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Green revolution: still possible amid deep recession?

Economic retreat could hamper green investment – but it could also spur a drive to move economies away from fossil-fuel dependencies.

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In 2008, oil prices spiked then collapsed, climate-change talks stuttered, and nuclear power reemerged. Europe banned incandescent light bulbs, Britain made cutting emissions legally binding, and US President-elect Barack Obama appointed the greenest US cabinet ever. But what does this augur for 2009? While nature and the economy can be wildly unpredictable, experts believe a warmer year is coming. At the same time, carbon-dioxide emissions are likely to drop as businesses slow. Some experts hope "green collar" jobs will help reverse the recession, but fossil fuels will probably continue to power much of the world for years. When and if the economy picks up steam, demand for oil will rise – as will prices.

WILL THE RECESSION DEFEAT EFFORTS TO COMBAT CLIMATE CHANGE?

Leaders like Barack Obama are promising a "green new deal" through formidable investment in the green economy. Environmentalists say that green technology is far more labor intensive than traditional energy sources such as oil and nuclear. There will also be plenty of jobs in the energy efficiency segment, according to Lester Brown, founder of the Washington-based Earth Policy Institute, who sees benefits to both economy and environment from retrofitting buildings, for example.

"If you compare wind and solar technologies versus coal," he adds, "it's much more labor intensive by a factor of 2 or 3. So if you're interested in creating jobs, you have to look at efficiency and renewables."

Andrew Simms, policy director at the London-based New Economics Foundation, says substantial investment in an "environmental transformation program" could create "countless green-collar jobs."

The slowdown will also help the emissions-cutting cause by reducing energy usage. A recent Deutsche Bank report predicts that EU emissions could fall 10 percent in 2009 from 2007 levels.

But recession is the last thing expensive new technologies need. Investment has tapered off and will continue to do so while credit is tight in 2009, and consumers may be deflected from their newfound interest in (costly) green living. "It will have some negative influence in terms of raising capital for new investments," warns Brown.

CHEAP OIL WON'T LAST. WILL WE PLAN AHEAD?

Demand for crude, which neared \$150 per barrel last year, fell in 2008 for the first time in 25 years, according to the International Energy Agency (IEA).

Few expect it to stay that way. Experts believe that current prices, just below \$50 a barrel, will persist only as long as the downturn. The IEA has for the first time hinted that the era of "peak oil" may be upon us – the highwater mark of production, after which output will start to taper off. As soon as economic growth resumes, it will open a costly gap between supply and demand – unless the world radically transforms the energy model.



"The minute you get recovery, you'll get a sharp rise in oil, which will stall the recovery," says Tom Burke, an environmental scientist and former British government adviser. "So you have to use the stimulus to get yourself off oil dependency and that will reduce the climate curve and you'll start to drive carbon the way you want to go.

"It's a one-time opportunity. The financial crisis couldn't have come at a better time because it's forcing us to act."

WHAT TECHNOLOGIES WILL MAKE THIS HAPPEN?

Concentrated solar-energy plants, electric cars, wave power, second-generation biofuels – the list of new technologies that could start to make a difference in 2009 is as long as it is exotic. Yet most promise incremental change. For a transformative shift, experts are eyeing more-familiar turf.

1. Mr. Brown is looking to wind power, particularly offshore. He reckons that the world could generate 40 percent of its electricity from wind by 2030. This would require 1.5 million turbines producing 2 megawatts each. Sound formidable? Yes, he says, but given that we already have 100,000 in operation and deployment is increasing exponentially, it may not be so far-fetched.

"The state of Texas," Brown notes, "has become our leading generator of electricity from wind, with 6,000 megawatts installed and several thousand more under construction and in the planning stage. When these are completed, they will supply more electricity than the 24 million people in Texas can consume." But, he adds, because of the relative cost of wind power, tax incentives should be rolled over next year through 2015.

2. Carbon capture and storage. Even with a massive deployment of renewable energy, the world will still burn coal. Nuclear energy will continue its comeback, but even the Chinese, with the world's most ambitious nuclear-power program, will still have to rely heavily on coal.

As such, efforts will have to be redoubled to develop and test systems that can sequester the carbon produced by burning coal and pump it back into the ground, an as yet unproven technology called carbon capture and storage. It is still years from implementation and hundreds of millions of dollars more costly than standard power stations, but the EU agreed at its summit last month to a mechanism to help fund 12 pilot projects. "If we don't deploy it very fast, then we cannot keep the climate within the bounds of a manageable problem," says Mr. Burke.

3. Energy efficiency. Pessimists argue that renewables and clean coal still will not be able to reduce emissions by the 80 percent target by 2050. "Under a business-as-usual scenario," argues Antony Froggatt, a climate-change expert at London's Chatham House think tank, "there will be a 50 percent increase in energy demand by 2030 and 85 percent will be fossil-fuel based, and that will mean a 6 degree increase in temperatures."

The IEA reckons that by 2050, energy efficiency can cut usage by half of today's consumption. "We can change light bulbs, get rid of standbys on equipment, ratchet up efficiency on appliances," says Mr. Froggatt. "Buildings amount to 30 percent of energy consumption in Europe. We can retrofit buildings. The state of the art is zero-energy. Loft insulation pays itself back in six months."



2009, he says, will be all about "how do you scale up all these technologies, how do you speed up introduction."

PROSPECTS OF A GLOBAL DEAL AT COPENHAGEN?

The institutional focus of 2009 will be the Copenhagen climate talks, designed to agree to a successor treaty to the Kyoto Protocol, due to expire in 2012. Judging from talks at Poznan, Poland, last month, hopes aren't high.

Analysts are skeptical that a global deal will emerge that specifies how deeply the world intends to cut greenhouse gas emissions by a certain date. There are also disagreements on how much money the rich world should give to help developing nations. "The funds are nowhere near the scale that will be required," says Froggatt.

The new US administration will be crucial in framing the debate ahead of Copenhagen. Burke says Obama will not get into the same situation as with Kyoto, where the US negotiated a treaty but then couldn't get it through Congress. "You'll see legislation start in Congress this year and it will be ambitious, but nobody thinks it will be completed this year.... The US will be a much more constructive ... player, but will still find it difficult to sign up to emissions targets," he says. Obama's powerful environmental team may instead use existing clean air acts to drive a reduction in emissions.

Brown says Copenhagen is just the tip of the (melting) iceberg. "Internationally negotiated climate agreements are largely obsolete," he says, with talks and ratification taking years. He says countries, businesses, and local authorities are acting unilaterally because it makes commercial and social sense. "It has nothing to do with climate negotiations. The people investing in wind farms are doing so because they expect to make money."

WHERE IS THE SCIENCE HEADING?

One thing's for sure: 2009 will be warmer than 2008. Last year was the coolest of the current millennium. But it was also the 10th hottest on record. The only years in the last century that were hotter were 1997 and 1998.

"It will be a warmer year next year," says Phil Jones, a climatologist at the University of East Anglia, in England. He says the longer-term trend is sobering.

"We are on an upward trajectory of 0.2 degrees per decade," Professor Jones says. "The trouble is, greenhouse gas emissions are going up faster than that; the ocean is picking up a significant amount of CO₂ and cannot go on doing that. More will stay in the atmosphere, and as you get more warmth in polar regions, you'll get more greenhouse gases released."

Those emissions have jumped 70 percent since 1970. CO₂ levels in the atmosphere are at around 380 parts per million. Scientific consensus wants this benchmark figure stabilized at or below 450 to keep temperatures from rising more than 2 degrees this century. Some fear this is no longer possible.

WHO IS LIKELY TO LEAD GLOBAL EFFORTS?

Europe's deal to cut emissions by 20 percent by 2020 and source 20 percent of energy from renewables by the same date bolsters its reputation as a leader and sets something of a global standard. "It was a really



important deal," says Burke. "There was some risk that the internal dissension would derail the EU commitment to the "20-20-20" package and that was avoided. It would have been catastrophic for prospects for next year if the EU had backed off." Some have criticized the EU for watering down its agreements, but the continent still has world leaders in critical areas – Germany in renewable technologies, for example, and Britain in offshore wind power. And British Prime Minister Gordon Brown and French President Nicolas Sarkozy are already talking about creating green jobs through investment.