



COLLÈGE
DE FRANCE
— 1530 —

Managing climate change and promoting growth, development and equity.

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Lecture 4: A global deal for action on climate change: managing climate change and creating a new era of progress and prosperity.

Paris, 19 March 2010

Three Part Structure

- Part 1: A global deal
- Part 2: Copenhagen: platform and problems
- Part 3: The road from Copenhagen



A global deal

- An effective response to the global challenge of climate change requires international collaboration on an unprecedented scale.
- A global deal is required which embodies mutual understandings between countries so that each has some confidence in its role in international action.
- Many of the key elements of a global deal have been discussed in Lectures 1 to 3.
- Must assemble these elements in a way that gives structure and specificity to a global deal.
- Some basic principles must be satisfied (see next slide) if a deal is to be agreed and sustained.



Key principles

- A deal must be effective, efficient and equitable. A deal that fails on one or more of these fundamental principles is unlikely to be agreed or sustained.
- **Effectiveness** – it must lead to the necessary cuts in emissions of greenhouse gases;
- **Efficiency** – it must be implemented in a cost-effective way, with mitigation focussed where and when it is cheaper; and
- **Equity** – it must take account of the fact that it is poor countries that will be hit earliest and hardest; further, rich countries have greater wealth, more technology and a particular responsibility for the cause of the problems through their past emissions. Equity requires strong reduction targets in rich countries, significant funding for mitigation and adaptation, and sharing of technologies.
- We begin with a broad description of a desired structure (based on previous lectures) and then examine Copenhagen and beyond.



Key elements: emissions

- A 50-50 chance of 2 C points to a global emissions path of 47 (2010), 44 (2020), <35 (2030), <20 (2050) billion tonnes CO₂e p.a. (see Lecture 1).
- Commitment by all countries to play their part in reducing global emissions of greenhouse gases by more than 50% (compared with 1990 levels) over the next four decades.
- Clear and binding commitments by rich countries to reduce their emissions domestically and collectively by at least 80% by 2050 relative to 1990 levels, with credible targets for 2020, 2030 and 2040 (see Lecture 1).
- National plans for each developing country for mitigation and adaptation.
- Whilst percentage targets indicate the magnitude of a necessary adjustment, the science operates through overall global emissions, so must keep to the discipline of adding up emissions in absolute terms.



Key elements: technology, forests, carbon markets

- An ambitious agreement on boosting research, development, demonstration and deployment of energy efficient and low-carbon technologies, and on the sharing of technologies and know-how.
- An internationally-funded strategy for halting deforestation.
- The restructuring and scaling-up of carbon markets, with improved regulation and good co-ordination across the trading schemes of different countries or regions.
- Development of programme or sector-based mechanisms in the reform of the Clean Development Mechanism (linking developed and developing countries) to enable greater scale with less administration.



Key elements: finance

- Adaptation requires resources: it is essentially development in a more hostile climate. Most of the change occurring in the next 20 years will be as a result of past emissions the majority of which came from rich countries.
- UNDP (HDR 2007/2008) estimated global extra costs for meeting Millennium Development Goals of \$86 billion p.a. by 2015. Frankhauser and Schmidt-Traub (2010) estimate extra external financing necessary for meeting MDGs for Africa alone of \$30 billion p.a. for next decade.
- Extra adaptation costs rise as climate change intensifies so global requirements likely to be at least \$100 billion p.a. extra flows by 2020.
- Extra costs for mitigation estimated by Project Catalyst prior to COP15 at Copenhagen around \$100 billion p.a. by 2020.
- Hence strong case for external support from developed to developing countries in the region of \$200 billion p.a. by the 2020s.



Key elements: organisation

- A registry, or schedule of actions, to capture domestic commitments and policies, creating transparency and trust.
- An effective system to measure, report and verify emissions from countries on a regular and frequent basis: transparency of method and data is the key issue.
- A climate finance architecture that builds on existing structures, including bilateral and multilateral flows, which facilitates the blending of climate finance and other forms of investment and development finance: activities of development, mitigation and adaptation are inextricably intertwined.
- Eventually a World Environment Organisation.



Three Part Structure

- Part 1: A global deal
- Part 2: Copenhagen: platform and problems
- Part 3: After Copenhagen: the road ahead

Copenhagen: platform and problems

- Commitment in Bali at COP13 to agree a global deal at COP15. This focused attention and led to the articulation of targets, plans and intentions in the years and months leading up to Copenhagen.
- COP15 prompted the statement of emissions intentions from the US and China and these were crystallised in submissions to the Copenhagen Accord.
- More than 100 Presidents and Prime Ministers showed commitment by attending.
- Must build on the platform created at Copenhagen:
 - We must understand the substance of the Copenhagen Accord;
 - We must understand the difficulties encountered and how they can be overcome; Copenhagen highlighted serious problems and divisions.



The Copenhagen Accord

- Copenhagen Accord was put together by a small group of countries, Brazil, China, India, South Africa and the USA were key, in the last 48 hours (17 and 18 December 2009) of the Copenhagen conference.
- It was agreed by the Presidents and Prime Ministers of these countries and 'noted' by the UNFCCC. It has 12 paragraphs and 3 pages.
- **Paragraphs 1 and 2** cover the 2°C target and the necessity for deep cuts and early peaking of emissions if it is to be achieved.
- **Paragraph 3** emphasises the importance of support for adaptation, particularly in the poorest and most vulnerable counties.



The Copenhagen Accord

- **Paragraphs 4 and 5** cover the responsibilities of developed and developing countries respectively to implement their emissions reduction plans (whether explicit targets or actions).
- Country targets or actions were submitted by 31 January 2010 and are contained in the appendices to the Accord.
- Developed countries ‘committed’ to reduction targets. Developing countries ‘will implement mitigation actions’.
- **Paragraph 6** agrees on the need to establish REDD+ (action on reducing emissions from deforestation and degradation and promoting afforestation and reforestation).
- **Paragraph 7** contains the promotion of cost-effectiveness (including via markets).



The Copenhagen Accord

- **Paragraphs 8, 9 and 10** set out the intention to establish a Green Climate Fund and to generate financial flows of US\$100 billion p.a. by 2020 ‘to address the needs of developing countries’ and to establish a High-Level Panel to study potential sources of revenue.
- Refers to providing US\$30 billion p.a. of new and additional resources for the period 2010-2012.
- **Paragraph 11** ‘decides to establish a Technology Mechanism’.
- **Paragraph 12** calls for an assessment of the implementation of the Accord by 2015 including to a possible stronger temperature target of 1.5°C.



Advances at Copenhagen

- Advances at Copenhagen:
 - The 2°C target. Provides direction and points to a global emissions reduction path;
 - US\$100 billion p.a. 2020 target for financial flows;
 - The High-Level Advisory Group on new sources of finance;
 - Forestry issues, REDD+ (Paris-Oslo process).
- These represent a real platform for advance.



Progress since Copenhagen

- High-Level Advisory Group on new sources of finance has been announced by UN Secretary General. Co-chaired by Meles Zenawi, Prime Minister of Ethiopia, who took the initiative in formulating the funding proposals, and the Prime Minister of the UK, Gordon Brown.
- Mechanism in place to take REDD+ forward (Paris-Oslo process) with the first successful meeting held on 11 March in Paris and a further meeting in Oslo in May.
- Submissions on emissions targets, plans and intentions were submitted by or close to the date specified in the Accord (31 January 2010).
- All major countries have submitted plans to the Accord - covers well over 80% of world emissions (see next slide).



Estimates of global emissions in 2020 based on Accord Appendix targets and actions

(Billions of tonnes CO ₂ e)	2020 total - low intentions	2020 total - high intentions
Developed country total	16.7	15.7
Developing countries total	29.7	29.7
International aviation and maritime	1.3	1.3
Global total (excluding peat)	47.7	46.7
Estimate for peat emissions	1.5	1.5
Global total (including peat)	49.2	48.2

Source: Stern and Taylor (2010)

- Based on current submissions global emissions in 2020 would be around 48 to 49 billion tonnes.



Estimates of global emissions in 2020 based on Accord Appendix targets and actions

- These targets, plans and intentions represent a very important advance relative to BAU.
- Represent around 8 billion tonnes less than BAU of around 56 billion tonnes in 2020.
- Will involve global emissions peaking around or just before 2020.
- However, they fall some way short (4 to 5 billion tonnes) of the 44 billion tonnes that is required for a 2°C path.
- Proposals must be strengthened by both developed and developing countries if total emissions consistent with a 2°C path are to be achieved by 2020.
- Further cuts could come from roughly 1½ to 2 billion tonnes from each of the developed and developing world groups. Extra possible from international aviation and maritime and from peat/deforestation.



Difficulties and challenges

- Major difficulties at Copenhagen:
 - The total magnitude of required cuts was not recognised;
 - Mistrust, misunderstanding and acrimony between countries prevented stronger progress;
 - Small progress on technology and MRV;
 - Responsibilities of countries left open on key issues (e.g., emissions and finance);
 - The Accord was only noted;
 - Unwieldy and unproductive process with 192 countries involved in each stage.



Difficulties and challenges

- Sources of mistrust and misunderstanding must be examined carefully if progress is to be made.
- Developing countries have a deep and understandable sense of injustice arising from the scale of past emissions from high-carbon growth in developed countries, and the request now, when they are striving to overcome poverty, that they find a different path to higher incomes.
- This sense of injustice was embodied in the Kyoto protocol as the Annex I (developed) and non-Annex I (developing) country distinction, with 'binding' commitments for the former and non-binding targets for the latter.
- There was a strong suspicion by developing countries that there was an intention to abandon this distinction at Copenhagen.
- Also a belief amongst many developing countries that to adopt binding targets might slow development.



Difficulties and challenges

- Suspicion and mistrust amplified by the appearance that rich countries tried to fix the draft agreement amongst themselves and then would force on developing countries.
- There was frequent talk of an ‘ambush’ via a draft ‘take-it-or-leave-it’ agreement.
- Rich countries still have old habits from the G8 era. These must be abandoned.
- Rich countries, on the other hand, thought developing countries were failing to recognise the basic arithmetic on future emissions.
- Rich countries also thought their industries would be left uncompetitive if they acted strongly whilst developing countries did not.



Difficulties and challenges

- Some developed countries thought that developing countries were making impossible demands on emissions reductions (40% 1990-2020 cuts).
- Also believed developing countries were seeking levels of financial support that would be politically impossible to deliver, especially post-financial crisis.
- Developed countries also saw some states, particularly amongst oil-exporting countries, as deliberately trying to wreck a deal.
- Many countries also thought their own special circumstances or political constraints were poorly understood by others.
- Far too many came with red lines they refused to cross and few with a flexible mandate that allowed negotiators to make compromises and deals.



Difficulties and challenges

- Distrust was fed by acrimony over MRV.
- Developed countries felt they were being forced to deliver but that poor countries could simply indicate general intentions and not be held to account.
- Some developing non-Annex I countries saw MRV as an intrusion of sovereignty when not obliged to deliver specific emissions cuts.
- Most of these points apply directly to the USA-China relationship at Copenhagen.



Difficulties and challenges

- There must be mutual understanding of the politics and decision-making mechanisms of other countries to make progress.
- For example, few amongst leadership of rich countries understand the care with which China does its planning.
- China does not announce targets and plans unless the homework has been done and they have confidence they can be fulfilled or exceeded.
- Similarly, those outside the USA, must understand how the constitution, conventions and political structures of that country, place strong constraints on what Presidents can offer.



Difficulties and challenges

- The processes themselves at Copenhagen were a major barrier to progress.
- Difficult to make progress on substance in a group of 192 with, for example, constant points of order.
- There was insufficient preparation and negotiators were not empowered to make agreements.
- Too much left to Prime Ministers and Presidents to achieve at the end.
- Attempts to compromise came too late and often went unrecognised, e.g., China's suggestion it may exceed its targets on the 17th of December.



Three Part Structure

- Part 1: A global deal
- Part 2: Copenhagen: platform and problems
- Part 3: The road from Copenhagen



The road from Copenhagen

- The way forward must build on the platform created by the Accord.
- We must examine four key areas:
 - The prospects for overall emissions;
 - Developments in key countries or regions (focus on top 5 emitters);
 - Potential progress on detail on 4 specific issues:
 - Finance;
 - REDD+;
 - Technology; and
 - MRV;
 - Processes of engagement and interaction.



The road from Copenhagen: prospects for overall emissions

- We have already noted that current targets, plans and intentions, as submitted for the Accord would, if fully implemented, result in total emissions around 48 or 49 billion tonnes in 2020.
- A sensible target path for 2°C would be around 44 billion tonnes in 2020, <35 in 2030, <20 in 2050.
- We must discuss in terms of overall global emissions. It is this total that matters for the science of climate change.
- Percentage reductions depend on starting dates, which can be manipulated, and they don't 'add up' in any straightforward way.
- We must accept the discipline of 'adding up' to reach a global total and examine this total.



The road from Copenhagen: prospects for overall emissions

- Emissions per capita are relevant from an equity perspective and emissions per unit of output from the perspective of effort and difficulty of structural change.
- But it is the path of total world emissions that is at the heart of the science.
- We must ask whether it would be possible to find an additional 4 billion tonnes of reductions by 2020.
- Should be able to find another 1 to 1.5 billion tonnes of reductions at reasonable cost across three main sub-headings: developed countries; developing countries (excluding forests/peat); and forests/peat. Also some extra from international maritime and aviation.



The road from Copenhagen: prospects for overall emissions

- A clear and analytical discussion is required on possible sources.
- For example:
 - A cap on international aviation and maritime emissions of 30% below 2005 levels would reduce emissions by around 0.5 billion tonnes.
 - If Annex I countries averaged a 25% cut on 1990 levels this would reduce current high intentions of these countries by 1.3 billion tonnes.
 - Reductions in emissions per unit of output by 29% in each 5-year plan in China would save nearly 2 billion tonnes of emissions by 2020.



The road from Copenhagen: developments in key countries - China

- The largest emitters are associated with one or more of, high income, large populations, deforestation. Hence the five largest emitters are China, the USA, the EU, Indonesia, and Brazil.
- China has indicated in its submissions to the UNFCCC Accord that it will endeavour to lower carbon dioxide emissions per unit of GDP by 40-45% between 2005 and 2020.
- Has also indicated targets for non-fossil fuels and for forestry.
- This target points to total 2020 emissions (with 8% growth of GDP) of 11.5 billion tonnes (8 or 9 billion now) or around 8 tonnes per capita.
- If there were similar emissions increases in the next decade 2020-2030, a smaller percentage increase, then China's emissions in 2030 would be 14 or 15 billion tonnes.



The road from Copenhagen: developments in key countries - China

- This would correspond to a 30-35% reduction in emissions per unit of output in that decade (2020-2030).
- This target corresponds to a cut in emissions per unit of output of around 2.5 (2010-2030) or around 60%.
- With a global constraint of around 30-32 billion tonnes in 2030 (for a 2°C path), emissions of 14-15 billion tonnes in 2030 means China would account for around half the world's emissions with 17-18% of the projected world population.
- Such a path for China could not possibly be consistent with the 2°C path we have described.
- This is not to allocate blame or to make demands, this is basic arithmetic and we must ask ourselves about the implications for such arithmetic.



The road from Copenhagen: developments in key countries - China

- If the 2°C path is to be met China's emissions will have to be close to the necessary world average of around 4 tonnes per capita in 2030.
- It means China's total emissions got back to something like 8 to 9 billion tonnes CO₂e by 2030, this would imply per capita emissions of 5 or 6 tonnes.
- If China is to grow at 7% for the next two decades, this implies it would have to cut emissions per unit of output by a factor of 4 over the next 20 years.
- This means a cut in emissions per unit of output by a factor of 2 per decade or 29% in each 5-year plan.



The road from Copenhagen: developments in key countries

- If we are to achieve the 2°C path, rich countries, including the US, assuming a 2.5% growth rate, would also have to cut emissions per unit of output by around a factor of 4, 2010-2030. This would reduce overall US emissions to around 3 billion tonnes in 2030 and emissions per capita to around 8-9 tonnes, still over twice the world average.
- If we are to accept a 2°C path and look for growth, then the above arithmetic is inescapable. The world as a whole, rich and poor can not avoid this simple logic of the combination of growth and overall emissions constraints.
- This arithmetic is hard to describe as equitable. These calculations take no account of relative income or wealth, the challenge of poverty reduction, the history of emissions, or whether responsibility for emissions lies with the producer or consumer of a product.
- These are important ethical issues, as discussed in Lecture 2.



The road from Copenhagen: developments in key countries - US

- The US has submitted its target of 17% reductions in emissions 2005-2020.
- The mechanism for delivery of this target will depend on the political and economic realities of US circumstances and structures.
- Debate on climate legislation has been slowed by political struggles over health care reforms and support for the economic recovery.
- US also set out 30% reductions 2005-2025 and 42% reductions 2005-2030.
- These targets are conditional on legislation being passed by Congress.



The road from Copenhagen: developments in key countries - US

- Assuming 2.5% growth p.a. for the US, a 17% cut in emissions 2010-2020 implies emissions per unit of output over this decade would be cut by around 35%.
- We previously indicated that the US needs to cut by a factor of 4 by 2030 for global emissions to be consistent with a 2°C path.
- Cutting by a factor of 4 over 20 years would be a factor of 2 every decade, or 50% (if the decadal rate of fall were constant).
- 35% is clearly some way short of 50%.
- The additional US targets, following similar arithmetic, imply a cut in emissions per unit of output of 45% (2020-2030) and an overall cut (2010-2030) of 64%. This implies emissions per unit of output will be cut by a factor of 3 in 2030. Again, clearly some way short of 4 required.



The road from Copenhagen: developments in key countries

- Both the US and China, roughly speaking, are making plans to cut emissions per unit of output over the next 20 years by a factor in the region of 2.5 to 3.
- A 2°C path would need a factor in the region of 4. If China and the US cannot work together to strengthen their planned actions we would either have to grow more slowly or fail on the 2°C path.
- The third largest emitter, as a region, is the European Union. It has plans to reduce emissions by 20%, 1990-2020, and by 30% in the context of strong action by other countries. A 30% cut would take Europe to around 8 tonnes per capita by 2020, similar to China for 2020 on current plans.
- Brazil and Indonesia are also planning large reductions in emissions, mostly by making reductions in deforestation (Brazil 80% reduction by 2020).



The road from Copenhagen: other developing countries

- We have focussed on the 5 largest emitters. Other developing countries have also engaged in a strong and constructive way.
- India has just introduced a (small) tax on coal, and has strong programmes on solar, afforestation and energy efficiency.
- Ethiopia and Costa Rica are planning zero net emissions by 2020-2025 (using forests, export of hydroelectricity, etc.).
- Developing countries have made significant progress in putting together climate change action plans.
- For developing countries overcoming poverty is of overwhelming importance, thus they insist actions on emissions must be voluntary and supported with resources and technology.



The road from Copenhagen: 4 key issues, finance

- The High Level Advisory Group on climate finance is crucial to generating this support. Established under co-chair of PM Meles Zenawi of Ethiopia and PM Gordon Brown of UK.
- Its task is to propose measures to find \$100 billion p.a. by 2020 to support adaptation, forestry and the transition to the low-carbon economy in developing countries.
- IMF has suggested a Green Fund to accelerate the availability of this level of resource in advance, based on depositing Special Drawing Rights (SDR) in a fund which could then borrow with this collateral.
- Many options for new sources: carbon taxes; auction revenues; tax on international aviation and maritime; financial transaction taxes; new SDR-based green funds; ...
- New sources more likely to be 'additional' to existing aid commitments and to ease pressure on rich country finances.
- Look for best combination relative to key public finance criteria: revenue, **incidence**, equity, efficiency...



The road from Copenhagen: 4 key issues, forests

- Brazil has been ambitious with an 80% target reduction in deforestation by 2020. Indonesia has a 26% target cut in forest emissions by 2020. China has made strong progress and strong pledges on reforestation and afforestation.
- These ambitions will require strong support and capacity building (especially in Indonesia).
- The Paris-Oslo process for taking forward REDD+ is making good progress. At the first meeting on March 11 more than 64 nations attended and promised funding has now reached \$4.5 billion. A further meeting is planned for May in Oslo (we discussed deforestation in detail in Lecture 3).
- Whilst the Paris-Oslo process is moving ahead well, deforestation will be a high priority for resources likely to come from the High-Level Advisory Group.



The road from Copenhagen: 4 key issues, technology

- Progress on ideas for deploying and sharing technological progress on the road to, at, and following Copenhagen has been much less rapid.
- There are many ideas, some influenced by experience of the ‘green revolution’ on wheat, rice and other grains, which I was involved in during the 1960s and 1970s. Examples include:
 - Local innovation centres;
 - International research networks (CIGAR);
 - Prize funds for advances in technology;
 - ‘Cornerstone funds’ that could support larger-scale investments;
 - Demonstration and deployment funds, e.g., feed-in tariffs;
 - Patent buy-out funds.
- There is no shortage of ideas.
- ‘BASIC’ countries and Korea and Mexico could take a lead here.



The road from Copenhagen: 4 key issues, MRV

- Progress on monitoring, reporting and verification (MRV) is also important for credibility and trust.
- Moving from 'verification' to 'transparency' is key here.
- We can feel confident in understanding the assessments made by country A of emissions from country A if we can understand how they have been put together and have some understanding of the sources for the basic data.
- This does not require direct, on-the-spot, verification and should be sufficient in this context.
- Scientific and technological advances over the coming years may also assist in providing this data.



The road from Copenhagen: negotiations

- The 4 subjects discussed; finance, REDD+, deployment and sharing of technology, and MRV, must all be studied carefully and quickly. Need to also consider notions of equity and how these are relevant to this issue (see Lecture 2).
- A pre-requisite to rational and substantive negotiations is careful work putting together well-studied options.
- We need manageable bodies for discussing proposals, covering a broad range of countries.
- A group of 28-30 countries emerged at the end of COP15; far too late.
- The Mexican presidency of COP16 has built on this group and established a contact group to help prepare and to represent a range of perspectives.
- This kind of group is essential if good text, based on common understandings, is to emerge. It cannot emerge from a process of 192 countries, many with fundamentally different points of view.



The road from Copenhagen: from platform to strong agreement

- The Copenhagen Accord is turning out to be a real platform.
- Strong and constructive work on the 4 key elements of detail discussed is crucial. This is analysis not negotiation.
- So too is a smaller but representative group to turn analysis into negotiations on agreement.
- All this requires a collaborative approach.
- The foundations for this approach must be: shared understanding of risk; an understanding of the real possibility and attractiveness of both the transition to low-carbon growth and the new green economy; mutual respect and functioning mechanisms for collaboration.
- We have the opportunity for a strong practical agreement in Cancun, COP16. But will we take it?

