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## CARBONEDGE SPECIAL REPORT

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### On the Road to Copenhagen

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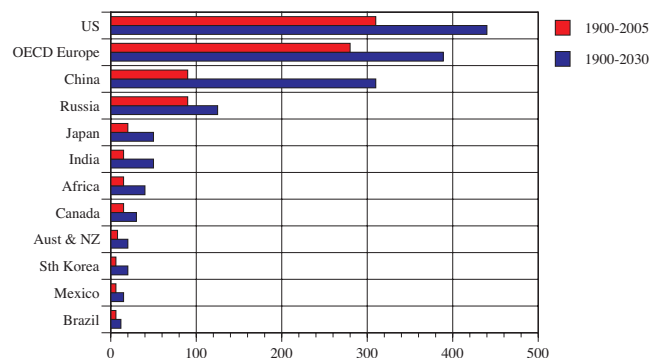
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*Barring a last minute miracle, Copenhagen will not deliver an international treaty but hopefully the framework for one – and you can blame it on the US Congress.*

attending the UN-sponsored conference in **Copenhagen** to hash out a replacement for the mostly symbolic **Kyoto Protocols**, will accomplish little. This, despite all the anticipation and the great expectations.

The ultimate aim, of course, is to agree to a binding international treaty that would stabilize global greenhouse gas (GHG) emissions somewhere around 450 parts per million (ppm) of CO<sub>2</sub>-equivalent, which according to scientific projections would limit the rise of global temperature to 2°C – with significant uncertainties on the scenarios, numbers, dates, consequences, costs and risks.

**Cumulative CO<sub>2</sub> emissions, 1900-2005 and projected for 1990-2030, in gigatonnes**



Source: World Resources Institute & EIA

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Trying not to repeat the mistakes of Kyoto, which expires in 2012, delegates representing their respective governments must try to reach a balance in what can realistically be achieved, what the politicians are likely to endorse and the taxpayers willing to swallow. Critically, and in contrast to Kyoto, the agreement must include the world's rich and poor, the haves and the have nots, in ways that may be deemed as reasonable, equitable and fair – difficult issues subject to different interpretations.

At stake is a 200-page draft document with some 1,000 critical clauses that has been hammered at repeated meetings since 2007. A handful of big polluters – past, present and future – dominate the numbers (see accompanying graph) but everyone's future is potentially at stake, including a number of small island nations that could potentially vanish if sea levels rise as predicted.

## It will take more than goodwill

### What will be needed to cut global carbon emissions in half by 2050, GW of capacity per year between 2010-50

Technology/option	#needed
Nuclear plants	24-32
Coal fired plants with CCS <sup>1</sup> technology	30-35 units at 500 MW ea
Gas fired plants with CCS technology	1-20 units at 500 MW ea
Wind - on shore	2,900 - 14,000 wind turbines
Wind - off shore	775.3.750 wind turbines at 4 MW ea
Hydro	1/5th Canada's current hydro capacity
Solar PV	115-215 million sq meters of panel
Solar CSP <sup>2</sup>	45-80 plants 250 MW ea
Biofuels	30-100 plants 50 MW ea
Geothermal	50-130 plants 100 MW ea

<sup>1</sup> Carbon capture & sequestration

<sup>2</sup> Concentrated solar power

Source: Energy Technology Perspective

In the weeks leading to the event, environmentalist advocates are doing their best to influence the outcome, pointing out that this is one big opportunity not to be missed or fumbled. Dignitaries, celebrities, scientists, scholars, think tanks, lobbying groups and a host of others have released reports, published books and put out press releases timed to educate the delegates and increase public support for a global treaty. Al Gore and James

Hansen have published two books timed for maximum impact (see boxes).

## Our choices according to Al Gore

Former US Vice President, **Al Gore**, does not need much of an introduction and his views on climate change are well known. His latest book, published in time for Copenhagen conference, like that of **James Hansen**, highlighted in the Nov 09 issue, is clearly intended to influence the public and – more important – the delegates assembled in Copenhagen to think twice before returning home empty handed.

The book's basic message, titled **Our Choice: A Plan to Solve the Climate Crisis**, is not particularly new, nor does Mr. Gore offer new insights. But he has managed to assemble his ideas in a single volume, a sequel to his prior work, **An Inconvenient Truth**.

Good thing he is no longer a politician and does not need the votes that politicians need to remain in office. As a celebrity, he can say as he pleases and get away with it – something he does with apparent relish.

He does not believe in **clean coal** – at least not in the near future – and points out that the powerful coal lobby in the US, and elsewhere, have duped us into believing that **carbon capture and storage (CCS)** technology is imminent and affordable. This explains why **Waxman-Markey**

**Bill**, for example, allows conventional coal-fired plants to be built for another decade or more with the provision that they will adopt CCS technology when it becomes commercially available. CCS is an illusion, Mr. Gore suggests, and legislation such as Waxman-Markey a gimmick that lets coal-fired plants off the hook.

Gore is not particularly enamored with nuclear power either, advising against expensive subsidies to bolster what he considers to be uneconomic and dangerous. He has changed his view on biofuels, once among his favorites,

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calling it a mistake. He, of course, likes renewables – no surprises here – but what he really likes is the idea of super-grids, smart, versatile and vastly more accommodating than the grids we have today.

One may disagree with Mr. Gore, but one cannot dismiss the fact that he has done his homework and knows more about climate change than most elected government officials and their representatives who will be debating the fate of the planet in Copenhagen.

In the mean time, UN officials are trying to manage public expectations by saying that they will settle for an agreement on a *framework* for a treaty, if not the *treaty* itself. While this lowers the goal post, it could be interpreted as sufficient success to save face on a final communiqué. It would be a major embarrassment for everyone to go home empty handed, having come this far.

## NASA's Chief Climatologist Goes Into High Gear For Copenhagen

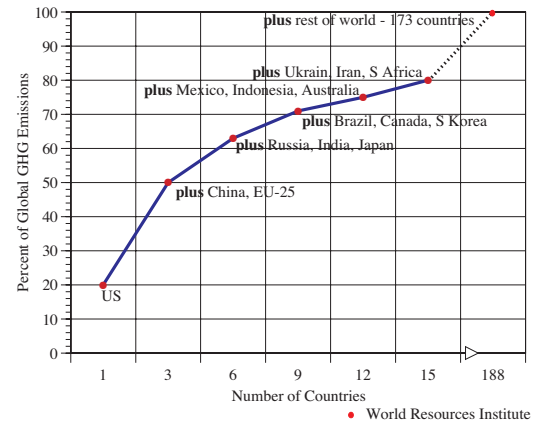
With the approach of the UN-sponsored climate change conference in Copenhagen, many environmentalists are doing their utmost to influence the outcome of the critical negotiations. Among the hopefuls are **James Hanson**, a Columbia University Professor and NASA's director at the Goddard Institute for Space Studies – widely credited for coining the word global warming in the 1980s. He was censored during the **Bush administration** for advocating the need to curtail carbon emissions, a message President Bush did not wish to hear or propagate.

Bloomsbury has committed to print 100,000 copies of his book ***Storms of my Grandchildren: The Truth About the Coming Climate Catastrophe and Our Last Chance to Save Humanity*** by early December (<http://www.stormsofmygrandchildren.com/>). The book's title refers to Hansen's growing concerns about the world our grandchildren will inhabit if we do not address climate change.

In praise of the author, Robert F. Kennedy, Jr. said, "Dr. James Hansen is Paul Revere to the foreboding tyranny of climate chaos - a modern day hero who has braved criticism and censure and put his career and fortune at

stake to issue the call to arms against the apocalyptic forces of ignorance and greed."

## Aggregate contribution of major greenhouse gas emitting countries, percentage of global GHG emissions



Source: World Resources Institute, 2005

What is needed, according to **Yvo de Boer**, the UN's point man in Copenhagen, is a grand political compromise on 4 main items:

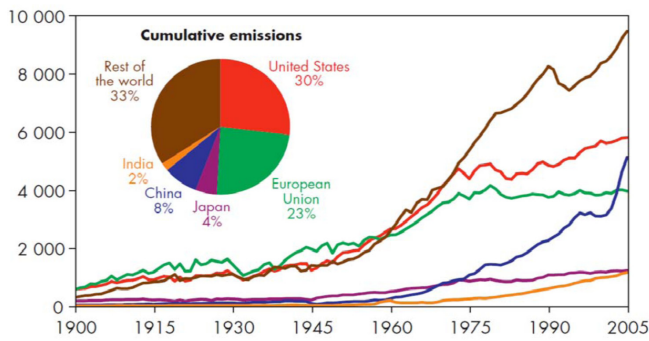
- A binding commitment by **developed countries** to cut their medium-term GHG emissions, say for 2020, by a respectable level, say by 20% or more, with commitments to go further, say 80%+ by 2050;
- Adequate assurances by **developing countries** – especially a few big emitters – to limit the rate of growth of their GHG emissions in the medium-term with the promise of capping and eventually reducing them at some future date;
- Agreement on how the **rich will assist the poor**, financially and technically, to curb their GHG emissions; and
- Agreement on a **system to monitor compliance** with the agreed commitments.

If it seems simple, it is not. Take the first 2 items to start with. The poor countries point out, correctly, that most of the carbon already accumulated in the atmosphere was spewed by the rich – and that is how they got to be rich. The rich must now show resolve by cutting back their emissions – paying for their past sins – before asking the poor to join the effort. The poor ask how can they be expected to forego their turn at economic growth and development now?

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## Keeps rising

Energy-related CO<sub>2</sub> emissions by region, 1900-2005, million tones



Source; International Energy Agency, World Energy Outlook, 2007

The rich do not dispute the historic facts, but point out, also correctly, that going forward, it is the developing countries that will dominate GHG emissions. And unless they agree to at least *reduce the rate of growth* of these emissions, there is no hope of addressing climate change. The poor respond, correctly, by pointing out that they do not have the financial resources to invest in clean energy and must be assisted. They also point, also correctly, to their relatively low per capita emission rates relative to the rich. And so the arguments go.

Repeated meetings and summits to reach a breakthrough on these and other intractable issues have failed to date – hence the importance of reaching an agreement in Copenhagen. “There is no plan B,” according to **Connie Hedegaard**, who will play a key role as the Danish Climate Minister at the meeting, adding, “We have to agree at Copenhagen.”

## What will it take? How much will it cost?

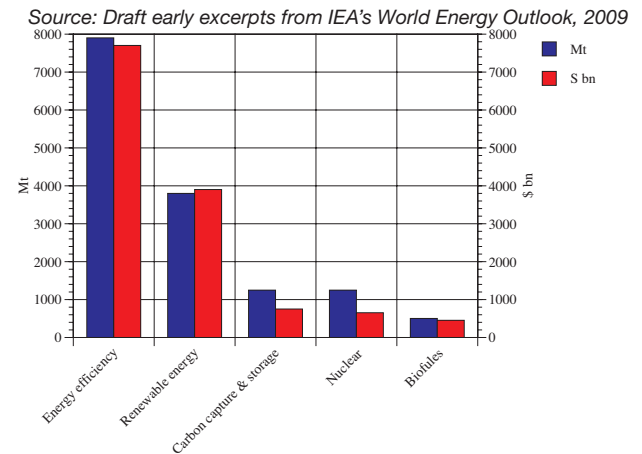
“If the world continues on the basis of today’s energy and climate policies, the consequences of climate change will be severe,” according to International Energy Agency’s Executive Director Nobuo Tanaka.

To stabilize CO<sub>2</sub> levels in the atmosphere at around 450 ppm, global GHG emissions must decline by 13,800 Mt by

2030 compared with the reference scenario. IEA’s suggested recipe calls for significant contributions from the power generation sector (see chart). The price tag? IEA puts the 20-year investment in the power sector alone around \$12 trillion.

## Power sector’s burden

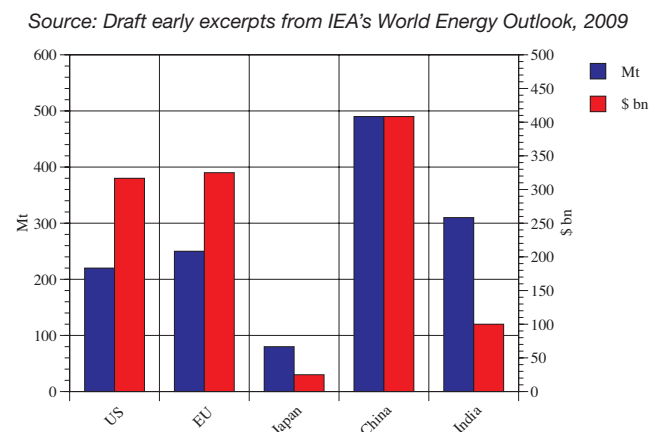
Requirement reductions in GHG emissions from various options within power generation sector from 2010-2030, in Mt and US \$billion



IEA says investment in renewable energy resources within the OECD countries could reduce GHG emissions by 816 Mt with an investment of US\$1,035 billion (see chart).

## What would we get for this much money?

Projected GHG reduction levels and costs from investment in renewable energy, 2010-2030, in Mt and US \$billion



“The biggest challenge will be to ensure there is funding to back this energy transformation with substantial support for developing countries,” says Tanaka, warning, “Every year of delay adds an extra US\$500 billion to the investment needed between 2010 and 2030 in the energy sector.” It

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sounds convincing and deceptively easy on paper.

What if negotiations fail to produce an agreement? Mr. De Boer says, "I don't think it's going to get any easier if we go into next year. I can only see it getting more difficult."

Success or failure at Copenhagen will be highly symbolic for **UN's Secretary General, Ban Ki-moon**, who has put his personal prestige on the line for an agreement. Speaking at a conference in London in early November, he said he was trying to be "very realistic and practical" about the prospects for a deal – conceding that he would settle for a "political settlement" in December to be followed by a legally binding deal later on.

**President Obama**, during his Southeast Asia Tour in mid November, pretty much dashed any expectation that there will be a final treaty in Copenhagen. After creating a furor of protests, he subsequently attempted to modify his initial statement – but the damage had already been done. Perhaps Mr. Obama was also trying to be realistic and practical, like Mr. Ban Ki-moon. Given the hostile reception in the US Senate, climate legislation appears a distant and daunting goal, and without Congressional support, concessions made in Copenhagen will be meaningless, as happened in Kyoto under **President Clinton's** administration (see box).

## Obama faces uphill battle on climate legislation

Candidate Obama ran for office on a platform that included an expanded role for renewable energy resources and a comprehensive cap-and-trade legislation that would have auctioned all allowances from the beginning. But President Obama has found that the reality on the ground, exacerbated by the worst financial crisis facing the US since the 1929 stock market crash, requires significant compromises on all fronts. Making matters worse, pushing health care reform has sapped the White House of all energy, draining Obama's personal political capital and leaving climate legislation as a mere afterthought.

Barring a last minute miracle, the only tangible progress the US delegation can claim in Copenhagen is the Waxman-**Markey Bill (HR 2454)**, a tepid loophole-ridden piece

of legislation that barely made it through the **US House of Representatives** on a 219-212 vote. As proposed, polluting industries actually stand to benefit from the bill because of the generous free allowances offered.

After months of delay, a bill similar to HR 2454 has been introduced in the US Senate, where at least 60 votes are needed to pass anything – and few observers can see how this can happen anytime soon, unless the bill is watered down to the point where it is virtually worthless. The original version of the bill would require a 20% cutback in greenhouse gas emissions by 2020 relative to 2005 levels – vs. 17% for the House version. Otherwise, the bills are quite similar in giving away all sorts of free allowances and putting off any serious reductions to 2050 – too far removed to be of much concern to anyone. The Senate Bill is vague on many of its provisions and silent on other details.

Some Democrats have indicated a preference for a bill that is limited to federal mandates for renewable energy and increased investment in energy efficiency and nuclear energy – avoiding cap-and-trade provisions and the controversies around who will get free allowances and who does not. But the White House has rejected anything short of a comprehensive legislation that avoids a piece-meal approach to climate change.

Critically, distracted by other priorities, the White House allowed precious months to pass after the House voted on climate bill in late June. Belatedly, recognizing that Copenhagen will not wait for the US Senate, the Obama administration has returned its attention to climate issues.

In late October, both the President and Vice President **Joe Biden** took steps to push the Senate forward by sending top guns to testify for the passage of a climate bill including Secretary of Energy **Steve Chu**, EPA administrator **Lisa Jackson**, Federal Energy Regulatory Commission (FERC) chairman **Jon Wellinghoff** as well as Interior and Transportation secretaries.

It was too little, too late. The US Congress, always sensitive to powerful special interests and leery of offending the voters in the midst of a serious financial crisis with anything resembling an additional hardship or tax, is simply reluctant

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to bite the bullet on climate change. With unemployment hovering around 10% nationally – higher in some states – climate change simply does not appear to be a high priority.

Moreover, those opposed to climate legislation have regrouped following the passage of the House bill, determined to put on a tough fight with a Senate already hostile to the climate bill. Powerful oil, coal, utility and industry lobbies, for example, are also doing their best to water down the Senate bill if they cannot delay or kill it.

The Senate bill, sponsored by **John Kerry** of Massachusetts and **Barbara Boxer** of California, both liberal Democrats representing two relatively affluent and green coastal states, received a frosty reception in committee and by all accounts will face an uphill battle if introduced to the floor. According to one informed source, at least 14 of the 59 Democrats in the Senate are leaning to join the 40 Republicans who are unanimously opposed to the “jobs-killer” bill, as its opponents refer to it. In mid November, acknowledging that the bill was going nowhere, Senate majority leader Harry Reid announced climate legislation will be taken up “some time in the spring (of 2010),” ending any hope for a vote in 2009.

Making matters worse, whatever Obama administration officials do in Copenhagen may be “dead on arrival in Washington,” according to **James Sensenbrenner**, a Wisconsin Republican member of the House. He predicts a repeat of the Kyoto, “namely an environmentally ineffective agreement that cannot be ratified by the (US) Senate.”

Frustrated UN officials are already preparing for a less-than-perfect outcome at Copenhagen. **Yvo de Boer**, UN’s official point man, has already stated that he does not think that a fully fledged new international treaty under the UN framework is going to happen. He is now resigned to an agreement on the structure of a deal, the technical details of which could be filled at a future date.

Nevertheless, Mr. De Boer has called on President Obama to personally attend the Copenhagen conference, putting his personal prestige in line. Obama had earlier announced that he would attend, but has been less forthcoming given the uncertainties posed by the US Senate. His special envoy **Todd Stern** has repeatedly stressed that Obama

will not repeat the mistake of former President **Bill Clinton** who signed into Kyoto without having the backing of the US Congress – which never ratified the international treaty, making it innocuous from the start.

What can the international community expect from the US in Copenhagen? Not much beyond a 17-20% cut in greenhouse gas emissions by 2020 with higher targets for 2050 – considered a tepid commitment from the world’s biggest economy by many observers. Those are the targets in the House and Senate bills, respectively.

Mr. Ban Ki-moon, and everyone else, must now be resigned with the fact that the chances for getting a climate bill through Congress before Copenhagen are virtually nil, and the fact that the US delegation – with or without Mr. Obama in attendance – will not have anything tangible to put on the table.