks protection of green industries, Financial Times, October 19 2009

¹⁹ For a scientific review of the options see <http://royalsociety.org/Geoengineering-the-climate/>

²⁰ UK Plan http://www.decc.gov.uk/en/content/cms/publications/lc_trans_plan/lc_trans_plan.aspx; Pilot Chinese studies <http://www.e3g.org/programmes/climate-articles/feasibility-study-on-eu-china-low-carbon-technology-and-investment-demonstr/> and <http://www.e3g.org/programmes/europe-articles/case-studies-on-low-carbon-zones-in-china/>

However, there is currently no mature economic model for decarbonisation and significant experimentation and innovation will be needed before a robust set of low carbon growth strategies emerge. It is vital that countries which see a strong national advantage in moving quickly to a low carbon economy are able to move fast to capture these benefits. The lessons learned can then be used to lower risks and encourage similar progress in other countries.

Despite country differences some common lessons are emerging. Without systematic analysis of long term decarbonisation paths countries will not address institutional barriers to change or motivate necessary investment in the innovation and infrastructure required to reach deep emission reductions. Cost-effective decarbonisation requires a focus on transforming sectors and markets not just on individual policies.

It is critical that the financial mechanisms established under the Copenhagen Agreement are designed to support investment in sectoral transformation and innovation. They cannot just focus on delivering short term low cost reductions.

Copenhagen should support this process by:

- Allocating immediate fast-start funding for the preparation of low carbon growth strategies in developing countries. The EU and other developed countries should set a target of funding strategy processes in at least 30 countries by mid-2010.
- Agree that a minimum of 20% of the international financial support to deliver these strategies should be allocated to innovation spending and infrastructure investment consistent with longer term decarbonisation paths.

Technology Development and Diffusion

Moving the global economy onto a 2C trajectory will require an acceleration of technology development and diffusion far beyond current levels. This is true even if all policies deliver to their full potential. However, there is also a high likelihood that emissions reductions will be lower than expected in some areas. For example, implementation failures in complex areas such as deforestation and energy efficiency and technological and social risks of some options (e.g. biofuels). Hedging against these risks requires investment now to create a wide portfolio of commercially available low carbon and adaptation technologies options by 2020 at the latest.²¹

Historically countries have been poor at cooperative technology development - except on basic research - due to competitive pressures. However, enhanced collaboration on critical low carbon technologies will be vital to meet climate change goals, and this implies significant change in existing innovation policies²². This must include helping countries improve national innovation systems, as evidence suggests this is critical to accelerating technology diffusion and adaptation of products to local markets and conditions. The integration of innovation pathways into low carbon strategies, and the ring-fenced financing for these higher-cost areas described above, will also be critical in providing market pull for new innovative technologies and businesses in developing countries.

²¹ For analysis of technology pathways see <http://www.e3g.org/programmes/climate-articles/e3g-report-launch-innovation-and-technology-transfer-framework-for-a-global/>

²² For technology cooperation priorities see <http://tonyblairoffice.org/2009/07/tony-blair-sets-out-practical.html>

A wide range of institutional and policy changes are needed to drive forward global technology development and diffusion, and there has been substantial progress towards a joint positive agenda in the negotiations²³. To translate this convergence into real action four additional elements are needed:

- Agreement to a set of specific technology objectives linked to achieving the overall objective of the Copenhagen Agreement, and a new technology fund to support their delivery in developing countries;
- A commitment from all major economies to double climate related RD&D by 2015 and quadruple by 2020. Developed countries should commit to spend 15% of this on co-operative R&D projects with developing countries;
- Agreement to a new executive body and network of regional centres to coordinate activity, develop technology roadmaps, review progress and build capacity;
- Agree to fast-start implementation of priority Global Technology Action Plans from early-2010 and to review progress annually to ensure they are on track.

Defusing disputes over intellectual property rights

Intellectual Property Rights (IPRs) are the most politically contentious area of the technology negotiations. The US, EU and other developed countries have strongly advocated that IPRs should not be discussed under the UNFCCC, and much industry lobbying has been focused on this issue. However, developing countries have put forward proposals for the use of existing flexibilities under the WTO Trade Related Aspects of Intellectual Property Rights (TRIPS) agreement, and the creation of new flexibilities.

At one level this is a purely a question of negotiating tactics of both sides. The polarisation of views is divorced from the realities of the global economy; where developing countries invest in protecting IPR and OECD companies regularly share technology with developing country firms. But it also reflects a deeper set of concerns that while 70-80% of future low carbon investment will occur in developing countries, over 70% of patents in low carbon sectors are held by OECD multinationals²⁴. Developing countries fear that they will be shut out of new low carbon sectors and will depend too highly on technology imports to reduce their emissions.

Behind these public differences there is greater convergence of views. Most countries actually take a balanced view that moving to a global low carbon economy requires both strong protection of incentives for future innovation and acceleration of technology diffusion beyond current rates. There is also growing agreement that in a few cases IPR issues could dramatically slow diffusion rates, but there are a range of practical measures to address this which are generally consistent with the current international IPR system.

The impact of IPR issues differ significantly between sectors and are in practice best resolved on a case by case basis. It is difficult to design an operational “one size fits all” approach that optimally balances the incentives for innovation and diffusion.

²³ The emerging convergences between country approaches to climate technology are analysed in <http://www.e3g.org/programmes/climate-articles/unfccc-technology-institutional-structure-identifying-convergence-in-countr/> and <http://www.e3g.org/programmes/climate-articles/financial-assessment-of-the-technology-proposals-under-the-unfccc-an-e3g-ec/>

²⁴ For review of patent ownership in some major low carbon technology clusters see <http://www.chathamhouse.org/research/eedp/papers/view/-/id/775/>

However, to diffuse the political tensions Parties could agree to a set of core principles to guide cooperation in this area based on the overarching principle that IPR must be protected in order that it can then be shared to achieve climate goals:

- Technology transfer should be undertaken within existing national and international laws governing IPR, including *inter alia* the Trade-Related Aspects of Intellectual Property Rights Agreement under the WTO.
- Where appropriate, existing flexibilities on IPR may be used to ensure access to essential climate change related technologies. Technology Action Plans should examine the role of IPR in development and diffusion of specific technologies, and recommend solutions where needed.
- International public climate finance should be available to enable developing countries to access proprietary technologies and to strengthen domestic systems for IPR protection where this would facilitate technology diffusion.
- Major public funding of climate-related technology development in developed countries should require conditions for enhanced knowledge sharing and accelerated dissemination with developing countries.

Similar balanced principles have already been agreed by countries in other areas and should be acceptable in the climate change debate.

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