



# Drumbeat: December 1, 2010

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### Tom Whipple: Peak Coal is Moving Closer Too

Those following the issue have known for years that peak oil was very close, but coal was always thought to be another issue entirely. Official estimates, made many years ago however, talked about 300 years' worth of coal being left which to most of us is synonymous with "eons." Neither we, nor our children, nor grandchildren, nor our great-grandchildren can expect to be around that long.

However, in recent decades, there were a number of developments that are now raising questions about the centuries-of-coal-left estimates.

#### Crude Oil Rises on Gain in Chinese Output, Reduced European Debt Concern

Crude rose to the highest level in almost three weeks on greater-than-forecast growth in U.S. private employment and Chinese manufacturing and on signals the European Central Bank will act to prevent the spread of the region's debt crisis.

Prices surged 3.1 percent as companies in the U.S. boosted payrolls the most since November 2007, according to figures from ADP Employer Services. Chinese manufacturing grew at the fastest rate in seven months. Futures reached the day's high after Goldman Sachs & Co. said oil will average \$110 a barrel in 2012, up from a forecast \$100 a barrel next year.

#### U.S. gasoline rallies on tight East Coast supplies

(Reuters) - U.S. gasoline futures surged nearly 5 percent on Wednesday on tight supplies in the U.S. East Coast and news of a snag at the 300,000 barrels-per-day refinery of Irving Oil Ltd in Saint John, New Brunswick, which delivers gasoline to the New York Harbor.

Japan average refining rate may rise to 90% in Dec on winter demand

Tokyo (Platts) - Japan's average refining capacity utilization rate is seen rising to 90% in December from the current average of around 85% as the country enters its peak winter oil demand season, coupled with steady middle distillates export margins, a

Platts survey of industry sources showed Wednesday.

Japan's average refining rate would also be higher from the country's average of around 82% in December 2009 due in part to steady oil products demand in Japan and abroad, the sources said.

### Paolo Bacigalupi's SHIP BREAKER: YA adventure story in a post-peak-oil world

*Ship Breaker* is set in a degraded, post-peak-oil world where the drowned coastlines are littered with the smashed wrecks of old sea-freighters, all acrawl with desperately poor "ship breakers" -- scavengers who get paid a starvation wage to extract the steel, copper, and oil reserves from the hulks of the old world. Nailer is a young boy, 14 or 15, on a "light duty" crew, and he's skinny enough to eel his way into the ducts of the ships and tear loose the copper wire; if he gets enough out to make quota, his crew eats. If not, they risk being fired, and turned loose to sell their bodies (or parts of them -- kidneys and eggs and eyes), beg, or steal.

#### Water, Wheat and Russia

In a time when there is much discussion of peak oil and the idea that other commodities are less abundant or more costly to access, one issue that might not get enough attention among investors is the shortage of water. Some political scientists, for example, have suggested that the next war in the Middle East may be over water not oil.

Grain is very water intensive. Roughly speaking, it takes 1000 tons (100 cubic meters) to grow a ton of grain. Find a country that is importing grain, and you'll find a country that has a water deficit.

#### Vatican keen on solar-powered electric popemobile

VATICAN CITY – Anyone have a fast, solar-powered electric popemobile for his holiness?

The Vatican says Pope Benedict XVI would gladly use one as another sign of his efforts to promote sustainable energy and take care of the planet, but one has yet to be offered.

## White House Official: No New Drilling off Florida

(AP) The Obama administration won't allow any new oil drilling in the eastern Gulf of Mexico for at least the next seven years because of the BP oil spill, a senior administration official told The Associated Press on Wednesday.

The area that includes the waters off Florida's coast had been considered for drilling as part of the management plan for the Outer Continental Shelf. Just a month before the

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April spill, the Obama administration had announced plans to allow drilling in the eastern Gulf.

"In light of the BP spill, we've learned a lot and understand the need to elevate the safety and environmental standards," said the official, who spoke on condition of anonymity because the decision hadn't been announced yet. "We took a second look at the announced plan and modified it to remove the Eastern Gulf of Mexico from leasing consideration."

### <u>Corn Crops for Biofuels Production Have Unintended Consequences on Water Quality and</u> <u>Quantity in Northwest Mississippi</u>

Growing corn for biofuels production is having unintended effects on water quality and quantity in northwestern Mississippi.

More water is required to produce corn than to produce cotton in the Mississippi Delta requiring increased withdrawals of groundwater from the Mississippi River Valley alluvial (MRVA) aquifer for irrigation. This is contributing to already declining water levels in the aquifer. In addition, increased use of nitrogen fertilizer for corn in comparison to cotton could contribute to low dissolved oxygen conditions in the Gulf of Mexico.

These are some of the key findings from a study conducted by the U.S. Geological Survey (USGS) to assess water quality and quantity in the Mississippi Delta, in relationship to biofuels production.

#### Distance costs money

Among the many compelling speakers at the Association for the Study of Peak Oil (ASPO-USA) conference in Washington, DC this October, only a few gave keynote addresses to the attendees. Jeff Rubin, former chief economist at CIBC World Markets and author of Why Your World Is About to Get a Whole Lot Smaller: Oil and the End of Globalization, was among that elite. His talk, "Oil and the End of Globalization" hinged on a few key points. One of the most compelling, a refrain he returned to again and again, was that "distance costs money."

## Jeff Rubin: Irish, Greek defaults will reshape Europe

German and British taxpayers are beginning to realize the downside of our economic interdependence in the global economy. When British banks have too much exposure to Irish banks, all of a sudden Dublin's property crash becomes the UK's problem. Similarly, when German taxpayers have to bail out bankrupt governments in Athens and Dublin, Greece and Ireland's problems become Germany's. How long will that model of international economic interdependence last?

Probably not too much longer, particularly if Portugal and Spain have to join the bailout queue, too.

China's private refineries blame diesel shortage on oil giants monopoly

BEIJING (Xinhua) -- China's privately owned oil refineries have accused oil giants in the country of holding back supplies and fueling the diesel shortage that has plagued the country since late September.

The real reason behind the diesel shortage, however, was the monopoly of the oil market by a few state-owned oil giants that led to insufficient supplies when demand rose, said Zhang Yue, chairman of the petroleum unit with the All-China Federation of Industry and Commerce (ACFIC).

#### How BP's oil spill costs could double

That optimistic view may turn out to be true. BP executives have said this is their "best estimate" of costs, adding they could turn out lower. But history shows there is ample scope for nasty surprises from BP. The London-based oil giant -- last year it was the biggest non-state controlled oil and gas producer in the world -- has so far consistently underestimated the scope and potential cost of the Gulf spill. It also has a track record of low-balling disasters, including the fatal Texas City refinery blast in 2005. Not only has the company underestimated the cost of repairing equipment and ecosystems in the past, it has also made overly optimistic assumptions about legal challenges.

#### Kazakh PM says oil players cause dispute

Kazakhstan will not seek to change the terms of production sharing agreements with foreign oil majors unless investors fail to meet their targets, Prime Minister Karim Masimov said in an interview today.

#### PG&E incentive in San Francisco, San Mateo County

Pacific Gas and Electric Co. will give \$25 debit cards to customers in San Francisco and San Mateo counties if they cut their use of natural gas in December, as the utility tries to avoid increasing pressure on the pipeline that exploded in San Bruno.

#### Myth & reality of Rental Power Plants

The on-going energy crisis has demonstrated the inability of the Ministry of Water and Power to recognize that Pakistan needs energy security for its sustained development. Various state organs are afflicted with a strange lethargy where even basic tasks are becoming increasingly difficult to perform. For example, behold the failure of key Ministries to bring out demand and supply options of electricity and affordability of each option by the industrial, agricultural, commercial and domestic consumers. This failure can be simply demonstrated by the pathetic submission of the Government to the IMF requirement that power tariff be raised by 18-20 per cent by June, 2011. Little attention has been paid to the development and exploitation of the country's primary energy sources leading to gas load shedding and the disruption of all industrial activities in major towns of the country.

### E.ON sells Gazprom stake for 3.4 bln eur

FRANKFURT (Reuters) - Germany's E.ON, the world's largest utility, agreed to sell its 3.5 percent stake in Russian gas monopoly Gazprom for 3.4 billion euros (\$4.5 billion) in a first step to raise money to expand outside Europe.

### Energy price hikes 'put strain on millions'

Ann Robinson, uSwitch.com's director of consumer policy, said the price hike will leave the average SSE customer paying more than  $\pounds_{1,200}$  a year for dual fuel, which will increase the financial strain on many households.

Although energy regulator Ofgem has announced a review of the market to ensure consumers are getting value for money, she argued that, with temperatures plummeting, Britons cannot afford to "just sit back and wait".

## The EPA's And Enron's End-Runs Of Congress

Immediately after chances for carbon cap-and-tax legislation were swept away by a Nov. 2 Republican House cleaning, the Obama administration proceeded with its Plan B. At a time when Congress was recessed for the Thanksgiving holiday and the president was ceremoniously pardoning two white turkeys, the Environmental Protection Agency served up American industries a fowl of far darker feathering--a gobbler of regulatory control. That turkey, called the "PSD and Title V Permitting Guidance for Greenhouse Gasses," came stuffed with constitutionally dubious prerogatives that extend the EPA's influence over a vast swathe of industrial sectors.

#### Energy profile: Where have we been, and where are we headed?

It's hard to imagine a time when energy design and building operation in the United States was conducted on a "business as usual" basis. With relatively low oil, gas, and electricity prices and plentiful energy supplies prior to 1970, the design and construction of buildings had little need to take energy efficiency into consideration. Today, however, U.S. buildings are responsible for 39% of CO<sub>2</sub> emissions, 40% of energy consumption, 13% of water consumption, and 15% of GDP per year. To understand our nation's high consumption of energy, we must first examine what brought on a surge in energy demand, then scrutinize where we stand today, and finally look toward the future for energy-efficient solutions.

### The paradox of Washington state's clean tech industry

Rather than praising our state's ability to create an ecosystem that both attracts and fosters clean technology companies, investors and entrepreneurs recognize that the Evergreen State has largely failed—thus far—to become a national leader in the development and deployment of clean technology.

Indeed, our state's path towards a vibrant clean tech sector has been a bumpy one. Washington has not captured nearly the same share of clean technology investment as the state has for the life sciences or other industries.

## <u>A high-risk play on the new uranium boom</u>

China currently has a capacity of 11 gigawatts (GW) of nuclear power. In 2008, it had 9GW, and was aiming for 40GW by 2020. But that figure is about to be revised up to 70GW, according to Reuters. And a recent study by McKinsey puts it closer to 120GW.

To put that into perspective, that would mean China consuming half of current global uranium production (circa 50,000 tonnes). Where's it all going to come from? The vice-chairman of one of China's other nuclear companies says: "China is relatively rich in uranium reserves and can completely satisfy the needs of Chinese nuclear energy development for 2020."

#### <u>Oil execs: Drilling ban will hurt for years</u>

NEW YORK (CNNMoney.com) -- Drilling activity in the Gulf of Mexico will remain light in the years ahead, despite the fact that the ban on drilling there has been lifted, according to a survey of oil executives released Tuesday.

Nearly 70% of industry executives expect drilling activity in the Gulf to remain below 2009 levels until at least 2012, according to a survey by BDO, a Chicago-based accounting and consulting firm. Some say it will never return to 2009 levels.

"One message came through loud and clear in this year's survey -- that legislative changes represent the biggest threat to growth in the oil and gas industry," said Charles Dewhurst, who heads BDO's natural resources group.

#### Crude Oil Gains as Chinese Economic Growth Counters Europe Debt Concern

Oil rose, trimming the biggest decline in almost two weeks, on signs of accelerating growth in China and shrinking fuel inventories in the U.S.

Futures gained as much as 1.7 percent after a report showed Chinese manufacturing expanded at the fastest rate in seven months in November. U.S. government data today may show oil stockpiles declined 1.15 million barrels last week. Crude advanced as the

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dollar declined for the first time in four days, increasing the appeal of commodities to investors.

#### Indonesia regulator warns maritime law may cut oil, gas output

(Reuters) - A new Indonesian maritime law could cut the country's oil production by 260,000 barrels per day next year and natural gas production by 22 percent, said Priyono, the head of oil and gas watchdog BP Migas on Wednesday.

A significant drop in oil production could tighten the Asia-Pacific crude market as well as reduce revenue for the state budget next year. The country's oil sector has already been struggling to lift production amid a lack of investment and ageing oil fields.

#### Power Shortage Across Poland Drives Prices Above Germany's

Poland's electricity is becoming more expensive than Germany's as the country fails to build enough plants to meet demand, threatening to make eastern Europe's biggest economy dependent on power imports.

## French Grid Forecasts Record Power Demand Amid Cold Weather

(Bloomberg) -- Electricite de France SA's power grid expects record demand today and tomorrow amid a cold snap that has increased the country's reliance on imports.

## South Korea's Oil Imports Jump on Winter Demand, Rising Exports of Fuels

South Korea, Asia's fourth-largest crude buyer, increased oil imports for a seventh month to meet winter demand and as fuel exports gained.

Imports rose to 76.8 million barrels last month from 59.1 million barrels a year earlier, the Ministry of Knowledge Economy said in an e-mailed statement today.

## U.S. Navy to ship jet fuel from Japan to Korea

SINGAPORE (Reuters) – The U.S. Navy is looking to transport jet fuel to South Korea from Japan, describing the shipment as routine even though shipping and energy brokers said such trade normally moves in the other direction.

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Interior may force drillers to disclose chemicals

WASHINGTON – The Interior Department may require natural gas drillers to disclose the chemicals being used in a controversial drilling technique called hydraulic fracturing.

Interior Secretary Ken Salazar says officials are weighing a policy that includes disclosure requirements for fluids used in the technique.

<u>Energy-Water Nexus: A Better and Coordinated Understanding of Water Resources Could Help</u> <u>Mitigate the Impacts of Potential Oil Shale Development</u>

Oil shale deposits in Colorado, Utah, and Wyoming are estimated to contain up to 3 trillion barrels of oil--or an amount equal to the world's proven oil reserves. About 72 percent of this oil shale is located beneath federal lands, making the federal government a key player in its potential development. Extracting this oil is expected to require substantial amounts of water and could impact groundwater and surface water. GAO was asked to report on (1) what is known about the potential impacts of oil shale development on surface water and groundwater, (2) what is known about the amount of water that may be needed for commercial oil shale development, (3) the extent to which water will likely be available for commercial oil shale development and its source, and (4) federal research efforts to address impacts to water resources from commercial oil shale development. GAO examined environmental impacts and water needs studies and talked to Department of Energy (DOE), Department of the Interior (Interior), and industry officials.

### Paterson Weighs Bill to Halt the Issuing of Gas Extraction Permits

Gov. David A. Paterson is considering whether to sign legislation that would impose a temporary moratorium on the issuing of permits for a controversial type of natural gas exploration that has raised broad safety concerns in New York State.

## Pipeline for Qatari gas from Abu Dhabi to Fujairah completed

A snaking 244km pipeline to transport Qatari gas from Abu Dhabi to Fujairah was completed yesterday, drawing to a successful close one of the most taxing feats of engineering ever attempted in the UAE.

## China Coal-Bed Gas Costlier Than U.S. to Drill, Standard Chartered Says

Extracting unconventional gas from coal seams in China is likely to be more expensive than in the U.S. because alternative drilling techniques are required, according to Standard Chartered Plc.

Companies must spend more to extract gas from China's coal seams because they need to drill horizontal wells, costing about \$2.3 million each, in a larger area and through dense deposits, Han Pin Hsi, a Singapore-based analyst, said in a report dated yesterday. U.S. explorers use vertical wells, costing about one- third of horizontal ones, with the fuel concentrated in deeper, smaller areas at a higher permeability.

#### Gazprom eyes Nigerian gas producing assets

Gazprom EP International B.V., Russia's gas giant Gazprom's overseas projects division, is seeking to acquire gas producing assets in Nigeria, Gazprom EP Director General Boris Ivanov said on Wednesday.

Nigeria's proven gas reserves amount to nearly 5 trillion cubic meters compared with Africa's total reserves of 14.6 trillion cu m. In the past 50 years, however, geological prospecting has focused on oil exploration.

#### Nigeria makes 65 arrests

Police in Nigeria's oil-producing Niger Delta have charged 65 people with kidnapping, robbery and oil theft, some of them believed to have been behind the abduction of 19 oil and construction workers.

#### BP oil spill swamps Yahoo search engine in 2010

SAN FRANCISCO — It took a man-made disaster to topple a celebrity from the top spot on Yahoo Inc.'s annual list of most popular search requests.

BP PLC's massive oil spill in the Gulf Coast drew the most interest among the tens of millions of people that used Yahoo's search engine during 2010. The Internet company released its top 10 rankings Tuesday.

Michael Jackson was Yahoo's most requested subject in 2009, the year that the entertainer's death stunned the world. Britney Spears, another star-crossed singer, held the No. 1 position on Yahoo's search list from 2005 through 2008.

## Iran talks must focus on nuclear issue: Clinton

ASTANA (Reuters) – U.S. Secretary of State Hillary Clinton on Wednesday said the United States welcomed Iran's decision to join talks in Geneva, which she said should focus "first and foremost" on Tehran's nuclear program.

Former Soviet republic giving up nuclear materials

ASTANA, Kazakhstan – The former Soviet republic of Belarus announced Wednesday that it will give up its stockpile of material used to make nuclear weapons by 2012.

TEHRAN, Iran – For the second time in a month, heavy air pollution in Iran's smogfilled capital has forced authorities to close government offices and schools and declare a two-day public holiday because of the health dangers of being outdoors.

A government committee decided pollution levels in Tehran warranted the closure of all government offices, schools and industries on Wednesday and Thursday because of "polluted and unhealthy" conditions.

### Quarter of HK people 'want to move over bad air'

HONG KONG (AFP) – About 25 percent of Hong Kong's population wants to leave the city to escape its notoriously polluted air, which has been described as a health crisis, said a survey released Monday.

The report by public policy think tank Civic Exchange found that one in four people living in the teeming financial hub are considering emigrating over fears that its bad air could affect their health.

### <u>Google Energy Guru Will Head Policy Center at Stanford</u>

Now Mr. Reicher is moving on to Stanford, where he will be the executive director of a new interdisciplinary center for energy policy and finance that will straddle the law school (where Mr. Reicher earned a degree) and the business school. The new center was created with a \$7 million donation from Thomas Steyer and his wife, Kat Taylor, both Stanford alumni. Mr. Steyer was co-chairman of the campaign to defeat Proposition 23, which would have rolled back California's clean energy mandate.

#### Tokyo Electric's Eurus Unit Plans 50% Expansion in Wind, Solar Capacity

Eurus Energy Holdings Corp., a unit of Tokyo Electric Power Co., may invest as much as 100 billion yen (\$1.2 billion) to expand wind and solar energy generation by more than half and meet rising demand for cleaner power.

#### Masdar City clips another \$2.5bn from price tag

Masdar, the Abu Dhabi Government's clean energy company, has cut another US\$2.5 billion (Dh9.18bn) from the cost of its carbon-neutral city project, reducing the price tag to \$16bn.

The savings result from a recent review that abandoned a costly pod transit system, removed a raised podium design for the buildings and scrapped a plan to install solar panels on all roofs.

# Hedge Funds Short Green Power; Goldman Cuts American Superconductor Stake

Hedge funds increased short selling in U.S. renewable energy stocks to the highest level in a year, boosting bets against First Solar Inc. and Tesla Motors Inc. as government support for low-polluting technologies faltered.

# Uranium Miner Battles Floods, Skepticism as Warhead Stockpiles Dwindle

Cameco Corp. plans to begin output at the world's largest untapped uranium deposit in 2013, just in time to make up for a shortfall in global supplies. The project's critics say it won't happen.

The Canadian company, the world's second-largest uranium producer, is developing the Cigar Lake mine in Saskatchewan beneath almost a half-kilometer (1,641 feet) of watersoaked sandstone. The mine, six years behind schedule because of floods, could meet 10 percent of current global needs.

# <u>Climate change takes wind out of energy sails</u>

VANCOUVER - Researchers at Simon Fraser University have tracked a slowing of wind speeds over land in the Pacific Northwest, which appears linked to climate change and has implications for the nascent wind energy field.

## Australia: Household panel subsidies to end earlier

THE rooftop solar industry has suffered another hit, with the Minister for Climate Change, Greg Combet, announcing subsidies for households that install panels will end sooner than planned.

# End Ethanol Subsidies, Senators Say

Subsidies and tariffs to promote domestic ethanol production are "fiscally irresponsible and environmentally unwise" and should be ended, a bipartisan group of United States senators declared in a letter to the chamber's leaders on Tuesday.

"Eliminating or reducing ethanol subsidies and trade barriers are important steps we can take to reduce the budget deficit, improve the environment, and lessen our reliance on imported oil," the senators wrote to the Democratic majority leader, Senator Harry Reid, and the Republican minority leader, Senator Mitch McConnell. When I dove into the blogosphere with Dot Earth in 2007 after a quarter century of conventional journalism, I was excited to find some "veterans" — if that word is remotely appropriate online — actively pursuing a vision of a humanized, but thriving, planet over at the Web site Worldchanging.com.

Without casting every challenge as a political battle or focusing on apocalyptic visions of a despoiled planet, Alex Steffen, first with Jamais Cascio and then a global community of contributors, built a conversation around designing a human future that could work for the long haul. We didn't agree on everything, but I loved — and have tried to emulate — their constructive approach.

## How do you sell an 'ecological civilization'?

There were lessons for Seattle greens in the PR strategies of Big Oil and automakers at Shanghai 2010. The climax of an expo selling sustainability was a global summit on urban development.

## The Mystery of the Red Bees of Red Hook

It seems natural, by now, for humans to prefer the unnatural, as if we ourselves had been genetically modified to choose artificially flavored strawberry candy over strawberries, or crunchy orange "cheese" puffs over a piece of actual cheese. But when bees make the same choice, it feels like a betrayal to our sense of how nature should work. Shouldn't they know better? Or, perhaps, not know enough to know better?

## China says 2010 pollution goal met

China has met its 2010 target to cut emissions of key pollutants and is on track to meet its energy efficiency goal, state media on Wednesday quoted the country's top climate change official as saying.

## East African leaders to hold food security, climate change summit in Tanzania

Heads of state of the five East African Community (EAC) will hold a summit this week on food security and climate change , according to a statement from the bloc's Secretariat.

Leaders of Burundi, Kenya, Rwanda, Tanzania and Uganda are meeting on Thursday and Friday at the headquarters of the EAC in Tanzania's northern town of Arusha.

## Global Climate Change Talks Begin in Cancún

WASHINGTON — Global talks on climate change opened in Cancún, Mexico, on Monday with the toughest issues unresolved and little expectation of a breakthrough on shaping an international treaty to curb emissions of the heat-trapping gases linked to global warming.

But some who attended the meetings, sponsored by the United Nations, expressed muted hope that small steps could be made on a decades-long journey to reduce the planetary threat of rising global temperatures.

## Fears US will walk out of 'last chance' climate talks

CANCUN: The US has adopted an all-or-nothing position at the Cancun climate change summit, fuelling speculation of a walk-out if developing countries do not meet its demands.

## U.A.E., Qatar Seek UN Credits to Shrink Biggest Carbon Dioxide Footprints

The United Arab Emirates and Qatar are seeking United Nations credits to develop alternative-energy projects and cut the world's most-intensive emissions.

Masdar, a renewable-energy company based in Abu Dhabi, plans to get tradable emission credits for solar and waste-heat projects by next year under the UN's Clean Development Mechanism, a company spokesman said in an e-mail last week. State-run Qatar Petroleum said it expects credits for reducing the flaring of a greenhouse gas linked to global warming.

## Japan Says 'No' to Kyoto Extension, Wants World Treaty

(Bloomberg) -- Japan said it won't help extend the Kyoto Protocol accord to curb greenhouse-gas emissions after it expires in 2012, saying instead that a new global agreement is necessary to combat climate change.

The Kyoto treaty is "outdated" because it only regulates 27 percent of global emissions, Kuni Shimada, special adviser to Japanese Environment Minister Ryu Matsumoto, said yesterday in an interview at United Nations climate talks in Cancun, Mexico.

Bangladesh pushes for climate cash as UN meets

DHAKA (AFP) – Bangladesh on Wednesday called for billions of dollars to be made available quickly for its fight against climate change, as United Nations' environment talks entered their third day in Mexico.

The low-lying country is vulnerable to the catastrophic impact of global warming with natural disasters killing nearly 200,000 people in the last 30 years, environment

minister Hasan Mahmud told reporters in Dhaka.

### EU, U.S., Japan Say \$9.9 Billion Spent on `Fast Start' Climate Change Aid

The European Union, Japan and the U.S. said they've channeled a total of \$9.9 billion in climate aid to developing countries this year, fulfilling pledges made a year ago at United Nations global warming talks in Copenhagen.

<u>Climate science chief sees `huge gaps' in research</u>

CANCUN, Mexico—From the methane-laden tundra of the far north to the depths of the oceans, world governments need to spend more on cutting-edge research to "get a handle" on how much and how quickly the world will warm in decades to come, says the head of the U.N. climate science network.

"There are huge gaps in the effort as far as scientific research is concerned," Rajendra Pachauri told The Associated Press, pointing to concerns that the Arctic's thawing permafrost is releasing powerful global warming gases, and the oceans might eventually turn from absorbing carbon dioxide to spewing it into the atmosphere.

#### Weird weather leaves Amazon forest thirsty

CAAPIRANGA, Brazil — The river loops low past its bleached-white banks, where caimans bask in the fierce morning sun and stranded houseboats tilt precariously. Nearby sits a beached barge with its load of eight trucks and a crane. Its owners were caught out long ago by the speed of the river's decline.

This is what it looks like when the world's greatest rainforest is thirsty. If climate scientists are right, parched Amazon scenes like this will become more common in the coming decades, possibly threatening the survival of the forest and accelerating global warming.

The environmental and economic consequences could be huge - for Brazil, for South America, for the planet.

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