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## CO<sub>2</sub> Budget 2010

Released 5 December 2011



## Rapid growth in CO<sub>2</sub> emissions after the 2008–2009 global financial crisis

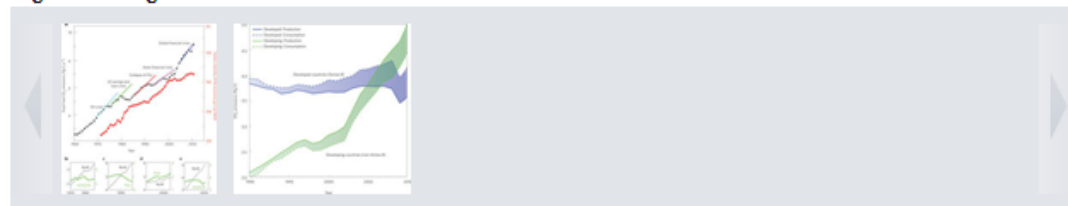
Glen P. Peters, Gregg Marland, Corinne Le Quéré, Thomas Boden, Josep G. Canadell & Michael R. Raupach

[Affiliations](#) | [Corresponding author](#)

*Nature Climate Change* (2011) | doi:10.1038/nclimate1332

Published online 04 December 2011

### Figures at a glance



### To the Editor

Global carbon dioxide emissions from fossil-fuel combustion and cement production grew 5.9% in 2010, surpassed 9 Pg of carbon (Pg C) for the first time, and more than offset the 1.4% decrease in 2009. The impact of the 2008–2009 global financial crisis (GFC) on emissions has been short-lived owing to strong emissions growth in emerging economies, a return to emissions growth in developed economies, and an increase in the fossil-fuel intensity of the world economy.

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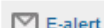
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### Carbon Emissions Show Biggest Jump Ever Recorded

By JUSTIN GILLIS

Published: December 4, 2011

Global emissions of carbon dioxide from fossil-fuel burning jumped by the largest amount on record last year, upending the notion that the brief decline during the [recession](#) might persist through the recovery.

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Emissions rose 5.9 percent in 2010, according to an analysis released Sunday by the Global Carbon Project, an international collaboration of scientists tracking the numbers. Scientists with the group said the increase, a half-billion extra tons of carbon pumped into the air, was almost certainly the largest absolute jump in any year since the Industrial Revolution, and the largest percentage increase since 2003.

The increase solidified a trend of ever-rising emissions that scientists fear will make it difficult, if not impossible, to forestall severe [climate change](#) in coming decades.

The researchers said the high growth rate reflected a

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## Eco News

### Global carbon emissions up 50 percent

Last Updated: Monday, December 05, 2011, 11:46

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London: Global carbon dioxide emissions from burning fossil fuels have gone up by 49 percent over the last two decades to reach a staggering 10 billion tonnes in 2010.

Contributions to such emissions growth in 2010 were largest from China, the US, India, the Russian Federation and the European Union.

The new analysis by the Global Carbon Project, undertaken by the University of East Anglia and others, shows fossil fuel emissions went up by 5.9 percent in 2010 and by 49 percent since 1990 - the reference year for the Kyoto protocol.

Half of the emissions remained in the air, where CO2 concentration reached 389.6 parts per million. The remaining emissions were taken up by the ocean and land reservoirs, in almost equal proportions, the journal Nature Climate Change reports.

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BY MARGARET MUNRO, POSTMEDIA NEWS DECEMBER 4, 2011

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## Emissions hit record as effect of financial crisis eases

Deborah Smith, SCIENCE EDITOR  
December 5, 2011

The impact of the global financial crisis on reducing carbon dioxide emissions was short-lived, with emissions quickly rebounding to a record level.

Emissions from fossil fuel burning and cement production grew by 5.9 per cent last year to a record high of more than 9 billion tonnes of carbon, preliminary figures show. This increase overwhelmed the 1.4 per cent reduction recorded in 2009.

The executive director of the Global Carbon Project, Pep Canadell, said the financial crisis in 2008-09 had been an opportunity for the global economy to move away from high emissions growth.

"This opportunity has not been realised," Dr Canadell, a CSIRO scientist, said.

When combined with deforestation and other land use emissions, total emissions last year topped 10 billion tonnes of carbon for the first time.

About half of the emissions remained in the air, with the atmospheric level of carbon dioxide reaching 389.6 parts per million at the end of last year – the highest level for at least 800,000 years.

Since 1990, the reference year for the Kyoto Protocol, emissions

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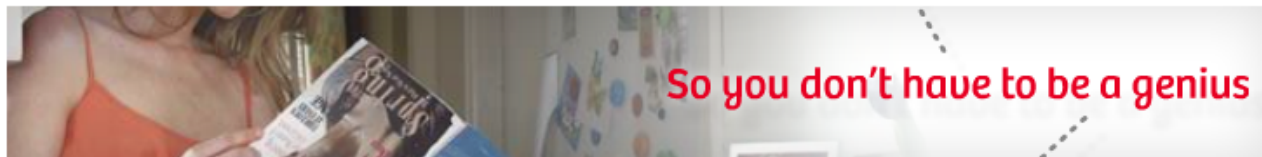


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## Record rise for fossil fuel emissions

December 5, 2011

AFP

Emissions of carbon dioxide (CO<sub>2</sub>) from fossil fuels and the cement industry scaled a record high in 2010, rocketing by 5.9 per cent over 2009 in a surge led by developing countries, scientists have reported.

For the first time ever, annual CO<sub>2</sub> from these sources topped nine billion tonnes, reaching an estimated 9.1 gigatonnes, they said in a letter to the journal Nature Climate Change.

The year-on-year rise was the highest ever recorded and more than wiped out a 1.4 per cent fall in 2009 which occurred as a result of the 2008 global financial crisis.

"After only one year, the global financial crisis has had little impact on the strong growth trend of global CO<sub>2</sub> emissions that characterised most of the 2000s," said the letter, led by Glen Peters of the Center for International Climate and Environmental Research in Norway.

The rebound may be explained by a swift easing in energy prices and injections of government funds to help recovery, the authors suggested.

CO<sub>2</sub> emissions from rich countries fell by 1.3 per cent in 2008 and 7.6 per cent in 2009, but increased by 3.4 per cent in 2010.

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## Scientists shocked by record rise in carbon emissions

AM By environment reporter Conor Duffy

Updated December 05, 2011 15:08:43

**New research has found global carbon emissions surged by a record amount in 2010 after falling during the international financial crisis.**

The Global Carbon Project published its yearly analysis of carbon dioxide emissions in the journal Nature Climate Change today.

It found global carbon dioxide emissions increased by a record 5.9 per cent in 2010.

The report says the overall atmospheric concentration of carbon dioxide is now at its highest level in 800,000 years.

Mike Raupach from the CSIRO helped write this year's report and says he and other scientists were shocked by the findings.

"This was a very large number, an unexpectedly high increase, much greater than the average increase through the decade of the 2000s which has been about 3 per cent, and it cancels out a downturn in emissions the year before."

Dr Raupach hopes the findings will add some pressure to the world climate talks underway in Durban, South Africa.

"The reality that we are not succeeding in producing any downturn in global emissions adds to the urgency of undertaking that task," he said.



**PHOTO:** The report found global carbon dioxide emissions increased by 5.9 per cent in 2010. (ABC News: Giulio Saggin, file photo)

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## Study finds industry CO2 output rising

David Fogarty  
Reuters

Monday, 5 December 2011

Global carbon dioxide emissions from industry rose about three per cent despite a weak global economy, a new study shows.

The finding adds fresh urgency to efforts to control planet-warming gases at UN climate talks being held this week in South Africa.

The study by the Global Carbon Project, an annual report card on human CO<sub>2</sub> pollution, says a slowdown in emissions during the 2008-09 global financial crisis was a mere speed bump, and the gain in 2011 followed a 6 per cent surge in 2010.

"The global financial crisis was an opportunity to move the global economy away from a high-emissions trajectory. Our results provide no indication of this happening," the authors say in the study published in the journal *Nature Climate Change*.

Delegates from nearly 200 nations attending major talks in South Africa are struggling to make progress towards tougher steps to curb soaring carbon pollution.

A small number of big developing nations were fuelling the emissions growth, the study said, even though the global financial crisis spawned long-term green stimulus plans by China, South Korea, the United States and others to attempt to curtail CO<sub>2</sub> output.

In the short-term, an improvement in the carbon intensity of economies, a measure of carbon emissions per unit of gross domestic product (GDP), has stalled, according to the study, which analysed data from the US government, United Nations and BP Statistics.

Global emissions from burning fossil fuels and cement production grew 5.9 per cent in 2010, compared with a



The report found a small number of big developing nations were fuelling the emissions growth (Source: Hans Thoursie/stock.xchng)

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## Emissions rising fast

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**TONY EASTLEY:** With world leaders set to attend climate talks in Durban this week, a new study published in the journal Nature Climate Change warns that carbon dioxide emissions are rising faster than ever.

The scientists behind the annual report say 2010 had one of the largest increases in emissions in decades.

They say the slowing down in emissions caused by the financial crisis has been totally upset by the surge in pollution in 2010.

Environment reporter Conor Duffy takes up the story.

**CONOR DUFFY:** Every year the Global Carbon Project sets out to measure the annual amount of carbon dioxide being pumped into the atmosphere worldwide

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## Emissions rising fast

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Updated December 5, 2011 11:22:29

With world leaders set to attend climate talks in Durban this week, a new study published in the journal *Nature Climate Change* warns that carbon dioxide emissions are rising faster than ever.

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# Recession did not lower Co2 emissions

STEVE CONNOR | MONDAY 05 DECEMBER 2011

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The world is on course for the "worst case" scenario of global warming, with average worldwide temperatures increasing by between 4C and 6C in the coming century, according to the latest analysis of how much man-made carbon dioxide is being pumped into the atmosphere.

Latest figures on CO2 emissions show that the global financial crisis of 2008-2009 has had virtually no impact on the long-term increase in greenhouse gases released from the burning of fossil fuels, deforestation and other industrial activities.

The amount of man-made carbon dioxide released in 2010 reached a record 10 billion tonnes, nearly 6 per cent higher than in 2009. It has returned the world to a path of ever-higher emissions that will make it increasingly difficult to keep within the 2C target that most experts believe is necessary to avoid dangerous climate change.

Unlike previous global recessions, which caused long-term

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## Global industry CO2 output continues to rise - study

Published: 10:43AM Monday December 05, 2011 Source: Reuters

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Global carbon dioxide emissions from industry rose about three percent in a weak global economy this year, a new study shows, adding fresh urgency to efforts to control planet-warming gases at UN climate talks in South Africa.

The study by the Global Carbon Project, an annual report card on mankind's CO2 pollution, says a slowdown in emissions during the 2008-09 global financial crisis was a mere speed bump, and the gain in 2011 followed a 6% surge in 2010.

"The global financial crisis was an opportunity to move the global economy away from a high-emissions trajectory. Our results provide no indication of this happening," the authors say in the study published in the journal Nature Climate Change.

Delegates from nearly 200 nations attending



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## Carbon emissions reach new high

Carbon emissions are higher than they have ever been, despite the economic downturn, according to the latest research.



Fossil fuel emissions from sources like coal-fired power stations increased by 5.9 per cent in 2010 Photo: ALAMY



By **Louise Gray**

6:00PM GMT 04 Dec 2011



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Global carbon emissions reach record 10 billion tonnes, an increase of almost 50 per cent in the last two decades, according to the team at the

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# Explosion in carbon emissions

Adam Morton Environment Editor  
December 5, 2011

CARBON dioxide emissions from burning fossil fuels are growing at a record rate, with the latest data suggesting pollution from rich countries is accelerating despite nearly 15 years of pledges to make cuts.

An analysis by international scientists working on the Global Carbon Project found emissions from developed countries increased by 3.4 per cent in 2010, reversing a two-year slump caused by the global financial crisis.

Developing world emissions continued to surge, particularly from the expanding economies of China and India, up 10.4 and 9.4 per cent respectively.

It meant that global emissions leapt by 5.9 per cent - nearly twice the average pace of growth of the past decade.

The findings came as 10 heads of state and dozens of government ministers, including Australian Climate Change Minister Greg Combet, prepared to meet in Durban, South Africa, in a bid to salvage a future for the United Nations climate negotiations.

The findings also coincided with the publication of research - using a new method not reliant on climate models - estimating that three-quarters of the global warming since 1950 was extremely likely to be due to the heat-trapping effect of human greenhouse gas emissions.

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### Global carbon emissions up 50 percent

Last Updated: Monday, December 05, 2011, 11:46



Tags: Global carbon emission , climate change , fossil fuel



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## Dire warming as carbon emissions surge

BY ROSSLYN BEEBY, SCIENCE AND ENVIRONMENT REPORTER  
05 Dec, 2011 04:00 AM

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Global carbon emissions surged by a record 5.9 per cent last year, putting the world on track for an average temperature rise of more than three degrees by the end of this century, a new study says.

The latest Global Carbon Project analysis, published today in the science journal Nature, reveals atmospheric concentrations of carbon have risen to just over 389 parts per million, the highest level "in at least the last 800,000 years".

Burning coal to produce electricity and cement emissions from construction works account for 52 per cent of this accelerated growth in greenhouse emissions.

The report confirms doubts raised at the United Nations climate summit in South Africa that it will be impossible to limit global warming to less than two degrees, given the slow pace of action to address climate change through a global treaty.

Restricting warming trends to a two-degree limit is regarded by UN experts as crucial to avoid the impacts of "dangerous climate change" which includes an increase in extreme weather events, failure of food crops and the increased spread of tropical diseases such as malaria and dengue fever.

University of Chicago climate systems centre director Raymond Pierrehumbert likened the two-degree temperature change guideline to setting a speed limit that is dangerous to exceed.

"The warmer you get, the more bad stuff can happen and the more outside the actual range of the Earth's climate we get," he said.

The international carbon data study, which involved CSIRO atmospheric scientists Mike Raupach and Pep Canadell, shows the world's greenhouse emissions have bounced back, following a brief 1.4 per cent dip as a result of the global economic crisis.

"There has been a much stronger rebound than expected," Dr Raupach said. "It's a bit of a shock because it puts us back on trend toward a warming world."

Dr Raupach said the global economic crisis had offered a chance to "move the global economy from a high emissions trajectory" but the quick rebound showed reversing global growth in fossil fuel emissions remained "an enormous challenge".

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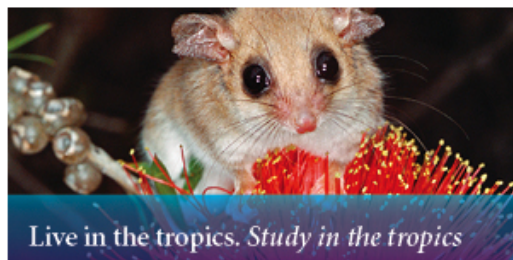


## Global carbon emissions rise 49 percent since 1990

[Jeremy Hance](#)

[mongabay.com](#)

December 04, 2011



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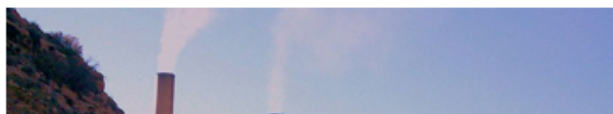


Total carbon emissions for the first time hit 10 billion metric tons (36.7 billion tons of CO<sub>2</sub>) in 2010, according to new analysis published by the Global Carbon Project (GCP) in *Nature Climate Change*. In the past two decades (since the reference year for the Kyoto Protocol: 1990), emissions have risen an astounding 49 percent. Released as officials from 190 countries meet in Durban, South Africa for the 17th UN Summit on Climate Change to discuss the future of international efforts on climate change, the

study is just the latest to argue a growing urgency for slashing emissions in the face of rising extreme weather incidents and vanishing polar sea ice, among other impacts.

"Global CO<sub>2</sub> emissions since 2000 are tracking the high end of the projections used by the Intergovernmental Panel on Climate Change, which far exceed two degrees warming by 2100," explained co-author Corinne Le Quéré, the director of the Tyndall Centre for Climate Change Research and professor at the University of East Anglia, in a press release. "Yet governments have pledged to keep warming below two degrees to avoid the most dangerous aspects of climate change such as widespread water stress and sea level rise, and increases in extreme climatic events. Taking action to reverse current trends is urgent."

Unlike a recent report from the U.S. Department of Energy, which just looked at fossil fuels, the



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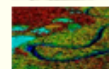
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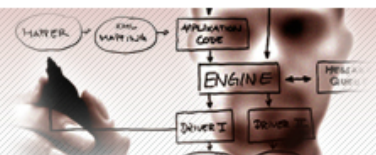
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# Global carbon emissions reach record high of 10 billion tonnes

by ClickGreen staff. Published Sun 04 Dec 2011 18:00, Last updated: 2011-12-04

Global carbon dioxide emissions from burning fossil fuels have increased by 49 per cent in the last two decades, according to the latest figures by an international team of researchers.

The new analysis by the Global Carbon Project shows fossil fuel emissions increased by 5.9 per cent in 2010 and by 49 per cent since 1990 – the reference year for the Kyoto protocol.

On average, fossil fuel emissions have risen by 3.1 per cent each year between 2000 and 2010 – three times the rate of increase during the 1990s. They are projected to continue to increase by 3.1 per cent in 2011.

Total emissions - which combine fossil fuel combustion, cement production, deforestation and other land use emissions - reached 10 billion tonnes of carbon in 2010 for the first time. Half of the emissions remained in the atmosphere, where CO2 concentration reached 389.6 parts per million.

The remaining emissions were taken up by the ocean and land reservoirs, in approximately equal proportions.

Rebounding from the global financial crisis of 2008-09 when emissions temporarily decreased, last year's high growth was caused by both emerging and developed economies. Rich countries continued to outsource part of their emissions to emerging economies through international trade.

Contributions to global emissions growth in 2010 were largest from China, the United States, India, the Russian Federation and the European Union. Emissions from the trade of goods and services produced in emerging economies but consumed in the West increased from 2.5 per cent of the share of rich countries in 1990 to 16 per cent in 2010.

In the UK, fossil fuel CO2 emissions grew 2.8 per cent in 2010 but were 14 per cent below their 1990 levels.

Emissions from burning fossil fuels increases by nearly 50% in two decades



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# Carbon emissions the highest for the past 800,000 years according to Australian-led Global Carbon Project research

Malcolm Holland The Daily Telegraph December 05, 2011 5:00AM

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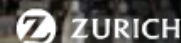
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# Global industry CO2 output rising even in weak economy: study

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 By [David Fogarty](#)

SINGAPORE | Sun Dec 4, 2011 1:02pm EST

(Reuters) - Global carbon dioxide emissions from industry rose about three percent in a weak global economy this year, a study released on Monday showed, adding fresh urgency to efforts to control planet-warming gases at U.N. climate talks in South Africa.

The study by the Global Carbon Project, an annual report card on mankind's CO2 pollution, says a slowdown in emissions during the 2008-09 global financial crisis was a mere speed bump, and the gain in 2011 followed a 6 percent surge in 2010.

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## CO2 Emissions in 2010 Show Biggest Increase Ever Recorded



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By Yale Environment 360 at [Yale Environment 360](#)

Tue Dec 6, 2011 10:47am EST

Global carbon emissions soared 5.9 percent in 2010, the largest increase ever recorded, according to the Global Carbon Project, an international collaboration of scientists that tracks carbon emissions.

The increase comes after a short-lived decline in emissions in 2008 and 2009 and is a sign that global CO2 emissions are once again on the rise as world economies bounce back from recession. The overall jump of more than 500,000 million tons of CO2 emissions from 2009 to 2010 was likely the largest absolute increase since the Industrial Revolution, according to the Global Carbon Project.

Emissions in China, the world's largest source of CO2 releases,

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## New Study Shows CO2 Emissions Higher Than Ever in 2010

Author: John Austin, Ph.D. : Posted to Decoded Science on December 4, 2011 at 8:47 am



Global warming results in melting ice in the Arctic. Photo credit: NOAA.

While delegates at the [Durban Climate Summit](#) discuss the advantages and disadvantages of delaying a global agreement on greenhouse gas emissions into the atmosphere, the latest study shows that CO2 emissions are higher than ever. At the Summit, many of the world's

### About the author

John Austin, Ph.D.



John Austin has over 30 years' experience as a research scientist with over 80 papers published on the stratosphere. He holds a BA and MA in mathematics and physics, and a PhD in atmospheric sciences from the University of Cambridge (UK). He was the (sole!) winner of the 2003 Buchan Prize of the Royal Meteorological Society and along with an almost uncountably large number of climate scientists, was a co-winner of the 2007 Nobel Peace Prize.

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## A Glimmer of Hope?

BY PHILLIP STALLEY

Posted: 12/14/2011 01:03:45 AM PST

With America's attention largely focused on the Republican presidential competition last week, three important developments barely made a ripple in the news.

First, the Global Carbon Project announced that in 2010 carbon dioxide (CO2) emissions from burning fossil fuels, the chief contributor to global climate change, increased by a record amount -- up just less than 6 percent, almost twice the pace of the previous decade. In absolute terms, this increase represents an additional 500 million tons of CO2, the largest hike in any single year since the Industrial Revolution.

Second, the 194 nations gathered in Durban, South Africa, made tentative progress toward a new climate change treaty. The 1997 Kyoto Protocol, which requires industrialized countries to reduce their emissions by an average of 5 percent below 1990 levels, expires next year. Without a new agreement to continue or replace Kyoto, there would have been little hope that the international community can achieve its stated goal of keeping the earth's temperature within two degrees centigrade (3.6 degrees Fahrenheit) of pre-industrial levels. Scientists argue that a two-degree limit is necessary to provide a reasonable chance that we avoid the most dangerous effects of climate change.

Third -- and here there's at least a hint of good news -- during the Durban talks, China indicated a willingness to discuss legally binding emission limits after 2020. Why is this important? Because China has no binding

commitments under the existing Kyoto Protocol and is the world's leading emitter of greenhouse gases by a wide and growing margin.

In 2010, China emitted roughly 8.9 billion tons of carbon dioxide from burning fossil fuels, almost 70 percent more than the United States, the world's second-leading emitter. Yet, on average, a Chinese citizen produces only about 40 percent as much CO2 as an American, which means there is ample room for China to pump out even more pollution as its economy continues its torrid expansion. Last year alone, Chinese emissions increased by more

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## Fundamental changes needed

BY RICK MCGOWAN, BURNABY NOW DECEMBER 14, 2011

Dear Editor:

Thank you for your editorial on the global warming crisis, Nature won't wait while we keep stalling, Our View, Burnaby NOW, Dec. 9.

This issue doesn't get the attention it deserves in Canada. The Global Carbon Project estimates 10 billion tonnes of greenhouse gases were emitted in 2010. That works out to be about 1.43 tonnes per person.

According to The Montreal Gazette, Canada alone emitted 690 million tonnes of carbon dioxide in 2009, or 20 tonnes per person - 14 times the world average!

High levels are largely because of increased emissions related to the extraction from Alberta's oilsands, but that is not the only source. An average car driver can easily produce over six tonnes of GHGs per year. Any hope of reducing our emissions will require fundamental changes in our attitudes and actions.

Rick McGowan, Burnaby municipal Greens

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DECEMBER 12, 2011

### TOP TEN SIGNS WE ARE LIVING IN A WARMING WORLD: 2011 EDITION

Posted by Elizabeth Kolbert



**1. Even “skeptics” admit the world is warming:** A study funded in part by the Charles G. Koch Foundation and led by Richard Muller, a Berkeley physicist and self-described global-warming skeptic, concluded that the world, in fact, warming up. The study, from the Berkeley Earth Surface Temperature, or BEST group,

reviewed more than a billion temperature measurements and came to the same conclusion as virtually all the previous studies. “As far as the basic science goes, the results could not have been less surprising if the press release had said ‘Man Finds Sun Rises At Dawn,’” [Eric Steig](#), a geochemist at the University of Washington, wrote on the blog RealClimate.



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## Ewart: Economy fuels emissions growth

BY STEPHEN EWART, CALGARY HERALD DECEMBER 6, 2011

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Greenpeace activists and supporters protest outside the climate conference venue in Durban, South Africa, Monday.

Photograph by: Alexander Joe, AFP-Getty Images, Postmedia News

In the wake of the news, or at least confirmation, out of South Africa early Monday that Canada wasn't going to agree to targets under the second

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BY PHILLIP STALLEY

Posted: 12/14/2011 01:03:45 AM PST

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## Butterfly effect flags climate chaos

Jo Chandler  
December 10, 2011

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Any regular observer of the annual international climate talks that have become a fixture on the Yuletide calendar over the past 17 years will be aware that these events create their own extreme weather. Conference rooms heavy with hot air are suddenly lashed by tornadoes of frenzied resolve and energy, most of which blow themselves out. Then there are the thunderous exchanges, frosty relations, occasional showers of aspiration, and the dustclouds of vanished hope.

What it all means it's often hard to say, the 10,000-plus players from 195 nations having evolved a banal language of negotiation that is near impenetrable to the uninitiated. One might be forgiven for thinking they are talking



Butterflies: the canaries in the coalmine of the environment.

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## Labor turns its back on reform

December 6, 2011  
OPINION

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### EDITORIAL



"Though debates raged, the promised surprises were few and far between." Photo: Kate Geraghty

JULIA GILLARD delivered her open national party conference, as promised - but though debates raged, the promised surprises were few and far between. It seems unlikely the public display of argument and contention will be enough to boost public interest in Labor and its ideas.

Much of the attention in conference reports has focused on gay

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