



THE MAINE WOODS

A Publication of the Forest Ecology Network

"In wildness is the preservation of the world." Henry David Thoreau

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Free

Is this really
what we want?



Have we passed the tipping point?

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"We are already fighting World War III and I am sorry to say we are winning. It is the war against the Earth"

Raymond Dasmann

Forest Ecology Network

336 Back Road

Lexington Township, ME 04961

<http://www.forestecologynetwork.org>

fen@207me.com

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A Voice in the Wilderness by Jonathan Carter

HAVE WE PASSED THE TIPPING POINT?

Have we passed the tipping point whereby the release of greenhouse gases can no longer be controlled or mitigated? This is the central question, which needs to be answered. While it is well understood how anthropogenic forces are contributing to climate change, the new data suggests that human contributions have triggered larger natural releases and damaged natural feedback loops. Scientists have determined that the Earth's forests and oceans are losing their ability to sequester carbon. Both the southern oceans and the North Atlantic have seen a dramatic decrease in absorptive potential. Forest mortality is up and the change in season lengths has altered the dates at which forests switch between carbon sinks (growing season) and carbon sources (dormancy). The melting of the permafrost in the arctic will result in the release of billions of tons of methane, a greenhouse gas 23 times more impacting than carbon dioxide.



FEN director Jonathan Carter along the Maine coast.

Kevin Anderson, an expert at the Tyndall Center for Climate Change Research at Manchester University, believes that the battle has been lost and that the world needs to prepare for catastrophic change. He stated, "As an academic, I wanted to be told that it (my research) was a very good piece of work and that the conclusions were sound. But as a human being I desperately wanted someone to point out a mistake, and to tell me we got it completely wrong." Anderson believes that "most of the climate targets debated by politicians and campaigners are fanciful at best, and dangerously misguided at worst." (See article "Too Late?" on page ??)

Currently, carbon dioxide levels at about 387 parts per million (ppm) and rising at an accelerated rate. While most efforts to cap the rise discuss 450 ppm as a target, catastrophic in of itself, Anderson believes it is "improbable" that levels could be capped at 650 ppm, which translates into a global temperature rise of 4° C (7° F). A 4° C rise in the next century would cause the extinction of thousands, if not millions, of species, massive crop failures accompanied by extensive famine, coastal flooding and the dislocation of hundreds of millions of people, and severe global water shortages. With this sort of collapse, it seems highly unlikely that human behavior would remain less than bellicose. Warfare would become rampant as countries attempt to secure survival resources for their struggling populations. This is not a pretty picture, but one we must consider, given the current scientific thinking.

I use to think that restoration would be to the 21st century what conservation was to the 20th. However, I am now more inclined to think that the 21st century will be more defined by adaptation. The question of restoration becomes problematic if, indeed, the climate induced vegetation changes are going to completely reconfigure current biological diversity. One can honestly ask why, for instance, should we spend billions of dollars on trying to restore places like the Everglades when south

Florida is going to be submerged? Do we invest in restoration or do we spend resources on dealing with the very real need to facilitate adaptation. I think the jury is out on this question.

It is highly likely that the Maine forest of the future will be much more like the current forests in West Virginia. Of course, this is dependent upon the ability of species to move northward as climate change unfolds. While

animals have mobility, plant species migrate much more slowly. There are some scientists who believe that tree species will not be able to migrate fast enough for survival. As a result, the community of wildlife dependent on these forest habitats may disappear. One thing we can count on is that as new niches and habitats are created, they will be filled. By what, it is impossible to say with certainty.

The discussions in the halls of government are about what is politically possible when what we really need is to implement what is scientifically necessary. The Markey- Waxman bill being tossed around in Congress is all about political feasibility. Cap and trade will not come close to ameliorating the climate crisis. How can a system based on giving allowances for greenhouse gas pollution or legalizing offsets really mitigate climate change? It is nothing more than a shell game. Worldwide rapid industrialization and a population growing out of control make the current discussions about targets meaningless. While the pundits of such a system will spin the truth to make the public think the problem has been tackled, in truth, little more than a feel good "ouch-less band aid" will have been applied. Congress, simply stated, does not have the backbone to do what is needed.

If Anderson is correct, then the only hope is to initiate massive de-carbonization, maximize natural carbon sequestration and to start working on a transition strategy of adaptation. I believe in hope. In this issue of The Maine Woods, we will not only tell the truth about the catastrophe of climate change, but we also will outline how forest restoration can still make a difference, and how adaptation and mitigation strategies can potentially lead to a positive planetary future.



Great Horned Owl by Paul Donahue



forest ecology network

336 Back Road
Lexington Township, ME 04961
Phone: 207-628-6404
Email: fen@207me.com
<http://www.forestecologynetwork.org>

Jonathan Carter
Executive Director

THE MAINE WOODS

Paul Donahue
Editor

Contributors

David Adam
Severin Carrell
Jared Carter
Jonathan Carter
Steve Connor
Paul Donahue
Johann Hari
Chris Hedges
Richard Hesslein
Naomi Klein
Stephen Leahy
Bill McKibben
Margaret Munro
Karen Pease
Lorna Salzman
Julian Solano
Lynne Williams
Teresa Wood

Special Thanks
Teresa Wood



Adaptation and Mitigation Strategies for Transition

by Jonathan Carter

Despite the gloom and doom around climate change, I strongly believe that there is hope for a healthier planetary future. Indeed, without hope, there would be no point at all.

It is clear to me that whether or not the climate catastrophe has passed the tipping point, we should not delay our efforts to develop adaptation and mitigation strategies. Adaptation to global warming will require us to lessen the vulnerability of natural systems to the impacts of climate change and mitigation will require us to reduce our carbon footprint. To successfully make the transition, we will need to immediately initiate the following:

1. A massive switch away from fossil fuels to wind, solar, geothermal, hydrogen, and small-scale hydro.
2. An absolute commitment to maximizing energy conservation and efficiency.
3. A global commitment to population control with a view towards reduction to a level which reflects the earth's carrying capacity
4. A commitment to local food production and sustainable living.
5. An immediate effort to stop forest destruction, oceanic decline and land use changes.
6. An all out effort to enhance natural systems resilience to climate change through
7. restoration.

I do not have high hopes that the governments of the world will come together on a viable plan of action. While it is possible to point to the 1987 Montreal Protocol that effectively joined the global community in an effort to rid the planet of ozone-destroying chlorofluorocarbons, the world is far too addicted and dependent on fossil fuels to wean themselves in short order.

I believe we have the adaptive capacity to make the changes necessary quickly, but the leadership and impetus will have to be fostered at the local level. The Transition Movement, which started in 2004 in the UK, may provide the best model for implementing, on a community basis, strategies for adaptation and mitigation. Over 287 communities around the world have been designated as Transition Towns – Portland, Maine is one. What this means is that a group of citizens have convened to answer the question, “How can our community respond to the challenges, and opportunities, of peak oil and climate change?” The underlying premise is that climate change makes greenhouse gas reduction essential and that the depletion of fossil fuels (peak oil) makes reduction inevitable. The purpose of the Transition Movement is to get citizens and local government focused on preparing for the inevitable and developing an action plan to support the energy descent. It is not simply a survival strategy, but an effort to enhance all aspects of life needed for the community to sustain itself and thrive. It is a positive approach and is based on the belief that human ingenuity has the adaptive capacity to develop sustainable living standards that operate in harmony with the earth. I like the ideas behind this movement because it not only offers hope, but it goes beyond simply being reactive to being anticipatory in its approach.

The Garcia River Forest Project: A Model for Reducing CO₂ and Mitigating Climate Change?

by Jonathan Carter

In 2008 the Garcia River Forest, a 23,780 acre heavily cut Coast Redwood-Douglas Fir tract of northern California coastal forest, became the first forest in the United States to be certified as a carbon sequestration forest by the California Climate Action Registry (CCAR). This certification establishes that forest restoration can achieve significant emission reductions through management practices focused on maximizing carbon sequestration.



The Garcia River Forest Project in Mendocino County, California.

In addition to sequestering carbon, this project is restoring the forest ecosystem, rehabilitating the Garcia River watershed, protecting biological diversity, and providing local timber jobs. It is estimated that over the 100-year lifetime of this project that more than 4.2 million metric tons of carbon dioxide will be sequestered.

Forestry activities in the Garcia River Forest employ “light touch” timber harvests that are designed to foster carbon absorption. This is accomplished by utilizing selective cutting techniques. By removing dead, dying, and inferior tress, accelerated growth occurs in healthier trees. The accelerated growth results in a significant increase in the fixing of atmospheric carbon.

Perhaps, the most important outgrowths of this project

are the forest protocols established by CCAR and the documentation capacity to verify the precise amount of carbon sequestered. By establishing an initial baseline of carbon storage, it has been possible through a series of inventory plots to monitor carbon sequestration over time. The greenhouse gas benefit can be extrapolated over the whole forest by calculating the difference between carbon stored with the forestry activities minus the carbon stored in the absence of management. In addition, the CCAR protocols address the issue of leakage.

Leakage occurs when a project causes carbon-emitting activities to be shifted to another location. CCAR monitors all registrant's other logging activities to make sure that a landowner does not increase logging elsewhere. The Garcia Forest Project is a model for Maine and the rest of the nation. It establishes that restorative forestry can and should be employed as a way to decrease atmospheric carbon levels. After years of logging abuse, the vast majority of our forests in Maine need restoration. Restoration forestry could more than double the approximately 2000 million metric tons currently stored in Maine forests. It would be possible to increase the annual storage by over 5.3 million metric tons per year – the equivalent amount of carbon spewed out by five million automobiles annually.

Cool the Planet: Restore Maine's Forests a presentation by Forest Ecology Network

The Forest Ecology Network's *Cool the Planet: Restore Maine's Forest* presentation focuses on how the forests of Maine can play a critical role in mitigating the impacts of climate change. The Forest Ecology Network is calling for the Maine Woods to be designated as a National Carbon Storage Forest. The Forest Ecology Network (FEN) offers free presentations. Please call FEN at 207 628-6404 or e-mail FEN at fen@207me.com to schedule an event.



For Obama, No Opportunity Too Big to Blow

by Naomi Klein

Contrary to countless reports, the debacle in Copenhagen was not everyone's fault. It did not happen because human beings are incapable of agreeing, or are inherently self-destructive. Nor was it all was China's fault, or the fault of the hapless UN.

There's plenty of blame to go around, but there was one country that possessed unique power to change the game. It didn't use it. If Barack Obama had come to Copenhagen with a transformative and inspiring commitment to getting the U.S. economy off fossil fuels, all the other major emitters would have stepped up. The EU, Japan, China and India had all indicated that they were willing to increase their levels of commitment, but only if the U.S. took the lead. Instead of leading, Obama arrived with embarrassingly low targets and the heavy emitters of the world took their cue from him.

(The "deal" that was ultimately rammed through was nothing more than a grubby pact between the world's biggest emitters: I'll pretend that you are doing something about climate change if you pretend that I am too. Deal? Deal.)

I understand all the arguments about not promising what he can't deliver, about the dysfunction of the U.S. Senate, about the art of the possible. But spare me the lecture about how little power poor Obama has. No President since FDR has been handed as many opportunities to transform the U.S. into something that doesn't threaten the stability of life on this planet. He has refused to use each and every one of them. Let's look at the big three.

Blown Opportunity Number 1: The Stimulus Package
When Obama came to office he had a free hand and a blank check to design a spending package to stimulate the economy. He could have used that power to fashion what many were calling a "Green New Deal" -- to build the best public transit systems and smart grids in the world. Instead, he experimented disastrously with reaching across the aisle to Republicans, low-balling the size of the stimulus and blowing much of it on tax cuts.

Sure, he spent some money on weatherization, but public transit was inexplicably short changed while highways that perpetuate car culture won big.

Blown Opportunity Number 2: The Auto Bailouts
Speaking of the car culture, when Obama took office

nationalize them. Once again, if Obama had dared to use the power that was handed to him by history, he could have mandated the banks to provide the loans for factories to be retrofitted and new green infrastructure to be built. Instead he declared that the government shouldn't tell the failed banks how to run their businesses. Green businesses report that it's harder than ever to get a loan.

Imagine if these three huge economic engines -- the



he also found himself in charge of two of the big three automakers, and all of the emissions for which they are responsible. A visionary leader committed to the fight against climate chaos would obviously have used that power to dramatically reengineer the failing industry so that its factories could build the infrastructure of the green economy the world desperately needs. Instead Obama saw his role as uninspiring down-sizer in chief, leaving the fundamentals of the industry unchanged.

Blown Opportunity Number 3: The Bank Bailouts
Obama, it's worth remembering, also came to office with the big banks on their knees -- it took real effort not to

banks, the auto companies, the stimulus bill -- had been harnessed to a common green vision. If that had happened, demand for a complementary energy bill would have been part of a coherent transformative agenda.

Whether the bill had passed or not, by the time Copenhagen had rolled around, the U.S. would already have been well on its way to dramatically cutting emissions, poised to inspire, rather than disappoint, the rest of the world.

There are very few U.S. Presidents who have squandered as many once-in-a-generation opportunities as Barack Obama. More than anyone else, the Copenhagen failure belongs to him.

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Naomi Klein is an award-winning journalist and syndicated columnist and the author of the international and New York Times bestseller *The Shock Doctrine: The Rise of Disaster Capitalism*, now out in paperback. Her earlier books include the international best-seller, *No Logo: Taking Aim at the Brand Bullies*; and the collection *Fences and Windows: Dispatches from the Front Lines of the Globalization Debate* (2002). To read all her latest writing visit www.naomiklein.org

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While responsible for a very small percentage of the greenhouse gases in the atmosphere, poorer countries like Bangladesh will suffer the consequences of global warming disproportionately.



The Truths Copenhagen Ignored

by Johann Hari

So that's it. The world's worst polluters – the people who are drastically altering the climate – gathered here in Copenhagen to announce they were going to carry on cooking, in defiance of all the scientific warnings.

They didn't seal the deal; they sealed the coffin for the world's low-lying islands, its glaciers, its North Pole, and millions of lives.

Those of us who watched this conference with open eyes aren't surprised. Every day, practical, intelligent solutions that would cut our emissions of warming gases have been offered by scientists, developing countries and protesters – and they have been systematically vetoed by the governments of North America and Europe.

It's worth recounting a few of the ideas that were summarily dismissed – because when the world finally resolves to find a real solution, we will have to revive them.

Discarded Idea One: The International Environmental Court. Any cuts that leaders claim they would like as a result of Copenhagen will be purely voluntary. If a government decides not to follow them, nothing will happen, except a mild blush, and disastrous warming. Canada signed up to cut its emissions at Kyoto, and then increased them by 26 per cent – and there were no consequences. Copenhagen could unleash a hundred Canadas.

The brave, articulate Bolivian delegates – who have seen their glaciers melt at a terrifying pace – objected. They said if countries are serious about reducing emissions, their cuts need to be policed by an International Environmental Court that has the power to punish people. This is hardly impractical. When our leaders and their corporate lobbies really care about an issue – say, on trade – they pool their sovereignty this way in a second. The World



The low-lying Maldives face a strong probability of disappearing beneath the waves of rising sea levels brought about by global warming.

Trade Organisation fines and sanctions nations severely if (say) they don't follow strict copyright laws. Is a safe climate less important than a trademark?

Discarded Idea Two: Leave the fossil fuels in the ground. At meetings here, an extraordinary piece of hypocrisy

has been pointed out by the new international chair of Friends of the Earth,

Nnimmo Bassey, and the environmental writer George Monbiot. The governments of the world say they want drastically to cut their use of fossil fuels, yet at the same time they are enthusiastically digging up any fossil fuels they can find, and hunting for more. They are holding a fire extinguisher in one hand and a flame-thrower in the other.

Only one of these instincts can prevail. A study published earlier this year in the journal *Nature* showed that we can use only – at an absolute maximum – 60 per cent of all the oil, coal and gas we have already discovered if we are going to stay the right side of catastrophic runaway warming. So the first step in any rational climate deal would be an immediate moratorium on searching for more fossil fuels, and fair plans for how to decide which of the existing stock we will leave unused. As Bassey put it: "Keep the coal in the hole. Keep the oil in the soil. Keep the tar sand in the land." This option wasn't even discussed by our leaders.

Discarded Idea Three: Climate debt. The rich world has been responsible for 70 per cent of the warming gases in the atmosphere – yet 70 per cent of the effects are being felt in the developing world. Holland can build vast dykes to prevent its land flooding; Bangladesh can only drown. There is a cruel inverse relationship between cause and effect: the polluter doesn't pay.

So we have racked up a climate debt. We broke it; they paid. At this summit, for the first time, the poor countries rose in disgust. Their chief negotiator pointed out that the compensation offered "won't even pay for the coffins". The cliché that environmentalism is a rich person's ideology just gasped its final CO₂-rich breath. As Naomi Klein put it: "At this summit, the pole of environmentalism has moved south."

When we are dividing up who has the right to emit the few remaining warming gases that the atmosphere can absorb, we need to realise that we are badly overdrawn. We have used up our share of warming gases, and then some. Yet the US and EU have dismissed the idea of climate debt out of hand. How can we get a lasting deal that every country agrees to if we ignore this basic principle of justice? Why should the poorest restrain themselves when the rich refuse to?

A deal based on these real ideas would actually cool the atmosphere. The alternatives championed at Copenhagen by the rich world – carbon offsetting, carbon trading,



As the average temperature continues to rise, many parts of the world face the likelihood of longer and more severe droughts.

carbon capture – won't. They are a global placebo. The critics who say the real solutions are "unrealistic" don't seem to realise that their alternative is more implausible still: civilisation continuing merrily on a planet whose natural processes are rapidly breaking down.

Throughout the negotiations here, the world's low-lying island states have clung to the real ideas as a life raft, because they are the only way to save their countries from a swelling sea. It has been extraordinary to watch their representatives – quiet, sombre people with sad eyes – as they were forced to plead for their own existence. They tried persuasion and hard science and lyrical hymns of love for their lands, and all were ignored.

These discarded ideas – and dozens more like them – show once again that man-made global warming can be stopped. The intellectual blueprints exist just as surely as the technological blueprints. There would be sacrifices, yes – but they are considerably less than the sacrifices made by our grandparents in their greatest fight.

We will have to pay higher taxes and fly less to make the leap to a renewably powered world – but we will still be able to live an abundant life where we are warm and free and well fed. The only real losers will be the fossil fuel corporations and the petro-dictatorships.

But our politicians have not chosen this sane path. No: they have chosen inertia and low taxes and oil money today over survival tomorrow. The true face of our current system – and of Copenhagen – can be seen in the life-saving ideas it has so casually tossed into the bin.

'You can watch Johann explaining some of the appalling loopholes being smuggled into the Copenhagen treaty here

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Johann Hari is a columnist for the London Independent. He has reported from Iraq, Israel/Palestine, the Congo, the Central African Republic, Venezuela, Peru and the US, and his journalism has appeared in publications all over the world*

Predictions for Climate Change This Century

by Staff Writers, Agence France Presse

Following is a summary of expert opinion of potential impacts from climate change by the end of the century.

“Earth is on track for warming of up to 6.4 degrees Celsius this century and sea-level rise of at least a metre.”

The source is the Fourth Assessment Report, published in 2007 by the UN’s Nobel-winning scientists, the Intergovernmental Panel on Climate Change (IPCC). The magnitude of impacts will mainly depend on the level of warming, which the panel predicted would be in a range of 1.8°-4.0° C (3.2°-7.2° F) by 2100, a figure that two recent studies have said could be under-estimated by up to 2.4° C (4.3° F).

ASIA

- Between 120 million to 1.2 billion Asians will experience increased water stress by 2020, and 185 to 981 million by 2050. Cereal yields in South Asia could drop in some areas by up to 30 percent by 2050.
- Even modest sea-level rises will cause flooding and economic disruption in densely-populated megadeltas, such as the Yangtze, Red River and Ganges-Brahmaputra.
- Cholera and malaria could increase, thanks to flooding and a wider habitat range for mosquitoes.
- In the Himalayas, glaciers less than four kilometers (2.5 miles) long will disappear entirely if average global temperatures rise by 3° C (5.4° F). This will initially cause increased flooding and mudslides followed by an eventual decrease in flow in rivers that are glacier-fed.
- Per-capita water availability in India will drop from around 1,900 cubic metres (66,500 cubic feet) currently to 1,000 cu. metres (35,000 cu. ft.) by 2025.

AFRICA

- Likely to be the worst-hit continent. Hundreds of millions are “very likely” -- a 90 percent certainty -- to face severe shortfalls in food and drinkable water by 2080, probably sooner.
- Climate change will shorten growing seasons and render swathes of land unusable for agriculture, with yields declining by as much as 50 percent in some countries. A rise of 60 to 90 million hectares (150 to 220 million acres) of arid and semi-arid land is projected by 2080.
- Food security will be “severely compromised”, with an additional 80 to 200 million people at risk of hunger by 2080. By that date, sub-Saharan Africa may account for 40 to 50 percent of the world’s undernourished, compared with about 25 percent today.
- Half a billion Africans will face acute scarcities of drinkable water if average global temperatures rise only 2° C (3.6 F) compared to 1990 levels. Cholera, meningitis and dengue fever will increase in extent and impact.
- Big deltas such as the Nile and the Niger face flooding and economic disruption caused by rising sea levels.

EUROPE

- Mediterranean countries can brace for a higher risk of severe droughts, reduced harvests and deadly heatwaves.
- High-latitude European nations will face flooding and severe weather, but this could be balanced by longer growing seasons and expanded areas for agriculture and forestry.
- In Alpine regions, rising temperatures could badly

damage the ski industry and wipe out up to 60 percent of plant and animal species.

- The percentage of river basin areas that are “severely water stressed” is predicted to jump from 19 percent today between 34 and 36 percent in the 2070s.
- Wintertime floods are likely to increase in Europe’s maritime regions, while snowmelt-related floods and flash floods will hit central Europe.
- Hydropower potential is expected to decline by 20-50 percent in the Mediterranean region but increase by 15-30 percent in Northern and Eastern Europe.



An *Anopheles* malaria mosquito fills with blood.

- Biodiversity will be badly affected: “A large percentage of the European flora is likely to become vulnerable, endangered, or committed to extinction by the end of this century,” the report says.

AMERICAS

- Global warming will power up tropical storms and heatwaves in North America and threaten species extinction and hunger in the South.
- Common to each American hemisphere will be a greater burden from water stress and health risks from heat, storms, infectious disease and urban smog.
- In Alaska and Canada, thawing of permafrost and loss of sea ice are set to accelerate, posing a threat to mammals such as seals and polar bears, encouraging invasive species and “severely” challenging the lifestyle of the native Inuit.
- Fast-growing cities on the coast will be increasingly vulnerable to storms, which will be amplified by sea-level rise.
- In the first decades of the 21st century, climate change will boost forest production and rain-fed agriculture. But this will be partly balanced by a greater range of insect pests and diseases.
- In Latin America, tropical glaciers are “very likely” to disappear by the early 2020s, reducing water availability and hydropower generation in several countries.
- Frequency and intensity of hurricanes in the Caribbean basin is likely to increase.
- By the 2020s, between seven and 77 million people in Latin America are likely to suffer from inadequate water supplies, a figure that could rise to 60-150 million by 2100.
- A rise of 2° C (3.6 F) and decreases in soil water would turn eastern Amazonia and the tropical forests of central and southern Mexico into savannah.

OCEANIA

- Invasive species and habitat loss, species extinction and the resultant hit to tourism are risks that are “virtually certain” to increase in Australia, New Zealand and Pacific island nations.
- The most vulnerable ecosystems are the Great Barrier Reef, southwestern Australia, the Kakadu wetlands, rainforests and alpine areas.
- Water problems that already plague southern and eastern Australia are “very likely” to increase by 2030. River flow from Australia’s Murray-Darling Basin could fall by 10-25 percent by 2050.
- By 2050, agriculture and forestry products are likely to be reduced over “much” of southern and southeastern Australia and parts of eastern New Zealand. But in the south and west of New Zealand crop yields are likely to increase.
- In Pacific island states, sea-level rise and increase in seawater temperature will accelerate beach erosion and degrade natural defences such as mangroves and coral reefs, in turn hitting tourism.
- Port facilities at Suva, Fiji, and Apia, Samoa, could be swamped by a 0.5 metre (19.5-inch) rise in sea level combined with waves associated in a one-in-a-half-century cyclone. Farming production will fall by between two and 18 percent by 2030.

POLAR REGIONS

Arctic

- By 2100, the extent of Arctic sea ice could shrink by 22-33 percent, depending on the emissions scenario. Arctic glaciers, ice caps and the Greenland ice sheet will suffer “important reductions” in thickness and range, but this magnitude is difficult to predict.
- Northern hemisphere permafrost is projected to decrease in extent by 20-35 percent by 2050. Seasonal thawing is likely to increase by 15-25 percent by this date. The runoff from this thaw will disrupt local ecosystems.
- Climate change will have a major impact on the Arctic’s four million people.

Antarctica

- Land ice loss from the Antarctic peninsula, which has had one of the highest observed increases in temperature anywhere in the world, will continue.
- Projections for summer sea ice range from a slight increase to a near complete loss of summer sea ice.
- Uncertainty surrounds the future of the Antarctic ice sheet, where most of the world’s freshwater is locked up. There is evidence of de-glaciation on the Western Antarctic ice sheet, but some experts suggest this could be a lingering result of the last Ice Age, some 12,000 years ago, rather than recent man-made global warming.
- (Note: since the 2007 IPCC report, further evidence has emerged that has fuelled alarm for polar regions, notably the loss of several ice-shelves in Antarctica and an abrupt shrinkage of summer ice in the Arctic).

Paris, Nov 29, 2009

What If Climate Refugees Have No Place to Go

by Staff Writers, Agence France Presse

The UN refugee agency says some 24 million people worldwide have fled their homes due to environmental factors, and warns their ranks could grow tenfold by mid-century, spurred greatly by climate change. Sheer numbers and the lack of legal status under international law mean a vicious humanitarian crisis is looming, say experts. Bottom line? Millions of hungry, poor, vulnerable people may simply have nowhere to go. "In the future, who is going to open their doors to all this misery?" is the rhetorical question asked by Jean-Francois Durieux, in charge of climate change at the UN High Commissioner for Refugees (UNHCR).

A decade ago, the threat of mass migrations driven by global warming seemed remote. Predicting how climate change might affect the planet was already vexingly difficult, and trying to calculate the additional impact on human communities only compounded the uncertainty. It was also feared that extending "refugee" status to those driven from homelands by floods, drought or damaged ecosystems would dilute efforts to help those fleeing political persecution as defined under UN provisions. But today these reservations have given way to alarm as scientists say we are on track for worst-case scenarios laid out only two years ago by the Nobel-winning UN Intergovernmental Panel on Climate Change (IPCC).

Two studies issued before the December 7-18 climate conference in Copenhagen say that, on current trends, Earth is on track for warming of up to 6.4 degrees Celsius this century and sea-level rise of at least a



metre. The outcome would be catastrophic, in terms of drought, floods and storm surges, leading inevitably to widespread homelessness. "Environmentally induced migration has the potential to become a phenomenon of unprecedented scale and scope," said Koko Warner at the UN University Institute of Environment and Human Security in Bonn, Germany. "At 4.0° C, climate-driven

migration redraws the map of population distribution across the surface of the globe," said Francois Gemmene of France's Institute for Sustainable Development and International Relations (IDDRI).

At least three forces are likely to push people in search of more hospitable terrain: rising sea levels, drought and dying coral reefs. If the world's population peaks at about nine billion in 2050, a large chunk of humanity will live in mega-cities spread across deltas vulnerable to the twin threats of submergence and subsidence. In the Ganges, Mekong and Nile deltas, for example, a one-metre increase would inundate 23.5 million people and destroy 1.5 million hectares of farmland, according to the 2009 UN State of the World Population report. Vietnam would be hit hardest: 10.8 percent of its population would be uprooted, 10 percent of gross domestic product (GDP) wiped out, and a quarter of fertile wetlands destroyed, according to the report. Several low-lying island nations, including Tuvalu and the Maldives, are already shopping for new homelands. Drought due to changing weather patterns and melting glaciers is another looming driver of involuntary migration.

The Ganges, Brahmaputra, Irawaddy, Salween, Mekong Yangtze and Yellow rivers, which nourish some 1.4 billion people in Asia, depend on Himalayan glaciers melting under temperature hikes several fold the global average. Predicted decreases in rainfall would wreak havoc across a wide swathe of arid and semi-arid Africa where fresh water is already in critically short supply. Then there are the half-billion people whose livelihood depends directly on coral reefs already in steep decline due to warming seas and increased ocean acidification. "What are you going to do with 500 million people if - probably 'when' - that problem hits you?" asked Pavan Sukhdev, a leading authority on the economics of ecosystems.

Paris, Nov 29, 2009

World Leaders Leave Their Work Unfinished in Copenhagen

Greenpeace press release - 18 December 2009

Two years of planning, two weeks of negotiating, and all we get is a worse-than-nothing deal slapped together in the last two hours.

The UN climate summit has just reached its anti-climactic close. The details of the deal reached here in Copenhagen are still being hammered out by ministers, but Heads of State are already on their way home, their photo opps and press conferences over. Even by their own admission, they have struck a deal that will not do what's necessary to stop global warming. I'm not sure that qualifies as even a half-measure. Also not really sure what else I care to say right now other than that. But Greenpeace International executive director, Kumi Naidoo, has plenty to say:

Not fair, not ambitious and not legally binding. The job of world leaders is not done. Today they failed to avert catastrophic climate change.

The city of Copenhagen is a climate crime scene

tonight, with the guilty men and women fleeing to the airport in shame. World leaders had a once in a generation chance to change the world for good, to avert catastrophic climate change. In the end they produced a poor deal full of loopholes big enough to fly Air Force One through.

We have seen a year of crises, but today it is clear that the biggest one facing humanity is a leadership crisis.

During the year a number developing countries showed a willingness to accept their share of the burden to avert climate chaos. But in the end, the blame for failure mostly lies with the rich industrialized world, countries which have the largest historic responsibility for causing the problem. In particular, the US failed to take any real leadership and dragged the talks down.

Climate science says we have only a few years left to halt the rise in emissions before making the kind of rapid reductions that would give us the best chance of avoiding dangerous climate change. We cannot change

that science, so instead we will have to change the politics — and we may well have to change the politicians.

This is not over, people everywhere demanded a real deal before the Summit began and they are still demanding it. We can still save hundreds of millions of people from the devastation of a warming world, but it has just become a whole lot harder.

Civil society, the bulk of which was locked out of the final days of this Climate Summit, now needs to redouble its efforts. Each and every one of us must hold our leaders to account. We must take the struggle to avert climate catastrophe into every level of politics, local, regional, national and international. We also need to take it into the board room and onto the high streets. We can either work for a fundamental change in our society or we can suffer the consequences of one.

Too Late? Why Scientists Say We Should Expect the Worst

by David Adam

As ministers and officials gather in Poznan one year ahead of the Copenhagen summit on global warming, the second part of a major series looks at the crucial issue of targets

At a high-level academic conference on global warming at Exeter University this summer, climate scientist Kevin Anderson stood before his expert audience and contemplated a strange feeling. He wanted to be wrong. Many of those in the room who knew what he was about to say felt the same. His conclusions had already caused a stir in scientific and political circles. Even committed green campaigners said the implications left them terrified.

Anderson, an expert at the Tyndall Centre for Climate Change Research at Manchester University, was about to send the gloomiest dispatch yet from the frontline of the war against climate change.

Despite the political rhetoric, the scientific warnings, the media headlines and the corporate promises, he would say, carbon emissions were soaring way out of control - far above even the bleak scenarios considered by last year's report from the Intergovernmental Panel on Climate Change (IPCC) and the Stern review. The battle against dangerous climate change had been lost, and the world needed to prepare for things to get very, very bad.

"As an academic I wanted to be told that it was a very good piece of work and that the conclusions were sound," Anderson said. "But as a human being I desperately wanted someone to point out a mistake, and to tell me we had got it completely wrong."

Nobody did. The cream of the UK climate science community sat in stunned silence as Anderson pointed out that carbon emissions since 2000 have risen much faster than anyone thought possible, driven mainly by the coal-fuelled economic boom in the developing world. So much extra pollution is being pumped out, he said, that most of the climate targets debated by politicians and campaigners are fanciful at best, and "dangerously misguided" at worst.

In the jargon used to count the steady accumulation of carbon dioxide in the Earth's thin layer of atmosphere, he said it was "improbable" that levels could now be restricted to 650 parts per million (ppm).

The CO₂ level is currently over 380ppm, up from 280ppm at the time of the industrial revolution, and it rises by more than 2ppm each year. The government's official position is that the world should aim to cap this rise at 450ppm.

The science is fuzzy, but experts say that could offer an even-money chance of limiting the eventual temperature

rise above pre-industrial times to 2° C, which the EU defines as dangerous. (We have had 0.7° C of that already and an estimated extra 0.5° C is guaranteed because of emissions to date.)

The graphs on the large screens behind Anderson's head at Exeter told a different story. Line after line, representing the fumes that belch from chimneys, exhausts and jet engines, that should have bent in a rapid curve towards the ground, were heading for the ceiling instead.

At 650ppm, the same fuzzy science says the world would face a catastrophic 4° C average rise. And even that bleak future, Anderson said, could only be achieved if rich countries adopted "draconian emission reductions within a decade". Only an unprecedented "planned economic recession" might be enough. The current financial woes would not come close.



Lost cause

Anderson is not the only expert to voice concerns that current targets are hopelessly optimistic. Many scientists, politicians and campaigners privately admit that 2° C is a lost cause. Ask for projections around the dinner table after a few bottles of wine and more vote for 650ppm than 450ppm as the more likely outcome.

Bob Watson, chief scientist at the Environment Department and a former head of the IPCC, warned this year that the world needed to prepare for a 4° C rise, which would wipe out hundreds of species, bring extreme food and water shortages in vulnerable countries and cause floods that would displace hundreds of millions of people. Warming would be much more severe towards the poles, which could accelerate melting of the Greenland and West Antarctic ice sheets.

Watson said: "We must alert everybody that at the moment we're at the very top end of the worst case [emissions] scenario. I think we should be striving for 450 [ppm] but I think we should be prepared that 550 [ppm]

is a more likely outcome." Hitting the 450ppm target, he said, would be "unbelievably difficult".

A report for the Australian government this autumn suggested that the 450ppm goal is so ambitious that it could wreck attempts to agree a new global deal on global warming at Copenhagen next year. The report, from economist Ross Garnaut and dubbed the Australian Stern review, says nations must accept that a greater amount of warming is inevitable, or risk a failure to agree that "would haunt humanity until the end of time".

It says developed nations including Britain, the US and Australia, would have to slash carbon dioxide emissions by 5% each year over the next decade to hit the 450ppm target. Britain's Climate Change Act 2008, the most ambitious legislation of its kind in the world, calls for reductions of about 3% each year to 2050.

Garnaut, a professorial fellow in economics at Melbourne University, said: "Achieving the objective of 450ppm would require tighter constraints on emissions than now seem likely in the period to 2020 ... The only alternative would be to impose even tighter constraints on developing countries from 2013, and that does not appear to be realistic at this time."

The report adds: "The awful arithmetic means that exclusively focusing on a 450ppm outcome, at this moment, could end up providing another reason for not reaching an international agreement to reduce emissions. In the meantime, the cost of excessive focus on an unlikely goal could consign to history any opportunity to lock in an agreement for stabilising at 550ppm - a more modest, but still difficult, international outcome. An effective agreement around 550ppm would be vastly superior to continuation of business as usual."

Henry Derwent, former head of the UK's international climate negotiating team and now president of the International Emissions Trading Association, said a new climate treaty was unlikely to include a stabilisation goal - either

450ppm or 550ppm.

"You've got to avoid talking and thinking in those terms because otherwise the politics reaches a dead end," he said. Many small island states are predicted to be swamped by rising seas with global warming triggered by carbon levels as low as 400ppm. "It's really difficult for countries to sign up to something that loses them half their territory. It's not going to work."

A new agreement in Copenhagen should concentrate instead on shorter term targets, such as firm emission reductions by 2020, he said.

Worst time

The escalating scale of human emissions could not have come at a worst time, as scientists have discovered that the Earth's forests and oceans could be losing their ability to soak up carbon pollution. Most climate projections assume that about half of all carbon emissions are reabsorbed in these natural sinks.

Computer models predict that this effect will weaken as

the world warms, and a string of recent studies suggests this is happening already.

The Southern Ocean's ability to absorb carbon dioxide has weakened by about 15% a decade since 1981, while in the North Atlantic, scientists at the University of East Anglia also found a dramatic decline in the CO₂ sink between the mid-1990s and mid-2000s.

A separate study published this year showed the ability of forests to soak up anthropogenic carbon dioxide - that caused by human activity - was weakening, because the changing length of the seasons alters the time when trees switch from being a sink of carbon to a source.

Soils could also be giving up their carbon stores: evidence emerged in 2005 that a vast expanse of western Siberia was undergoing an unprecedented thaw.

The region, the largest frozen peat bog in the world, had begun to melt for the first time since it formed 11,000 years ago. Scientists believe the bog could begin to release billions of tonnes of methane locked up in the soils, a greenhouse gas 20 times more potent than carbon dioxide. The World Meteorological Organisation recently reported the largest annual rise of methane levels in the atmosphere for a decade.

Some experts argue that the grave nature of recent studies, combined with the unexpected boom in carbon emissions, demands an urgent reassessment of the situation. In an article published this month in the journal *Climatic Change*, Peter Sheehan, an economist at Victoria University, Australia, says the scale of recent emissions means the carbon cuts suggested by the IPCC to stabilise levels in the atmosphere "cannot be taken as a reliable guide for immediate policy determination". The cuts, he says, will need to be bigger and in more places.

Earlier this year, Jim Hansen, senior climate scientist with Nasa, published a paper that said the world's carbon targets needed to be urgently revised because of the risk of feedbacks in the climate system. He used reconstructions of the Earth's past climate to show that a target of 350ppm, significantly below where we are today, is needed to "preserve a planet similar to that on which civilisation developed and to which life on Earth is adapted". Hansen has suggested a joint review by Britain's Royal Society and the US National Academy of Sciences of all research findings since the IPCC report.

Rajendra Pachauri, who chairs the IPCC, argues that suggestions the IPCC report is out of date is "not a valid position at all".

He said: "What the IPCC produces is not based on two years of literature, but 30 or 40 years of literature. We're not dealing with short-term weather changes, we're talking about major changes in our climate system. I refuse to accept that a few papers are in any way going to influence the long-term projections the IPCC has come up with."

At Defra, Watson said: "Even without the new information there was enough to make most policy makers think that urgent action was absolutely essential. The new information only strengthens that and pushes it even harder. It was already very urgent to start with. It's now become very, very urgent."

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The Methane Time Bomb

by Steve Connor

Arctic scientists discover new global warming threat as melting permafrost releases millions of tons of a gas 20 times more damaging than carbon dioxide.

The first evidence that millions of tons of a greenhouse gas 20 times more potent than carbon dioxide is being released into the atmosphere from beneath the Arctic seabed has been discovered by scientists.



Millions of tons of methane, a greenhouse gas 20 times more potent than carbon dioxide, are being released into the atmosphere from beneath the Arctic seabed.

The Independent has been passed details of preliminary findings suggesting that massive deposits of sub-sea methane are bubbling to the surface as the Arctic region becomes warmer and its ice retreats.

Underground stores of methane are important because scientists believe their sudden release has in the past been responsible for rapid increases in global temperatures, dramatic changes to the climate, and even the mass extinction of species. Scientists aboard a research ship that has sailed the entire length of Russia's northern coast have discovered intense concentrations of methane - sometimes at up to 100 times background levels - over several areas covering thousands of square miles of the Siberian continental shelf.

In the past few days, the researchers have seen areas of sea foaming with gas bubbling up through "methane chimneys" rising from the sea floor. They believe that the sub-sea layer of permafrost, which has acted like a "lid" to prevent the gas from escaping, has melted away to allow methane to rise from underground deposits formed before the last ice age.

They have warned that this is likely to be linked with the rapid warming that the region has experienced in recent years.

Methane is about 20 times more powerful as a greenhouse gas than carbon dioxide and many scientists fear that its release could accelerate global warming in a giant positive feedback where more atmospheric methane causes higher temperatures, leading to further permafrost melting and the release of yet more methane.

The amount of methane stored beneath the Arctic is calculated to be greater than the total amount of carbon locked up in global coal reserves so there is intense interest in the stability of these deposits as the region warms at a faster rate than other places on earth.

Orjan Gustafsson of Stockholm University in Sweden, one of the leaders of the expedition, described the scale of the methane emissions in an email exchange sent from the Russian research ship *Jacob Smirnitskyi*.

"We had a hectic finishing of the sampling programme yesterday and this past night," said Dr Gustafsson. "An extensive area of intense methane release was found. At earlier sites we had found elevated levels of dissolved methane. Yesterday, for the first time, we documented a field where the release was so intense that the methane did not have time to dissolve into the seawater but was rising as methane bubbles to the sea surface. These 'methane chimneys' were documented on echo sounder and with seismic [instruments]."

At some locations, methane concentrations reached 100 times background levels. These anomalies have been seen in the East Siberian Sea and the Laptev Sea, covering several tens of thousands of square kilometres, amounting to millions of tons of methane, said Dr Gustafsson. "This may be of the same magnitude as presently estimated from the global ocean," he said. "Nobody knows how many more such areas exist on the extensive East Siberian continental shelves."

"The conventional thought has been that the permafrost 'lid' on the sub-sea sediments on the Siberian shelf should cap and hold the massive reservoirs of shallow methane deposits in place. The growing evidence for release of methane in this inaccessible region may suggest that the permafrost lid is starting to get perforated and thus leak methane... The permafrost now has small holes. We have found elevated levels of methane above the water surface and even more in the water just below. It is obvious that the source is the seabed."

The preliminary findings of the International Siberian Shelf Study 2008, being prepared for publication by the American Geophysical Union, are being overseen by Igor Semiletov of the Far-Eastern branch of the Russian Academy of Sciences. Since 1994, he has led about 10 expeditions in the Laptev Sea but during the 1990s he did not detect any elevated levels of methane. However, since 2003 he reported a rising number of methane "hotspots", which have now been confirmed using more sensitive instruments on board the *Jacob Smirnitskyi*.

Dr Semiletov has suggested several possible reasons why methane is now being released from the Arctic, including the rising volume of relatively warmer water being discharged from Siberia's rivers due to the melting of the permafrost on the land.

The Arctic region as a whole has seen a 4° C rise in average temperatures over recent decades and a dramatic decline in the area of the Arctic Ocean covered by summer sea ice. Many scientists fear that the loss of sea ice could accelerate the warming trend because open ocean soaks up more heat from the sun than the reflective surface of an ice-covered sea.

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Why Politicians Will Not Save Us

by Paul Donahue

For anybody who was still operating under the delusion that there was hope our so-called leaders might actually step up and do something about global warming, the United Nations climate talks in Copenhagen back in December should have cleared up their misunderstanding. Despite Obama's pronouncements that the talks were an important step forward, they were, in fact, a dismal failure. (When was the last time you heard a politician admit failure?) After two weeks of high-level meetings, not a single molecule of carbon dioxide was banned from the atmosphere.

These climate talks were billed in advance as the most important summit in the history of the world. Instead, they were a disaster. After two weeks of negotiating, the agreement that was signed has no targets on carbon emissions, no timetables, and nothing binding. It does absolutely nothing to curtail global warming. Some have suggested that it would have been an improvement if the delegates had signed a blank sheaf of paper. With nothing positive accomplished and all the jetting around of the negotiators and other government officials, the climate crisis is actually worse now than before the conference. And just as in climate negotiations of the past, the biggest impediment to progress in Copenhagen was the United States.

The faces in Washington change, the rhetoric changes, the parties flip from Democratic to Republican and back again, but the policies rarely waver. After eight years of Bush and company, Obama has now been in office for a year. Very little has changed. Officials in the Obama administration are approving new oil exploration operations, handing out permits for more mountaintop removal coal mining operations, and signing deals for pipelines to import the very dirty tar sands oil from Canada. In November 2008, liberals thought they were voting for change, for a president who would finally do something about global warming, but in actuality they were just voting for the *status quo*.

The protestations of Exxon Mobil, Peabody Energy, other fossil fuel corporations, and their pet scientists to the contrary, the existence of global warming has been proven, and also proven is the fact that it is human-caused. All that is unknown is how bad things will get. What is clear is that actual conditions keep out-stripping even the worst predictions. The world is currently on course for worst case scenarios. Eminent climate scientists the world over are screaming at the top of their lungs that we need to immediately address what will likely be the greatest challenge our society has ever faced. One would think that level of alarm from such a prominent body of scientists might spur our so-called leaders to action, but no such luck. The reason for the inaction is simple - dealing with global warming is not their job. Their job is

to supervise the economy for their corporate sponsors.

The politicians elected to high office in this country are not leaders, and they certainly are not environmentalists, they are managers. Their political campaigns are funded through a system that is nothing more than legalized bribery, with the biggest donors - energy corporations high on the list - having the greatest access to and influence over the politicians they finance. The aim is to put in place politicians who will spend their terms in office managing the economy in a way that guarantees an uninterrupted flow of profits to the financing corporations. If your personal philosophy is at variance with the dominant corporate mindset, the odds of you getting far in politics are very, very small.



Change? Who needs change?

Strong action on climate change requires steep cuts in our emissions of carbon dioxide, but these steep cuts would be very bad for oil companies, coal companies, automotive companies, agribusiness, and even the large banks that finance fossil fuel development. Therefore, under our present system of campaign financing, politicians simply are not going to push for the needed cuts in emissions. Not today, not tomorrow, not ever. I would like to be wrong, but the road signs keep telling me that my pessimism is right on track. In the words of Paul Kingsnorth, "Our leaders are running this enormous machine, and this machine is about cannibalizing resources from the rest of the world, it's about keeping the consumer economy going."

Numerous studies have documented that political donations are an incredibly good investment with a terrific return rate. Many eminent scientists say we must stop burning coal, the dirtiest of the fossil fuels, but George Bush's presidential campaigns were heavily financed by the coal industry, and so was Obama's. So it's no big mystery why the Obama administration keeps approving coal-mining permits for mountaintop removal in the Appalachians. An exhaustive new study on the coal mining practice of mountaintop removal was published in the January 8, 2010 issue of the journal Science. The authors state, "Scientists are not usually that comfortable coming out with policy recommendations, but this time the results were overwhelming... [The] only conclusion

that one can reach is that mountaintop mining needs to be stopped." However, don't expect that study to make any difference in the administration's issuance of permits - at least not until the study's authors can pony up a campaign contribution equivalent to that of the "clean coal" lobby.

While in Brazil this past summer I had the opportunity to talk at some length with a social scientist from the Stockholm Environment Institute. He worked as an official consultant on climate change policy to both the Brazilian government and the European Union. Over dinner we spoke in some depth about climate change policy. The conversation was both enlightening and disturbing, and he solidly reinforced what I already felt - that global warming is a problem the governments of the world are not going to solve.

The fellow was very knowledgeable about all the available technologies and schemes for reducing carbon dioxide emissions and how all the various EU and South American countries were doing on their emissions targets. The discouraging thing was that he took it as a given that all climate policy had to first take into account economic growth. To him, economic growth was both necessary and good, the more the better, and within that context, let's try to reduce carbon dioxide emissions.

Unfortunately, that seems to be the starting point for all politicians, government officials,

and climate policy negotiators, including Barack Obama, and even including Al Gore, and it's a plan guaranteed to fail. The correlation between economic output and CO2 emissions is very strong - more growth equals more emissions - very simple and very discouraging. It's discouraging because virtually every politician in the country either explicitly or implicitly denies the growth-emissions connection. To have a prayer of avoiding catastrophic climate change, we need to drastically scale back the U.S. economy and get away from the endless growth mentality of capitalism, but there is not an elected official out there who will tell that to the American people.

In the words of environmentalist Edward Abbey, "Growth for the sake of growth is the ideology of a cancer cell." You would think that it would be fairly easy to grasp the concept that you can't have endless growth on a finite planet. After all, it's a physical impossibility. However, politicians (and economists) don't show any indication that they comprehend the inherent contradiction of endless growth. The closest they ever get is in their use of the oxymoronic term "sustainable growth".

Our so-called leaders measure the health of our country by how much our economy is growing - the more growth the better - steadfastly denying or ignoring the growth-emissions connection. We're then supposed to take them seriously when five minutes later these same

so-called leaders turn around and tell us they are serious about taking action to slow global warming and forestall catastrophic climate change.

Many people talk of the utter uselessness of our politicians, but it is actually much worse than that. At this point, the inaction of our so-called leaders has probably locked us into irreversible and catastrophic climate change. If, as scientists say, global warming will be the biggest crisis our society has faced, and if, as scientists say, global warming will be responsible for the death and suffering of hundreds of millions of people, and if our politicians hold the key to solving or at least mitigating the crisis, then for them to thwart meaningful action amounts to nothing less than criminal negligence on a grand scale.

We need to realize that until there is radical change in our political system, most politicians will continue to impede serious action on global warming. We need to recognize most politicians for the corporate pawns and stooges and criminals they are. In the words of the great prevaricator Barack Obama, "Global warming is not just the greatest environmental challenge facing our planet - it is one of our greatest challenges of any kind." As problems go, I would put global warming right up there with getting corporate money out of politics. Until we get rid of the corporate money, politicians simply are not going to face vitally important issues like global warming.

Why the Congress' Climate Bills Will Not Work

by Jonathan Carter

John Hansen, a senior climate scientist at NASA, used reconstructions of the Earth's climate past to prove that a target of 350 parts per million (ppm) of carbon dioxide in the atmosphere is needed to "preserve a planet similar to that on which civilization developed and to which life on Earth is adapted". Carbon dioxide levels are already way beyond 350 ppm. With positive feedback loops already at work, population skyrocketing, and the undeveloped world committed to high energy industrialization, short of an immediate end to fossil fuels or a complete global economic collapse, there is no way to meet this target. Congress is talking about a 17 to 20% reduction below 2005 levels by 2020. Even if this target could be reached, overall increases in greenhouse gases would occur by as much as 9 billion metric tons. What we really need is an 80% reduction below 1990 levels in order to avoid a complete global climate disaster.

Last year FEN went to Washington to push for getting Congress to utilize forest restoration as a tool to significantly reduce atmospheric carbon through increased sequestration. While both Chellie Pingree and Olympia Snowe have taken up the issue, the Congress, at this point in time, has not included it in its climate legislation. Chellie Pingree's bill, "Buy American Carbon Incentives Program Act of 2009", which would have authorized the Secretary of Agriculture to establish a carbon incentives program on private agricultural and forestland, was removed at the last minute from the House climate bill. Olympia Snowe, along with Jean Shaheen of New Hampshire, has introduced a similar bill in the Senate. While no action has been taken in the Senate, it appears that the industrial farm and forest folks who want to control the process to maximize their profits, not to maximize carbon reductions, are watering

down the bill.

The problem in Congress is that, due to the power of special interests, their vision for climate change legislation is about determining what is politically possible, not what is scientifically necessary.

It is simply wishful thinking that carbon credits and offsets will work. Yet the Waxman-Markey Bill, which passed in the House by just a few votes, and the current climate change bill in the Senate both use a cap and trade market system based on credits and offsets. The carbon trading system is based on giving or selling carbon-polluting industries allowances (credits) for emissions. These credits (one credit equals one metric ton of carbon reduction) can be used to continue polluting or sold as carbon offsets to businesses which either voluntarily want to reduce their emissions or whose emissions are exceeding their regulatory cap. In the bills before Congress 90% of the emission allowances will be given at no charge to utilities and the two billion tons of offsets will enable emitting entities to continue to burn coal - the primary anthropogenic source of atmospheric carbon.

While this system provides caps on emissions, the polluters too often will make the decision that it is cheaper to use credits or buy credits than to meet the caps. Of course, the cost of any purchased credits will be passed on to consumers. Not only are the caps ridiculously high, but a market-based system will all but insure, as we have already seen in the EU's cap and trade program, that no significant reductions will occur. In fact, in this system there is a sort of perverse incentive for companies to maximize their carbon footprint so that they can later get credit for cutting back.

There are also often potential secondary ecological and human impacts as a result of the credit/offset system. The most striking example is a carbon credit-generating scheme in Ecuador where 220 square miles of Andean forest was converted to a Eucalyptus and pine plantation. The result has been the elimination of a native forest, the reduction of biological diversity, the introduction of invasive species, the release of massive amounts of soil carbon, and the displacement of indigenous peoples.

Even if a cap and trade climate bill succeeds in getting through Congress, it will be too little, and far too late. A market-based system will not work. We need mandatory reductions. Mandatory reductions should be helped along with tax credits, outright subsidies, and other incentives. However, at the end of the day, atmospheric carbon has to be reduced to 350 ppm if, as Hansen says, we want to, "preserve a planet similar to that on which civilization developed and to which life on Earth is adapted".



Supreme Court Lifts Ban on Corporate Funding of Candidates

by Paul Donahue

For the cynical among you who are already thoroughly disgusted with the present political system and think that things could not possibly get any worse, forget it, they just did. Much worse. Exponentially worse.

Last week's Supreme Court decision to allow unlimited corporate money into political campaigns will open the floodgates to corporate campaign spending. Large corporations like Exxon Mobil and Chevron will now be free to drop literally billions into the campaigns of their favored candidates. The total cost of the 2008 presidential campaign was about \$2.5 billion, with Obama raising a record \$745 million, but by the time the 2012 presidential election rolls around, those numbers will look small.

The only problem for corporations like Exxon Mobil will be finding enough hours in the day for airing all the television ads they can now legally purchase. If you are one of those rare, principled candidates who actually wants to take meaningful action against a problem like global warming, you are out of luck - they will sink you. Of course, 501(c)(4) public interest groups like Greenpeace will also be free now to spend as much as they want on political campaigns, but then Greenpeace didn't pull in \$45 billion in profits last year.

To spare ourselves from the excruciatingly long campaigns and endless television ads, for future elections we should consider bringing in accountants to check the coffers of the various contenders. Then we could just simply declare the candidate with the most money to be the winner.

With our democracy already in tatters, this Supreme Court decision marks a very, very sad day. The state of our environment will undoubtedly take a big hit as a result of it.

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War and Pipelines

by Paul Donahue

If anyone wants to understand Obama's true position on solving global warming and moving to an alternative energy future, all they have to do is check out the speech he gave on December 1st 2009 at West Point....."As Commander-in-Chief, I have determined that it is in our vital national interest to send an additional 30,000 U.S. troops to Afghanistan." In this case, Obama's "vital national interest" refers to a natural gas pipeline across Central Asia.

When U.S. intelligence agencies report, as they have, that U.S. bombing and killing in Afghanistan is creating new terrorists faster than it is eliminating the present threat, and yet the bombing and killing continues, then you know the war is not about bringing security to Americans or peace to the war-ravaged country.

Despite the administration and corporate media smoke-screen about fighting terrorism, bringing freedom to the Afghan people, etc., etc., etc., The wars on Afghanistan and Pakistan, as well as the war on Iraq, are about the control of fossil fuel reserves and their transport. In Afghanistan and Pakistan, it's not about making the countries safe for democracy, but about making the countries safe for a natural gas pipeline.

Sending U.S. troops off to die in the desert for fossil fuels is not something that plays well with the American public, so neither the politicians nor the mainstream media ever mention Afghanistan in the same sentence with the words "pipelines" or "natural gas". It's quite remarkable. Instead, they talk endlessly about terrorism, security, and freedom, concepts that do play very well with the American public.

Unfortunately for the Afghan and Pakistani people, their countries lie along vital transshipment routes for fossil fuel resources. The country or alliance that controls the region controls the pipelines and the country that controls the pipelines controls who gets to sell the natural gas and who gets to buy it. Washington and NATO's competition for control of the region's pipeline routes



is the Shanghai Cooperation Organization, a strategic alliance between China and Russia and the energy-rich former nations of the USSR, Kyrgyzstan, Uzbekistan, Kazakhstan, and Tajikistan. The wars in Afghanistan and Pakistan today may be nothing compared to the energy

Wars that could well develop there in the future.

The U.S. is currently backing the Trans-Afghanistan Pipeline (TAPI pipeline). The heaviest fighting in Afghanistan is in the south, in the region through which the TAPI pipeline will pass, and U.S. military bases line the pipeline route. This pipeline is scheduled to be operational in 2014. For anyone who wants more details or who doubts my interpretation of U.S. goals in Afghanistan and Pakistan, I strongly recommend you read the numerous articles on "Pipelineistan" by Pepe Escobar of the Asia Times. They are widely available on the internet. One of the more exhaustive on the subject is "Pipelineistan: Everything You Need to Know About Oil, Gas, Russia, China, Iran, Afghanistan and Obama" from May 2009. In Escobar's words, the current struggle in Central Asia is the "New Great Game." With the world rapidly running out of both oil and natural gas and, simultaneously, with a demand for those resources still going up, especially in places like China and India, the TAPI pipeline and others are not a small matter.

The wording of the U.S. Silk Road Strategy Act of 2006 (S.2749) is also very revealing of the true U.S. goals in Central Asia. While this bill, an update of the Silk Road Strategy Act of 1999, never became law, just the fact that it was introduced speaks volumes. In among the bill's stated support for "the economic and political independence of the countries of Central Asia and the South Caucasus" are numerous references to the region's key role in U.S. energy security and the need to support the development of energy infrastructure in the region. The paragraphs below are direct from the legislation.....

"The United States has significant long-term interests in the countries of Central Asia and the South Caucasus. These interests concern security, economic development, energy...."

"It is the policy of the United States to aid in the development of infrastructure in Central Asia and the South Caucasus for energy

and energy transit..."

"Consistent with the purposes of the Overseas Private Investment Corporation, it is the policy of the United States to promote and protect the interests of United



A U.S. Predator drone in the air over Pakistan, on patrol for unwitting wedding parties.

States businesses and investments in Central Asia and the South Caucasus."

"The Governments of Azerbaijan and Kazakhstan, which have contributed to United States military deployments in Iraq, Afghanistan, and Kosovo, are key United States partners in diversification of energy sources and transportation routes, enhancing and contributing to United States energy and security interests."

"The pressing need for diversification of energy resources makes access to Central Asian and Caspian Sea oil and gas resources a high energy security priority of the United States."

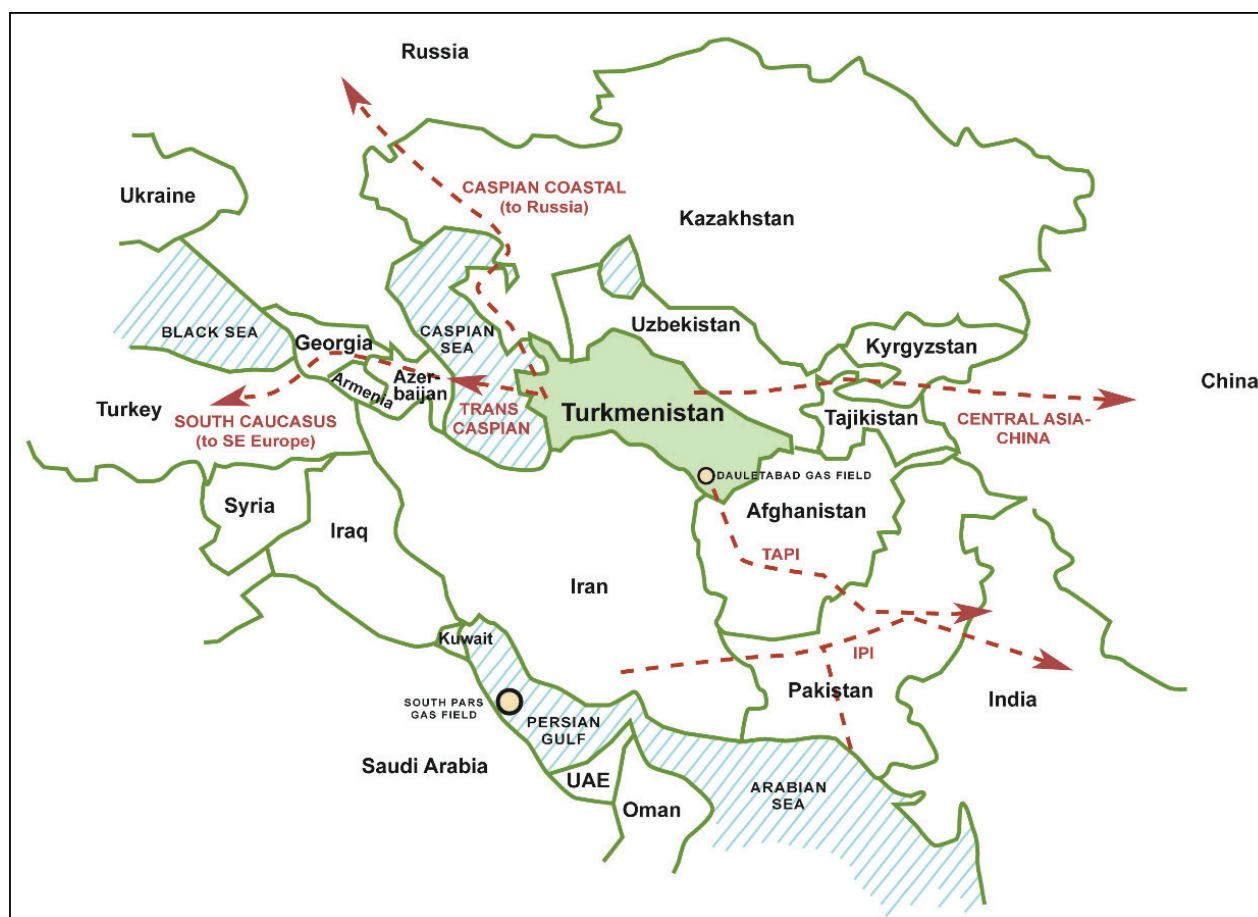
"Stability, democratic development, protection of property rights, including mineral rights, and rule of law in countries with valuable energy resources and infrastructure, including Kazakhstan, Azerbaijan, and Turkmenistan, are important to safeguard United States energy security."

"Preventing any other country from establishing a monopoly on energy resources or energy transport infrastructure in the countries of Central Asia and the South Caucasus that may restrict United States access to energy resources is important to the energy security of the United States and other consumers of energy in the developed and developing world."

"Extensive trade relations with the energy-producing and energy-transporting states of Central Asia and the South Caucasus will enhance United States access to diversified energy resources, thereby strengthening United States energy security, as well as that of energy consumers in developed and developing countries."

"Assistance in accelerating the broad and equitable privatization of state enterprises in a manner that does not promote oligarchical rule and the deregulation of national economies in a manner that allows equal access to nonresident companies to privatization procedures."

"Expansion of activity under the Trade and Investment



Map of the pipeline routes planned for central Asia.

Framework Agreement (TIFA), including reducing barriers to trade and investment, protection of workers' and property rights, fostering an environment of transparency and predictability, encouraging private sector growth and foreign and domestic investment, and removing impediments to increased intraregional trade and investment, particularly with respect to Afghanistan."

"Promotion of the development of the Trans-Caspian Oil and Gas Pipelines (TCOP/TCGP), while encouraging the Governments of Azerbaijan, Kazakhstan, and particularly Turkmenistan to improve their business climate and investor confidence by fully disclosing their internationally audited hydrocarbon reserves."

"Support for activities that promote the participation of United States businesses and investors in the planning, financing, and construction of infrastructure for communications, transportation, and trade, including aviation, highways, railroads, port facilities, shipping, banking, insurance, telecommunications networks, and gas and oil pipelines."

"Support for the construction of energy transit infrastructure, including the Trans-Caspian Oil Pipeline (TCOP) in Kazakhstan, from Aktau to Baku, which would carry oil from the Karachaganak field, and the Trans-Caspian Gas Pipeline (TCGP), from Turkmenistan or neighboring areas of Kazakhstan to Baku, which would carry natural gas."

EVERYTHING IS CONNECTED

I teach a lot of ecology classes, and the most important point I try to get across to my students is that everything is connected. It's the first law of ecology. It is true if you are looking at ecosystems, and it is equally true if you are looking at social and environmental problems. Unfortunately, the media, even the alternative media, tend to compartmentalize and treat the major stories of the day - climate change, war, peak oil, corruption of our political system - as separate entities. In reality, they are

all aspects of the same story.

Global warming is connected to a society dependent on fossil fuels, which is connected to the U.S. devoting hundreds of billions of dollars a year to a military tasked with protecting our access to fossil fuels, which is connected to the lack of money for social programs here in the U.S., and which is also connected to the U.S. brutalization of the citizens of countries like Afghanistan, Pakistan and Iraq, leading to the next generation of American-hating terrorists.

The connections continue. The supply of relatively cheap fossil fuels we've enjoyed has allowed us to grow accustomed to an endless supply of cheap consumer goods, cheap consumer goods which China is now supplying to us in bulk. This has allowed the Chinese economy to grow tremendously. Consequently, with all the manufacturing of cheap consumer goods for Americans, China has now surpassed the U.S. and become the world's largest emitter of greenhouse gases. At the recent talks in Copenhagen the U.S. negotiators argued with the Chinese about who should cut their greenhouse gas emissions first.

While the U.S. is slowly going broke from paying for endless war in the Middle East and Central Asia, the Chinese have lots of money because of how much stuff we buy from them. So, China is loaning the U.S. money, about \$1-2 billion a day, to finance the U.S. wars. At the same time, the Chinese need lots of fossil fuel to power their growing manufacturing industry. So, China is rapidly becoming our main competition for the world's remaining fossil fuel reserves, and they are a big part of the reason why we want to maintain a large military presence in the Middle East and Central Asia - a military presence financed by the same Chinese. And Iran has lots of oil, and lots of natural gas, and the Iranians are becoming very cozy with the Chinese and have signed cooperation pacts with them, so the U.S. threatens Iran and calls them potential terrorists.

Meanwhile, the planet is melting due to all the fossil fuel burning, but the politicians haven't noticed because they're too wrapped up in their pipeline deals and fossil fuel wars. It's all so incredibly crazy! SOMEONE PLEASE MAKE IT STOP!

Wars are About Resources

by Paul Donahue

Wars, all wars, are ultimately about resources, and the current conflicts in the Middle East and Central Asia are no exception to that rule. The resources at stake are fossil fuels. (See the article "War and Pipelines" in this issue and check out the recent oil deals signed by Exxon Mobil and other oil companies with the "government" of Iraq.)

Waging war for resources is a clear violation of the United Nations Charter, and the U.S. is a signatory of the U.N. Charter.

The Supremacy Clause in the U.S. Constitution establishes that international treaties, like the U.N. Charter, of which the U.S. is a signatory become "the supreme law of the land" - *i.e.* U.S. law.

A crime is defined by Merriam-Webster as "An act or the commission of an act that is forbidden or the omission of a duty that is commanded by a public law and that makes the offender liable to punishment by that law; especially : a gross violation of law." Illegal wars in which hundreds of thousands have died would certainly qualify as gross violations of law.

A criminal is defined as "One who has committed a crime." As a former constitutional law professor, Barack Obama certainly knows the law and knows a crime when he sees one.

The FBI defines a criminal enterprise as "a group of individuals with an identified hierarchy, or comparable structure, engaged in significant criminal activity. These organizations often engage in multiple criminal activities and have extensive supporting networks." To me, that sounds like a perfect description of the Obama administration and the Pentagon.

More than half of our tax dollars go to the Pentagon and war, so, unless I am missing some important detail in this story, when we send in our taxes in April, aren't we helping to prop up a criminal enterprise?



Maine's Climate Future

by Jonathan Carter

Nobel Laureate and physicist Neils Bohr once wrote, "Prediction is very difficult, especially about the future". While we can be sure that global warming is going to have a major impact on Maine, because of the complexity of factors influencing climate, it is difficult to predict these changes with absolute specificity. However, it is possible to outline the general direction and possible range of impacts. In February 2009 a report called, "Maine's Climate Future" was published. Unfortunately, this report was based on data, which was outdated. Indeed, the scenarios outlined in this report are overly optimistic since new climate data predicts significantly higher temperature changes due to global warming. With that said, the general trends of change are probably accurate. While the impacts of climate change in the next century are going to be catastrophic, Maine will probably fair much better than most of the rest of the country. We should expect warmer temperatures, longer growing seasons, milder winters with less snow, higher overall precipitation, but extended late summer droughts.

Following is a list of some of the changes that can be expected.

Coastal Ecosystems

1. The increase in CO₂ in the atmosphere will result in higher acidity in the Gulf of Maine. Shelled animals such as Crustaceans and Mollusks – lobsters, crabs, mussels, clams, whelks, oysters, snails, many smaller animals at the base of the ocean food pyramid – will be impacted.
2. Sea level will rise more than two feet. Coastal environments and communities will be severely disrupted. Coastal wetlands and salt marshes will be submerged and freshwater coastal lakes and bogs will be inundated

with salt water. Coastal fauna and floral will be displaced. It has been estimated that a One-foot rise will threaten 260 businesses in York County alone.

3. Hurricanes and storms will be more frequent and damaging. The "100 year storm" could occur every two to three years.

Freshwater Ecosystems

1. Maine's lakes, rivers, and wetlands will experience significant changes in hydrology because of changes in precipitation patterns, ice-out dates, and the magnitude of spring runoff.
2. Water temperature rises will negatively impact coldwater fisheries – such as trout and salmon as well as allow a more rapid advance of invasive species.
3. The timing of spring run-off will upset aquatic insect and plant life cycles. In addition freshwater supplies for coastal communities, as a result of rising sea levels, will become less reliable. The interface between fresh and salt water, critical to estuaries, will change as larger volumes of spring runoff occur earlier.
4. Higher water temperatures will increase the occurrence of West Nile Virus and other mosquito-borne diseases. The occurrence of malaria in Maine is not out of the question.
5. More frequent storms will cause more scouring water



Alpine wildflowers like Diapensia could disappear from Maine's mountaintops.

flows which will increase erosion and enhance siltation, causing massive habitat damage. Current spawning grounds will be compromised.

Forest Ecosystems

1. Boreal species will decrease. Red Spruce will disappear from interior Maine and Balsam Fir may well be eliminated.
2. Northern hardwoods will become less dominant and move northward. Southern Appalachian species like Chestnut Oak will migrate northward.
3. Genetically flexible species such as White Pine, Eastern Hemlock, and Red Maple will increase in abundance.
4. Forest disturbances from fire, ice storms, insects, and disease will become more frequent.

Biodiversity

1. Maine's official list of endangered species will grow.
2. Sharp declines in Maine's icon species - American Lobsters, Brook Trout, Moose, Common Loons, Atlantic Puffins, and Sugar Maples - will occur.
3. Southern species at their northern edge will increase in abundance – particularly warm water fish species. Northern species at the edge of their southern range - the Canada Lynx - will disappear. Overall, expansion of southern species will be greater than the decline of northern species.
4. Invasive exotic species will dramatically increase.
5. Alpine plants and animals with strong Arctic affinities will disappear.



photo by Paul Donahue

As global warming advances, Red Spruce may disappear from much of Maine.



Study Shows Climate Change Largely Irreversible

NOAA - National Oceanic and Atmospheric Administration

A scientific study led by the National Oceanic and Atmospheric Administration reaches a powerful conclusion about the climate change caused by future increases of carbon dioxide: to a large extent, there's no going back.

The pioneering study, led by NOAA senior scientist Susan Solomon, shows how changes in surface temperature, rainfall, and sea level are largely irreversible for more than 1,000 years after carbon dioxide (CO₂) emissions are completely stopped. The findings appear during the week of January 26, 2009 in the Proceedings of the National Academy of Sciences.

"Our study convinced us that current choices regarding carbon dioxide emissions will have legacies that will irreversibly change the planet," said Solomon, who is based at NOAA's Earth System Research Laboratory in Boulder, Colorado.

"It has long been known that some of the carbon dioxide emitted by human activities stays in the atmosphere for thousands of years," Solomon said. "But the new study advances the understanding of how this affects the climate system."

The study examines the consequences of allowing CO₂ to build up to several different peak levels beyond present-day concentrations of 385 parts per million and then completely halting the emissions after the peak. The authors found that the scientific evidence is strong enough to quantify some irreversible climate impacts, including rainfall changes in certain key regions, and global sea level rise.

If CO₂ is allowed to peak at 450-600 parts per million, the results would include persistent decreases in dry-season rainfall that are comparable to the 1930s North American Dust Bowl in zones including southern Europe, northern Africa, southwestern North America, southern Africa and western Australia.

The study notes that decreases in rainfall that last not just for a few decades but over centuries are expected to have a range of impacts that differ by region. Such regional impacts include decreasing human water supplies, increased fire frequency, ecosystem change and expanded deserts. Dry-season wheat and maize agriculture in regions of rain-fed farming, such as Africa, would also be affected.

Climate impacts were less severe at lower peak levels. But at all levels added carbon dioxide and its climate effects linger because of the ocean.

"In the long run, both carbon dioxide loss and heat transfer depend on the same physics of deep-ocean mixing. The two work against each other to keep temperatures almost constant for more than a thousand years, and that makes carbon dioxide unique among the major climate gases," said Solomon.

The scientists emphasize that increases in CO₂ that occur in this century "lock in" sea level rise that would slowly follow in the next 1,000 years. Considering just the expansion of warming ocean waters—without melting glaciers and polar ice sheets—the authors find that the irreversible global average sea level rise by the year 3000 would be at least 1.3–3.2 feet (0.4–1.0 meter) if CO₂ peaks at 600 parts per million, and double that amount if CO₂ peaks at 1,000 parts per million.

"Additional contributions to sea level rise from the melting of glaciers and polar ice sheets are too uncertain to quantify in the same way," said Solomon. "They could be even larger but we just don't have the same level of knowledge about those terms. We presented the minimum sea level rise that we can expect from well-understood physics, and we were surprised that it was so large."

Rising sea levels would cause "...irreversible commitments to future changes in the geography of the Earth, since many coastal and island features would ultimately become submerged," the authors write.

Geoengineering to remove carbon dioxide from the atmosphere was not considered in the study. "Ideas about taking the carbon dioxide away after the world puts it in have been proposed, but right now those are very speculative," said Solomon.

The authors relied on measurements as well as many different models to support the understanding of their results. They focused on drying of particular regions and on thermal expansion of the ocean because observations suggest that humans are contributing to changes that have already been measured.

Besides Solomon, the study's authors are Gian-Kasper Plattner and Reto Knutti of ETH Zurich, Switzerland, and Pierre Friedlingstein of Institut Pierre Simon Laplace, Gif-Sur-Yvette, France.

NOAA understands and predicts changes in the Earth's environment, from the depths of the ocean to the surface of the sun, and conserves and manages our coastal and marine resources.

The Snows of Kilimanjaro?

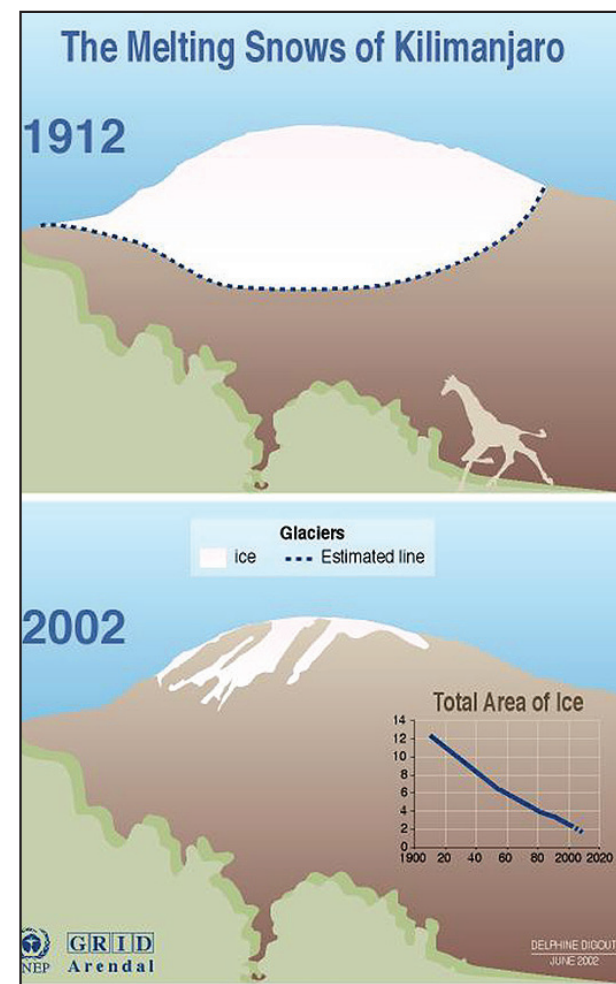
by Jared Carter

We know the story well. The "Snows of Kilimanjaro", made famous by Ernest Hemingway's novel of the same name, are melting. A recent study by scientists from Ohio State University provides us with the most conclusive evidence yet that these glaciers, arguably the most famous chunks of ice and snow in the world, are melting at a rate that will leave Mount Kilimanjaro without its icy white cap in less than twenty years. The study, which was released in early November, demonstrates the impact our dual addiction to consumerism and oil is having on the glaciers atop the 19,958 foot peak. In the nine years since we entered the new millennium, the "Snows of Kilimanjaro" have decreased by twenty-six percent.

Several years ago, I visited Tanzania and added my name to the list of thousands of people from all over the world who have climbed to the top of Africa's highest peak and left their boot print in those vanishing snows. The mountain gave me so much. Not only did it give me the proud memory of summiting one of the world's greatest peaks with my father, but it also left me with a vivid recollection of the impact that mountain and its globally famous snows have on the people who wake up and look at it every day.

Tanzania is one of the world's poorest countries and the

area around Mount Kilimanjaro is no exception. The trailhead we chose to start our trek up Mount Kilimanjaro was a mass of would-be Tanzanian guides, porters, and cooks all looking for a few days work so that they could continue to eek out their existence on the edge of poverty. It is estimated that Mount Kilimanjaro brings in 40,000 visitors each year, which translates into roughly 50 million dollars annually. What happens when those famous snows disappear, do the tourists and their dollar bills disappear with them? Where will the Tanzanian's turn then?



The disappearing "Snows of Kilimanjaro" are so important not just for what they are but for what they symbolize. They are a microcosm of the global impact climate change will have on our environment and they are a microcosm of how climate change will so drastically impact the world's poor - who, I may add, make up the vast majority of the global population.

While it is unlikely that the "Snows of Kilimanjaro" can be saved from the ravages of a warming world, the time for action is now if we are to stave off the impacts it will have on the world's most vulnerable populations. As the world's biggest polluter, the fate of these wonderful places and people is largely in our hands.

We must ask ourselves, not what we can do for the "Snows of Kilimanjaro", sadly its time has past, instead, we must look to the future and ask ourselves, what can we do for what those Snows symbolize? What can we do for the millions of other places around the world where we still have a chance? What can we do for the millions of other people around the world where they still have a chance? The choice is ours.



Ocean Acidification Rates Pose Disaster for Marine Life

by Severin Carrell

The world's oceans are becoming acidic at a faster rate than at any time in the last 55m years, threatening disaster for marine life and food supplies across the globe, delegates at the UN climate conference in Copenhagen have been warned.

A report by more than 100 of Europe's leading marine scientists, released at the climate talks this morning, states that the seas are absorbing dangerous levels of carbon dioxide as a direct result of human activity. This is already affecting marine species, for example by interfering with whale navigation and depleting planktonic species at the base of the food chain.

Ocean acidification - the facts says that acidity in the seas has increased 30% since the start of the industrial revolution. Many of the effects of this acidification are already irreversible and are expected to accelerate, according to the scientists.

The study, which is a massive review of existing scientific studies, warns that if CO₂ emissions continue unchecked many key parts of the marine environment - particularly coral reefs and the algae and plankton which are essential for fish such as herring and salmon - will be "severely affected" by 2050, leading to the extinction of some species.

Dr Helen Phillips, chief executive of Natural England, which co-sponsored the report, said: "The threat to the delicate balance of the marine environment cannot be overstated - this is a conservation challenge of unprecedented scale and highlights the urgent need for effective marine management and protection."

Although oceans have acidified naturally in the past, the current rate of acidification is so fast that it is becoming extremely difficult for species and habitats to adapt. "We're counting it in decades, and that's the real take-home message," said Dr John Baxter a senior scientist with Scottish Natural Heritage, and the report's co-author. "This is happening fast."

The report, published by the EU-funded European Project on Ocean Acidification, a consortium of 27 research institutes and environment agencies, states that the survival of a number of marine species is affected or threatened, in ways not recognised and understood until now. These species include:

- whales and dolphins, who will find it harder to navigate and communicate as the seas become "noisier". Sound travels further as acidity increases. Noise from drilling, naval sonar and boat engines is already travelling up to 10% further under water and could travel up to 70% further by 2050.
- brittle stars (*Ophiothrix fragilis*) produce fewer larvae because they need to expend more energy maintaining their skeletons in more acid seas. These larvae are a key food source for herring.
- tiny algae such as *Calcidiscus leptoporus* which form the basis of the marine food chain for fish such as

salmon may be unable to survive.

- young clownfish will lose their ability to "smell" the anemone species that they shelter in. Experiments show that acidification interferes with the species' ability to detect the chemicals that give "olfactory cues".

The report predicts that the north Atlantic, north Pacific and Arctic seas - a crucial summer feeding ground for whales - will see the greatest degree of acidification. It says that levels of aragonite, the type of calcium carbonate which is essential for marine organisms to make their skeletons and shells, will fall worldwide. But because cold water absorbs CO₂ more quickly, the study predicts



Blue Mussels and Acorn Barnacles, two of the many shelled creatures that will be harmed by ocean acidification.

that levels of aragonite will fall by 60% to 80% by 2095 across the northern hemisphere.

"The bottom line is the only way to slow this down or reverse it is aggressive and immediate cuts in CO₂," said Baxter. "This is a very dangerous global experiment we're undertaking here."

Written for policy makers and political leaders, the document is being distributed worldwide, with 32,000 copies printed in five major languages including English, Chinese and Arabic. Every member of the US congress, now struggling to agree a binding policy on CO₂ emissions, will be sent a copy.

Congressman Brian Baird, a Democrat representative from Washington state, who championed a bill in Congress promoting US research on ocean acidification, said these findings would help counter climate change sceptics, since acidification was easily and immediately measurable.

"The consequences of ocean acidification may be every bit as grave as the consequences of temperature increases," he said. "It's one thing to question a computer extrapolation, or say it snowed in Las Vegas last year, but to say basic chemistry doesn't apply is a real problem [for the sceptics]. I think the evidence is really quite striking."

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Refuse Allegiance to Coal

by Chris Hedges

There are some 614 coal-fired power plants in the United States, and it is up to us to shut them down. No one in the White House will do it. No one in Congress will do it. And no one at the coming U.N. climate change conference in Copenhagen will do it. We will build local movements to carry out acts of nonviolent civil disobedience to halt the burning of coal, or the polar ice caps will continue to dissolve, the Greenland ice sheet will disappear, the glaciers in the Alps, the Himalayas and Tibet will melt, and widespread droughts, rising sea levels and temperatures, acute food shortages, disease and gigantic mass migrations will envelop the globe. We are killing the ecosystem on which human life depends. One of the major polluters is coal, which supplies about half of the country's electricity. NASA's James Hansen has demonstrated that our only hope of getting our atmosphere back to a safe level - below 350 parts per million CO₂ - lies in stopping the use of coal to generate electricity. We are currently at 390 parts per million carbon dioxide.

"The world political system is not about to keel over and give us a treaty that will get us to 350 parts per million anytime soon, or in fact do anything of great note," the writer and environmental activist Bill McKibben told me when I met him in New York City. The author of "The End of Nature" and "Deep Economy" said: "The news that the Obama administration had punted on the Copenhagen talks is discouraging. The good news, to the extent that there is any, is that we finally have the beginning of a real global movement about climate change."

McKibben and his group, 350.org, this year organized perhaps the most widespread day of political action in the planet's history: On Oct. 24, people in 181 countries joined in calling for environmental reform. But such popular calls for change have largely been ignored by the leaders of industrialized nations. The climate crisis will be solved by widespread and sustained civil disobedience or not at all.

"There were no celebrities, no rock stars, no movie stars," McKibben said of the October protest. "People were rallying around a fairly obscure scientific data point, and the 25,000 pictures or so that have come into the Flickr site from the 5,200 events in 181 countries make it clear that the canard that environmentalism is something for rich white people is crazy. It is mostly something for black, brown and yellow people and mostly something for poor people. We are all going to bear the consequences before very long, but Bangladesh and places like Bangladesh get it first. This is why it was so great to see them heavily involved. We have about half the countries in the world that have endorsed the 350 [parts per million] target. Unfortunately they are the poorest countries on Earth. They will not carry the day at Copenhagen or anywhere else, but they have begun to challenge the right of the rich countries of the world to submerge them, burn them up or whatever else."

There are five countries that are responsible for over half of fossil-fuel-related CO₂ emissions. The United States and China alone account for more than a third. We in the U.S. have been the world's largest emitters for more than a century, although we have now been overtaken by China, where growth in emissions has been driven by a rapid increase in coal consumption. China is currently opening an average of two coal-fired power plants a week. Emissions there have more than doubled since 1990. The burden to act rests on us, our major trading

partner and a handful of other highly industrialized nations.

“The average American family uses more energy between the stroke of midnight on New Year’s Eve and dinner on Jan. 2 than the average Tanzanian family uses all year,” McKibben said.

The projected rise of sea levels, as much as six feet this century and 23 feet if the Greenland ice sheet disappears, will submerge coastal nations such as Bangladesh, a country of 160 million people, as well as places such as the Mekong Delta, the Maldives and the Marshall Islands. The disappearance of glaciers in the Himalayas and on the Tibetan plateau-glaciers that feed the Indus, Ganges, Yangtze and Yellow rivers-will create catastrophic water shortages and devastate the rice and wheat harvests in China and India, where about four of every 10 people live. World food prices will rise dramatically. If we can’t save countries such as the Maldives and Bangladesh we will also be unable to save Venice, Hawaii, the Netherlands, New Zealand, London, Hong Kong and Manhattan. But don’t expect much from Barack Obama and other leaders in the industrialized world. Their loyalty is not to the planet, or to us, but to the oil and gas industry, the coal industry and the huge corporate polluters who own them.

“Even the inadequate bill before the Congress has been postponed until the spring,” McKibben said, “which in my political calendar is a little too close to the election to be very comfortable. We are getting no leadership from the president, rhetorical or otherwise. All the problems are obvious. The only good news is that there is finally something that looks like the glimmer of a movement.”

It is incumbent on all of us to find out where the nearest coal-powered plant is located-the one closest to me is in Hamilton, N.J.-and begin to organize to shut it down nonviolently. Princeton, where I live, is also home to NRG Energy, the ninth-biggest coal energy producer in the United States. A map of the nation’s coal-fired plants can be found here.

“Coal is the key commodity,” McKibben said. “The ability to cease the combustion of coal will be the thing that decides whether or not we go over the precipice meteorologically in the decades ahead.”

“It is unlikely that the environmental movement, or any other movement, will come up with as much cash as those industries,” McKibben said of the corporations he opposes. “ExxonMobil made more money last year than any company in the history of money. We better not compete in that currency. We better find something else to compete in. The only thing I can think of is bodies, creativity and passion. These are the sort of things, with all their strengths, the Exxons of the world tend to lack.”

McKibben, along with the writer and activist Wendell Berry, organized a mass act of civil disobedience conducted last March against a coal-fired power plant in Washington, D.C., near the White House. Thousands of demonstrators from around the country arrived to see that in anticipation of the protest a promise had been made to convert the plant from coal to natural gas. But there are over 600 more coal plants to close. And McKibben said that local and regional leaders need to rise up to organize against coal.

McKibben and Berry embrace civility and nonviolence. Protesters in Washington last March were enjoined to arrive “in their Sunday best.”

“If we are going to use civil disobedience we need to reclaim it from people who enjoy taunting the police and showing off,” McKibben said.

“I spent last Sunday night out on Boston Common with hundreds and hundreds of young people from across Massachusetts who were willing to very, very peacefully and unaggressively risk arrest, and in fact we were all cited [by the police] before the evening was done,” he went on. “They were sleeping in Boston Common and refusing to sleep in their dorms for the rest of the fall because [the dormitories] are powered by dirt energy. They have been lobbying for a bill in the Massachusetts Statehouse to close down all the coal-fired power plants within the next 10 years. There were students from every campus. The biggest contingent came from Clark in Wooster. The prize was whoever brought the most students got to have me sleep in their tent.”

McKibben and Berry are right. Nonviolent civil disobedience is the only tool that might work. If we mirror the violence employed by the instruments of state security we will become corrupt, as they are, and obliterate the moral high ground that attracts followers to any movement and sustains the long night of resistance. Violence is a poison that infects all those who use it, even in what can be defined as a just cause. And nothing could make ExxonMobil or the coal industry happier than to see shop windows broken, cars set afire and police lines rushed. The moment we resort to violence the corporate state wins. It will gleefully crush us like flies in the name of law and order and national security. The temptation to violence, especially given the passivity of most of us and the hypocrisy of our ruling elite, including Obama, will mount as climate change begins to create social and political unrest. But it must be resisted. This will be a long, long struggle. The coal companies will only be the start. The other corporations that have disempowered the citizenry, created a state of neo-feudalism and turned our democracy into a sham will be next.

“We are past the point where we are going to stop global

warming,” McKibben said. “It is happening already, and more of it is coming no matter what we do. One of our jobs is to start figuring out how to cope with it. We need to build the kind of communities that can deal with that. The key question is scale. Communities need to be smaller. Our way of thinking about the world has to shrink. At the same time we need a global movement to continue this fight to bring carbon emissions under some kind of control. If we don’t, the kind of change we are talking about over the next decades is so big there is no way to adapt ... no matter what we do, no matter how wonderfully organic your community has become. Communities still require water. People don’t quite understand what three or four or five degrees increase in the temperature of the planet will mean. One degree was enough to melt the Arctic. This was a bad sign.”

“Nothing important is going to come out of Copenhagen,” McKibben warned, “just a lot of spin. ... [Obama’s] vast spin machine will be in full gear. There is no obvious route out of all this. We have started exploring mainly popular movements, and hopefully we have introduced a wild card into this game. Our plans are not even plans at this point. It is easier said than done. We shut down one coal-fired power plant and not a very big one. There are 600 left in the country. I don’t fancy myself up to the task of figuring out how to shut them all down. Hopefully some people will begin to do it.”

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Chris Hedges writes a regular column for Truthdig.com. Hedges graduated from Harvard Divinity School and was for nearly two decades a foreign correspondent for The New York Times. He is the author of many books, including: War Is A Force That Gives Us Meaning, What Every Person Should Know About War, and American Fascists: The Christian Right and the War on America. His most recent book is Empire of Illusion: The End of Literacy and the Triumph of Spectacle.



Mountaintop removal coal mining in the Appalachians.

North American Trees Dying Twice as Fast

by Stephen Leahy

Our trees are dying. Throughout the western United States, cherished and protected forests are dying twice as fast as they did 20 years ago because of climate change, researchers reported Thursday in the journal *Science*.

Fire did not kill these trees, nor did some massive insect outbreak. The trees in this wide-ranging study were “undisturbed stands of old growth forests”, said Jerry Franklin, a professor of forest resources at the University of Washington and one of 11 co-authors of the report.

“The data in this study is from our most stable, resilient stands of trees,” Franklin told IPS.

What this means is that the United States’ best forests

stress and a few more insect pests appears to be enough to tip the balance, said Tom Veblen of the University of Colorado at Boulder.

“We’re seeing continental-scale evidence of warming,” Veblen said. “It is very likely tree mortality will increase further as temperatures continue to rise.”

Previous research has shown global warming is largely responsible for the enormous increase in forest fires in the west and the massive insect outbreaks like that of the mountain pine beetle, expected to kill 80 percent of the pine forest in Canada’s province of British Columbia by 2013.



photo by Paul Donahue

Vast area of Lodgepole Pine in Rocky Mountain National Park killed by Mountain Pine Beetle.

are getting thinner.

It is like a town where the birth rate is stable but the mortality rate for all ages doubled over the past two decades. “If that was happening in your hometown you’d become very concerned,” said Nate Stephenson, an ecologist with the U.S. Geological Survey (USGS).

This dramatic increase in tree mortality applies to all kinds, sizes, ages and locations of trees. In the Pacific Northwest and southern British Columbia, the rate of tree death in older coniferous forests doubled in 17 years. In California, doubling mortality rates took a little longer at 25 years. For interior states it took 29 years.

Mortality has increased in lock-step with rising temperatures of about 1 degree C in the last 30 years. Air pollution and ground level ozone were investigated and eliminated as the cause of the increased mortality, Stephenson told IPS.

Warmer temperatures in the west have meant the summer drought period is longer. The mountain snow pack contains less snow and melts much earlier in the spring. Warmer temperatures also favor insects like tree-damaging beetles. The combination of trees suffering moisture

Forests of all kinds contain more than 80 percent of Earth’s terrestrial biodiversity. Not only do they absorb carbon, forests produce 30 percent of the world’s oxygen. They are also a key part of the planet’s climate regulating system. About half of the world’s forests are already gone.

Carbon emissions from burning of fossil fuels is warming temperatures globally but forests play a vital role in capturing carbon from the atmosphere and sequester or trap carbon. As a result, forests around the world store as much carbon as is currently in the atmosphere.

Dead trees release that stored carbon. If the mortality rate of big trees goes up, then North America’s forests become a source of carbon emissions, leading to even higher temperatures and still thinner forests in a feed-back loop.

“At best they will take up less carbon from the atmosphere,” said Franklin. “Older, stable forests should be left alone. We don’t want to accelerate this process.”

Large old growth trees hold far more carbon than young, fast growing trees and so there is no way to recover the carbon lost from logging old growth, he said. Govern-

ment policies should reflect this reality. Preserving old growth forests must be part of the international climate agreement that will be negotiated in Copenhagen, he said.

Surprisingly, this is the first large-scale analysis of mortality rates in temperate forests but Franklin believes the increase in mortality is widespread and applies to forests everywhere.

Logging aside, the fact that forests are dying is not new. Scientists have known since the 1980s that temperate forests were suffering from pollutants such as acid rain, nitrogen deposition and increased ground-level ozone, as well as higher ultraviolet radiation levels. While invisible to nearly everyone, the slow decline of U.S. forests was well-documented in a 1995 book “The Dying of the Trees” by science writer Charles E. Little.

Based on the science of the day, Little accurately predicted that the western U.S. would burn and deserts would expand and that sugar maples would largely vanish from the northeast in the near future. And, particularly because of global warming, he regretfully concluded that temperate forests had crossed a threshold. “And the more trees die, the more will die,” he wrote.

Scientists working in tropical forests now say these forests are extremely sensitive to increases in temperature. The vast majority of tropical forests exist where the annual average temperature is 25° to 26° C. Before the end of this century temperatures in tropical regions are projected to be 3° C higher. No forest exists anywhere where the annual average temperature is 28° C, Joseph Wright of the Smithsonian Tropical Research Institute (STRI) in Panama told IPS in a previous interview.

“That doesn’t mean something else won’t replace tropical forests, but we don’t know what it will be,” said Wright.

Major reductions in carbon emissions and deforestation are urgently needed, the experts all agree. Little said the same thing 14 years ago. But he also said that humanity needed to begin the process of environmental repair: “The trees could save us, if we would save the trees, for they are the threshold.”

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Black-capped Chickadee by Paul Donahue

Canada’s Boreal Forest Top-Rated Carbon Warehouse

by Margaret Munro

The boreal forest stores more carbon than any land-based ecosystem on the planet, according to a new report that says the Amazon is no match for Canada’s boggy bush.

North America’s boreal forest contains nearly twice as much carbon per hectare as tropical forests, says the report by Canadian and American researchers. And Canada, home to the largest blocks of forest left on

government.

The report, entitled “The Carbon the World Forgot,” says the “boreal biome is the world’s largest and most important forest carbon storehouse, holding almost twice as much carbon per unit area as tropical forests.”

The carbon has been “vastly underestimated” in the past, it says, in part because most of it is not in trees,

and move if temperatures climb as predicted in coming decades, due to global warming.

The Harper government could do much to improve its environmental image by pushing for protection of the boreal carbon at international climate meetings slated for Copenhagen next month.

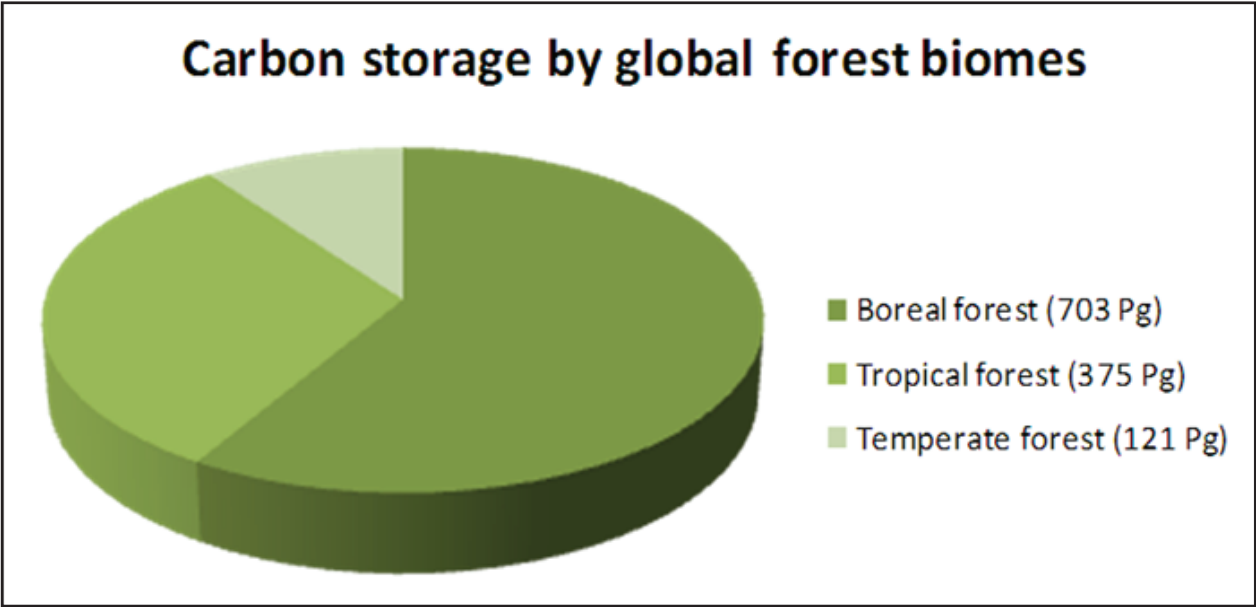
The report recommends two “simple changes” to climate protocols — one to include peatland carbon and the other to make it mandatory to account for carbon emissions created when forests are disturbed by logging, mining, road-building or hydroelectric projects.

Canada and other countries decided against inclusion of the forest carbon in the Kyoto Protocol because they didn’t want to be held accountable for emissions from wild fires and pests, such as the mountain pine beetle, that can destroy large tracts of forest and send huge amounts of carbon into the atmosphere.

“These rules are now being revisited,” Kurz said by e-mail from Beijing where he is attending meetings.

Kurz is leading the development of a national forest carbon accounting system for Canada, and says the federal government is involved in ongoing international negotiations to develop “rules that will create incentives for climate mitigation through sustainable forest management without obligations to account for emissions from natural disturbances.”

This article was originally published in the 12 November 2009 issue of The Montreal Gazette, CanWest News Service



Earth, has by far, the lion’s share of the carbon, it says, and a responsibility to ensure it stays locked in trees, soils and peatlands.

“Canada is unique in the world with its carbon stores and its intact ecosystems,” says Jeff Wells, of the Boreal Songbird Initiative, and lead author of the report by Canadian and U.S. groups pushing for inclusion of the boreal in upcoming climate talks in Copenhagen and for the forest’s protection.

It’s been endorsed by an international panel of leading scientists who write in a forward that it is “imperative that the world’s policy-makers and public now make a concerted effort to ensure that both the boreal forest and its vast stores of carbon remain intact.”

The report says Canada’s boreal region sweeping from Newfoundland across to the Yukon holds a staggering 208 billion tonnes of carbon, or the equivalent of 26 years of the world’s carbon emissions that spew into the atmosphere by burning fossil fuels.

“Future climate change protocols must be better suited to motivate stewardship of the massive quantity of carbon stored in forest and peatland ecosystems,” the report says.

It is “scientifically indefensible” the boreal forest has been left out of international climate agreements to date, given its importance in the global carbon budget, Wells said in an interview.

Federal officials declined to comment on the specifics in the report which is to be released Thursday. But Werner Kurz, senior scientist with Natural Resource Canada, says the idea of including the forest in international climate agreements is “being revisited” by the federal

shrubs and plants but below ground in often metres-deep soils and peats, some thousands of years old.

The report says there is a total of 208 billion tonnes of carbon in Canada’s boreal, a figure that includes 71 billion tonnes in forest ecosystems and 137 billion tonnes in peatland ecosystems.

Federal, provincial and aboriginal leaders are moving to protect the boreal — the premiers of Ontario and Quebec have both promised to set aside half their boreal forest. But the Songbird and boreal conservation campaign, funded largely by the Pew Charitable Trusts and backed by 1,500 scientists, says much more needs to be protected.

The report notes that almost 90 per cent of Canada’s soil carbon — much of it around James Bay and in the Northwest Territories — is outside existing protected areas.

But the ecosystems are still largely intact, which means Canada can still safeguard the carbon and forest ecosystems that the report says will play a “crucial role in the Earth’s climate change future.”

“There’s an incredible opportunity here,” says Wells, noting that taking steps to ensure carbon stays in place also would protect songbirds and creatures such as caribou, bears and moose. Large tracts of intact forest are also seen as “refuge” that could help ecosystems and creatures adapt



The boreal forest of Manitoba.

The Most Important Number on Earth

by Bill McKibben

Sooner or later, you have to draw a line. We've spent the last 20 years in the opening scenes of what historians will one day call the Global Warming Era-the preamble to the biggest drama that humans have ever staged, the overture that hints at the themes that will follow for centuries to come. But none of the notes have resolved, none of the story lines yet come into clear view. And that's largely because until recently we didn't know quite where we were. From the moment in 1988 when a NASA scientist named James Hansen told Congress that burning coal and gas and oil was warming the earth, we've struggled to absorb this one truth: The central fact of our economic lives (the ubiquitous fossil fuel that developed the developed world) is wrecking the central fact of our physical lives (the stable climate and sea level on which civilization rests). For a while, and much longer in the US than elsewhere, we battled over whether this was true. But warm year succeeded warm year and that fight began to subside. Instead, the real question became, is this a future peril, the kind of thing you take out a reasonably priced insurance policy to guard against? Or is it the oh-my-lord crisis you drop everything else to deal with? Will Hitler be happy with the Sudetenland, or is the world going to spend every cent it has, not to mention tens of millions of lives, fighting him off? Trouble, or TROUBLE? These last 12 months, we've found out.

It was September 2007 that the tide began to turn. Every summer Arctic sea ice melts, and every fall it refreezes. The amount of open water has been steadily increasing for three decades, a percent or two every year-it's been going at about the pace that the hairline recedes on a middle-aged man. It was worrisome, and scientists said all the summer ice could be gone by 2070 or so, which is an eyeblink in geologic time but an eternity in politician time. In late summer of last year, though, the melt turned into a rout-it was like those stories of people whose hair turns gray overnight. An area the size of Colorado was disappearing every week; the Northwest Passage was staying wide open all September, for the first time in history. Before long the Arctic night mercifully descended and the ice began to refreeze, but scientists were using words like "astounding." They were recalculating-by one NASA scientist's estimate the summer Arctic might now be free of ice by 2012. Which in politician years is "beginning of my second term."

The key phrase, really, was "tipping point." As in "I'd say we are reaching a tipping point or are past it for the ice. This is a strong indication that there is an amplifying mechanism here." That's Pål Prestrud of the Center for International Climate and Environmental Research-Oslo. Or this, from Mark Serreze, of the National Snow and Ice Data Center at the University of Colorado: "When the ice thins to a vulnerable state, the bottom will drop out...I think there is some evidence that we may have reached that tipping point, and the impacts will not be confined to the Arctic region."

"Tipping point" is not, in this context, an idle buzzword. It means that the physical world is taking over the process that humans began. We poured carbon into the atmosphere, trapping excess heat; that excess heat began to melt ice. When that ice was melted, there was less white up north to reflect the sun's rays back out to space, and more blue ocean to absorb them. Events began to feed upon themselves. And in the course of the last year, we've seen the same thing happening in other systems. In April, the National Oceanic and Atmospheric Administration released a report showing that 2007 had seen a sudden and dramatic surge in the amount of methane, another heat-trapping gas, in the atmosphere. Apparently, one reason is that when we burned all that fossil fuel and began raising the temperature, we also started melting the permafrost-melting eight times more of it in some places over two decades than had thawed for the previ-



ous 1,000 years. And as that frozen soil thaws, it releases methane; enough of it now bubbles out to make "hot spots" in lakes and ponds that don't freeze during the deepest part of the Siberian winter. The more methane, the more heat, the more methane. Wash, rinse, repeat.

The final piece of the puzzle came early this year, and again from James Hansen. Twenty years after his crucial testimony, he published a paper with several coauthors called "Target Atmospheric CO₂" (.pdf). It put, finally, a number on the table-indeed it did so in the boldest of terms. "If humanity wishes to preserve a planet similar to that on which civilization developed and to which life on Earth is adapted," it said, "paleoclimate evidence and ongoing climate change suggest that CO₂ will need to be reduced from its current 385 ppm to at most 350 ppm."

Get that? Let me break it down for you. For most of the period we call human civilization, the amount of carbon dioxide in the atmosphere hovered at about 275 parts per million. Let's call that the Genesis number, or depending on your icons, the Buddha number, the Confucius number, the Shakespeare number. Then, in the late 18th century, we started burning fossil fuel in appreciable quantities, and that number started to rise. The first time we actually measured it, in the late 1950s, it was already about 315. Now it's at 385, and growing by more than 2 parts per million annually.

And it turns out that that's too high. We never had a number before, so we never knew whether we'd crossed a red line. We half guessed and half hoped that the

danger zone might be 450 or 550 parts per million-those were still a little ways in the distance. Therefore we could get away with thinking like the young Augustine: "Lord, make me chaste, but not yet." Not anymore. We have been told by science that we're already over the line.

And so we're now in the land of tipping points. We know that we've passed some of them-Arctic sea ice is melting, and so is the permafrost that guards those carbon stores. But the logic of Hansen's paper was clear. Above 350, we are at constant risk of crossing other, even worse, thresholds, the ones that govern the reliability of monsoons, the availability of water from alpine glaciers, the acidification of the ocean, and, perhaps most spectacularly, the very level of the seas. It is at least conceivable that instead of a slow, steady rise in the height of the oceans, we could see rapid melt in Greenland and the West Antarctic, where much of the world's frozen water resides. We can't rule out, warns Hansen, a sea level rise of up to 20 feet this century. Plug that into

Google Earth and watch waterfront developments turn into high-priced reefs. We can't rule out, in other words, the collapse of human society as we've known it. "If humanity wishes to preserve a planet similar to that on which civilization developed and to which life on Earth is adapted..." We should add the phrase to the oath of office for every politico on the third planet.

So what does this mean? If you took 350 to be the most important number on the planet, what would it

imply?

In essence, it means that we've got to transform the world's economy far more quickly than we'd hoped. Almost everyone knows that this transformation is coming-that by century's end we won't be relying on fossil fuel, both because the oil will have run out and because the environmental damage will be intense. But the question is how quickly. The kind of change envisioned before last year was still a little leisurely-maybe the developed world cutting its carbon emissions 15 or 20 percent by 2020. That's far more than the Bush administration or its energy-industry cronies would go for, of course-at ExxonMobil's annual meeting last spring, CEO Rex Tillerson said he envisioned a world that still used fossil fuel for two-thirds of its power in 2030. A world where change came slowly enough that everyone could make every last penny off their sunk investments in coal mines and oil platforms. And a world where politicians didn't need to raise the price of carbon steeply, and hence didn't need to arouse voters.

But the 350 world looks different. We're not worried we might have a weight problem. We've been to the doctor and the doctor has said, "Your cholesterol is too high. Scaring me. You're in the danger zone. You need to change your diet and then you need to pray that you get back down where you're supposed to be before the stroke that's coming at you." When that happens, you clean the cheese out of the refrigerator and go cold turkey.

In energy terms, that would look like this:

[1] No more new coal plants, because although the world still has immense amounts of coal, it's immensely dirty. And the people who tell you about clean coal are blowing smoke-literally.

[2] A cap on the amount of carbon the country can produce-which, in essence, is a tax. America would say, just as it does now with sulfur from coal plants, "We're only going to release so much carbon every year." CO₂ would stop being free; in fact, it would become expensive. In order to simplify the process, the upstream producer who mines, imports, or sells the fossil fuel would get the tab. ExxonMobil would have to pay dearly for a permit to release x amount of carbon, a cost it would pass on to consumers. Then those consumers would use less, and markets would go to work figuring out all the possible ways to cut demand and boost renewables.

[3] An international agreement, including China and India, to do the same thing around the world.

Now, these are three of the hardest tasks we've even thought about since we took on Hitler. They go to the very heart of the way our economy operates: We get most of our electricity from fossil fuels, any increase in the price of energy affects every single part of the economy, and China and India are pulling people out of poverty largely by burning cheap coal. If you're a person who uses a lot of fossil fuel, i.e. an American, then they're unappealing. If you're a person who would like to use even a little energy, i.e. almost anyone in the developing world, then they're maddening. And yet they are what the physics and chemistry of the situation dictate. So the question becomes, how to make them happen?

The logic imposed by 350 is fairly straightforward. In order to keep Americans from rebelling, we need to take the money we're charging Exxon Mobil for those pollution permits and return it to the taxpayers-everyone needs to get a check every month to, in essence, buy us all off. To help make us whole for the price rises that will inevitably come, the price rises that will do the work of wringing fossil fuel out of the economy. ExxonMobil would pay, then we'd pay-but we'd get some of the money back in the mail. We've got to make the switch so fast that it's going to be brutally expensive-think \$10 gas-and our democracy will never support it for long without that monthly check.

But we can't give ourselves back all the money. Because some of it is needed to make the rest of the world whole-to build windmills for the Indians so they won't use the same cheap coal that we used for 200 years in order to get rich. That is, we're going to need a Marshall Plan for carbon-with the same mix of idealism and self-interest that motivated the Marshall Plan in Hitler's wake.

We also need serious investment in infrastructure, both technological and human. For instance, concepts like concentrated solar power-those big mirror arrays in the desert-have gained real momentum in the last 18 months. Former Clinton administration energy analyst Joseph Romm recently calculated that such arrays could provide America with all of its electricity from a 92-square-mile grid in the Southwest desert-but only if promoted via loan guarantees for the entrepreneurs who build them and a new generation of transcontinental transmission lines. Meanwhile, demand is skyrocketing for small rooftop solar panels, but increasingly there's a shortage of trained installers, which means our community colleges need money to start training them. No matter

what the price of energy, homes aren't going to insulate themselves-this is the great opening for a green-jobs revolution. (See "The Truth About Green Jobs.")

You'll note here I'm talking more about what we should do in the US House (and Senate) in the next year or two than which bulbs you should be changing in your house. diy conservation makes great practical sense, but we won't save the planet that way. One by one, trying to do the right thing, we add up to...not nearly enough.



You cannot make the math work that way-there are too many sockets and too many tailpipes and most of all too much inertia for voluntary action to do the trick. It didn't work when President Bush made voluntary reduction by corporations his global warming "policy," and it won't work fast enough with individuals either.

Which is not to say that life at home doesn't need to change. It does-and it will, once we've taken the political step of making the price of carbon reflect the damage it does to the environment. Look at what happened this past year when the price of gas finally rose far enough to get our attention. We began riding trains and buses in record numbers. Total miles driven fell, sharply, for the first time since we started keeping records in 1942. We groused and moaned and we started to change. General Motors decided to sell its Hummer factory.

If we get that check every month to cover some of the damage, it will help attenuate the very real heat-or-eat dilemma that will grip many people this coming winter, but the incentive to change will still be there. Buses and bikes. Smaller homes that are easier to heat. Solar panels, bought on the installment plan with loans paid off from the power generated on your roof. Local food (and lots more local farmers). Vacations in the neighborhood-no more jetting off for the weekend.

You can see every one of these trends in embryo already, driven by the run-up in energy prices that we've seen so far. The quick contraction of the airline industry. The collapse in home values in the distant suburbs, while homes along the commuter rail lines fare better. Again the question is all about pace-what will make them happen fast enough, across a wide enough swath of the planet. Al Gore set the example with his call for a 10-year conversion to non-carbon electricity. It's at the outer edge of doable, and the outer edge is where we need to be. We'll have plug-in hybrid electric vehicles on sale by 2010. The question is, can we have nothing else on sale by 2020? We built more than half of the interstate highway system in a decade. Would rebuilding our rail networks to a European standard be all that much harder? Can we get the price of energy up quickly enough to get markets on the task of finding a low-carbon way of life that works? And by works, I mean reverses the flow of

carbon into the atmosphere. Because physics and chemistry won't reward good intentions. Methane is seriously uninterested in compromise. Permafrost, notoriously, refuses to bargain. Even the absolute political power represented by King Canute couldn't hold back the rising seas. Those forces will only pay attention if we can scramble back below 350.

Forcing that pace requires a new kind of politics. It requires forging a consensus that this toughest of all changes must happen. The consensus must be broad, it must come quickly, and it must encompass the whole earth-they don't call it global warming for nothing.

The list of things on which we've achieved a broad and deep global consensus is pretty much limited to...Coke Is It. And that took billions of dollars and several decades, and it involved inducing people to drink sugar water. The odds against a strong global movement about anything tougher than that are low, with language barriers, religious barriers, cultural barriers. And we start from such incredibly different places-Americans use 12 times the energy of sub-Saharan Africans.

And yet we do have this one tool that at least offers the possibility, a tool that wasn't fully there even a few years ago. The Internet-and its attendant technologies, like cell phones and texting-does link up most of the known world at this point. You can get pretty far back of beyond in most of the world, and someone in that village has a mobile.

And we have a number-350. The most important number on earth. If the Internet has a cosmic purpose, this could be it-to take that number and spread it everywhere on the planet, so that everyone, even if they knew little else about climate change, understood that it represented a kind of safety, a bulwark against the monsoon turning erratic, the sea rising over their fields, the mosquito spreading up their mountain.

I'm part of a group of people calling ourselves 350.org. Our goal is simple-to try to get people everywhere to spread that number. We've started finding musicians and artists, athletes and video makers, and most of all activists, the kinds of people who are working to save watersheds or babies, or to educate girls or to block dams, or any of the other thousand lovely things that won't happen if we allow the basic physical stability of the planet to come unglued. We need a lot of noise, and we need it fast, in the scant months-14 now-before the world meets in Copenhagen next December to draw up a new climate treaty. Because one clear implication of 350 is that that treaty is our last real chance to get it right. If we don't, then all we'll be dealing with is the consequences. Once the ocean really starts to rise, dike building is pretty much the only project.

It's not clear if a vocal world citizenry will be enough to beat inertia and vested interest. If 350 emerges as the clear bar for success or failure, then the odds of the international community taking effective action increase, though the odds are still long. Still, these are the lines it is our turn to speak. To be human in 2008 is to rise in defense of the planet we have known and the civilization it has spawned.

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Bill McKibben is the author of many books, including his latest: Deep Economy: The Wealth of Communities and the Durable Future . McKibben is a scholar in residence at Middlebury College, and cofounder of 350.org.

Think Again: Climate Change

by Bill McKibben

Act now, we're told, if we want to save the planet from a climate catastrophe. Trouble is, it might be too late. The science is settled, and the damage has already begun. The only question now is whether we will stop playing political games and embrace the few imperfect options we have left.

"Scientists Are Divided"

No, they're not. In the early years of the global warming debate, there was great controversy over whether the planet was warming, whether humans were the cause, and whether it would be a significant problem. That debate is long since over. Although the details of future forecasts remain unclear, there's no serious question about the general shape of what's to come.

Every national academy of science, long lists of Nobel laureates, and in recent years even the science advisors of President George W. Bush have agreed that we are heating the planet. Indeed, there is a more thorough scientific process here than on almost any other issue: Two decades ago, the United Nations formed the Intergovernmental Panel on Climate Change (IPCC) and charged its scientists with synthesizing the peer-reviewed science and developing broad-based conclusions. The reports have found since 1995 that warming is dangerous and caused by humans. The panel's most recent report, in November 2007, found it is "very likely" (defined as more than 90 percent certain, or about as certain as science gets) that heat-trapping emissions from human activities have caused "most of the observed increase in global average temperatures since the mid-20th century."

If anything, many scientists now think that the IPCC has been too conservative-both because member countries must sign off on the conclusions and because there's a time lag. Its last report synthesized data from the early part of the decade, not the latest scary results, such as what we're now seeing in the Arctic.

In the summer of 2007, ice in the Arctic Ocean melted. It melts a little every summer, of course, but this time was different-by late September, there was 25 percent less ice than ever measured before. And it wasn't a one-time accident. By the end of the summer season in 2008, so much ice had melted that both the Northwest and Northeast passages were open. In other words, you could circumnavigate the Arctic on open water. The computer models, which are just a few years old, said this shouldn't have happened until sometime late in the 21st century. Even skeptics can't dispute such alarming events.

"We Have Time"

Wrong. Time might be the toughest part of the equation. That melting Arctic ice is unsettling not only because it proves the planet is warming rapidly, but also because it will help speed up the warming. That old white ice

reflected 80 percent of incoming solar radiation back to space; the new blue water left behind absorbs 80 percent of that sunshine. The process amps up. And there are many other such feedback loops. Another occurs as northern permafrost thaws. Huge amounts of methane long trapped below the ice begin to escape into the atmosphere; methane is an even more potent greenhouse gas than carbon dioxide.

Such examples are the biggest reason why many experts are now fast-forwarding their estimates of how quickly we must shift away from fossil fuel. Indian economist Rajendra Pachauri, who accepted the 2007 Nobel Peace Prize alongside Al Gore on behalf of the IPCC, said recently that we must begin to make fundamental reforms by 2012 or watch the climate system spin out of control; NASA scientist James Hansen, who was the first to blow



the whistle on climate change in the late 1980s, has said that we must stop burning coal by 2030. Period. All of which makes the Copenhagen climate change talks that are set to take place in December 2009 more urgent than they appeared a few years ago. At issue is a seemingly small number: the level of carbon dioxide in the air. Hansen argues that 350 parts per million is the highest level we can maintain "if humanity wishes to preserve a planet similar to that on which civilization developed and to which life on Earth is adapted." But because we're already past that mark-the air outside is currently about 387 parts per million and growing by about 2 parts annually-global warming suddenly feels less like a huge problem, and more like an Oh-My-God Emergency.

"Climate Change Will Help as Many Places as It Hurts"

Wishful thinking. For a long time, the winners-and-losers calculus was pretty standard: Though climate change will cause some parts of the planet to flood or shrivel up, other frigid, rainy regions would at least get some warmer days every year. Or so the thinking went. But more recently, models have begun to show that after

a certain point almost everyone on the planet will suffer. Crops might be easier to grow in some places for a few decades as the danger of frost recedes, but over time the threat of heat stress and drought will almost certainly be stronger.

A 2003 report commissioned by the Pentagon forecasts the possibility of violent storms across Europe, mega-droughts across the Southwest United States and Mexico, and unpredictable monsoons causing food shortages in China. "Envision Pakistan, India, and China-all armed with nuclear weapons-skirmishing at their borders over refugees, access to shared rivers, and arable land," the report warned. Or Spain and Portugal "fighting over fishing rights-leading to conflicts at sea."

Of course, there are a few places we used to think of as possible winners-mostly the far north, where Canada and Russia could theoretically produce more grain with longer growing seasons, or perhaps explore for oil beneath the newly melted Arctic ice cap. But even those places will have to deal with expensive consequences-a real military race across the high Arctic, for instance.

Want more bad news? Here's how that Pentagon report's scenario played out: As the planet's carrying capacity shrinks, an ancient pattern of desperate, all-out wars over food, water, and energy supplies would reemerge. The report refers to the work of Harvard archaeologist Steven LeBlanc, who notes that wars over resources were the norm until about three centuries ago. When such conflicts broke out, 25 percent of a population's adult males usually died. As abrupt climate change hits home, warfare may again come to define human life. Set against that bleak backdrop, the potential upside of a few longer growing seasons in Vladivostok doesn't seem like an even trade.

"It's China's Fault"

Not so much. China is an easy target to blame for the climate crisis. In the midst of its industrial revolution, China has overtaken the United States as the world's biggest carbon dioxide producer. And everyone has read about the one-a-week pace of power plant construction there. But those numbers are misleading, and not just because a lot of that carbon dioxide was emitted to build products for the West to consume. Rather, it's because China has four times the population of the United States, and per capita is really the only way to think about these emissions. And by that standard, each Chinese person now emits just over a quarter of the carbon dioxide that each American does. Not only that, but carbon dioxide lives in the atmosphere for more than a century. China has been at it in a big way less than 20 years, so it will be many, many years before the Chinese are as responsible for global warming as Americans. What's more, unlike many of their counterparts in the United States, Chinese officials have begun a concerted effort to reduce emissions in the midst of their country's staggering growth. China now leads the world in the deployment of renewable energy, and there's barely a car made in the United States that can meet China's much tougher fuel-economy standards.

For its part, the United States must develop a plan to cut



“Solving It Will Be Painful”

It depends. What’s your definition of painful? On the one hand, you’re talking about transforming the backbone of the world’s industrial and consumer system. That’s certainly expensive. On the other hand, say you manage to convert a lot of it to solar or wind power—think of the money you’d save on fuel. And then there’s the growing realization that we don’t have many other possible sources for the

economic growth we’ll need to pull ourselves out of our current economic crisis. Luckily, green energy should be bigger than IT and biotech combined.

Almost from the moment scientists began studying the problem of climate change, people have been trying to estimate the costs of solving it. The real answer, though, is that it’s such a huge transformation that no one really knows for sure. The bottom line is, the growth rate in energy use worldwide could be cut in half during the next 15 years and the steps would, net, save more money than they cost. The IPCC included a cost estimate in its latest five-year update on climate change and looked a little further into the future. It found that an attempt to keep carbon levels below about 500 parts per million would shave a little bit off the world’s economic growth—but only a little. As in, the world would have to wait until Thanksgiving 2030 to be as rich as it would have been on January 1 of that year. And in return, it would have a much-transformed energy system.

Unfortunately though, those estimates are probably too optimistic. For one thing, in the years since they were published, the science has grown darker. Deeper and quicker cuts now seem mandatory. But so far we’ve just been counting the costs of fixing the system. What about the cost of doing nothing? Nicholas Stern, a renowned economist commissioned by the British government to study the question, concluded that the costs of climate change could eventually reach the combined costs of both world wars and the Great Depression. In 2003, Swiss Re, the world’s biggest reinsur-

ance company, and Harvard Medical School explained why global warming would be so expensive. It’s not just the infrastructure, such as sea walls against rising oceans, for example. It’s also that the increased costs of natural disasters begin to compound. The diminishing time between monster storms in places such as the U.S. Gulf Coast could eventually mean that parts of “developed countries would experience developing nation conditions for prolonged periods.” Quite simply, we’ve already done too much damage and waited too long to have any easy options left.

“We Can Reverse Climate Change”

If only. Solving this crisis is no longer an option.

Human beings have already raised the temperature of the planet about a degree Fahrenheit. When people first began to focus on global warming (which is, remember, only 20 years ago), the general consensus was that at this point we’d just be standing on the threshold of realizing its consequences—that the big changes would be a degree or two and hence several decades down the road. But scientists seem to have systematically underestimated just how delicate the balance of the planet’s physical systems really is.

The warming is happening faster than we expected, and the results are more widespread and more disturbing. Even that rise of 1 degree has seriously perturbed hydrological cycles: Because warm air holds more water vapor than cold air does, both droughts and floods are increasing dramatically. Just look at the record levels of insurance payouts, for instance. Mosquitoes, able to survive in new places, are spreading more malaria and dengue. Coral reefs are dying, and so are vast stretches of forest.

None of that is going to stop, even if we do everything right from here on out. Given the time lag between when we emit carbon and when the air heats up, we’re already guaranteed at least another degree of warming.

The only question now is whether we’re going to hold off catastrophe. It won’t be easy, because the scientific consensus calls for roughly 5 degrees more warming this century unless we do just about everything right. And if our behavior up until now is any indication, we won’t.

This article was first published in the January-February 2009 issue of the journal Foreign Policy. © 2009 Foreign Policy

Bill McKibben is the author of many books, including his latest: Deep Economy: The Wealth of Communities and the Durable Future. McKibben is a scholar in residence at Middlebury College, and cofounder of 350.org.

emissions—something that has eluded Americans for the entire two-decade history of the problem. Although the U.S. Senate voted down the last such attempt, Barack Obama has promised that it will be a priority in his administration. He favors some variation of a “cap and trade” plan that would limit the total amount of carbon dioxide the United States could release, thus putting a price on what has until now been free.

Despite the rapid industrialization of countries such as China and India, and the careless neglect of rich ones such as the United States, climate change is neither any one country’s fault, nor any one country’s responsibility. It will require sacrifice from everyone. Just as the Chinese might have to use somewhat more expensive power to protect the global environment, Americans will have to pay some of the difference in price, even if just in technology. Call it a Marshall Plan for the environment. Such a plan makes eminent moral and practical sense and could probably be structured so as to bolster emerging green energy industries in the West. But asking Americans to pay to put up windmills in China will be a hard political sell in a country that already thinks China is prospering at its expense. It could be the biggest test of the country’s political maturity in many years.

“Climate Change Is an Environmental Problem”

Not really. Environmentalists were the first to sound the alarm. But carbon dioxide is not like traditional pollution. There’s no Clean Air Act that can solve it. We must make a fundamental transformation in the most important part of our economies, shifting away from fossil fuels and on to something else. That means, for the United States, it’s at least as much a problem for the Commerce and Treasury departments as it is for the Environmental Protection Agency.

And because every country on Earth will have to coordinate, it’s far and away the biggest foreign-policy issue we face. (You were thinking terrorism? It’s hard to figure out a scenario in which Osama bin Laden destroys Western civilization. It’s easy to figure out how it happens with a rising sea level and a wrecked hydrological cycle.)

Expecting the environmental movement to lead this fight is like asking the USDA to wage the war in Iraq. It’s not equipped for this kind of battle. It may be ready to save Alaska’s Arctic National Wildlife Refuge, which is a noble undertaking but on a far smaller scale. Unless climate change is quickly de-ghettoized, the chances of making a real difference are small.



Saving the Earth: Are There Grounds for Optimism?

by Lorna Salzman

Given the debacle unfolding in Washington over how to rescue capitalism, it is time for a reality check. Let's look at the scorecard so far.

Coal-fueled power plants, the largest stationary CO₂ source, are still operating here and abroad, and there is no indication they will be shut down in any meaningful time frame.

Oil and gasoline prices have dropped precipitously.

Government subsidies and incentives for fossil fuels and nukes abound in the proposed stimulus package and in

standards and measures.

Conventional wisdom prevails in the mantra of reducing CO₂ "80% by 2050", even among some of the progressive environmental groups, when science tells us we need to cut back 90% within ten years.

The goal of cutting back greenhouse gases to 300-350 parts per million has not been adopted or even acknowledged by our elected officials.

Many scientists quietly believe that we have already exceeded the average global temperature that might have headed off climate change catastrophe, that is, 2 degrees Celsius, and that we are already committed to irreversible ecological conditions that still bring social and economic disruption and chaos within a matter of years.

The government and the private sector are still promot-

the rapid advance of global warming impacts, decades in advance of predictions by the Intergovernmental Panel on Climate Change (IPCC), is largely ignored by American mass media.

Public understanding and awareness of the crisis and the imminence of irreversible tipping points, remains minimal due to internet doubters, mass media, Congress, businesses, and Pollyanna Prosperity Pushers like Ted Nordhaus and Michael Shellenberger (N&S), all of whom are focused strictly on "the economy", as if energy and ecology play no role. In their book, Break Through, N&S propose in all seriousness that prosperity is the answer to all our problems. I am not making this up.

Schools and universities, for the most part, still lack mandatory environmental studies courses.

Religious and spiritual leaders preach change in personal moral behavior but play no role in community organizing, electoral campaigns or political activism.

Leftist groups, the US Green Party and progressive and left media, for the most part, still relegate environmental concerns to the back burner (exception: We Act and the Climate Justice movement), with some preaching socialism as the answer.

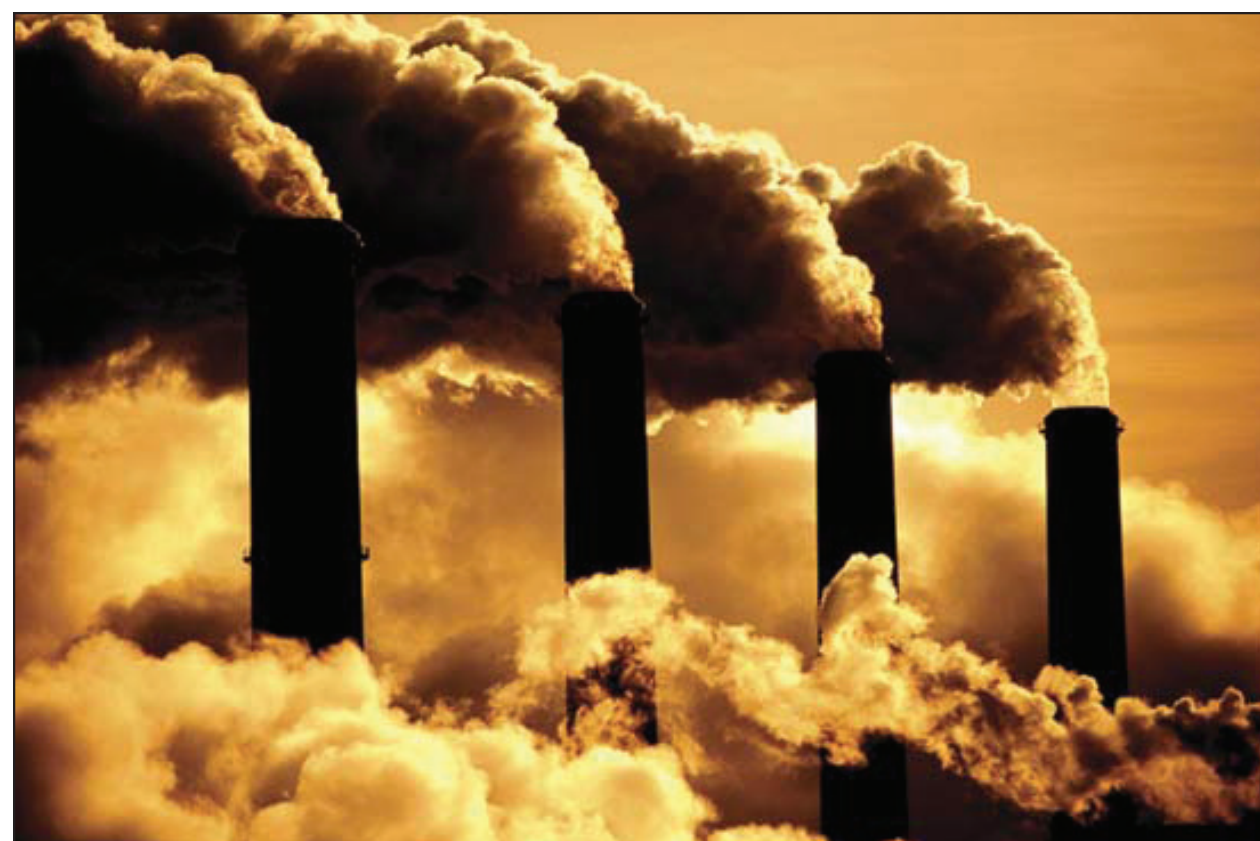
No counterweight to the compromised environmental groups (NRDC, EDF, *et. al.*) has developed as a lobbying force in Congress, allowing some Congress members to continue to sponsor flabby, weak, ineffective energy bills that are universes away from being commensurate with the threat of global warming.

Deforestation across the globe by numerous governments and corporations continues unabated, with little or no protest by our government.

Financial assistance institutions like the World Bank and International Monetary Fund and trade pacts like NAFTA remain committed to traditional development models and still refuse to incorporate environmental criteria into their policies.

Wildly out of control population growth in Africa (denied by leftists and nationalists) is leading many countries there to the brink of ecological disaster, as water becomes scarce or polluted, soil depleted, access to arable land disputed and fought over, trees and shrubs cut down for fuel, and natural resources monopolized for export currency.

Apologies if I have left anything out. Draw your own conclusions.



existing legislation, including money to stimulate the purchase of new cars (!). As Dave Barry would say, I am not making this up.

Public transportation and energy efficiency have been starved to death in the stimulus bill.

The beltway biggies (Natural Resources Defense Council, Environmental Defense Fund, World Resources Institute, Pew Center on Global Climate Change, plus the U.S. Climate Action Plan corporations) are calling the shots in Congress on energy, with little opposition, and are pushing carbon trading and preventing imposition of a carbon tax.

A national, rapidly declining cap on overall CO₂ emissions from all stationary power sources has not been set, nor have mandatory efficiency standards.

An international carbon trading regime is expanding, increasing our reliance on fossil fuels, primarily coal. This is already enriching the new middleman sector of brokers, accountants and lawyers to the tune of hundreds of millions of dollars (our dollars), while raising energy prices for the public and seriously delaying the development of renewable energy and mandatory efficiency

ing increased consumption and economic growth as their top priorities, (both of which are at the root of the environmental crisis) fearing that citizens will (choke) save their money or (choke choke) use it to pay off their debts.

Renewable energy technologies are still poor relations to fossil fuels and can't compete with existing subsidies to fossil fuels and nuclear power. In the case of nuclear power the government is on the verge of granting gigantic loan guarantees because private investment is, wisely, staying away.

Studies in Europe show that even market penetration and government promotion of renewable energy hasn't reduced CO₂ emissions.

Converting an energy economy takes up to fifty years.

Imports of foreign goods and foodstuffs do not reflect their environmental and energy costs (or social costs).

The accumulation of evidence showing



FEN Lawyers Committed to an Appeal

by Lynne Williams

On September 23, 2009, the Land Use Regulation Commission voted to approve the disastrous rezoning application submitted by Plum Creek for the Moosehead Lake region. For years, both FEN and RESTORE fought to convince the Commission to deny the application, to no avail. We have now decided that we have no option but to appeal the decision to Superior Court.

While the court gives great deference to the administrative decision-maker (LURC) in factual matters, such as impacts on wildlife, there are numerous procedural issues and matters of law that we will be challenging in our appeal. Early on in the process, we filed a Motion to Dismiss, in which we argued that the Legislature had not delegated authority to the Commission to engage in contract zoning, which is exactly what we continue to believe the Commission has done. This motion was denied and we will raise the same argument, as well as the following additional arguments, in our appeal.

It is our contention that the Commission misunderstood how to evaluate whether the concept plan is at least as protective of the environment as the existing zoning. Rather than assuming that the existing zoning would remain static over the 30-year period of the plan and thereby relying upon 30 year “build out” models based on current zoning remaining static, the Commission should have projected the likely evolution of the zoning as it becomes more protective of the environment as the zoning and comprehensive plan are periodically updated during the next 30 years.

Likewise, the Commission erred when it gave Plum Creek regulatory credit for the Conservation Framework, since that conservation land was sold, as opposed to donated, and should not be counted as mitigation. Most troubling, however, is the fact that the Commission accepted Plum Creek’s repeated arguments that there was no need to cover, at this stage of the proceedings, development details, such as what kind of resorts it wanted to develop, or environmental details, such as the location of vernal pools, because those issues will be adjudicated during subdivision review.

Most importantly, at the conclusion of the evidentiary hearings, the Commission should have deliberated on the merits of Plum Creek’s proposal based upon the record created in the evidentiary hearings. Instead, it took it upon itself to initiate such extensive and substantive amendments to Plum Creek’s proposal as to create a new, alternative plan. The Commission could not impartially evaluate the new plan it solicited precisely because the new plan was its own.

It is our opinion that the Superior Court will closely analyze the record in the context of these procedural and legal issues, and will thus be compelled to reverse the Commission’s decision.

Lynne Williams is the attorney for the Forest Ecology Network and the Green Party candidate for governor.



Reasons for a Legal Challenge of LURC’s Decision to Grant Plum Creek’s Sprawl Agenda Around Moosehead Lake

1. The Commission erred when it gave Plum Creek regulatory credit for the separate Conservation Framework. By allowing – indeed, insisting on – including the separate arrangement by which Plum Creek will be paid \$35 million for selling conservation lands and easements, LURC is setting a very bad legal precedent. The Conservation Framework is a real estate transaction for compensation between private parties. Future land speculators will also want to be paid instead of providing conservation as an offset to development as the LURC rules require.
2. The Commission erred when it took it upon itself at the conclusion of the hearings to initiate such extensive and substantive amendments to Plum Creek’s proposal as to create a new, alternative plan. Instead, the Commission should have deliberated and voted on the merits of Plum Creek’s proposal based upon the record.
3. The Commission erred when it allowed LURC staff and consultants to become advocates in the proceedings for LURC’s own alternative concept plan.
4. The Commission erred when it evaluated Plum Creek’s proposal under an outdated comprehensive plan. LURC’s 1997 Comprehensive Land Use Plan should have been updated and a regional plan for Moosehead should have been completed before processing Plum Creek’s concept plan.
5. The Commission erred when failed to adequately address many legal tests and key issues mandated in the LURC law. For instance, LURC has not sufficiently evaluated whether the plan adequately addresses:
 - demonstrated need
 - no undue adverse impact on uses and resources in the region
 - how the proposed zoning would be more appropriate for existing uses and resources than the current zoning
6. The Commission erred when it failed to adequately address crucial development issues. For instance, LURC:
 - failed to reduce the total number of development unit
 - failed to put any cap on caretaker and employee housing units
 - failed to adequately say how lynx and other threatened wildlife will be protected from resorts and shoreland sprawl
7. The Commission erred when it failed to sufficiently evaluate, as specified in the LURC Comprehensive Land Use Plan, whether Plum Creek’s plan adequately addresses protection of:
 - air resources• cultural, archaeological, historical resources
 - forest resources• geological resources
 - recreational resources
 - water and wetland resources
 - wildlife and fisheries resources
8. The Commission erred when it failed to adequately evaluate, as specified in the LURC rules, whether the plan:
 - strikes a reasonable and publicly beneficial development-conservation balance
 - justifies a waiver of the normal requirement that new development be adjacent or proximate to existing, compatible development
9. The Commission erred on a number of procedural issues. For instance, limiting testimony at the hearings to cross-examination meant that intervenor witnesses did not get to talk unless Plum Creek chose to cross-examine them.



photo by Jym St. Pierre

Paper or Plastic? Neither!

by Teresa Wood

A list on how to reduce your energy consumption and combat global warming includes numerous important suggestions like unplugging your television, computer or radio until you are ready to use them, driving less, changing to compact fluorescent light bulbs, weather stripping your home, washing a full load of clothes and using a clothes line, stopping the use of disposable plastic water bottles, turning down your thermostat in winter and up in the summer. One more item on the list should be: use cloth shopping bags instead of paper or plastic bags.

Here are some facts related to plastic and paper shopping bags and their impact on the environment: Oil and natural gas are the major raw materials of plastics. Great



amounts of water and fossil fuels are used annually in the manufacture and subsequent transport of single-use plastic bags to stores and businesses worldwide. Worldwatch Institute says that four to five trillion plastic bags were produced worldwide in 2002 alone and that Americans throw away 100 billion polyethylene plastic bags each year. An estimated 12 million barrels of oil is required to make that many plastic bags. Most are used just once and discarded.

Contrary to popular thought, using paper bags is not less harmful to the environment than using plastic. It takes more than four times as much energy to manufacture a paper bag as it does to manufacture a plastic bag.

ENERGY TO PRODUCE BAG ORIGINALLY (BTUs)
Safeway Plastic Bags: 594 BTUs
Safeway Paper Bags: 2511 BTUs
(Source: 1989 Plastic Recycling Directory, Society of Plastics Industry.)

Of course, most paper comes from tree pulp and each new paper grocery bag you use is made from mostly virgin pulp for better strength and elasticity, so the impact of paper bag production on forests is enormous. In 1999, 14 million trees were cut to produce the 10 billion paper grocery bags used by Americans that year alone. Paper bag production delivers a global warming double-wham

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Plastic and paper shopping bags are recyclable. Unfortunately, recycling rates of either type of disposable bag are extremely low, with only 10 to 15% of paper bags and 1 to 3% of plastic bags being recycled, according to the Wall Street Journal. Additionally, most people tend to forget that the processes involved in recycling of all products, including plastic and paper shopping bags, include collection, transportation, processing and conversion. All require energy, often derived from oil. The non-recycled bags end up in landfills where degradation is extremely slow or they blow about city streets, countrysides and beaches as ugly litter and potential wildlife killers.

The preferred alternative to this costly energy use is prevention of the waste in the first place. Do not use disposable single-use plastic and paper bags at all. Use a sturdy, long lasting cloth bag to carry home your store purchases. By doing so you will decrease deforestation, litter, and plastic particle contamination in the environment and reduce the environmental and monetary costs of producing, transporting, recycling, and landfilling paper and plastic bags.

Reduce your use of petroleum products and help prevent global warming, one grocery bag at a time.

for more info check out these sites:

www.reusablebags.com

www.knib.org/paper.php

www.sierraclub.org/sustainable_consumption/articles/bags1.asp

www.greenyour.com/lifestyle/food-drink/shopping-bag/tips/reuse-your-shopping-bags?subject=579

David Suzuki on the Environment and Global Warming

“Our personal consumer choices have ecological, social, and spiritual consequences. It is time to re-examine some of our deeply held notions that underlie our lifestyles.”

“The human brain now holds the key to our future. We have to recall the image of the planet from outer space.. a single entity in which air, water, and continents are interconnected. That is our home.”

“People.. especially people in positions of power.. have invested a tremendous amount of effort and time to get to where they are. They really don’t want to hear that we’re on the wrong path, that we’ve got to shift gears and start thinking differently.”

“We no longer see the world as a single entity. We’ve moved to cities and we think the economy is what gives us our life, that if the economy is strong we can afford garbage collection and sewage disposal and fresh food and water and electricity. We go through life thinking that money is the key to having whatever we want, without regard to what it does to the rest of the world.”

“If we want to move towards a low-polluting, sustainable society, we need to get consumers to think about their purchases.”

“We are playing Russian roulette with features of the planet’s atmosphere that will profoundly impact generations to come. How long are we willing to gamble?”

“The fact of the matter is that today, stuff-selling mega-corporations have a huge influence on our daily lives. And because of the competitive nature of our global economy, these corporations are generally only concerned with one thing - the bottom line. That is, maximizing profit, regardless of the social or environmental costs.”

“We’re in a giant car heading towards a brick wall and everyone’s arguing over where they’re going to sit”

“We must reinvent a future free of blinders so that we can choose from real options.”

“What I would challenge you to do is to put a lot of effort into trying to see whether there’s a legal way of throwing our so-called leaders into jail because what they’re doing is a criminal act.”

David Suzuki is a Canadian science broadcaster and environmental activist.

***Castor canadensis*: Small-Scale Woodland Manager/Big Time Climate Change Buffer/ Wetland Wildlife and Habitat Engineer**

by Richard Hesslein

Even though there are some specific protections under law, beaver are virtually persecuted throughout Maine as well as many areas throughout the world. The laws are often waived or limited too easily for reasons of landowner and property concerns - perceived or real. Also, there is virtually no protection from seasonal trapping except by individual landowner postings or requests for closures.



The awareness of the critical value of these wetlands needs to be increased so that landowners and state officials are more fully aware of the tradeoffs that the continued loss of these wetlands represents, particularly the cyclic expansion and contraction of active beaver wetlands.

In addition to raising awareness, the alternatives of engineered solutions or water level control devices need to be more actively pursued.

Active beaver wetlands have critical functions with regard to water quality, quantity, and purification, as well as reduced rate of climate change and restoration of a healthy ecology and biodiversity, which affects us all! In retaining water on the land, these wetlands serve to recharge aquifers, reduce danger of forest fire, control and distribute what would otherwise be destructive flood events, slow and prevent erosion, and filter and decompose pollutants and contaminants. This includes microbiological activity that actually breaks down pollutants and pesticides, and they contribute, along with intact forests, very significantly to carbon storage and consumption to help buffer accelerating climate change. It is known that about half of rare species depend on beaver managed wetlands. It has been estimated that beaver engineered life support systems generate \$8,000 worth of ecosystem services per acre per year!

Some of the most critical wetlands in terms of biological diversity seem to be at the greatest risk. These are the cyclic wetlands created by beaver, which must continue to expand (and contract) into what may be perceived as new areas and which most often meet with landowner or other property or infrastructure concerns. It is, however, these newly flooded areas that are the greatest key to providing the most diverse and viable habitat and ecology, which can support the widest variety and abundance of plants and animals.

These newly flooded areas provide openings in the forest, creating den and nesting trees and places where other types of vegetation will flourish. These new areas will quickly team with life by providing newly created habitat that will fill with varieties of small fish, na-



tive trout, amphibians by the thousands, and reptiles, turtles, heron, bittern, wood duck, muskrat, otter and much more! These “super concentrations” of aquatic insects, small fish and amphibians will serve as the base of a food chain. A patrolling guard of many species of dragonflies, damsel flies, swallows, flycatchers and bats in the air as well as minnows, shiners, chubs, dace and predacious larval insects and amphibians in the water all feed on adult and larval mosquitoes!

Too often, though, these benefits are lost as draining and trapping disrupt active beaver workings. The limited resources and staff of our State Inland Fisheries and Wildlife Biology Department do not adequately monitor beaver population and distribution across the spectrum of our various wetland complexes. The disruption of beaver workings by virtually unlimited trapping is poorly understood. The answer to perceived or real infrastructure or property concerns are not adequately investigated. Too often the seemingly expedient solution of beaver removal and draining is allowed and the resource is degraded or lost. Better planning, engineering, construction and location of roads and other development is needed to reduce these conflicts.

Lastly, there are many ways to engineer beaver deceiving water level control devices where necessary to reduce the degradation of wetland habitat. Often it will prove to be more cost efficient and far more beneficial to take these extra steps. This will allow the full benefit of the beaver generated ecosystem services to be realized.

Some further references to explore:

Swampwalker's Journal by David Carroll
Beavers, Wetlands and Wildlife at www.BeaversWW.org
www.beaversolutions.com
www.hsus.org

photo by Paul Donahue



A beaver pond in Phillips, Maine.

Mountaintop Industrial Wind Power Is Not “Green”

by Jonathan Carter

I have been advocating for wind power for decades. I never thought I would see the day when I would be opposing wind power development. However, the current frantic rush to install industrial wind on every viable mountaintop is both shortsighted and ecologically damaging. All one has to do is look at the impact of the Kibby TransCanada industrial wind operation in the remote Boundary Mountains of western Maine. This is nothing more than industrial wind mountaintop removal. It is being driven by dollars and cents, not ecological sense. To call mountaintop wind operations “farms” is nothing more than PR. Farms suggest a positive relationship with the land. The industrial wind operations are nothing less than massive electrical generating facilities that destroy the quality of place and pose serious health problems for both humans and wildlife.

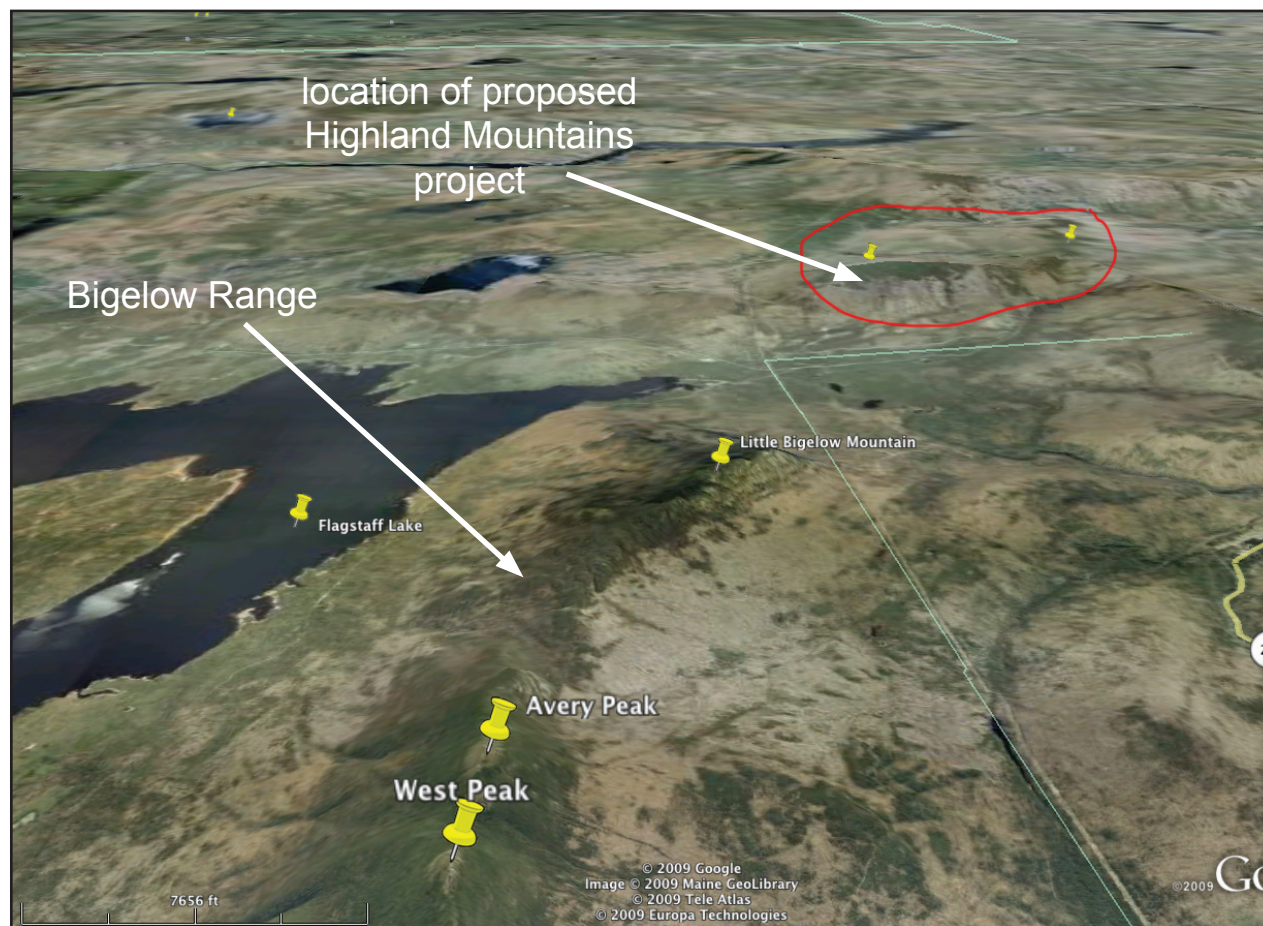
When John Baldacci announced the formation of the Governor’s Task Force on Wind Power, I thought, “good idea John”. Never in my wildest dreams did I think this task force would submit to the legislature an Expedited Wind Permitting Law which fast tracks industrial wind development in an area covering two thirds of the state. This bill was passed by the legislature in fifteen days with little to no public involvement or debate. The fact is that the Expedited Wind Law was to a large extent written by the wind developers, whose primary interest is green money not green energy.

This law gives the go ahead for potentially 360 miles of industrial wind turbines on Maine mountaintops. This would result in the building of thousands of miles of additional power lines and roads. It would require the clearcutting of over 50,000 acres of carbon-sequestering forestlands. Literally, the tops of the mountains are blown-up in order to establish a bedrock base for the massive concrete pads needed to support 400 to 500 foot turbines.

In addition to the destruction of habitat, these massive wind machines, which, moving at over 180 miles an hour, individually sweep an acre of space, broadcast high volume sounds which have literally driven people in Maine from their homes. It is not only audible sounds which cause a problem to people and wildlife, but probably more damaging are low frequency sound waves that are emitted from these industrial power plants. It is well documented that the low frequency sounds and shadow flicker caused the turbines, pose serious health risks. The neurological health problems have been labeled as Wind Turbine Syndrome (WTS). People experiencing WTS can exhibit elevated heart rates, memory problems,

visual blurring, nausea, sleep disturbance, and chronic headaches.

The proposal by Independence Wind for the Highland Mountains is a perfect example of how the new Expedited Wind Law will open the doors for wind developers to destroy the essence of a rural community by turning the mountains of Maine into something more analogous to Portland Jetport. The Highland Mountains are right next to the Bigelow Preserve. This development would undermine the wilderness character of hundreds of miles of the Appalachian Trail. The whole Bigelow Range would be confronted with, upfront in your face, a string of 49 turbines with their noise, shadow flicker, and flashing red lights.



The area of the Highland Mountains project of Independence Wind in relation to the Bigelow Range.

The Kibby industrial wind facility to the north and west of the Highland Mts. has already reduced the value of remote real estate and destroyed the tranquility of many camp owners who now view “Portland Jetport every night”. If you like to hike, hunt, or fish, do you honestly think your experience is going to be enhanced by the high decibel sounds, the shadow flicker, and flashing red lights of turbines? North Carolina has put a moratorium on mountaintop turbines because they recognized that turbines would degrade the mountains, which define their state and are a major economic driver in the form of tourism and outdoor recreation. What has Maine done? It has passed an Expedited Law that will fast track industrial wind mountaintop removal.

In defiance of the Migratory Bird Protection Act, turbines routinely kill birds and bats. The Highland Mountains area is home to many Bald Eagles, the rare Bicknell’s Thrush, and the threatened Canada Lynx. While we certainly know that turbines kill bats and birds and that a string of turbines is going to destroy habitat, little

research has been done on the impacts of low frequency sound on wildlife. We know it causes WTS in humans, but what does it do to wildlife – does it impact reproduction, fertility rates, feeding behavior etc? It would be prudent to find the answers before rather than regret the outcome later.

Some environmentalists have been drawn into believing that if you are not for covering the mountains of Maine with wind turbines, then you are acting against the unfolding disaster of climate change. This is a false dichotomy. Global warming is a catastrophic crisis, but the solution is not to destroy the pristine character of the Maine mountains. The industrial wind mountaintop frenzy sweeping across Maine is not tied to shutting down an oil or coal power plant. It is simply feeding our gluttonous consumption of more and more energy. It makes no sense to destroy our mountaintops to feed this appetite.

There are better alternatives – the first being CONSERVATION. It is no secret that if the federal subsidies (as much as 60% of cost) being poured into industrial wind were invested instead into efficiency and conservation projects, the reductions in carbon emissions would dwarf those potentially created by mountaintop industrial wind. It would also create thousands more jobs for local communities. If these funds were used for forest restoration, the reductions per dollar expended would be even greater.

Maine, a state with one of the highest renewable energy portfolios, already produces more than enough energy to meet its needs. In fact, we export energy. It has been estimated that Maine and the rest of New England will have excess capacity for the next fifteen to twenty years. It is clear that the right choice for Maine is offshore.

This is where the best winds are, where turbines can be placed out of sight, and, in general, where the least amount of environmental damage will occur. Norway is already pursuing offshore wind projects with great success. In addition, residential and community-based wind projects hold a lot of promise. At a local or community scale, turbines are much smaller, emit a lot less sound, have reduced shadow flicker, do not require flashing red lights, are less damaging to migratory birds, and, if placed properly, will not destroy fragile habitat.

It is time to take a step back from industrial wind power mountaintop removal and to develop an energy policy that is not simply driven by the huge profits to be made from federal subsidies. If we allow this mountaintop wind gold rush to continue, after the rush has played out, Mainers will be left with the tailings of a despoiled landscape and the magic of the mountains gone forever.

This article originally appeared in the Times-Record.

Industrial Wind Power in Maine's Mountains Is Bad Policy

by the Citizen's Task Force on Wind Power

Following are the key points about industrial wind power that the government and the wind industry are not talking about:

Political - "The goal of the Governor's Task Force on Wind Power was to grease the skids for the wind industry and Wall Street, not to find out if wind power was good for Mainers."

- The "Expedited Permit" wind law was an "emergency" bill from the governor which passed through the legislature in 15 days with very little scrutiny and no debate in April 2008. The bill was the result of the Governor's Task Force on Wind Power, whose mandate was to identify and remove obstacles to wind power development in the state, and not to examine the pros and cons or negative impacts of wind power.

Environmental - "The promise of wind power is false, but the damage is guaranteed. The Governor's plan will destroy 50,000 acres of forest land - the size of 39,000 football fields."

- The wind law established a goal of 2700 megawatts of installed capacity by 2020.
- 2700 MW requires one thousand, eight hundred GE 1.5 MW turbines spaced approximately 1/5 mile apart = 360 miles of ridge line cleared, blasted and filled for the turbine foundations and interconnecting two lane haul roads.
- Additionally, hundreds of miles of new access roads and transmission corridors fragmenting deep forest habitats and fragile ecosystems must be constructed to gain access to the top of the ridges and connect the turbines to the grid. As much as 50,000 acres of clear cutting will be required. Compare that to 3,000 acres for the Plum Creek development, recently appealed by NRCM. Ironically, NRCM fully supports industrial wind power on Maine's mountains, despite the massive destruction to ecosystems that will occur.

Maine's Economy - "Tourism is Maine's #1 industry. Wind power will kill tourism in Maine's mountains. How will people make a living when the tourists stop coming?"

Σ Tourism is Maine's #1 industry, as important to the mountain region as the coast. The installation of more than one thousand gigantic turbines on Maine's ridges will change the experience for tourists as well as residents. Access for hiking, snowmobiling, and hunting will be restricted. Every horizon will contain near or distant views of turbines. Night skies will be punctuated with the red strobe lights on the turbines, visible for 40 miles.

Σ Maine's "Quality of Place" has received a great deal of attention recently. The Governor's Task Force defined Quality of Place as "our majestic mountains, unbroken forests, open fields, wild rivers, pristine lakes, widely-celebrated coast, picturesque downtowns, lively arts and culture, authentic historic buildings, and exceptional recreational opportunities. It is our principal advantage in today's global economic competition. Quality of place will help us keep and attract skilled workers and entrepreneurs to fill Maine's declining workforce population." Maine's "Quality of Place Investment Strategy", adopted by executive order in July 2008 contains the following goals:

A: Protect, strengthen, and develop Maine's Quality of Place assets, both natural and built;

B: Make the State's several regions more economically competitive and prosperous through increased invest-

ment, job opportunities, regional incomes, and public revenues; and

C: Create new jobs and valued products and services in Maine that will succeed in national and global markets for local, regional, and state benefit.

Σ These goals are in direct opposition to the goal of 2700 MW of industrial wind power in Maine's mountains. The preservation of Maine's Sense of Place and industrial wind power are irreconcilable goals.

Σ Expensive wind power will increase the cost of electricity for Maine's ratepayers and eliminate existing jobs in the renewable energy sector. The grid is required to take wind generation when it is available, which will force other renewable generators such as biomass plants to reduce output. Less production equals fewer jobs.

Human Health Concerns - "Turbines make people sick. The same symptoms are reported all over the world. Why does the wind industry deny this? Remember tobacco and asbestos."

- Turbines cause sleep disturbance at long distances for some people due to low frequency noise which travels further in the atmosphere than higher frequencies.
- People living within range of turbine noise around the world report symptoms similar to the complaints of folks living at Mars Hill and Freedom - sleep disturbance, headaches, aggravation, anxiety - caused by the intense sound of the enormous blades ripping through the atmosphere.
- The wind industry is in denial about these well documented and very serious health concerns, and Maine

project to serve remote wind projects = \$6.9 billion installed cost.

- Its costs more than \$100 per MW to generate electricity with a mountain top turbine, while electricity is selling in the ISO NE grid for about \$35 per MW today. The difference is made up in subsidies and tax benefits.

- Percentage of industrial wind power installed cost provided by taxpayer subsidies = approximately 2/3 of cost = \$4.3 billion dollars

- Transmission lines in densely populated southern Maine as well as near remote wind farms must be built to accommodate 100% of the capacity of the wind project, even though the wind project will only produce erratically at about 25% of rated capacity. Ratepayers will pay for this gross over build of transmission capacity with higher rates due to the under-utilization of the infrastructure.

A Much More Cost Effective Use of Our Tax Dollars - "Weatherization, insulation and increased efficiency create long term jobs for Mainers. Wind power does not".

Σ If \$4.3 billion was instead directed to conservation and efficiency programs it would equal more than \$10,000 per residential structure in Maine, which could be used for incentives to encourage massive reductions in heating oil usage. By contrast, Maine's current year budget for C and E programs is about \$15 per household. The government and the wind industry pay lip service to C and E while pouring 90% of subsidies into industrial wind power.

Σ These subsidies do not create many jobs in this country. Wind turbines are made in China and other countries,



Citizens' Task Force on Wind Power News Conference - November 9, 2009

photo © Jym St. Pierre

CDC has exhibited a startling lack of medical ethics by ignoring the complaints of citizens whose lives have been negatively impacted by the very first turbine installations in the state.

Wind Generated Electricity Costs 3 Times More Than the Grid Currently Pays for Electricity - "Wind power will make your electricity more expensive."

- 2700 MW @ 25% average capacity factor = 675 MW electricity delivered on average to the ISO NE grid.
- 675 MW divided by average ISO NE grid demand of 16,000 MW = only 4.5% of grid demand will be met by 2700 MW of wind turbines. Very little electricity in the grid is produced with oil so claims of reduced foreign oil use due to wind power are false.
- 2700 MW x \$2 million per MW construction cost = \$5.4 billion plus \$1.5 billion new CMP transmission

not in the US.

Σ Without these massive subsidies, wind projects cannot pay their property taxes, or their TIF payments, or assure us the money to remove the turbines will be there when they stop working.

Summary

Towns considering wind projects need to understand industrial wind power's reliance on massive government subsidies (our tax dollars) for its existence. When political support for industrial wind power dries up and the subsidies are removed all of the "tangible benefits" towns believed they would get indefinitely will disappear. The limited liability shell corporations that own the wind turbines will abandon these projects, having received handsome upfront returns on their investments.

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Voices on the Wind

by Karen L. Pease

Dear Senators and Representatives of the Maine Legislature;

I am a citizen with serious concerns regarding a crisis here in Maine. Although the specific issue I will speak of pertains to our state, the root problem is one that is affecting the country at large. It's time for us to take a leadership role and do what is right.

Americans are fast losing their voice and their right to shape their own destinies and the future of our country. You, the members of our State Legislature, passed an 'emergency' bill in 2008 which is now known as LD#2283, the 'expedited permitting law'. This law was shaped, in part, by industrial wind turbine developers.

Rob Gardiner, partner to Maine's former governor Angus King, gave specific instructions and advice to Governor Baldacci's Task Force on Wind Power as to how this law could best circumvent the objections of the people of Maine, as well as eliminating many of the discretionary powers of LURC, the board charged with protecting Maine's natural resources in our unorganized territories. Once it was designed (using those recommendations of developers who stood to make millions of dollars on industrial wind), the Task Force then urged passage of the measure. This bill passed into law in 15 days—a remarkably short time-frame. Not a single member of our Legislature voted against this 'emergency' measure, and there was no debate. There is some question as to whether some of you even read the bill.

What LD#2283 does, in essence, is fast-track the installation of massive industrial wind turbine developments along the unspoiled mountain ridges of Maine. The people of Maine, under this law, do not have the 'right' to a public hearing, wherein we can voice our objections to these encroachments. That the bill was introduced as an 'emergency' measure removed the standard 90-day period between its passage and its implementation, during which the people of this state would have had time to learn of the measure before it was put into practice.

There are many injustices involved in this issue. The 'emergency' designation is just the first. There was no genuine emergency. There were no blizzards or earthquakes or floods to prompt this measure. There was no war or disaster looming on the horizon. I believe that we, the people of Maine, were the 'emergency'. I believe that the politicians and the developers with power, money and influence knew that if the voting public of this state learned of the huge impacts these industrial energy plants would have on our landscape, wildlife, economy and quality of life here in Maine, they might very well stand up and object. Directly prior to

the passage of LD#2283 some average Mainers openly opposed other such installations, and they caused many problems for the developers. They delayed approval of the permit. They insisted on additional environmental impact studies. They even caused the Redington permit application to be denied. The average Mainers were the 'emergency', and so we were removed from the equation. At the very least, we are ordered to jump through hoops to earn the possibility of being heard. Even after such acrobatics, there is no guarantee that a public hearing will be allowed. In all honesty, I am not convinced that, if granted, a hearing will even carry any weight. I believe a public hearing would be nothing more than a tool to placate those in opposition, and give them a false feeling of hope. I believe that the administrations in Washington and Augusta have charged those under their authority to expedite the permitting process. Period. End of story.



photo by Paul Donahue

In order for developers to take advantage of government subsidy monies to fund their projects, the roadblocks and delays must be eliminated quickly, before those offers of subsidies expire. In my opinion, that was the purpose of LD#2283; to remove those human roadblocks.

The passage of that law was an outrageous act. What is worse is that the general public has not received honest information regarding these wind developments. We have been fed the line that 'wind is green, and green is good'. I am as concerned as the next woman about global warming, our country's dependence on foreign oil, and the need for sustainable and renewable energy sources. But I want to see responsible, careful, and long term consideration given to the resources and citizens of our rural communities.

In order to meet the governor's goals for sustainable energy, over three hundred miles of our mountaintops will have to be sacrificed for massive forty-story wind turbines. The summits will be dynamited to create a level area for the pouring of a massive concrete pad for each of the hundreds of towers. Miles and miles of roads will be cut through pristine forests and along the slopes of hills to allow access to the turbines and their infrastruc-

ture. Transmission corridors will also be cut, and the vegetation controlled with herbicides. Hydro-fractures, erosion, interruption of the foraging and hunting trails of our native species, bird and bat deaths from collision with the blades... these are just a few of the concerns that pertain to the ecology and environment of this state. Thousands of acres of trees and plants will be sacrificed—vegetation that is invaluable when battling the effects of greenhouse gasses! The emissions created in manufacturing these machines add another complication to the equation of how 'green' wind energy is. These turbines are not manufactured in the United States, either. That government subsidy money—those tax dollars that come from working Americans—will be shipped overseas to places like China and Denmark to support the economies of those countries. Not America's. As far as the question of job creation here at home is concerned, some local workers may be employed on a temporary basis during the construction phases, but the developers themselves have told us that full time maintenance jobs are limited to a few for each project.

Over the past three decades Maine has lost the majority of its industry. Our paper mills, our saw mills, our shirt and shoe factories, our toothpick and novelty manufacturers are all gone. Those 'in the know' decided it was cheaper to export the jobs and import the goods. What Maine has left are our natural resources. Our unspoiled and beautiful wilderness. Our lush trees and our rugged mountains, our crystal clear lakes and glacial ponds. Tourism is what is saving Maine. People escape the crowds and the urban sprawl and industrial complexes to come to Maine, where they can experience life the way it should be. If we despoil this state by covering every

mountaintop outside the Appalachian Trail corridor and beyond the boundaries of our national and state parks with 40-story wind turbines that thrum and pulse and create disorienting shadow flicker, and which are proven to cause severe sleep disturbances and other serious health problems, then I despair of ever seeing a tourist or his dollars, again. We may have a brief influx of folks who come to Maine to gawk at our new horizons, but that will be short-lived. Once you've seen one ruined skyline; once you've heard the jet whine and low frequency thrum caused by blades which sweep an area the size of a 747; once you've witnessed a landscape forever altered and scarred, the novelty passes. And what do we Mainers have left?

What we have is an unreliable energy source; wind-mills that are at the mercy of intermittent winds and the ravages of nature, and massive and expensive pieces of machinery whose power production is so unreliable that electrical plants powered by coal and natural gas must remain online as back-up. The real kicker is that Maine already produces more power than its citizens consume. We are an exporter of electricity. Every bit of that unnecessary wind-generated power will be shipped to southern New England, where the need is greater. If



photo by Nancy O'Toole

Aerial view of the Kibby Wind Power Project.

we wish to buy back that 'green' power, we will have to pay the higher rates paid by consumers living in those other states. Maine does not need this power, but it is our natural resources which will be sacrificed to meet the needs of more gluttonous markets. It will be our mountaintops which will be blasted away, our wildlife which will be threatened, our very culture and our ability to provide for ourselves which will be at risk. There is no wisdom in this proposal.

Other countries like Spain and Denmark which have heavily invested in wind energy for decades have learned some valuable lessons from their mistakes. I am baffled as to why our elected leaders are not willing to learn from them.

In our complacency we Americans have allowed our government to decide what is best for us. We have allowed it to assume powers which it does not rightly have. The government (and that includes you) works for us; not the other way around. I am tired of being told what will happen in my home and in my homeland, instead of being asked for permission before new, irreversible and encompassing decisions are made. I still have rights as an American citizen and I am tired of watching my freedoms disappear. I'm angry that decisions are made without my input. I still have a voice, and I still

have a vote, and I intend to use them.

I ask that you take time to research this issue if you have not done so, and bring the facts to the citizens of Maine and to the rest of the country. I ask that you put politics and careers aside and stand up. Show us you actually represent the best interests of this state and her people. Do what's right. This is a multi-faceted issue, and as Maine is not alone in its mandates it is a subject which will soon be affecting much of the nation.

Using the internet and standard media, I have researched wind turbine developments and all the myriad issues involved in their placement, feasibility, and environmental and health impacts. I have read documents provided through the Freedom of Information Act. I have had in-depth discussions with a sound engineer, an environmental engineer, my senator and representative, and citizens of Maine already living

in the shadow of Big Wind. I have referenced Dr. Nina Pierpont's study of Wind Turbine Syndrome. I've also attended meetings held by wind developers in my neighboring town. I have taken the time to learn the realities of 'Big Wind'. As members of the Maine Legislature who represent the citizens of this state, I believe it is your obligation to do the same.

The people of Maine must have their power restored. The state and

federal governments must return to their proper place. This is not the America of my youth. We, the people, have to stop allowing a government that is out of control to make local decisions for us. The state and federal government exist to support home rule, not to eliminate it. They exist at our discretion, and must operate by carrying out the will of the majority of its citizens. Those with money and influence must not have more power than ordinary citizens, because ordinary citizens are the backbone of this country.

There is little chance we can turn the tide and stop the destruction of our mountains as long as LD#2283 holds sway, and while those with money and influence are able to push their agendas forward, but I refuse to relinquish my right to have a say in what happens in my corner of this great nation. I have a voice, and I plan to use it. A moratorium must be put in place before further permits are granted under LD#2283. Thereafter, this law must be repealed.

I look forward to your response, and will be happy to discuss this issue with you.
Sincerely,

Karen L. Pease
25 January 2010



Industrial Wind Power in Maine's Mountains Is Bad Policy

continued from page 29

Lack of funds to remove the turbines and restore the sites, due to the DEP's failure to require set aside of these funds will leave towns with no ability to remove the turbines, or deal with the long term environmental consequences of high mountain clearing and road building.

Who are we?

Citizens' Task Force on Wind Power is a newly formed coalition of citizens from around the state drawn together in the common purpose of advocating for responsible, science based, economically and environmentally sound approaches to Maine's energy policy.

Dr. Monique Aneil co-chair 207 364 8422
Steve Thurston co-chair 207 545 2151 or 802 384 5267
Brad Blake – Public Relations 207 773 4252
<http://www.windtaskforce.org>



photo by Nancy O'Toole

Cement pad at the Kibby Wind Power Project.

THE LAST WORD



photo by Paul Donahue

CO²ws
...make the world a
warmer place

“Coal is the single greatest threat to civilization and all life on our planet..... If we burn all fossil fuels, we will destroy the planet we know. Carbon dioxide would increase to 500 ppm or more. We would set the planet on a course to the ice-free state, with sea level 75 meters higher.” - U.S. climate scientist Dr. James Hansen, director of the NASA Goddard Institute for Space Studies

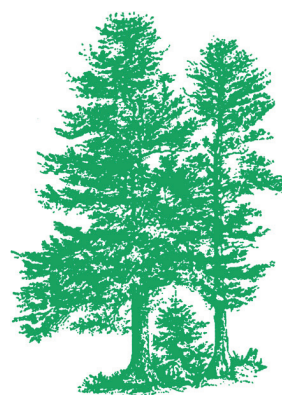
“I don’t think the American public has gripped in its gut what could happen. We’re looking at a scenario where there’s no more agriculture in California. ...I don’t actually see how they can keep their cities going.” - remarks on effects of global warming by U.S. Secretary of Energy Steven Chu in an interview with the Los Angeles Times in February 2009

“The role of individuals is to force change by being politically active, recognizing that personal action, unless it’s at a political scale, is no longer relevant on climate because we have too big a problem and too short a time.” - Auden Schendler, author of *Getting Green Done: Hard Truths from the Front Lines of the Sustainability Movement*

“The danger posed by war to all of humanity - and to our planet - is at least matched by the climate crisis and global warming. I believe that the world has reached a critical stage in its efforts to exercise responsible environmental stewardship.” - United Nations Secretary General Ban Ki-moon

“There are many who still do not believe that global warming is a problem at all. And it’s no wonder: because they are the targets of a massive and well-organized campaign of disinformation lavishly funded by polluters who are determined to prevent any action to reduce the greenhouse gas emissions that cause global warming out of a fear that their profits might be affected if they had to stop dumping so much pollution into the atmosphere.” - Al Gore

“People tend to focus on the here and now. The problem is that, once global warming is something that most people can feel in the course of their daily lives, it will be too late to prevent much larger, potentially catastrophic changes.” - climate journalist Elizabeth Kolbert



Join the forest ecology network

The purpose of the Forest Ecology Network is to protect the native forest environment of Maine through public awareness, grassroots citizen activism, and education. Your contributions and involvement are essential to the success of our efforts. Membership benefits include a subscription to our newspaper, The Maine Woods and educational field trips and workshops. Contributions to FEN (a 501 [c] [3] non-profit organization) are tax-deductible.

Membership Categories: ☐ \$25 Seedling ☐ \$35 Sapling ☐ \$50 Tree
☐ \$100 Grove ☐ \$500 Forest ☐ Other \$_____ ☐ Please sign me up for
the FEN Action/Email Alert List. I can’t afford a donation but would like to be involved.

Name: _____

Address: _____

City, State, Zipcode: _____

Phone: _____ Fax: _____

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Make checks payable to the Forest Ecology Network or FEN. Please enclose payment and a note describing your interest in FEN. Let us know if you’d like to volunteer. Forest Ecology Network, 336 Back Road, Lexington Township, ME 04961. Phone: 207-628-6404. Email: fen@207me.com Website: <http://www.forestecologynetwork.org>