The Emissions Gap

Where do we need to be in 2020 to meet our climate target?

Washington DC ♦ 20 March 2013
Joseph Alcamo
Chief Scientist, UNEP
Moving forward on global climate policy

Two policy developments ...
✓ A target (or limit) ...
   Staying below an increase of 2 degrees Celsius (1.5°C)
✓ A means to get there ...
   > 30 states/countries pledge to control emissions (pegged to 2020)

Two questions ...
✓ Is there a gap between ...
   What we are aiming for ... and where we are heading?
✓ Can the gap be bridged – and what will it take?
What are we aiming for?
Post-2020 goals for staying within 2°C target

Global Greenhouse Gas Emissions
Gt/year CO₂-equiv.

Now (2010) ≈ 49 GtCO₂e/yr

39 emission pathways
Likely chance of complying with 2°C target:

In 2030 ≈ 37 Gt CO₂e/yr (33-44)
≈ - 23% rel. to 2010 emissions
≈ 1990 emissions

In 2050 ≈ 21 Gt CO₂e/yr (18-25)
≈ - 56% rel. to 2010 emissions
≈ - 42% rel to 1990 emissions

Peak before 2020

Global Greenhouse Gas Emissions
Gt/year CO₂-equiv.

Peak before 2020
Is there a gap -- between what we are aiming for and where we are headed in 2020?

Under Business-as-Usual
\[ \text{Gap} = 14 \text{ GtCO}_2\text{e/yr} \]

Under different cases of country pledges:
\[ \text{Gap} = 8 - 13 \text{ GtCO}_2\text{e/yr} \]

Under the most ambitious case:
\[ \text{Gap} = 8 \text{ GtCO}_2\text{e/yr} \]

Pledges not enough to meet the 2°C climate target according to current scenarios

Big gap to close in 2020.
What happens if we don’t close the gap in 2020?

If countries do not *increase* their pledges:
Trajectory to $\approx + 2.5$ to $5.0^\circ C$
How can the 2020 gap be bridged?
Bottom-up sectoral studies

<table>
<thead>
<tr>
<th>Sector</th>
<th>Emission Reduction Potential in 2020 (Gt/year equivalent CO₂)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power</td>
<td>2.2 – 3.9</td>
</tr>
<tr>
<td>Industry</td>
<td>1.5 – 4.6</td>
</tr>
<tr>
<td>Transport</td>
<td>1.7 – 2.5</td>
</tr>
<tr>
<td>Buildings</td>
<td>1.4 – 2.9</td>
</tr>
<tr>
<td>Waste</td>
<td>≈ 0.8</td>
</tr>
<tr>
<td>Forestry</td>
<td>1.3 – 4.2</td>
</tr>
<tr>
<td>Agriculture</td>
<td>1.1 – 4.3</td>
</tr>
</tbody>
</table>

Total Emission Reduction Potential = **17 ± 3** Gt/year CO₂e

The Gap in 2020 = **14** Gt/year CO₂e (relative to business-as-usual)

Potential in sectors big enough to bridge the gap.
How can the 2020 gap be bridged?  
Already effective policies on the ground

**Transportation**

Potential: - 1.7 to - 2.5 Gt CO$_2$e in 2020
- Bus rapid transit systems
- Vehicle performance standards

**Buildings**

Potential: -1.4 to - 2.9 Gt CO$_2$e in 2020
- Appliance standards and labels
- Building codes

**Forestry – Reducing deforestation**

Potential: - 1.3 to - 4.2 Gt CO$_2$e in 2020
- Protected areas
- Satellite-based monitoring of compliance with anti-deforestation laws
How can the 2020 gap be bridged?

Already effective policies on the ground

**Transportation**

- Potential: -1.7 to -2.5 Gt CO$_2$e in 2020

**Policies bring national and local benefits:**
- Reduce traffic congestion, reduce air pollution
- Save energy, lower energy costs
- Protect indigenous cultures, conserve economic value of forests

Pursuing national and local benefits $\rightarrow$ substantial reductions of greenhouse gas emissions

**Forestry – Reducing deforestation**

- Potential: -1.3 to -4.2 Gt CO$_2$e in 2020

- Protected areas
- Satellite-based monitoring of compliance with anti-deforestation laws

- Appliance standards and labels
Losing opportunities …

“Lock in” of high emission technologies, structures and processes

- Manufacturing energy-inefficient vehicles → still on the road in 2020
- Building power plants with combustion efficiency below what is technically feasible, and will have lifetime of >25 years
- Constructing energy-wasteful buildings → will last 100 years
Summing Up

To meet the two degree target:

• Global emissions peak before 2020 → But current emissions more than 10% above emissions level in 2020 consistent with 2°C target + still growing
• Country pledges to reduce emissions not enough:
  Emissions gap in 2020 → 8 - 13 Gt CO₂e

The Gap can be narrowed ... with action in the negotiations

• If countries insist on strict rules for complying with emission pledges
• If countries pursue more ambitious emission reduction pledges

The Gap in 2020 can be bridged ... by realizing large potential in each sector

• Technical potential for reductions in 2020 (17 Gt CO₂e /yr ) big enough to close the gap (14 Gt CO₂e /yr)
• Potential can be realized → Scaling up packages of policies that fulfil local and national self-interest: Saving energy, saving costs, reducing traffic congestion, reducing air pollution ...
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