The Emissions Gap Report 2015

What contributions do the INDCs make towards the $2^\circ$C target?
How can the 2030 emissions gap be bridged?

Paris ♦ 4 December, 2015
Key questions - Emissions Gap Report 2015

• **What are we aiming for?** Keeping temperature increase below 2°C or 1.5°C by 2100

• **What is the pre-2020 contribution?** Cancun pledges and current policies

• **What do INDCs contribute and is it sufficient to stay below 2°C?** Assessment of the aggregate effect on emission levels and global warming resulting from INDCs submitted by 1 October 2015

• **How can the 2030 Gap be bridged?** This year with a special focus on International Cooperative Initiatives and forest mitigation actions
INDCs assessed

• 119 INDCs assessed
• 146 countries represented
• 85-88% of 2012 global emissions
INDC submissions by type of mitigation target
by 1st October 2015

Adapted from WRI CAIT Climate Data Explorer
Note: The boundaries and names shown and designations used on this map do not imply official endorsement or acceptance by the United Nations
INDC characteristics

• Coverage – sectors and gases
• Global warming potential
• Agriculture, forests, and other land use
• Adaptation
• Support needs and conditions
• Descriptions of equity and ambition
Approach to INDC assessment

- Assessment of literature on INDCs from global & national studies
  - Official estimates (documents submitted by countries to the UNFCCC)
  - Estimates from many country-specific studies (WRI, ERI, NCSC, etc.)
  - Eight global studies:
    1. Climate Action Tracker (CAT) (www.climateactiontracker.org)
    2. PBL Netherlands Environmental Assessment Agency (www.pbl.nl/indc)
    3. IEA WEO (adjusted) (CO₂ from energy, augmented with USEPA, NatComs, IIASA)
    4. London School of Economics and Political Science (LSE), UK
    5. University of Melbourne
    6. NIES, Japan
    7. Climate Interactive, US
    8. Danish Energy Agency
Methodological challenges

- **Differences in reporting:** Reported historical data differs slightly between inventory and projections

- **Forestry:** Estimates for LULUCF and exact accounting rules are not always known

- **Missing estimates:** Inter- and extrapolation is necessary where 2025 and 2030 were not provided, timing but not level of peak provided

- **GWPs:** Emissions are reported in GWP from SAR and AR4, historical emissions and projections may not match

- **Missing information on countries/sectors:** For global aggregation, information on all countries and sectors and greenhouse gases is necessary
Figure 3.4 Global greenhouse gas emissions as implied by submitted INDCs (original data from different modelling groups, including LULUCF)

Results of the model groups
**INDC contributions and the emissions gap**

**The Gap**

- **Unconditional INDC case**
  - Gap = 14 GtCO$_2$e

- **Conditional INDC case**
  - Gap = 12 GtCO$_2$e

The INDCs present a real increase in the ambition level compared to a projection of current policies.

The emissions gap in both 2025 and 2030 will be very significant and ambitions will need to be enhanced urgently.

Blue area shows pathways limiting global temperature increase to below 2°C by 2100 with >66% probability.
Results of the model groups

* For USA unconditional INDC is for 2025
The Emissions Gap Report 2015 – The emissions gap in 2025 and 2030

Figure 3.6  Greenhouse gas emissions per unit of real GDP (PPP) (MtCO₂e/billion US$ (2005))

Results of the model groups
The Emissions Gap Report 2015 – The emissions gap in 2025 and 2030

Figure 3.7: Greenhouse gas emissions per capita of... is included. Data is sourced from the global studies, the national studies and official government sources.

Results of the model groups

* For USA unconditional INDC is for 2025
What are we aiming for?

Kyoto-GHG emissions (GtCO₂e/yr)

- EDGAR estimates (including large-scale biomass burning)
- CAIT
- PRIMAP
- IPCC AR5 scenarios
  - Baseline (median line), 20-80% (darker), min. – max. (lighter)
What are we aiming for?

Kyoto-GHG emissions
(GtCO₂e/yr)

- EDGAR estimates (including large-scale biomass burning)
- CAIT
- PRIMAP
- EDGAR

IPCC AR5 scenarios
- Baseline
- Median (line), 20-80% (darker)
- Min. – max. (lighter)

2°C limit (starting in 2020)
- Median (line), 20-80% (darker)
- Min. – max. (lighter)

Baseline

2°C (>66% chance)

1990 2000 2010 2020 2030 2040 2050

120
100
80
60
40
20
0
What are we aiming for?

Kyoto-GHG emissions (GtCO₂e/yr)

- EDGAR estimates (including large-scale biomass burning)
- CAIT
- PRIMAP
- EDGAR

Estimated global warming by 2100 (°C rel. 1850-1900)

- + 7°C
- + 6°C
- + 5°C
- + 4°C
- + 3°C
- + 2°C
- + 1°C

Baseline

2°C (>66% chance)

2°C limit (starting in 2020)
median (line), 20-80% (darker) min. – max. (lighter)

IPCC AR5 scenarios
Baseline
median (line), 20-80% (darker) min. – max. (lighter)

20-80% scenario range
scenario median

+ °C
What are we aiming for?
What are we aiming for?
Staying within the 2°C target
Where are INDCs bringing us?

Kyoto-GHG emissions (GtCO₂e/yr)

Estimated global warming by 2100
(°C rel. 1850-1900)

- +7°C
- +6°C
- +5°C
- +4°C
- +3°C
- +2°C
- +1°C

2°C
(>66% chance)

Baseline

2°C limit (starting in 2020)
median (line), 20-80% (darker) min. – max. (lighter)

20-80% scenario range + climate uncertainty range

20-80% scenario range

Scenario median

EDGAR estimates (including large-scale biomass burning)
- CAIT
- PRIMAP
- all excluding biomass burning emissions
- IPCC AR5 scenarios
- Baseline median (line), 20-80% (darker) min. – max. (lighter)
What will be the contribution of INDCs to the temperature target?

• Post-2030 assumptions determine much of the 2100 temperature outcome

• Transparent assumptions critical

• UNEP assesses a wide range assumptions from the scenario literature linking 2030 emission levels to 2100 temperature

• Core assumption: effort until 2030 is continued over time
Where are INDCs bringing us?

Kyoto-GHG emission levels in 2030 (GtCO₂e/yr)

Estimated maximum temperature level avoided during 21st century with greater than 66% chance

+°C
Where are INDCs bringing us?

Kyoto-GHG emission levels in 2030 (GtCO₂e/yr)

Estimated maximum temperature level avoided during 21st century with greater than 66% chance
Where are INDCs bringing us?

Kyoto-GHG emission levels in 2030
(GtCO₂e/yr)

Estimated maximum temperature level avoided during 21st century with greater than 66% chance
Where are INDCs bringing us?

Kyoto-GHG emission levels in 2030 (GtCO₂e/yr)

Unconditional INDC case
Conditional INDC case

Estimated maximum temperature level avoided during 21st century with greater than 66% chance

+°C
Where are INDCs bringing us?

Kyoto-GHG emission levels in 2030 (GtCO$_2$e/yr)

Unconditional INDC case

Conditional INDC case

Estimated maximum temperature level avoided during 21st century with greater than 66% chance

+°C
What will be the contribution of INDCs to the temperature target?

• Full implementation of unconditional INDCs results in emission level estimates in 2030 that are most consistent with scenarios that limit global average temperature increase to below 3.5 °C (range: 3 - 4 °C) by 2100 with a greater than 66 % chance

• Full implementation of conditional INDCs results in emission level estimates most consistent with scenarios that limit temperature increase to <3-3.5 °C by 2100

• INDC estimates have uncertainty ranges associated with them
Further actions and initiatives for closing the gap - ICIs

- Enhanced energy efficiency with a particular emphasis on industry, buildings and transport
- Expanded use of renewable energy technologies
- International Cooperative Initiatives such as the C40 Cities Climate Leadership Group, the Compact of Mayors, and the Cement Sustainability Initiative. Emission reductions from 0.75 to 2 GtCO$_2$e in 2020
Assessing adaptation and emissions gaps: How far are we from 2°C and from meeting adaptation finance needs?

EU Pavilion Side Event organised by UNEP DTU Partnership and UNEP, 4 December 2015

Chapter 6: Lead authors: Lera Miles, UNEP-WCMC, Denis Jean Sonwa, CIFOR; Contributing authors: Riyong Kim Bakkegaard (UNEP DTU Partnership), Blaise Bodin (UNEP-WCMC), Rebecca Mant (UNEP-WCMC), Lisen Runsten (UNEP-WCMC), Maria Sanz Sanchez (FAO), Kimberly Todd (UNDP), Francesco Tubiello (FAO), Arief Wijaya (CIFOR / Thuenen Institute Hamburg)
National statements on forest-related mitigation – we reviewed:

- Intended Nationally Determined Contributions (INDCs)
- Nationally Appropriate Mitigation Actions (NAMAs)
- Bilateral arrangements for REDD+
- Carbon Fund proposals
- Bonn Challenge and Initiative 20x20 commitments on forest landscape restoration
- The New York Declaration on Forests (NYDF) (national signatories)
Forest-related mitigation opportunities

**Addressing drivers:**
- Reduced deforestation
- Reduced forest degradation

**Removing barriers to:**
- Restoration / reforestation
- Sustainable forest management (enhanced C stocks)

- **economic instruments (taxes / incentives)**
- **command and control policies**
- **cross-sectoral action on drivers** (e.g. agriculture subsidies)
- **new & better managed protected areas**
Technical potential for forest-related activities

9 GtCO₂/year at 2030 across developing countries

BUT

constrained by economic factors and land-use competition
Conclusion: Forest-related actions for closing the gap

- Co-benefits of REDD+: restoration of degraded forest landscapes, improved food production and enhanced climate resilience
- Technical potential up to 9 GtCO$_2$/yr in Africa, Asia and the Pacific and Latin America and the Caribbean
- Likely to be constrained by economic and land use factors
- INDCs often emphasise the need for international financial support to enable forest-related mitigation – conditional commitments
- A significant opportunity to help narrow the emissions gap