



Embargoed: Not for Publication or Broadcast Until After 11.30am GMT, 23 November 2011

Bridging the Emissions Gap to Meet 2-Degree Target Do-able

New UNEP Report Outlines the Pathways to 2020 Able to Deliver the Additional 6 to 11 Gigatonne Cuts Needed to Get World onto Safe track

London/Nairobi, 23 November 2011 – Cutting emissions by 2020 to a level that could keep a global, 21st century, temperature rise under 2 degrees C is technologically and economically feasible, says a comprehensive new study released today by the UN Environment Programme (UNEP).

Accelerated uptake of renewable energy, fuel switching and energy efficiency improvements can deliver a large slice of the necessary cuts.

Other measures include sectoral improvements ranging from increased penetration of public transport and more fuel efficient vehicles to ones in areas, such as, agriculture and waste management.

The report cites aviation and shipping as a special but important case, as currently these ‘international emissions’ fall outside the Kyoto Protocol—the emission reduction treaty.

Together they account for around five per cent of CO₂ emissions and could account for up to 2.5 Gigatonnes (Gt) of carbon dioxide equivalent (GtCO₂e) annually, by 2020.

“Options for reducing emissions from both sectors include improving fuel efficiency and using low-carbon fuels. For the shipping sector, another promising and simple option is to reduce ship speeds,” says the report which has involved 55 scientists and experts from 28 scientific groups across 15 countries.

The *Bridging the Emissions Gap* report, issued just days ahead of the UN climate convention negotiations in South Africa and seven months before the Rio+20 summit in Brazil, provides the clearest indicators yet that the world already has the solutions to avert damaging climate change.

It presents policymakers with clear ideas on how to bridge the emissions gap by 2020 which, as a result of improved modeling from last year’s assessment, is now estimated, under the most optimistic scenarios, to be 6 GtCO₂e rather than 5 Gt of GtCO₂e.

The report also outlines far more pessimistic scenarios, if the commitments and pledges of developed countries, including levels of financing amounting to \$100 billion a year by 2020, and the intentions of developing ones are not fully realized—the gap then, by 2020, could be 11 GtCO₂e. Under business-as-usual conditions, it could even be 12 GtCO₂e.

“The annual UNEP Gap Report is a vital contribution to the global effort to address dangerous climate change,” said United Nations Secretary General Ban Ki-moon. “It shows that we have much to do, both in terms of ambition and policy, but it also shows that the gap can still be closed if we act now. This is a message of hope and an important call to action.”

The study, titled *Bridging the Emissions Gap*, brought together 55 scientists and experts from 28 scientific groups across 15 countries to examine the newest scientific research on the gap between the pledges that countries have made to cut their greenhouse gas emissions and what will be needed if we are to be on track to reach the 2 degree target by 2020.

“This report puts into the hands of governments and policymakers vital information about their options if the world is to meet the climate change challenge,” said Achim Steiner, Executive Director of UNEP and Under-Secretary General of the UN. “This year, countries will be able to begin their deliberations in Durban, South Africa, with all the key technological and economic scenarios at their fingertips that outline the gap between current ambition and scientific reality alongside the urgent bridges that can be built to span this emissions’ divide.”

Bridging the Emissions Gap is the second in UNEP's series of reports on the topic. The first - the *Emissions Gap Report* - became a clear benchmark at last year's international climate negotiations in Cancun, Mexico.

There, policymakers asked UNEP to prepare a follow-up report that, not only updated emissions gap estimates, but which also provided ideas on how to bridge the gap. That follow-up is the new report, *Bridging the Emissions Gap*.

Christiana Figueres, Executive Secretary of the United Nations Framework Convention on Climate Change, emphasized the need for increased action. "This study, again, reminds us that efforts to address climate change are currently still insufficient," she said. "But it also shows that it is possible for governments to bridge the gap between what they have promised and what needs to be done to stay below a 2-degrees Celsius average global temperature rise."

"Time is short, so we need to optimize the tools at hand. In Durban, governments need to resolve the immediate future of the Kyoto Protocol, define the longer path towards a global, binding climate agreement, launch the agreed institutional network to support developing countries in their response to the climate challenge, and set out a path to deliver the long-term funding that will pay for that," she added.

Changes to Energy System Key

Bridging the Emissions Gap highlights the need for realistic changes in the energy system, by improving energy efficiency and by accelerating the introduction of renewable energies.

Specifically, the study reviewed 13 scenarios from nine different scientific groups. The scenarios were all able to reduce greenhouse gas emissions to meet the 2-degree target by 2020 by using a combination of the following:

- Improving energy efficiency: primary energy production would need to drop up to 11 per cent from business-as-usual models in 2020, and the amount of energy used per unit of GDP would need to fall 1.1-2.3 per cent each year from 2005 to 2020.
- Up to 28 per cent of total primary energy would need to come from non-fossil sources in 2020 (up from 18.5 per cent in 2005).
- Up to 17 per cent of total primary energy in 2020 would come from biomass (up from about 10.5 per cent in 2005).
- Up to 9 per cent of total primary energy in 2020 would come from non-biomass renewable energy (solar, wind, hydroelectricity and the like).
- Non-CO₂ emissions would fall by up to 19 per cent relative to business as usual by 2020.

The report's authors note that all the scenarios examined had different mixes of these options, indicating that there are many different pathways to bridging the gap.

Importantly for policymakers, the report also looks at what these options would cost. Globally, the average marginal costs range from \$US25-\$US54 per tonne of equivalent carbon dioxide removed, with a median value of \$US34 per tonne.

Sector by sector

The study also examined research on various economic sectors to consider technical potential for emissions reductions by 2020. It found the following potential:

- Electricity production: 2.2 to 3.9 GtCO₂e per year through more efficient power plants, and by introducing renewable energy sources, carbon capture and storage and fuel shifting.
- Industry: 1.5 to 4.6 GtCO₂e per year through improved energy efficiency, fuel switching, power recovery, materials efficiency and other measures.
- Transport (excluding aviation and shipping sectors): 1.4 to 2.0 GtCO₂e per year through improved fuel efficiency, adoption of electric drive vehicles, shifting to public transit and use of low-carbon fuels.
- Aviation and shipping: 0.3-0.5 GtCO₂e per year through improved fuel efficiency and low-carbon fuels, and other measures.

- Buildings: 1.4 to 2.9 GtCO₂e per year by improving the efficiency of heating, cooling, lighting and appliances, and other measures.
- Forestry: 1.3 to 4.2 GtCO₂e per year by reducing deforestation and making changes in forest management that increases above and below ground carbon stocks.
- Agriculture: 1.1 to 4.3 GtCO₂e per year through changes in cropland and livestock management practices that reduce non-CO₂ emissions and enhance soil carbon.
- Waste: about 0.8 GtCO₂e per year by improving wastewater treatment, waste gas recovery from landfills, and other measures.

The total emission reduction potential adds up to about 17 GtCO₂e, plus/minus 3 GtCO₂e, with marginal costs of up to \$US50-100 per tonne of CO₂e. This is consistent with the cost estimates from the scenarios mentioned above.

This emissions reduction potential is larger than the estimated emissions gap of 12 GtCO₂e under business-as-usual conditions, and as such provides policymakers with clear insights into promising options for the way forward to stay below the 2-degree C target.

Conclusions

The report concludes that policymakers could narrow or close the emissions gap in 2020 by:

- Agreeing to implement their more ambitious emissions reduction pledges with stricter rules for complying with these pledges;
- Deciding to target their energy systems, using more non-fossil fuel and renewable energy sources, and making significant improvements in energy efficiency;
- Putting in place strong, long-term, sector-specific policies to achieve the full emissions potential of the different economic sectors.

Editor's notes

- Embargoed copies of the report can be downloaded from : <http://www.unep.org/publications/ebooks/bridgingemissionsgap/>
- The first report in the series, “The Emissions Gap Report”, can be downloaded from: [http://www.unep.org/publications/ebooks/emissionsgapreport/pdfs/The EMISSIONS G AP REPORT.pdf](http://www.unep.org/publications/ebooks/emissionsgapreport/pdfs/The_EMISSIONS_GAP_REPORT.pdf)
- This report was also supported by the European Climate Foundation (www.europeanclimate.org) and was coordinated by Ecofys (www.ecofys.com).

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