Comparing the Copenhagen climate targets

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The Copenhagen Accord

• “...a view to reduce global emissions so as to hold the increase in global temperature below 2 degrees Celsius...” ...

“We should cooperate in achieving the peaking of global and national emissions as soon as possible, recognizing that the time frame for peaking will be longer in developing countries.”

• Commitments to actions and targets by 102 countries totalling >80% of global emissions
  – not legally binding but appended to Accord

• Financing
  – Public finance $10b/yr immediate, prospect of ramping up to $100b/yr
  – Future market-based finance?
Key countries’ emissions targets (pledges)

<table>
<thead>
<tr>
<th>Country</th>
<th>Type of emissions target</th>
<th>Quantitative target (all for 2020)</th>
<th>Base year / nature of target</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>Absolute reduction</td>
<td>-17%</td>
<td>2005</td>
</tr>
<tr>
<td>EU</td>
<td>Absolute reduction</td>
<td>-20% to -30%</td>
<td>1990</td>
</tr>
<tr>
<td>Japan</td>
<td>Absolute reduction</td>
<td>-25%</td>
<td>1990</td>
</tr>
<tr>
<td>Russia</td>
<td>Absolute reduction</td>
<td>-15% to -25%</td>
<td>1990</td>
</tr>
<tr>
<td>Canada</td>
<td>Absolute reduction</td>
<td>-17%</td>
<td>2005</td>
</tr>
<tr>
<td>Australia</td>
<td>Absolute reduction</td>
<td>-5% to -25%</td>
<td>2000</td>
</tr>
<tr>
<td>China</td>
<td>Intensity reduction</td>
<td>-40% to -45%</td>
<td>Emissions intensity change 2005-2020</td>
</tr>
<tr>
<td>India</td>
<td>Intensity reduction</td>
<td>-20% to -25%</td>
<td>Emissions intensity change 2005-2020</td>
</tr>
<tr>
<td>Indonesia</td>
<td>Reduction below BAU</td>
<td>-26%</td>
<td>Reduction below BAU at 2020</td>
</tr>
<tr>
<td>Brazil</td>
<td>Reduction below BAU</td>
<td>-36% to -39%</td>
<td>Reduction below BAU at 2020</td>
</tr>
<tr>
<td>Mexico</td>
<td>Reduction below BAU</td>
<td>-30%</td>
<td>Reduction below BAU at 2020</td>
</tr>
<tr>
<td>Korea</td>
<td>Reduction below BAU</td>
<td>-30%</td>
<td>Reduction below BAU at 2020</td>
</tr>
<tr>
<td>South Africa</td>
<td>Reduction below BAU</td>
<td>-34%</td>
<td>Reduction below BAU at 2020</td>
</tr>
</tbody>
</table>
This paper

• Putting targets on a common footing, and comparing them across different metrics
  1. Change in absolute emissions
  2. Reductions in emissions intensity
  3. Reductions relative to business-as-usual
  4. Change in per-capita emissions
• Will country’s targets be achieved, and how?
• Implications for Australia’s commitment
1) Absolute emissions

• Developed countries (mostly) have absolute targets
• Very large differences in % change between countries
  – Big differences in underlying growth trajectories
• Different base years (2005/2000/1990) matter
• Aggregate global ambition widely seen to fall short of 2 degrees ambition
  – There is no definitive maximum emissions level for short term (2020) ... but it seems unlikely that the targets drive fundamental change toward de-carbonisation of economies
Absolute emissions
Targeted change, % from 2005 to 2020

Annex I refers to average of countries included here. (Also applies to remaining slides.)
Absolute emissions
Targeted change, % from 2005 to 2020

For mid-point of target ranges where applicable. (Also applies to remaining slides)
Framing targets for different base years
Targeted absolute emissions change, % to 2020
Framing targets for different base years
Targeted absolute emissions change, % to 2020
2) Emissions intensity

- Emissions intensity: carbon per unit of GDP
- China & India have emissions intensity targets
- A useful measure
  - Takes GDP growth growth out of the equation
  - Slowing economic growth is not a policy variable
  - Gets to the heart of the matter: de-carbonizing economic activity
- Targeted intensity reductions are remarkably similar for developed & dev’ing countries
Emissions intensity
Targeted change, % from 2005 to 2020

For mid-point of target ranges where applicable.
3) Comparison to business-as-usual (BAU)

• Most dev’ing country targets framed as BAU deviation
  ... often without (yet) defining BAU

• A measure of effect of action, but an elusive concept
  — “what would have been the case in the future, if it had not been for dedicated action”
  — Projections of *likely* outcomes (ie IEA reference case) often mistaken for BAU
  — Quantitative estimates contestable

• Targeted reductions relative to BAU are remarkably similar for developed & dev’ing countries
  — China’s reduction large (eg Garnaut et al 2008, Stern & Jotzo 2010)
Targets versus business-as-usual
Absolute emissions\textsuperscript{(central scenario)}, % change 2005-2020

For central scenario.

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Targeted change relative to BAU
% difference at 2020
Targeted change relative to BAU

Quantity difference at 2020, MtCO2-eq

For mid-point of target ranges.
Targeted change relative to BAU
Quantity difference at 2020, MtCO2-eq

For mid-point of target ranges where applicable.

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4) Per capita comparisons

- Countries differ greatly in their level of development, and in their carbon output per person
  - Developing countries want carbon headway to move up the development ladder

- ‘Contraction and convergence’ model would have all countries converging to common, low per capita emissions level... high emitters come down faster

- Copenhagen targets imply reductions in per capita emissions for many developing countries
Emissions per capita
2005 and 2020 targeted, tCO2-e/person/yr

For mid-point of target ranges where applicable.

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Will the targets be achieved, and how?

• Technical and economic analysis typically says it is possible
  – technically feasible to achieve the targets
  – at manageable economic cost
• But political hurdles are high
  – Domestic constituencies resist change
  – Copenhagen pledges have made progress in overcoming free-riding, but the underlying problem remains unsolved
Outlook in some countries

• China: the target will require strong policies
  – will it happen?
  – will policies be economically and socially sensible?

• United States: possible hodge-podge of policies
  – federally and at State/municipal level

• Indonesia, Brazil, etc: reducing deforestation
  – Technically and economically straightforward
  – But difficult institutionally and socially
Implications for Australia’s target

- Government (for now) is keeping commitment at 5% ... a shift up the range appears justified
- The national commitment can and needs to include other issues:
  - Financing for developing countries
  - Possibly an additional, non-binding commitment for action on land-based carbon
<table>
<thead>
<tr>
<th>Australia’s Copenhagen commitment</th>
<th>25%</th>
<th>“if the world agrees to an ambitious global deal capable of stabilising [...] at 450 ppm CO₂-eq or lower”</th>
<th>✗ (post-2020 ramp-up? ...but strong ambition from some developing countries)</th>
</tr>
</thead>
<tbody>
<tr>
<td>up to 15%</td>
<td></td>
<td>“if there is a global agreement which falls short of [450] and under which major developing countries commit to substantially restrain emissions and advanced economies take on commitments comparable to Australia’s”</td>
<td>✓</td>
</tr>
<tr>
<td>5%</td>
<td></td>
<td>Unconditional</td>
<td>n/a</td>
</tr>
</tbody>
</table>
Tailoring a commitment to Australia’s interests and circumstances

Interest in strong global climate change mitigation
... implies rapid transition to low-carbon energy systems

Neighbourhood: forest emissions
- Indonesia deforestation, peat
- money and capacity needed
- emissions accounting difficult

Domestic opportunities in biosequestration
- eg soil carbon, algae
- R&D needed
- emissions accounting difficult

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### An Australian composite commitment:

#### 15++

|   | **15% reduction at 2020** | Binding, covers emissions in Kyoto scope | - Emissions trading (fixed-price start-up)
- Buying international UNFCCC-recognised emissions units |
|---|--------------------------|------------------------------------------|-------------------------------------------------------------------|
| 2 | **Extra land-based reduction** *(possibly very large)* | Non-binding, covers emissions outside Kyoto scope | - Australia: biosequestration incl soil carbon – incentives, standards, research
- Indonesia: investment in peat fire prevention and forest conservation |
| 3 | **Financing for developing countries** | New money | Global $10b/year immediate, scale-up to $100b/year (Copenhagen Accord)
Australia’s share 2.8% (Garnaut Review), 1.8% (UN schedule) |
Paper will be available from
Environmental Economics Research Hub website

[additional slides]
Australia’s commitment: the fine print

Press release Minister Wong, 27 Jan 2010:

“The Government will not increase Australia’s emissions reduction target above 5 per cent until:

• the level of global ambition becomes sufficiently clear, including both the specific targets of advanced economies and the verifiable emissions reduction actions of China and India;

• the credibility of those commitments and actions is established, for example, by way of a robust global agreement at the next United Nations Climate Change Conference in Mexico, or commitment to verifiable domestic action on the part of major emitters including the United States, India and China; and

• there is clarity on the assumptions for emissions accounting and access to markets”