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EUROPE

1. London's Air Pollution Levels Hit Eight Year High

Air pollution in London has hit its highest level since 2003 according to official figures. Under European Union air quality laws daily pollution levels must not be above the legal limit on more than 35 days in a calendar year. But air pollution levels in London have already exceeded EU daily limits 36 times this year.

It is the first time that the annual limit has been exceeded by this date since 2003 when there were 50 breaches.

Marylebone Road in central London has already exceeded EU limits for the 36th day this year. The station there records air pollution from PM₁₀ which are mainly caused by traffic. The government recently issued a "smog alert" for PM10s, which can affect people's health.

The European Commission has already given the UK two written warnings and the next stage in the legal process will be referral to the European Court of Justice. The Commission gave the mayor and UK Government until June to come up with a "London action plan" to ensure compliance with the air pollution limits.

The UK will not face fines for the breach, as the EU has given Britain an extension until June before it has to start meeting the standards in the capital. A statement from London mayor Boris Johnson said that until 11 June, the daily limit of PM10 in London was 50% higher as a result of the UK's extension from the EU. The statement says that as of 19 April, the daily limit value has been exceeded at Marylebone Road just six times this year, meaning that the annual legal limits have not been breached.

A spokesperson for the mayor said: "The mayor is already taking action to improve London's air quality with cleaner buses, tougher standards for the Low Emission Zone and the first ever age limit for taxis." Since the beginning of 2011, we estimate that more than 75% of air pollution episodes have occurred when pollutants have been blown in from Europe."

2. Belgium and Romania Also Out Of Compliance with Air Quality Rules

The European Commission is taking Belgium to court for failing to comply with EU air quality limit values for PM₁₀. Belgium has so far failed to effectively tackle excess emissions of these particles in 8 zones across the country. On the recommendation of Environment Commissioner Janez Potočnik, the Commission has therefore decided to take Belgium to the EU Court of Justice. As Romania is also not complying with the air quality limit values for PM₁₀, the Commission is sending a reasoned opinion under ongoing infringement proceedings. Romania has two months to comply. In the absence of a satisfactory response, the Commission may refer the case to the EU Court of Justice.

Directive 2008/50/EC on ambient air quality and cleaner air for Europe requires Member States to limit the exposure of citizens to PM₁₀. The legislation sets limit values for exposure covering both an annual concentration value (40 µg/m³), and a daily concentration value (50 µg/m³) that must not be exceeded more than 35 times in a calendar year.

Since the legislation entered into force in 2005, the limit values for PM10 have not been respected in 8 air quality zones in Belgium in the Brussels, Flanders and Walloon regions.

Belgium has applied for time extensions for meeting the targets, but in the Commission's view, the conditions required have not been met. Despite an earlier reasoned opinion asking Belgium to act, air quality has not improved, so the Commission has decided to take Belgium to the EU Court of Justice.

In Romania, 17 areas have been found to exceed PM₁₀ limits. Romania applied for an exemption in 2010 for 11 of these 17 areas, and the Commission sent a reasoned opinion concerning the 6 areas not covered by the application for an exemption. After considering the exemption request, the Commission has concluded that the necessary conditions have not been met, and so a reasoned opinion is being sent to Romania for 9 additional areas (the situation having improved in 2 of the regions concerned in the meantime). Romania has two months to reply. A failure to improve the situation could result in a summons before the EU Court of Justice.

Airborne particles (PM₁₀) are mainly present in pollutant emissions from industry, traffic and domestic heating. They can cause asthma, cardiovascular problems, lung cancer and premature death. The PM₁₀ limit values were to be met by 2005 (or from the date of accession in the case of Romania), although Member States may ask the Commission to extend the time for meeting the standards until June 2011. Such exemptions are subject to a number of conditions. Member States must present an air quality plan setting out the relevant abatement actions during the extension period and demonstrate that they have taken all the necessary steps to achieve compliance by the extended deadline.

3. Study Finds No Air Quality Benefit from London's Traffic Charging Scheme

London's congestion charging scheme (CCS), which charges motorists for entering central London to try to cut traffic volume, has so far shown little evidence of improving air quality, according to scientists. A study led by researchers at King's College London found that the charge, introduced in 2003 and the first such levy in a major city in Europe or the United States had indeed helped reduce traffic in the city center. "But air pollution does not know precise boundaries so any benefit of the CCS or air quality appears to have been lost in the larger regional pollution mix," said Dan Greenbaum, president of the Health Effects Institute (HEI), which published the study.

Frank Kelly from the environmental research group at King's College, who led the study, analyzed a variety of emissions and used a range of exposure modeling techniques, studied air monitoring data, and used a newly developed test which assesses the oxidative potential of particles collected on filters at urban background and roadside monitors. Despite this wide range of different tests, the team did not find consistent evidence of improved air quality as a result of the congestion charge, they wrote in their study.

They noted that it is hard to identify significant air quality improvements from a specific project -- particularly one targeted at a small area in a large city -- against the backdrop of broader regional pollution and weather changes. They also said that other changes, such as increased use of diesel-powered taxi and bus trips to transport people in and out of the congestion charge zone, may have offset any benefits.

Kelly said London's congestion charge was "a world leading traffic intervention" and said he hoped his findings would be "of use to other administrations considering introducing traffic management schemes so that they can achieve vehicle reductions as well as improving air quality at the same time."

All profits made from the congestion charge have to be plowed back into upgrading London's aging and often overcrowded transport system.

4. Industry Foresees Further Fuel Efficiency Gains

There is still a significant potential for fuel efficiency improvements in the transport sector in coming years, according to a recent report published by petroleum industry association Europa in response to March's EU white paper on transport policy. Fuel efficiency will continue to reduce total fuel consumption in most transport sectors, making up for an increase in vehicles. For example, a slight increase in the number of light duty vehicles such as vans will be offset by fuel efficiency gains and a reduction in the distance travelled per vehicle, according to the report.

Regarding lorries, manufacturers anticipate a fuel efficiency improvement of up to 20% over the next decade. Vehicle design will play an important role. A 22% reduction in aerodynamic drag would result in an 8.7% improvement in fuel consumption.

In aviation, fleet renewal could result in a 25-35% carbon emission reduction per seat or ton kilometer by 2020. New aircraft design after 2020 would lead to a 25-50% reduction. Regarding maritime transport, the report foresees reductions of 25-75% through technology and operational measures.

Europa recommends six key parameters for EU transport policy. These include avoiding technology dictates and making cost-efficient energy efficiency improvements a top priority. It also calls for the consistent application of energy taxation levels to all energy products based on the energy content and CO₂ emitted.

5. EC Consults on Target for Green Transport Fuels

The European Commission has launched a consultation on how renewable electricity, hydrogen and biomethane should be accounted for in the EU's 10% target for renewable transport fuels. The consultation runs until 14 June. The 2009 renewable energy directive contains no specific accounting methods for hydrogen or biomethane, says the commission. The law requires that the EU executive propose such methodologies by 31 December this year.

Stakeholders are also being asked under which conditions the full amount of power used by electric vehicles could be considered green. At the moment, there is no way to guarantee this. It is recommended that member states apply the percentage of green electricity in the grid to the amount of power that goes into a vehicle.

The commission also wants to know whether to extend a list of transport fuels in an annex of the 2009 directive. The annex displays the energy content of various types of biofuels. New fuels can be added depending on technical and scientific progress.

6. Green Claims of Diesel Cars Disputed

Modern diesel cars may not be as clean as previously thought, say some experts as regulators try to roll out industry standards to satisfy "green" consumers. Filter technologies have cleaned up diesel cars traditionally viewed as far more polluting than gasoline rivals, but their soot emissions are now underestimated, say some analysts.

Autos standards often focus on carbon emissions and fuel economy, where diesel vehicles perform best, omitting other effects, including soot, where they fare worst, say experts. In Britain, for example, cars are exempt from road tax if their carbon dioxide (CO₂) emissions are below a certain level. The scheme does not account for soot, which also can contribute to global warming through a substance called black carbon. The omission is a mistake, say some analysts.

"Even with a particle trap (filter), all the diesels have an impact," said Stanford University's Mark Jacobson. "Each effect will vary from vehicle to vehicle but the point is they are not accounting for this. The claim that barely detectable black carbon causes no warming is misinformation."

Diesel cars -- not electric, hybrid or gasoline -- dominate the UK tax rebates introduced two years ago. The scheme excludes soot because new technologies and EU rules have dealt with the problem, said Britain's department for transport. "Black carbon emitted by modern diesel cars is practically undetectable," it said in a statement. Other regulators support that view -- diesel filters were a "game changing technology", said the head of monitoring at California's Air Resources Board (CARB.L).

"I would not characterize the little black carbon that remains in the emissions (as) still a problem," said CARB's Alberto Ayala.

But even reduced levels of soot could still be the equivalent of an extra one gram (g) of CO₂ per kilometer, according to the estimates of two leading experts. Just one gram of CO₂ is significant as manufacturers try to shave off carbon emissions in a bid to qualify for incentives and improve their image. Some 33 of the 51 car models which qualify for zero road tax in Britain are diesel, and half of these emit 99g of CO₂ per kilometer, as close as possible to the 100g threshold, government data show.

Black carbon is produced from incomplete burning of fossil fuels and is blamed for accelerating global warming by soaking up heat from the sun. It can darken snow and ice when it lands, hastening a thaw such as in the Arctic or Himalayas.

Modern diesel cars also produce more NO_x emissions than gasoline, which in turn creates a greenhouse gas and pollutant called ozone which can harm the lungs. But NO_x emissions also destroy a powerful greenhouse gas called methane, further muddying the net effect of such cars on the environment.

A European Commission study in 2007 showed average emissions of 0.57 milligram (mg) of soot per kilometer, in laboratory tests of modern diesel engines equipped with filters, a figure well below the present EU legal limit. That's equivalent to about 1g of CO₂, according to calculations by Stanford's Jacobson, who estimated that 1 mg of soot, including black carbon and other particulates, is equivalent to about 1,500mg of CO₂. Another leading expert, Veerabhadran Ramanathan from the U.S. Scripps Institution of Oceanography, supported Jacobson's calculation. Furthermore, Jacobson reckons that lab testing significantly underestimated actual soot emissions because of the harder acceleration people used on the road in real life.

Other scientists said that such estimates were at the upper end of estimates. "The (research) trend is coming closer and closer to them," said Pam Pearson, a climate policy expert at the U.S. and Sweden-based International Cryosphere Climate Initiative ICCI.L.

Other researchers said that it was difficult to compare CO₂ with black carbon as they behaved differently, staying in the atmosphere for centuries and just weeks respectively.

7. Libya Crises Hurts Mediterranean Refiners, Rewards Russian

The best-quality oil is fetching the highest premium in more than two years, weighing on profits at Mediterranean refiners that depend on Libyan crude. North Sea Dated Brent, Europe's benchmark low-sulfur crude, sold for \$7.11 a barrel more than Dubai crude, a Middle Eastern high-sulfur oil, on April 11th, according to data compiled by Bloomberg. That's the highest spread since October 2008. Brent's premium to Iran Heavy crude has doubled from January's average.

Nine weeks of civil conflict in Libya is crimping supply of lower-sulfur "sweet" crude, which is more easily refined into cleaner-burning fuels, pushing up prices for comparable grades from the North Sea and Nigeria. That helps Finland's Neste Oil Oyj, Hungary's Mol Nryt. and refiners set up to turn high-sulfur "sour" crude like Russian Urals, while hurting Mediterranean refiners such as Saras SpA and Hellenic Petroleum SA that can't easily switch away from low-sulfur grades.

Libya accounted for 8.8 percent of global light, low-sulfur crude supply in 2010; oil output from the African OPEC member is down 75 percent as fighting between rebels and government troops forced producers such as Marathon Oil Corp. to evacuate workers.

Prices are rising for low-sulfur grades from Nigeria, Algeria and Azerbaijan, as well as those in the North Sea. Nigerian Qua Iboe's premium to Brent rose to \$4.13 a barrel on March 30, the most since July 2008. Meanwhile, Russian Urals' discount to Brent crude in northwest Europe widened to \$4.30 a barrel on April 12 from \$1.90 discount at the start of the year.

The discount on Urals helps refiners including Neste Oil, which operates plants in Naantali and Porvoo in Finland and gets most of its crude from Russia. Neste's stock gained 13 percent this year, compared with a 5 percent advance in Europe's Stoxx 600 Oil and Gas Index. The company, based in Espoo, Finland, gets 70 percent of its crude from Russia and none from Libya.

Many refineries in former Eastern bloc countries such as PKN Orlen SA's Plock facility were designed to handle Russian heavy crude and are still linked by pipelines dating back to Soviet times. BP Plc. can process Urals at its Gelsenkirchen facility in Germany, while Total SA uses Russian imports at Leuna, south of Berlin, where a sulfur-removal unit was completed in 2009.

Mediterranean refiners, being closest to Libya, tend to be the most reliant on its crude. Saras, which operates the Sarroch refinery in Sardinia, imports as much as 40 percent of its crude from Libya. Saras has ample flexibility in its operations, allowing it to use more than 20 types of crude. The company will likely need to find alternatives to Libyan crude from the second quarter. The Italian company was more reliant on Libya than Repsol YPF SA, Spain's biggest oil company, which bought 16 percent of its crude from North Africa in 2009.

Hellenic Petroleum relies on Libya for as much as 12 percent of its supply and may be "competitively disadvantaged" by the rising premium for sweet crude until it finishes a 1.2 billion euro (\$1.8 billion) upgrade at its Elefsis plant. Hellenic had to switch to other sources of light-sweet crude because of lost Libyan supply.

OMV AG, one of the oil producers forced to curb output in Libya, is adapting its Burghausen refinery in southern Germany to use crudes from other countries. Vienna-based OMV ran about 20 percent of its capacity on Libyan oil before the crisis. OMV told investors the crisis in Libya will cut earnings before interest and taxes by an estimated 20 percent.

European refiners may find it harder in coming weeks to get suitable crudes as they return from seasonal maintenance, the International Energy Agency in Paris said in an April 12 report. "The impact of the lost supplies has so far been muted by the fact that European spring turnarounds hit a seasonal peak in March," the agency said. Refinery maintenance is mostly timed to allow refiners to maximize production of gasoline in the European summer and heating oil in winter.

8. Progress towards EU Rules on CO2 from Lorries

CO2 emissions from lorries, also called heavy-duty vehicles (HDVs), are not yet regulated in Europe despite them accounting for some 26% of total road transport emissions. An attempt to make drivers pay for the CO2 they emit under the Eurovignette law was defeated in 2009, killing hopes of legislative action. But after the adoption of legislation on new passenger cars and a 2010 agreement to cut emissions from light commercial vehicles it became increasingly likely that the HDV sector was going to be the European Commission's next target.

In its strategy on clean and energy efficient vehicles, the commission floated the idea of curbing emissions from road freight transport by introducing CO2 standards. The proposal was only briefly mentioned in its March white paper on transport policy, in which the commission said it would develop such standards for all vehicle types.

Although plans remain vague at this stage, work is under way to explore how to tackle lorry emissions. The automotive industry is playing an active role in discussions, but it has warned that any forthcoming legislation should not be solely based on kilometers driven as is the case for passenger cars and vans. The HDV market is very different, industry says. Policymakers must also take into account the amount of freight transported, otherwise they will create a perverse incentive to put more small lorries on the road instead of fewer heavy duty vehicles carrying more goods, some representatives have pointed out.

In what could be the first of many studies on this issue, environmental consultancy AEA claims that without further action in the HDV sector, fuel consumption and direct CO2 emissions might increase by almost 15% by 2030. Of the three scenarios envisaged by AEA, only one shows potential to cut emissions – by 3% – from the HDV fleet below 2010 levels by 2030. This meager forecast assumes industry uptake of all the available technologies between 2010 and 2030.

In terms of technological developments, the paper argues that powertrain efficiency improvement has the greatest reduction potential. Short-term CO2 abatement options with relatively small financial outlays, such as changing driver styles and introducing best practice dissemination programs, are also mulled in the AEA study. In addition, AEA says labeling and differentiated tax incentives could be used alongside performance requirements.

Standards being set in the US for CO2 and fuel consumption, as well as N2O, CH4 and HFC could also be plucked and used for the EU's own framework. The commission is already in close contact with the US environmental protection agency to find out how these standards were developed. However, these measures cannot simply be replicated in Europe because there are differences between the EU's HDV market and others. For example, the European

market is a lot more commercial than in Japan. And fuel efficiency benchmarks are very different from those used in the US because of higher fuel costs.

The US regulation, which could enter into force as early as July, is projected to reduce emissions by about 250 million tons and save 500 million barrels of oil over the lifetime of vehicles produced within the program's first five years. There are standards for combination tractors, heavy-duty pickups and vans, as well as vocational vehicles. Fuel and diesel truck standards for heavy-duty pickup trucks and vans will be phased-in from 2014. These standards are expected to cut emissions from petrol engines by up to 10% and 15% for diesel engines.

More findings on how to regulate lorries in the EU will come after the publication of a second consultancy study that looks at how fuel efficiency and emissions can be measured.

9. Swedes Seek To Boost Ships' Use of Onshore Power

Sweden is planning to give energy tax breaks to boats that use onshore electricity while berthed in ports. Onshore electricity is quieter and less air polluting than electricity produced on board. The European Commission backs the measure.

A proposal to authorize the move was put forward by the commission on Friday. The Swedish measure, which would apply for a three-year period, must be endorsed by member states. The commission says it would encourage the shipping sector to use this more environmentally friendly source of electricity.

The tax cuts will target vessels with significant onboard electricity generation. It will be restricted to vessels of at least 400 tons as well as to supplies of shore-side electricity of at least 380 volts. The cuts are likely to get the go-ahead in June.

10. France to Trial Low Emission Zones in 8 Cities

Eight French urban agglomerations including Paris, Bordeaux, Lyon and Grenoble have volunteered to trial low emission zones (LEZs) in an effort to get a grip on pollution, the French environment minister told an air quality conference. An assessment will be made within three years to find out whether the LEZs have successfully cut pollution. The idea is to ban the most polluting vehicles from entering certain areas. The Czech Republic also plans to create several LEZs.

Recently released air quality figures for 2010 show a slight reduction in PM10 concentrations compared with previous years. But this is not sufficient and many areas continue to exceed EU air quality standards. The European Commission has said it will take France to court unless it takes immediate action.

Data for early 2011 also released recently show that the situation is not yet under control. In mid-March certain sites in densely populated areas such as the Ile-de-France and the Provence-Alpes-Côte d'Azur region were exceeding PM10 limits. The government blamed weather conditions, heating and transport.

The French minister, Nathalie Kosciusko-Morizet, said she hoped LEZs would help to "re-energize" city centers and to encourage new forms of urban planning. LEZs must also encourage automobile makers to build cleaner vehicles, she added.

There are more than 160 LEZs in eight European countries. They have been very successful, although environmental benefits vary greatly depending on the location. For example, in Stockholm LEZs have led to a 40% cut in PM10 pollution. In Berlin and London emissions have decreased by 25% and 19% respectively.

11. Swiss Report Drop in Carbon Emissions, But Still Behind on Kyoto Commitments

Switzerland has reported a drop in its greenhouse gas emissions for 2009, but it is still behind in meeting its reduction commitments under the Kyoto Protocol. According to figures reported by the government on April 18th, Switzerland's total greenhouse gas emissions declined by 2.6 percent in 2009 to 51.85 million metric tons of carbon equivalent. The government said the decline was due to slower economic growth stemming from the international financial downturn as well as milder temperatures in 2009, which reduced heating fuel consumption.

Taking into account emissions credits from forest sinks and the purchase of emissions offsets, Swiss greenhouse gas emissions totaled 49.2 million metric tons for 2009. That is still 600,000 metric tons higher than the 48.6 million metric ton target Switzerland agreed to as part of its Kyoto Protocol commitments. The 2009 figure, however, is a notable improvement from 2008, when Switzerland exceeded its Kyoto target by 2.6 million metric tons.

The figures were reported to the United Nations. Under the Kyoto Protocol, the countries that have made commitments to reduce greenhouse gas emissions—called Annex I countries—must submit annual reports by April 15 on greenhouse gas emissions from sources and removals via carbon sinks.

Switzerland agreed to reduce carbon emissions by 8 percent on average between 2008 and 2012 from a 1990 base level. Greenhouse gas emissions from the transportation sector rose by 12 percent between 1990 and 2009, while emissions from all other major sectors declined, the Swiss government noted. The transportation sector now accounts for a third of the country's total greenhouse gas emissions.

The Swiss Parliament is debating whether to subject motor vehicle fuel to a national carbon tax on fossil fuels, with the latest emissions figures likely to spark further debate. The government raised the existing carbon tax from 12 Swiss francs (\$13.30) per metric ton to 36 francs (\$36.60) per metric ton on Jan. 1, 2010, after Switzerland failed to meet its 2008 emissions reduction target. The tax currently applies to fossil fuels such as heating oil and natural gas but not to gasoline and diesel fuel for vehicles. However, motor vehicle fuels may be subject to the tax under a proposed revision to the Swiss carbon dioxide law, which would set out the country's emissions reduction targets beyond 2012.

A first review of the proposed revision saw the two houses of Parliament split on the issue. The Parliament is due to take up the issue again at its summer session.

12. European Commission Proposes Fuel Tax Based on Energy Content, Carbon Emissions

On April 13th, the European Commission proposed revisions to the EU energy taxation directive that would increase levies on fuels with high carbon dioxide content and industrial sectors not currently covered by the bloc's Emissions Trading System. Overcoming objections from some EU member states and a wide range of industry groups, the European Union's executive body

said the changes are needed to make the taxes more compatible with EU energy efficiency and greenhouse gas emissions reduction targets. The Commission said the revisions could help the European Union reduce its carbon dioxide emissions by 2 percent, or 92 million metric tons, by 2020.

The proposed regulations, which would tax fuel based on its energy content and carbon dioxide emissions rather than strictly by volume, aims to create a consistent tax regime across the 27-nation bloc and promote consumption of cleaner fuels in the future.

“The challenge we are facing is to ensure that energy taxes continue generating revenues for member states while promoting energy efficiency and encouraging the use of less polluting energy products,” European Taxation Commissioner Algirdas Semeta said. “The current energy taxation directive does not sufficiently reflect the objectives. ... It may even contradict them by providing lower levels of taxation and thus giving incentives for more polluting products. The directive does not provide for a proper taxation for biofuels. It does not take into account the EU emissions trading scheme.” The former Lithuanian finance minister said the timing of the proposal is auspicious because all EU member states are revamping their fiscal revenue regimes to exit the economic crisis of the past three years and reduce their budget deficits and public debt.

The German government has vowed to fight the proposal, which it said would increase the price of diesel and hurt Europe's biggest economy, where nearly half the cars run on diesel fuel.

The European Commission proposal will now be submitted to the European Council of Economic and Finance Ministers, where it will require the unanimous consent of the 27 EU member states. Approval is not required by the European Parliament. As with all EU taxation legislation, the European Parliament has only a consulting legislative role, with no veto powers.

The EU proposal would split the minimum energy tax rate into two elements, with the first based on carbon dioxide emissions and the second on the energy content of each product or fuel. Second, a carbon dioxide tax would be instituted in all areas where the EU Emissions Trading System does not apply. However, industrial and agricultural sectors deemed to be vulnerable to imports from countries that do not tax carbon would be exempted. The third important change would take into account the lower carbon dioxide emissions and energy content of renewable energies such as biofuels.

“This will lead to lower taxation of biofuels than under the current system in which they are in principle taxed at the rate of the fossil fuels they are supposed to replace,” Semeta said.

Some EU member state governments, car manufacturers, and motorist lobby groups criticized the proposal even before its April 13 launch. Their main concern is the expected increase in taxes for diesel fuel, which powers a majority of the EU car fleet.

“Diesel has been consistently encouraged over the past decade due to its better fuel efficiency,” said the International Automobile Federation, which claims to represent 36 million car owners in the European Union. “It makes no sense now to penalize those consumers who have chosen this technology and have accepted their higher initial purchasing costs because in the long term they have been led to believe diesel will mean lower running costs.”

To ease the expected increase in taxes on diesel fuel, the proposal calls for a 12-year transition period. “The goal of the proposal is to tax all motor fuels at an equivalent level and this will

change the relationship between taxation of different fuels,” Semeta said. “We are aware that moving to such equivalent taxation cannot be introduced overnight and therefore we foresee a sufficiently long transitional period.”

As expected, the proposal was well received by EU biofuel producers. Although environment groups welcomed the higher taxes on diesel fuel, they objected to claims that biofuels are sustainable, greenhouse gas-reducing fuels and therefore warrant a tax reduction. They also criticized the failure to include aviation and shipping fuels in the proposed energy tax directive.

Under EU law, 10 percent of all transport fuel in the European Union must come from biofuels by 2020. Renewable energy must represent 20 percent of all energy consumption in EU member states by 2020 and greenhouse gases must be reduced 20 percent from 1990 levels by 2020. In addition there must be a 20 percent increase in energy efficiency.

Germany has vowed to block the proposal. “The government has made their position clear, the chancellor has clearly said no, I have clearly said no,” German Transport Minister Peter Ramsauer said of the EU proposal in an interview broadcast on the ministry's website. “And since you need clear unanimity on such tax matters at an EU level, the German ‘no’ is enough to stop such nonsense.”

Currently, diesel in Germany is taxed at 52 euro cents (75 U.S. cents) per liter, which is 18 euro cents (26 cents) lower than gasoline per liter. While some, including the German automobile club ADAC, estimate that the new proposal would increase taxes on diesel by up to 17 percent, others said the more likely scenario is that diesel taxes would remain steady while gasoline becomes cheaper.

ADAC says German taxes on diesel are 14 euro cents higher than current EU requirements. They say the EU plan would increase taxes on diesel, whose use emits less carbon dioxide than gas, and would not help the environment. “Germany already leads in its energy tax rates in the EU,” an ADAC spokesman said in a written statement. “And a tax strategy that penalizes those car owners that use energy-efficient vehicles, some with high purchase prices, is counterproductive for the climate.”

Germany began subsidizing diesel fuel 50 years ago to keep products cheap and to promote economic growth by keeping commercial transport prices down; in the following decades, diesel's share of passenger cars has grown to almost 50 percent.

13. MEPs Take Tougher Stance on NRMM Emissions

The European Parliament's environment committee has agreed to scale back a proposal to allow 50% of non-road mobile machinery (NRMM) such as tractors to meet less stringent air emission limits. Under the European Commission proposal, up to half of each NRMM manufacturer's sales – averaged over the past five years – would be allowed to meet weaker stage III A emission limits until the end of 2013. At the time, the commission believed that the new rules would help allay the impact of recession on industry.

But the parliament's environment committee voted in favor of a compromised amendment which calls for the current 20% quota to be increased only to 30%. The agreement was a compromise to conservative MEP Sirpa Peitkainen's draft resolution on the commission's so-called flexibility scheme. Ms Peitkainen argued that with fledgling signs of economic recovery, and sales picking up, the commission's rationale for the proposal is diminishing.

Member states are likely to adopt a position on the issue at a meeting of environment ministers in a few weeks. (See below) A vote in the parliament is scheduled for May. The law could enter into force by the end of the year if EU lawmakers reach a deal shortly.

14. Lawmakers to Hold Trialogue Talks On NRMM

Member states will demand that a greater number of more polluting non-road mobile machinery (NRMM) such as locomotives are allowed on the market when they hold trialogue talks with MEPs and the EU executive. Government representatives, who recently agreed their negotiating position in Brussels, support the European Commission's proposal that up to half of each manufacturer's sales – averaged over the past five years – would be allowed to meet less stringent stage III A emission limits until the end of 2013.

In March, the European Parliament's environment committee said that only 30% of sales should be allowed to meet less stringent limits.

Member states also backed a commission proposal that only 12 locomotives per manufacturer should be given more time to meet stricter limits. The UK wants extra time for more locomotives due to its different operating network.

15. Huge Barents Oil Find Shifts Norway Focus Back To Arctic

Statoil's half-a-billion barrel oil find in the Barents Sea will shift Norway's oil industry away from the North Sea and toward the Arctic -- a harsh region where costs and technical challenges mount. Further east, in the Russian part of the Barents, a long awaited offshore boom may also soon begin as foreign partnerships help supply knowhow to tap potentially huge resources.

Statoil announced recently that it had made the most significant discovery off Norway in the past decade at its Skrugard prospect in the western Barents, breathing new life into Norway's hitherto declining oil prospects. But producing oil and gas in Norway's remote "High North" entails higher costs and possibly greater risk of spills. Appetite for Barents Sea exploration had declined in past years due to mainly lackluster drilling results off Norway prior to Skrugard, and growing concerns over safety after BP's oil spill in the Gulf of Mexico a year ago.

Norway's oil production, already down some 40 percent from its 2001 peak to around 2 million barrels per day, is set to decline significantly after 2020 unless new deposits are found and tapped.

Official forecasts from the start of 2011 put Norway's potential oil and gas resources in its section of the Barents Sea at some 6 billion barrels of oil equivalent. Tantalizingly, these forecasts do not include reserves that could lay hidden in the recently drawn border zone between Norway and Russia, an area half the size of Germany that for four decades was closed to oil and gas activities.

Norway seeks to start the process of opening up its part of the zone as quickly as possible after Russia finalizes the border treaty signed last year. Statoil hopes to start producing oil from Skrugard within 5-10 years.

So far only Statoil's Snoehvit gas field is in operation in the Barents Sea. Italian operator ENI seeks to start producing oil from its nearby Goliat find in 2013. Both projects -- which are much

closer to shore than Skrugard -- have been hit by delays. Snoehvit has had lots of teething problems after start-up as Statoil scrambled to make the facility more robust in the unforgiving Arctic. About 200 km from Norway's coast, three times as far from shore as BP's blown-out Macondo well in the Gulf of Mexico, Skrugard will prove a challenge for emergency monitoring.

There are three big developments in Russia's Arctic: Gazprom's Prirazlomnoye, where the platform has been under construction for years, Gazprom's Shtokman gas project in which Statoil plays a role and three Kara Sea fields in a deal between BP and Rosneft. The Norwegian Barents Sea offers a stable and tested energy regime, complete with a 78 percent tax on oil and gas activities, and may also prove more hospitable weather-wise.

16. Putin Rides First Russian Hybrid Car to See Medvedev

Avid car lover and Russian Prime Minister Vladimir Putin drove Russia's first gasoline-electric hybrid car recently to visit political partner President Dmitry Medvedev. Called Yo-mobile, the car is a personal project of billionaire Mikhail Prokhorov, who has said it could bring Russia a competitive edge in the global automotive industry, where the country is better known for its boxy Lada cars.

"I would like to drive your Yo-mobile to Dmitry Anatolievich (Medvedev), and show it to him ... I hope your Yo-mobile will not fall apart on the way," Putin told Prokhorov at a meeting just outside of Moscow.

About 5 kilometers (3 miles) separate Putin's Novo-Ogaryovo country residence, nestled in a pine forest outside Moscow, from Medvedev's home in Gorki.

The car, whose name is plays on a Russian swear word, drives both on petrol and natural gas. It has a rotary engine and uses ultra-capacitors, an energy-storing device seen as an alternative to lithium-ion batteries, which are installed on all other hybrid cars currently in production. The capacitors store energy they receive directly from the engine and do not require re-charging from a power network. "Lithium-ion batteries are a mistake, a dead-end," said the car's developer Andrei Biryukov.

Prokhorov said the Yo-mobile is to go into mass production in the second half of 2012, and expects to produce 10,000 cars a year. The car will burn 3.5 liters of fuel per 100 km and will cost about 450,000 rubles (\$15,860).

Putin, who as head of government had backed state aid worth billions of dollars to Russia's struggling automotive industry, often appears behind the wheel in public. Most of the state aid, allocated in 2009, went to the Soviet-era giant AvtoVAZ, which produces the Lada.

Last year Putin tried to drum up support for Ladas by driving a bright yellow Lada Kalina some 2,000 km in Russia's Siberia and Far East. He also raced in a Formula One car made by Renault, a shareholder in AvtoVAZ.

17. Commission Outlines Plan to Increase Mobility and Reduce Emissions

The European Commission has adopted a comprehensive strategy for a competitive transport system that will increase mobility, remove major barriers in key areas and fuel growth and

employment.¹ At the same time, the proposals are intended to reduce Europe's dependence on imported oil and cut carbon emissions in transport by 60% by 2050.

To achieve this will require a transformation in Europe's current transport system. By 2050, key goals will include:

- No more conventionally-fuelled cars in cities.
- 40% use of sustainable low carbon fuels in aviation.
- At least 40% cut in shipping emissions.
- A 50% shift of medium distance intercity passenger and freight journeys from road to rail and waterborne transport.
- All of which will contribute to a 60% cut in transport emissions by the middle of the century.

The Transport 2050 roadmap to a Single European Transport Area sets out to remove major barriers and bottlenecks in many key areas across the fields of: transport infrastructure and investment, innovation and the internal market. The aim is to create a Single European Transport Area with more competition and a fully integrated transport network which links the different modes and allows for a profound shift in transport patterns for passengers and freight. To this purpose, the roadmap puts forward 40 concrete initiatives for the next decade.

For intercity travel: 50% of all medium-distance passenger and freight transport should shift off the roads and onto rail and waterborne transport.

- By 2050, the majority of medium-distance passenger transport, about 300km and beyond, should go by rail.
- By 2030, 30% of road freight over 300 km should shift to other modes such as rail or waterborne transport, and more than 50% by 2050.
- Deliver a fully functional and EU-wide core network of transport corridors, ensuring facilities for efficient transfer between transport modes (TEN-T core network) by 2030, with a high-quality high-capacity network by 2050 and a corresponding set of information services.
- By 2050, connect all core network airports to the rail network, preferably high-speed; ensure that all core seaports are sufficiently connected to the rail freight and, where possible, inland waterway system.
- By 2020, establish the framework for a European multimodal transport information, management and payment system, both for passengers and freight.
- Move towards full application of “user pays” and “polluter pays” principles and private sector engagement to eliminate distortions, generate revenues and ensure financing for future transport investments.

For long-distance travel and intercontinental freight, air travel and ships will continue to dominate. New engines, fuels and traffic management systems will increase efficiency and reduce emissions.

- Low-carbon fuels in aviation to reach 40% by 2050; also, by 2050, reduce EU CO2 emissions from maritime bunker fuels by 40%.

¹ Roadmap to a Single European Transport Area: Towards a Competitive and Resource-Efficient Transport System.

- A complete modernization of Europe's air traffic control system by 2020, delivering the Single European Sky: shorter and safer air journeys and more capacity. Completion of the European Common Aviation Area of 58 countries and 1 billion inhabitants by 2020.
- Deployment of intelligent land and waterborne transport management systems².
- Work with international partners and in international organizations such as ICAO and IMO to promote European competitiveness and climate goals at a global level.

For urban transport, there must be a big shift to cleaner cars and cleaner fuels, requiring a 50% shift away from conventionally fuelled cars by 2030, phasing them out in cities by 2050.

- Halve the use of 'conventionally fuelled' cars in urban transport by 2030; phase them out in cities by 2050; achieve essentially CO₂-free movement of goods in major urban centers by 2030.
- By 2050, move close to zero fatalities in road transport. In line with this goal, the EU aims at halving road casualties by 2020. Make sure that the EU is a world leader in safety and security of transport in aviation, rail and maritime

The strategy paper will be discussed by the European Parliament and EU Council. It is one of a series being published by the Commission this year, setting out strategies that, if endorsed by decision makers, would add up to a vision of a low-carbon society to be created in the next few decades. The Commission has already published a resource-efficiency road map, a road map for reducing greenhouse gas emissions 80 percent or more by 2050, and an energy efficiency plan through 2020.

18. Research Quantifies Increased Life and Wealth from Cleaner Air

EU-supported research findings by the Aphekom project³ show that significant health and monetary benefits could result from further reducing current levels of air pollution in European cities. Project coordinator, Dr. Sylvia Medina of the French Institute for Public Health Surveillance (InVS), said: "Our project shows that compliance with WHO's annual air-quality guideline on PM_{2.5} fine particles (10 micrograms/cubic metre) in 25 large European cities⁴ could both add up to 22 months of life expectancy for persons 30 years of age and older, and produce 31.5 billion euros in monetary health benefits every year."

The findings were released at a stakeholders meeting on Wednesday, 2 March 2011.⁵

The findings come at an important time. The European Commission is currently preparing for a review of EU air quality policy. Air pollution of fine particles is associated with more than 455,000 premature deaths every year in the EU's 27 member states, according to a recent

² European Rail Traffic Management System, Intelligent Transport Systems (for road transport), River Information Services, the EU's maritime information systems SafeSeaNet and Long Range Identification and Tracking of vessels.

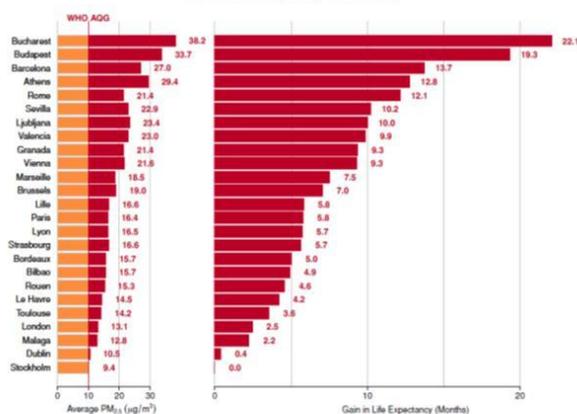
³ Aphekom (Improving Knowledge and Communication for Decision Making on Air Pollution and Health in Europe) aims to help decision makers set more effective European, national and local policies; health professionals to better advise vulnerable individuals; and all Europeans to better protect their health.

⁴ The 25 cities in descending order of predicted average gain in life expectancy for persons of 30 years of age and over for a decrease in average annual level of PM_{2.5} to 10ug/m³ (WHO's Air Quality Guideline) are Bucharest, Budapest, Barcelona, Athens, Rome, Sevilla, Ljubljana, Valencia, Granada, Vienna, Lille, Paris, Lyon, Strasbourg, Bordeaux, Bilbao, Rouen, Le Havre, Toulouse, London, Malaga, Dublin and Stockholm.

⁵ Aphekom press release and other information about the findings and meeting at <http://www.aphekom.org>

study by the European Topic Centre on Air and Climate Change (ETC/ACC) on behalf of the European Environment Agency (EEA).

Predicted average gain in life expectancy (months) for persons 30 years of age and older in 25 Aphekom cities for a decrease in average annual level of PM_{2.5} to 10µg/m³ (WHO's Air Quality Guideline)



The new research which looks at 25 cities in 12 European countries also shows that living near busy roads substantially increases the total burden of disease attributable to air pollution. “We also determined that living near busy roads could be responsible for 15 percent of asthma in children and possibly for similar or higher percentages of other common chronic respiratory and cardiovascular diseases in adults 65 and over,” Sylvia Medina said.

19. EU Climate Chief Sees Green Fuel Debate in Months

European Union governments may begin talks in the coming months on a proposal to promote greener fuels, potentially black-listing fuels whose production is more polluting, according to EU Climate Change Commissioner Connie Hedegaard. She said default emission values for fuel derived from tar sands and oil shale -- widespread in Canada and Estonia -- will be peer reviewed and included in the proposal.

"I now expect that a proposal could be discussed with the member states in the coming months," Hedegaard told EU lawmakers. "It is the Commission's intention, at this stage, to present a draft implementing measure ... that will include default values both for oil sands and for oil shale," she added. Last month it was reported that Canada threatened to pull out of trade talks if Europe blacklisted tar sands, but Ottawa has denied that.

The European Commission initially proposed last year that tar sands be ascribed a greenhouse gas value of 107 grams per megajoule of fuel -- making clear to buyers that it had far greater environmental impact than average crude oil at 87.1 grams. But the European Union later appeared to back down on the issue, putting commerce ahead of a strategy to curb greenhouse gases from transport fuels by 6 percent this decade.

The inclusion of default values for shale oil -- whose use EU member state Estonia has been promoting -- may help to head off any complaint by Canada to the World Trade Organization that the green fuel norms discriminate against it. Hedegaard said she had consulted closely with EU trade Chief Karel De Gucht "to ensure that our approach is robust in terms of our obligations under international law."

20. U.K. Seeks Comment on Policy to Reduce Aviation Pollution, Greenhouse Emissions

The U.K. government is seeking public input on how to create an aviation policy that will address “the environmental impacts of flying—both local and global.” Describing the previous government’s air policy as “fundamentally out of date because it fails to give sufficient weight to

the challenge of climate change,” the Department for Transport said on March 30th that it aims to introduce legislation for a “greener” aviation policy by March 2013.

Currently, the government does not include emissions from international aviation as part of its overall country emissions, but under the Climate Change Act it will need to decide how to allocate these international emissions by December 31, 2012, or explain to Parliament why it will not do so.

Aviation accounted for about 6 percent of Britain's total greenhouse gas emissions in 2009, and 21 percent of the transportation sector's emissions, the department said. Cars accounted for 43 percent of the transportation sector's total emissions, while heavy goods vehicles made up 13 percent, and domestic and international shipping comprised 7 percent.

The Department for Transport's scoping document outlining the aviation policy will be open for comment until September 30th. The government then will have six months before it launches a formal consultation on a draft aviation policy framework that addresses the need to reduce carbon emissions, as well as local noise and air quality issues.

As aviation is “by its very nature, an international sector,” the department said global action is essential to combat aviation emissions, which is why it is pressing ahead with the inclusion of aviation in the European Union's Emissions Trading System starting in 2012 and pushing for a global agreement on reducing aviation's carbon dioxide emissions. “But the aviation industry needs to do more,” the document said.

The government is asking for input on the potential for increased use of sustainable biofuels in aviation and on ways the government can encourage that. Under the Renewable Energy Directive, the United Kingdom must get 15 percent of its total energy use and 10 percent of the energy in transportation, from renewable sources by 2020.

The government also wants views on how to reduce non-carbon aviation emissions, including nitrogen oxides.

The scoping document invites opinions on the most prominent local environmental impacts of aviation, such as noise and local air pollution, which can in turn impact public health. To reduce these other, non-carbon impacts in London, the government already has decided not to approve new runways at the capital's three biggest airports of Heathrow, Gatwick, and Stansted. Instead, it will explore developing regional airport hubs, the department said.

21. EU Sets Carbon Dioxide Cap for Airlines Entering Emissions Trading System in 2012

Airlines participating in the European Union's Emissions Trading System (ETS) in 2012 will have their carbon dioxide emissions capped at 212,892,052 metric tons for the year, the European Commission said on March 7th. The restriction applies to about 4,000 aircraft operators flying within, or arriving in and departing from, the European Union, that are required to participate in the ETS under legislation finalized in October 2008. The Commission said the overall cap was set at 97 percent of the average 2004-2006 annual emissions of airlines using EU airports, a calculation that is stipulated in the 2008 law.

In 2013, the cap will be set at 95 percent of 2004-2006 average annual emissions, meaning an allowance of 208,502,525 metric tons of carbon dioxide per year.

Specific allocations for each airline operator will be decided according to a methodology to be published by the end of September, the Commission said.

EU Climate Action Commissioner Connie Hedegaard said “firm action” is needed to curb rapid growth in emissions from the sector. “Emissions from aviation are growing faster than from any other sector, and all forecasts indicate they will continue to do so under business-as-usual conditions,” she said.

Average annual emissions during the 2004-2006 period were calculated from data on flights held by Eurocontrol, the EU air traffic management organization, and from fuel consumption figures provided by airlines.

The Commission said 82 percent of the available emissions allowances will be given to airlines for free, 15 percent will be sold upfront through auctions, and 3 percent will be held back as a reserve for market entrants. The percentages will be maintained unless international negotiations result in a deal to tighten the cap or set a specific aviation cap internationally.

According to Eurocontrol figures, the number of flights in Europe in 2010 was 0.7 percent lower than in 2006. However, Eurocontrol forecasts the number of flights will rise to 10.24 million in 2012, 7 percent above the 2006 level.

A group of U.S. airlines is contesting its inclusion in the ETS, on the basis that the European Union has no right to impose limitations on operators flying outside EU airspace. The Air Transport Association of America, American Airlines, Continental Airlines, and United Airlines initially filed a case with the High Court in London, but in July 2010 the action was referred to the Court of Justice of the European Union for an interpretation of EU law.⁶ The Commission said the U.S. airlines are “complying with the [emissions trading] requirements in full pending the resolution of this challenge.”

22. MEPs Back Green EU-US Aviation Agreement

The European Parliament has given the green light to an updated EU-US aviation agreement that encourages both parties to develop a more environmentally friendly sector. The Council of Ministers approved the deal on March 7th.

A first agreement was signed in 2007 and allowed any EU and US airline to fly between any points in either of their territories. A second deal including green and social provisions was signed in June 2010 and has since been provisionally applied. But MEPs' consent was required before it could officially enter force.

According to the new agreement, the two parties commit to limit "in an economically reasonable manner" the damaging impact of aviation emissions on air quality and the environment as well as limit or reduce noise pollution. In addition, they commit to boost their research capacities to spur on the development of greener aviation technologies and sustainable aviation fuels.

On March 9th, the MEPs adopted a resolution for better policy coordination between regions bordering the Atlantic. This is in response to a European Commission consultation on a possible EU strategy for this geographical area.

⁶ Case No. C-366/10, Air Transport Association of America v. Secretary of State for Energy and Climate Change

23. UK Outlines Goals, Deadlines for Moving Toward Low-Carbon Economy

To show its commitment to weaning the country off traditional energy sources, on March 8th the United Kingdom's government issued a preliminary action plan setting goals and target dates for various departments to help deliver a low-carbon economy. The government is seeking public input, though not through a formal consultation, on the draft Carbon Plan. The aim is to publish a final version in the fall and to update it annually, the Department of Energy and Climate Change (DECC) said.

The final version of the plan will help determine the contents of the United Kingdom's fourth carbon budget (covering 2023 through 2027), which is to be announced later this year. In 2009, the previous Labor government set the first three, five-year carbon budgets (2008–12, 2013–17, and 2018–22), which are mandatory under the Climate Change Act of 2008.

The draft plan highlights three major changes that will be required across the U.K. economy. For electricity generation, the plan calls for moving to replace fossil fuels with renewable energy sources, nuclear power, and clean coal. In the transportation sector, the plan calls for greater use of public transportation and electric vehicles. Internationally, the plan calls for the United Kingdom, along with the European Union, to push for a global climate change agreement.

The Department for Transport will need to devise a nationwide strategy to promote the installation of electric vehicle infrastructure. In December, the government's advisory Committee on Climate Change said that to reduce transportation emissions, the government should encourage use of electric vehicles, the use of hydrogen to power heavy-goods vehicles and half of all buses, and more use of public transportation and carpooling.

The Department for Business, Innovation, and Skills will be required to have a Green Investment Bank in operation by September 2012. The bank was proposed by the previous government in the spring of 2010. The Green Investment Bank also escaped the drastic round of cuts in autumn 2010, with the Treasury committing to setting aside £1 billion (\$1.62 billion) for the new institution. Under the plan, the Department for Business, Innovation, and Skills will have to release the first annual data on funds in the bank and the size of investments made by the bank by May 2013.

24. Concerns Raised Over Tighter Motorbike Standards Timetable

Tougher emission standards planned for motorcycles and mopeds could harm European producers if they are introduced as rapidly as proposed, members of the parliament's internal market committee were warned. The committee was holding initial discussions on a proposal, released last October, addressing safety and environmental impacts of so-called 'L' (or light-powered) vehicles. These account for about 2% of EU road transport miles but their emissions are disproportionately high and they are responsible for 16% of road deaths.

Plans for tougher air emissions standards were broadly welcomed, but industry representatives warned the timetable for their introduction was tight. This is a particular concern given the number of small producers in the EU and the heavy toll the recession has taken on them, the committee heard.

There were also concerns raised about the emphasis on new vehicles. French environmental agency ADEME and the Association for Emissions Control by Catalyst warned that current emission limits are regularly exceeded.

The EU executive also wants to introduce eco-labels for 'L' vehicles but this was not discussed at the meeting. There is also likely to be debate about the threshold level for exemptions applying to limited edition models. The parliamentary rapporteur for the regulation, Wim van de Camp, hopes to submit his proposals by early May.

25. European Cities' Air Quality Efforts Ranked

Berlin, Copenhagen, Stockholm, Vienna and Zurich have made the greatest efforts to cut air pollution in the past five years, according to a ranking being compiled by the Soot Free for the Climate campaign. Dusseldorf, Milan and Rome rank at the bottom. Progress was measured using ten categories including abatement measures, sustainable transport planning and reduction trends from 2005 to 2010. So far 15 cities have been evaluated. The preliminary results were presented at a recent meeting in Brussels.

At the meeting, measures adopted in the German capital, including the introduction of a low-emission zone in 2008 banning some of the most polluting cars were presented. This led to a 40% decrease in soot emissions and a 19% drop in NOx emissions. Other best practices highlighted include Zurich's goal of a 2% reduction of fuel consumption every year until 2015, Vienna's requirement that all non-road machinery have particulate filters and Copenhagen's increase in parking charges.

During the presentations, several representatives of regions with poor geographic or weather conditions, such as Graz in Austria and Stuttgart in Germany, complained that it will be difficult to meet the PM10 limits set by the NEC directive. Such regions want their special circumstances to be recognized. But a commission official insisted air quality standards in these areas should be no different from those in other regions because all citizens should enjoy the same level of protection.

26. New EU Plan to Boost Energy Efficiency Criticized for Lack of Legally Binding Targets

With the European Union falling behind on its nonbinding target to realize a 20 percent energy savings by 2020 through efficiency, the European Commission's new plan, released on March 8th, called for a range of measures, including requiring EU member states to modernize 3 percent of all public buildings on an annual basis and establish energy efficiency requirements for public procurement contracts. In addition, the plan includes industrial equipment requirements, energy audits for small businesses, energy management systems for large companies and stricter energy standards for power and heat generation. Overall, the EU executive body said the plan could save the European Union 100 million tons of oil by 2020.

“Despite progress, our estimates show that we need a further decisive and coordinated action on energy efficiency without which the EU will not meet its objective of 20 percent energy savings by 2020,” said European Energy Commissioner Gunter Oettinger. “It paves the way for the longer term policies needed to achieve a low carbon and resource-efficient economy by 2050 and to place the EU at the forefront of innovation.”

The EU executive body estimated that, based on the current pace for reducing energy through efficiency measures, the European Union will only achieve a 9 percent reduction in energy use compared to 2007 levels instead of the 20 percent goal.

With the European Union so far behind its target, many environmental groups and some European Parliament members were expecting mandatory targets in the new plan. Their absence triggered considerable criticism. Oettinger defended the decision to not include binding targets. He said the Commission would review the plan in 2013 and would at that time propose legal requirements if necessary.

The plan must be approved by the European Council of Ministers and the European Parliament before it can take effect.

27. France Tightens Rules for Bonuses to Buyers of Low-Carbon-Emitting Vehicles

On March 24th, the French government published tougher requirements, to take effect on January 1, 2012, for its popular Bonus-Malus program designed to encourage purchases of low carbon-dioxide-emitting vehicles and to discourage sales of higher-emitting vehicles. Citing a need to reduce costs in the four-year-old program, the government in December implemented new, less generous “bonus” terms for low-emitting vehicles beginning Jan. 1, 2011, and also announced plans for tougher “malus” penalties for higher emitting vehicles starting Jan. 1, 2012. The government said the program has always foreseen a gradual tightening of conditions for vehicles to qualify for bonuses as technology improved and demand for cleaner-running vehicles increased.

Under the newly published terms in Decree No. 2011-310, beginning Jan. 1, 2012, vehicles emitting 50 to 60 grams of carbon dioxide per kilometer (2.84 to 3.41 ounces per mile) will qualify for a €3,500 (\$4,926) bonus, down from the current €5,000 (\$7,036). The program's so-called super bonus of €5,000 will go to vehicles emitting 50 g/km or less, down from the current 60 g/km. The decree reduces the current €400 (\$563) bonus for vehicles emitting 90 to 110 g/km (5.1 to 6.24 oz./mile) to €300 (\$422) and also reduces the maximum emissions for this category, so that it henceforth will apply to emissions of 90 to 105 g/km (5.1 to 5.96 oz./mile). It reduces the bonus for vehicles emitting 60 to 90 g/km (3.41 to 5.1 oz./mile) to €600 (\$844), down from €800 (\$1,126) currently.

28. London Black Cabs Going Hydrogen

Fuel Cell Black Cabs have taken to the roads of London for the first time since being awarded Road Legal status by the UK Vehicle Certification Authority (VCA). At an event on 22nd March 2011, one of the Intelligent Energy powered taxis travelled from Forbes House, headquarters of the Society of Motor Manufacturers and Traders (SMMT) and the taxi's base for the day, to some of London's most iconic landmarks.

The project to deliver a fleet of the zero emission taxis to the streets of London in time for 2012 is on track, with the first Fuel Cell Black Cabs covering a combined total of over 8,000 miles in road and test track testing conditions. During its first tour of London's roads, one of the Fuel Cell Black Cabs excelled in rush-hour traffic, with smooth and responsive acceleration provided by the fuel cell and electric motors.

Boris Johnson, Mayor of London, wants to make Britain a leader in fuel cell technology and has already announced plans to increase hydrogen refueling stations around the capital. He said,

“These prototype zero-emission taxis are a shining example of British ingenuity, combining revolutionary fuel cell technology with an iconic design classic. This marks an important milestone in my goal to create a cleaner cab fleet, firstly through introduction of the first ever age limits moving towards zero-emission vehicles as they come to market. Affordable and low polluting cabs are within our grasp and I urge manufacturers to accelerate efforts to produce them.”

The zero emission taxis have been developed by a consortium, led by Intelligent Energy, which includes Lotus Engineering, London Taxis International and TRW Conekt with part-funding from the UK Government’s Technology Strategy Board. The fuel cell and battery powered hybrid taxi provides a 250 mile driving range with rapid refueling, all within the confines of the body of a conventional London taxi. Now that fully functional, validated, proven vehicles have been produced, the consortium plans to push ahead with the delivery of a fleet to London in time for 2012.

29. Researcher Concludes German CO2 Output Up 4.8 Percent In 2010

German carbon dioxide emissions in 2010 were 4.8 percent higher than the year before at 826.5 million metric tons, according to a prominent researcher. "First estimates show that CO2 emissions in 2010, after the dramatic decline of 7 percent in 2009 (788.8 million), rose 4.8 percent year-on-year," said Hans-Joachim Ziesing, a former energy expert at the DIW institute who compiles energy statistics. "But 2010 was still below 2008 and greatly so, by 2.5 percent," he said. The 2008 number was 848.0 million.

The German number is important for wholesale carbon emissions certificates markets. Polluters in identified sectors such as energy must hold CO2 emission rights to cover their production in the traded emission allowances market.

The results are due to be published in a trade magazine in April but were made available to reporters earlier by Ziesing, who advises the Berlin economy and environment ministries. They precede official numbers due soon from environment agency Umweltbundesamt (UBA).

The 2010 result is in line with a resumption of industrial activity in Europe's biggest economy after the recession, but pre-crisis levels in many areas have not yet been recaptured, Ziesing said. Germany's adjusted gross domestic product (GDP) rose 3.6 percent and manufacturing output rose more than 10 percent as producers of chemicals and metals filled their order books again.

More CO2 was also emitted, because the year was unusually cold, which boosted energy-derived CO2 output as heat providers burned more fuels. Output of six so-called Kyoto gases, which cause global warming and include CO2, the heaviest pollutant, broadly developed in the same pattern, Ziesing said.

30. Mercedes-Benz Launches Blue Efficiency Power for Euro VI

Daimler Trucks has launched the Mercedes-Benz OM 47x, under the name "Blue Efficiency Power", heralding the arrival of a completely redesigned range of heavy-duty engines. The Blue Efficiency Power generation of Mercedes-Benz engines has been specifically developed for use in Europe and is the first of its type to meet, from the outset, the Euro VI emission standard.

Mercedes-Benz has developed a cooled exhaust gas recirculation system (EGR), particulate filter and SCR technology for use in the new Blue Efficiency Power generation of engines. This combination has already proved successful in real-life use in vehicles from Daimler Trucks on other continents. The configuration has been specifically adjusted to European emissions legislation, while the particulate filter, including the strategy for its regeneration, is a special European development.

31. PMP Publishes Final Report On Heavy-Duty Testing

The EU Joint Research Centre has published a final report on inter-laboratory correlation of PMP particle mass (PM) and solid particle number (PN) emission testing from heavy-duty engines.⁷ Key findings include:

- PN emission levels from the Golden Engine varied significantly from cycle to cycle. The cold start WHTC gave the highest PN levels, approximately 4×10^{11} #/kWh from both CVS and PFDS dilution systems. At these levels tunnel background PN concentrations did not significantly influence measurements. Hot start WHTC and ETC cycles gave PN levels around $5-9 \times 10^9$ #/kWh, while steady state cycles gave higher results ($2-3 \times 10^{10}$ #/kWh on the WHSC and $6-8 \times 10^{10}$ #/kWh on the ESC), possibly due to higher exhaust temperatures resulting in some passive DPF regeneration that caused a reduction in filtration efficiency. On these test cycles tunnel background levels were found to have a significant impact in the case of some laboratories' CVS systems. PFDS tunnel background levels, however, were significantly lower and did not influence PN results. Where tunnel background concentrations were low, correlation between CVS and PFDS measurements was excellent.
- PN repeatability levels across the different test cycles ranged from 20-60% for CVS sampling, with best repeatability being on the cold WHTC (where PN levels were highest), and worst on the WHSC, where partial passive regeneration of the DPF may have occurred. PFDS repeatability ranged from 20-70%, with best and worst results again on cold WHTC and WHSC respectively. PN reproducibility between laboratories was generally similar to repeatability. Across the different test cycles PN reproducibility ranged from 30-80% for CVS sampling and 50-86% for PFDS sampling.

The results demonstrate that the PM measurement method is suitable to confirm that engine emissions are below 10 mg/kWh concludes the report. In this exercise, PM measurements could not generally be discriminated from tunnel background PM measurements. The PN emissions measurement method was able to discriminate between the emissions levels on different test cycles of an engine equipped with an efficient wall-flow DPF. PN was also able to discriminate engine emissions from tunnel background levels, except in the case of high tunnel background sampling systems during testing on cycles with lower emissions levels.

NORTH AMERICA

32. Report: Clean Air Act Saves Lives; Benefits Exceed Costs 30:1

A new report by the U.S. Environmental Protection Agency (EPA) estimates that the benefits of reducing fine particle and ground level ozone pollution under the 1990 Clean Air Act amendments will reach approximately \$2 trillion in 2020 while saving 230,000 people from early

⁷ "Particle Measurement Programme (PMP) Heavy-duty Inter-laboratory Correlation Exercise (ILCE_HD)"

death in that year alone. The report studied the effects of the Clean Air Act updates on the economy, public health and the environment between 1990 and 2020.

The EPA report received extensive review and input from the Council on Clean Air Compliance Analysis, an independent panel of distinguished economists, scientists and public health experts established by Congress in 1991.

“The Clean Air Act’s decades-long track record of success has helped millions of Americans live healthier, safer and more productive lives,” said EPA Administrator Lisa P. Jackson.” This report outlines the extraordinary health and economic benefits of one of our nation’s most transformative environmental laws and demonstrates the power of bipartisan approaches to protecting the health of the American people from pollution in our environment.”

“The Benefits and Costs of the Clean Air Act from 1990 to 2020” shows that the benefits of avoiding early death, preventing heart attacks and asthma attacks, and reducing the number of sick days for employees far exceed costs of implementing clean air protections. These benefits lead to a more productive workforce, and enable consumers and businesses to spend less on health care -- all of which help strengthen the economy.

In 2010 alone, the reductions in fine particle and ozone pollution from the 1990 Clean Air Act amendments prevented more than:

- 160,000 cases of premature mortality
- 130,000 heart attacks
- 13 million lost work days
- 1.7 million asthma attacks

In 2020, the study projects benefits will be even greater, preventing more than:

- 230,000 cases of premature mortality
- 200,000 heart attacks
- 17 million lost work days
- 2.4 million asthma attacks

This report estimates only the benefits from the 1990 Clean Air Act amendments. The 1990 Clean Air Act amendments built on the significant progress made in improving the nation’s air quality through the Clean Air Act of 1970 and its 1977 amendments. The overall benefits of the Clean Air Act exceed the benefits estimated in this report, with millions of lives saved since 1970.

The report is the third in a series of EPA studies required under the 1990 Clean Air Act amendments that estimate the benefits and costs of the act. The reports are intended to provide Congress and the public with comprehensive, up-to-date, peer-reviewed information on the Clean Air Act’s social benefits and costs, including improvements in human health, welfare, and ecological resources, as well as the impact of the act’s provisions on the U.S. economy.

33. Air-Quality Standards Stringency Questioned by EPA Staff

U.S. government scientists questioned the stringency of federal standards for particle pollution, setting the stage for the Environmental Protection Agency to propose tougher rules affecting

emissions from power plants, manufacturers, or automobiles later this year. The EPA management has said that it hasn't decided whether to strengthen the rules in question. But in a report made public, EPA staff said "currently available information clearly calls into question the adequacy of the current standards." The staff was examining EPA regulations for "fine particles" found in smoke or haze emitted after fuel is burned.

The Clean Air Act requires the EPA to set standards for air quality, including the presence of tiny particles that can cause lung and heart problems when they are inhaled. States then develop plans to implement the standards. In 2006, the Bush administration updated the standards but didn't change a critical standard for fine particles (PM_{2.5}). Watchdog groups sued and won, with a federal court ordering the EPA to revisit the fine-particle standard because the agency hadn't proven that the rule adequately protected public health.

The scientists' report was published as part of an assessment of the EPA's options for changing the rule. The EPA said it will issue a formal proposal later this year. The agency is also reviewing standards for other types of particle pollution, including what are known as coarse particles. Coarse particles are larger than fine particles and are associated with dust from farming and mining operations in the Western U.S. On standards for coarse particles, the EPA scientists were less clear in their report. They wrote that it would be "appropriate" for the EPA to keep current standards or to revise them.

Farmers and their allies in Congress have been worried that the EPA will decide to set strict standards for airborne dust in rural areas. Richard Krause, senior director of congressional relations for the American Farm Bureau, said that lowering the acceptable level of coarse particles in the air "is going to have a lot worse economic impacts and a lot worse effects on business."

In their assessment, the EPA scientists acknowledged "uncertainties and limitations" regarding the evidence for negative health impacts from particle pollution. But they concluded there was enough evidence for the EPA to consider tougher rules on emissions for fine particles, which can come from coal-fired power plants, factories, and transportation. "Consideration should be given to revising the suite of standards to provide increased public health protection," the scientists wrote.

34. New Jersey Governor Takes Action to Reduce Diesel Emissions

Governor Chris Christie has signed an Executive Order that targets air pollution caused by diesel engines used on major transportation construction projects in New Jersey. It calls on the Department of Environmental Protection (DEP) and Department of Transportation (DOT) to create a diesel emission retrofit Pilot Program for construction equipment with the ultimate goal of improving air quality for those living near urban construction sites.

"The cumulative effect of multiple sources of pollution, including diesel exhaust, is a major health impact in communities across the Garden State," Governor Christie said. "Exhaust from older diesel-powered vehicles and equipment is a source of these harmful pollutants especially in congested urban areas. With this Executive Order, we're focused on reducing diesel emissions to help resolve this serious public health issue that disproportionately affects residents in these areas."

Limiting exposure to fine particulate matter is a priority for the environmental community and a priority for Governor Christie.

“It is well documented that exposure to such fine particulate matter, of which diesel exhaust is a significant contributor, has cardiovascular and respiratory effects, including cancer, premature death, and increased incidence of asthma, allergies, and other breathing disorders. It is imperative that we reduce those harmful emissions,” said DEP Commissioner Bob Martin.

Executive Order No. 60 directs Commissioner Martin and DOT Commissioner James Simpson to establish a pilot program that will retrofit 175 pieces of equipment within three years. Upon completion of the pilot project in 2014, the DEP and DOT will conduct a stakeholders’ process to gather information to determine if the diesel retrofit project should continue and/or expand. A report and recommendation will be submitted to the Governor, who will make the final decision.

Additionally, under the pilot project to be implemented by the DEP, non-road diesel construction equipment of more than 100 horsepower (such as bulldozers, graders and pavers) used in State-financed construction projects must meet stringent standards or must be retrofitted with devices to achieve at least an 85 percent reduction in particulate matter emissions. The first phase of the new diesel program will focus on DOT projects in urban areas to be selected later this year. Retrofits will be financed by \$2.5 million in DEP grants from State and Federal air quality mitigation funds.

Non-road diesel construction equipment generates approximately one-third of the toxic mobile source diesel particulate matter emissions in New Jersey — more than any other mobile source sector including on-road vehicles, trains, or marine commercial vessels. While there are four times as many on-road diesel vehicles as non-road equipment, the non-road equipment emits twice as much due to the fact that Federal emissions standards for non-road engines lag behind those for on-road engines.

35. U.S. Utilities Push To Delay EPA Pollution Rules

The U.S. Environmental Protection Agency's timeline for implementing new rules requiring utilities to reduce emissions of toxic chemicals is too aggressive and could put the reliability of the nation's electric grid at risk, according to company executives. The EPA has proposed a three-year schedule for power plants to comply with new pollution rules for utilities, but the executives said that is not enough time for companies to adjust to the complex regulations.

The anti-pollution regulations proposed by EPA would require many coal-fired power plants to install scrubbers and other technologies to cut the levels of arsenic, chromium, nickel and acid gases in addition to mercury escaping through smokestacks and eventually reaching water supplies, which can damage nervous systems in babies.

A representative from Southern Co. said the new rules coupled with a suite of other pollution regulations being pursued by EPA will raise costs and force a significant amount of plants to shut down, hampering the nation's ability to handle periods of high electricity demand or power outages. The EPA can extend the compliance deadline for individual plants by up to a year, but he said that is still too little time for companies to make necessary modifications.

Republicans in the House of Representatives said this week they plan to introduce a bill to delay the pollution rules for utilities, as well as those for boilers and cement plants. "The goal is not to repeal these regulations. It is to advance them in a reasonable way," Energy and Commerce committee chairman Fred Upton said at the hearing.

Clean Energy Group, a coalition of energy companies including Exelon Corp, spoke against delaying the EPA's utility pollution rules. "While complying with these obligations will take planning and significant resources by the electric sector ... we anticipate that the electric sector can comply with the Act's requirements," the group's executive director Michael Bradley said at the hearing.

When Republicans took control of the House this year, they pledged to greatly increase oversight of the environmental agency. But lawmakers complained the EPA failed to provide a witness for the House hearing on Friday, as well as other House hearings held this week. "They don't seem to ever show up and be accountable," said Representative Joe Barton, who referred to the agency as the "evaporating personnel administration." EPA Assistant Administrator Gina McCarthy said in a letter to the subcommittee chairman that she could not attend Friday's hearing because she had "long-standing obligations" that she was unable to change on "such short notice." McCarthy expressed willingness to testify at a "mutually agreeable future date."

Bobby Rush, the top Democrat on that subcommittee, defended the EPA's absence at the hearing. "We don't give the EPA proper notice," Rush said. "I know they have a lot of employees over there but they have very few employees who have this kind of expertise."

36. East Coast Gets First Electric Cruise Ship Dock

Luxury liners that dock in New York will soon be able to plug into the East Coast's first electric ship terminal, according to city officials. The green initiative at the Brooklyn Cruise Terminal swaps electric power for the diesel fuel emissions spewed into the air by cruise ships. The huge boats typically idle their engines as they dock to unload passengers and supplies, often for up to 11 hours at a time.

Mayor Michael Bloomberg said in a statement that the environmental move will eliminate roughly 1,500 tons of carbon dioxide that the ships emit into the air each year. The new grid will allow the ships to shut off their engines and be powered by electricity instead. "We'll lower fossil fuel emissions and improve air quality for local residents all while keeping our waterfront working and our tourism numbers growing," the mayor said.

Brooklyn's waterfront electric grid will be the first of its kind on the East Coast, although electric docks have been used on the West Coast for nearly a decade.

It will cost roughly \$15 million to install the electric grid, with funding coming from the Port Authority of New York and New Jersey as well as the U.S. Environmental Protection Agency.

Construction on the terminal will begin later this year and is expected to be complete by early 2012.

37. 2011 Budget Deal Would Slash EPA Budget 16 Percent

The U.S. Environmental Protection Agency budget for this fiscal year will be cut 16 percent under government-wide reductions. EPA funds would get a \$1.6 billion cut for the fiscal year ending September 30 under the last minute deal between President Barack Obama and Republican and Democratic leaders in the U.S. Congress that averted a government shutdown.

"Some programs will be cut back," EPA Administrator Lisa Jackson told reporters. She said the largest cuts to the EPA would be made in revolving funds that help states pay for pollution

abatement. There will be some cuts in the EPA's programs on climate, but those will be comparatively small compared to cuts in other agency programs, Jackson added.

Under the budget deal, many other government departments face smaller cuts than EPA on a percentage basis and the Department of Defense actually gets a boost.

Many Republicans and some Democrats are anxious to delay or permanently stop EPA rules on greenhouse gas emissions. These critics say the rules could hurt businesses like oil refineries and power utilities, which could pass costs to consumers who are struggling to recover from the economic downturn. The EPA began rolling out the rules in January and will propose emissions limits on refiners and power plants in coming months.

Recently EPA critics in the U.S. Senate failed to get enough votes to pass a measure that would have stopped the EPA from regulating emissions of greenhouse gases blamed for warming the planet. Similar legislation passed easily in the Republican-controlled House, but that vote was mostly symbolic after the Senate vote.

38. U.S. Government to Review Plans To Develop Oil Shale, Tar Sands

The Obama administration has announced that it will "take a fresh look" at plans issued under the prior Bush administration to develop commercial oil shale and tar sands in three U.S. states. The Interior Department said its Bureau of Land Management plans to review the environmental impact of allocating oil shale and tar sands resources on federal government-owned lands in Colorado, Utah and Wyoming.

The BLM in 2008, during the administration of President George W. Bush, issued an environmental impact statement on making 1.9 million acres of public lands available for oil shale development and 431,244 acres to lease for tar sands development. "With commercial development of oil shale at least several years away, the new planning process will allow the BLM to take a fresh look at what public lands are best suited for oil shale and tar sands development," the agency said. "Final land-use decisions will be made in light of any new information about potential resource needs and impacts, and technological innovations," the BLM said.

Oil is released from tar sands and shale rock when they are heated.

Many environmental groups are against tar sands and oil shale because they generate more greenhouse gas emissions than conventional oil. Green groups argue the tar sands development, in particular, conflicts with the Obama administration's efforts to fight global warming. Environmental groups also oppose TransCanada Corp's proposed Keystone XL pipeline that will bring Canadian tar sands oil to U.S. Gulf Coast refineries. The U.S. State Department is considering whether to issue a permit for the Keystone project.

39. Obama Calls for Deep Cuts in U.S. Oil Imports

President Barack Obama has proposed to cut U.S. oil imports by a third over 10 years, a goal that eluded his predecessors and is seen as extremely ambitious by skeptical analysts. In a speech that was short on details on how to curb U.S. energy demand, Obama did not pretend there were speedy measures to curb mounting fuel costs, which could threaten the country's economic recovery by weighing on American spending and confidence. "There are no quick

fixes ... We will keep on being a victim to shifts in the oil market until we finally get serious about a long-term policy for secure, affordable energy," Obama said.

As he rolled out a blueprint on energy security, Obama said the country must curb dependence on foreign oil that makes up roughly half of its daily fuel needs. Previous presidents have made similar promises on energy imports that they failed to meet. And any new policy initiative can expect tough opposition from Republicans, who see high energy prices hurting Obama and his Democrats in the 2012 presidential and congressional elections. Republicans have mocked the idea of Obama curbing oil imports a week after visiting Brazil, where he said the United States wanted to be a good customer for its oil exports.

Obama laid out four areas to help reach his target of curbing U.S. dependence on foreign oil: lifting domestic energy production, fostering the use of more natural gas in vehicles like city buses, making cars and trucks more efficient, and boosting alternative energy by encouraging biofuels.

The United States consumed almost 20 million barrels of oil a day in 2010 of which roughly half was imported.

Noting natural gas made sense after discoveries of an estimated 100-years' worth of domestic shale gas reserves, Obama urged Congress to pass legislation to encourage the use of natural gas burning vehicles. He said his administration would help private business break ground on four next-generation bio refineries, and "look for ways to reform biofuels incentives" to save taxpayer money, without going into details. Obama also reiterated nuclear power would be a part of the country's long-term energy plan, stressing the lessons from the nuclear disaster in Japan would be studied carefully, while making just passing reference to climate change.

Obama's election campaign goal of passing measures to curb U.S. greenhouse gas emissions has made little headway on Capitol Hill, to the dismay of environmental activists who complain it has slipped way down his list of priorities.

Analysts and experts said Obama's goal is ambitious and that truly reforming U.S. energy use would involve sweeping changes, including possible fuel taxes to encourage Americans to change their habits, which could be politically toxic.

The latest measures of consumer confidence have been dented by rising energy prices, which sap household spending and could derail the U.S. recovery if prices stay high enough for a long time, hurting Obama's re-election prospects.

A new Quinnipiac University poll showed that 48 percent of American voters disapprove of Obama's job performance, and 50 percent think he does not deserve to be re-elected in 2012, compared with 42 percent who approve and 41 percent who feel he does deserve to be re-elected. Those were his lowest ratings ever, Quinnipiac said.

Obama singled out Canada and Mexico, the United States' two largest suppliers, as reliable sources of oil and also cited Brazil as a promising future energy partner. The U.S. Interior Department estimates millions of acres (hectares) of U.S. energy leases are not being exploited by oil companies and the White House wants that to change.

40. EPA Publishes National U.S. Greenhouse Gas Inventory

The U.S. Environmental Protection Agency has released the 16th annual U.S. greenhouse gas inventory. The final report shows overall emissions during 2009 decreased by 6.1 percent from the previous year. This downward trend was attributed to a decrease in fuel and electricity consumption across all U.S. economic sectors.

Total emissions of the six main greenhouse gases in 2009 were equivalent to 6,633 million metric tons of carbon dioxide. These gases include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride. The report indicates that overall emissions have grown by more than 7.3 percent from 1990 to 2009. Emissions in 2009 represent the lowest total U.S. annual GHG emissions since 1995.

The Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2009 tracks annual greenhouse gas emissions at the national level and presents historical emissions from 1990 to 2009. The inventory also calculates carbon dioxide emissions that are removed from the atmosphere by "sinks," e.g., through the uptake of carbon by forests, vegetation and soils.

This inventory, prepared in collaboration with federal agencies, is the latest submitted by the United States to the Secretariat of the United Nations Framework Convention on Climate Change (UNFCCC). The UNFCCC sets an overall global framework for nations to address climate change. The final report takes into consideration comments received from stakeholders across the country.

41. EPA Proposes Air Rules That May Hit Coal-Fired Power

Environmental regulators recently proposed rules that would force aging coal-fired power plants to choose between installing costly anti-pollution technology and shutting, which could ensure greater reliance on nuclear power and natural gas. The Environmental Protection Agency said the proposed rules, once fully implemented, will prevent 91 percent of mercury in coal from being released into the air. Power plants would have four years to meet the standards.

The EPA will take public comment for 60 days on the rules, which would require many coal-fired power plants to install scrubbers and other technologies to reduce emissions of arsenic, chromium, nickel and acid gases in addition to mercury, which can damage nervous systems in babies.

Coal-fired plants generate nearly 50 percent of U.S. electricity while nuclear and natural gas generates about 20 percent each.

Issuance of the rules, 20 years in the making, came in response to a court deadline. "With the help of existing technologies we will be able to take reasonable steps that will provide dramatic protections to our children and loved ones, preventing premature deaths, heart attacks and asthma attacks," said Lisa Jackson, the EPA administrator. She said the rules could prevent as many as 17,000 premature deaths and 11,000 heart attacks each year.

42. Court Backs EPA in LA Pollution Case

A court has upheld federal caps on vehicle emissions environmentalists had argued failed to address air pollution faced by 1.5 million Californians. The U.S. 9th Circuit Court of Appeals in San Francisco upheld the Environmental Protection Agency's approval of the caps, saying the limits on the amount of motor vehicle emissions allowed in the region were adequate for the

purposes of proceeding with California's transportation plans and projects, the Los Angeles Times reported.

Environmental groups said the caps failed to take into account the amounts of air pollution faced by the 1.5 million people who live in close proximity to Southern California's freeways. The Natural Resources Defense Council, in a lawsuit filed in 2008, had asked for monitoring of air quality along freeways, including some in Los Angeles where traffic averages 12,180 vehicles per hour -- more than 25 percent of it diesel trucks.

Environmentalists said measurements taken by South Coast Air Quality Management District monitors were collected far from heavily traveled freeways where cancer risks from diesel particulates are greatest.

43. NPRA Argues Changes to Ozone Standard Will Harm Job Growth, Consumers

The Environmental Protection Agency's proposed changes to federal standards regulating ozone could inflict serious harm on America's economy, job growth and consumers, said Gregory Scott, executive vice president and general counsel of the National Petrochemical & Refiners Association (NPRA), in a statement to an EPA advisory panel. "The proposed NAAQS for ozone will have a great, and potentially very negative, impact on the nation's economy and whether the current economy rebound can be sustained," Scott said. "It will have a great, and again potentially very negative, impact on the prospects for job creation and retention over the next decade. And its impact on American citizens – the motorists, truckers, farmers and families that drive our great nation – will be felt for years to come."

Scott's statement to the Clean Air Scientific Advisory Committee's Ozone Review Panel was given during a teleconference held as the panel considers proposed revisions to the 2008 National Ambient Air Quality Standards for ozone. "Air quality is improving and risks are declining without a change to the Ozone NAAQS," Scott said. "Cleaner fuels and cleaner facilities are contributing to this trend and will continue to do so in the future as current programs are fully implemented."

"The current ozone NAAQS standard and many existing continuing air quality improvement programs are working and will continue to protect public health in the future."

EPA typically reviews federal air quality regulations every five years, as required by the Clean Air Act. Although the current standard for ozone was established in 2008, EPA is expected to issue changes to the standard this July. "I urge you to undertake your work cautiously and with full knowledge that the advice you provide to the EPA administrator will impact the lives, livelihoods, jobs and futures of hundreds of millions of Americans across the nation," Scott told the panel.

44. Republicans Move to Stop EPA CO2 Rules

Republicans in the Congress have pushed forward with legislation that would kill the Environmental Protection Agency's efforts to regulate greenhouse gases blamed for global warming. The House Energy and Commerce Committee, on a mostly partisan vote, approved the bill that would halt EPA regulations that began this year to control emissions of carbon dioxide and other pollutants linked to climate change.

A House subcommittee had previously approved this measure.

In the Senate, Republican leader Mitch McConnell moved to attach identical legislation to an unrelated small business bill being debated in the chamber. House Energy and Commerce Committee Chairman Fred Upton is working in tandem with Senator James Inhofe, a leading skeptic of human-induced climate change and a critic of government attempts to control carbon dioxide pollution. Inhofe has been instrumental in blocking climate control legislation over the last decade, and he and other Republicans are now moving to squelch more narrow EPA regulations.

The measure would stop EPA from regulating carbon dioxide emissions from large factories, oil refineries and electric utilities.

In January, EPA went ahead with regulations aimed at large polluters by requiring them to obtain permits for emitting carbon and other greenhouse gases. Still to come this year are proposed rules that would limit emissions from power plants and oil refineries. EPA is moving ahead with the regulations after efforts to pass climate control legislation collapsed in the Senate last year. The House passed a comprehensive bill in 2009.

Inhofe, speaking on the Senate floor, said new controls on carbon pollution would cost families in his home state of Oklahoma about \$3,000 annually in higher energy prices. But Democrats and environmentalists have challenged such estimates as scare tactics and say the high cost figures were based on outdated or faulty research. Under legislation in Congress last year, consumers would have been compensated for some of the higher energy costs associated with moving the U.S. economy toward using more alternative fuels such as wind and solar power.

45. Report Recommends NAFTA-Based Forum to Lower Freight Transport Emissions

The North American Free Trade Agreement countries should create a forum where transportation and environmental officials from the United States, Canada, and Mexico could meet to develop long-term plans for reducing greenhouse gas emissions from freight transportation, according to a March 31st report from the Commission on Environmental Cooperation.⁸ The report recommends several steps the three countries should take to minimize greenhouse gas emissions from heavy-duty trucks and trains. Greenhouse gas emissions from freight transportation are projected to increase through 2030 even as emissions from light-duty vehicles decline by 11.5 percent in the United States, according to the report.

It recommends that the countries agree to set a price on carbon emissions, work to minimize delays when freight crosses borders, better integrate land-use planning and freight transportation, promote lower-carbon fuels, shift to more efficient modes of transport such as rail and water, and increase the efficiency of transportation technologies. The countries should also take steps to coordinate voluntary emissions reductions programs such as the Environmental Protection Agency's SmartWay with similar programs in Canada and Mexico.

Though vehicle miles traveled for light-duty cars and trucks are projected to increase through 2030, emissions from those vehicles will decline as new fuel economy standards and updated pollution control requirements are implemented, according to the report. However, freight transportation emissions are projected to increase during that period. Heavy-duty trucks, the largest segment of freight transportation, accounted for 17.4 percent of all U.S. greenhouse gas

⁸ Destination Sustainability: Reducing Greenhouse Gas Emissions From Freight Transportation in North America

emissions from the transportation sector. The report projects that freight transportation will grow to 20.7 percent of all U.S. transportation emissions by 2030 despite proposed emissions standards for heavy-duty vehicles.

The Environmental Protection Agency and the National Highway Traffic Safety Administration proposed the first greenhouse gas emissions and fuel economy standards for heavy-duty vehicles in November 2010. The standards would apply to vehicles in model years 2014 through 2018 and are projected to reduce fuel consumption and greenhouse gas emissions from the trucks by 20 percent by 2018, according to the agencies.

46. Alberta Implements Renewable Fuels Standard

On April 1st, the Canadian province of Alberta will implement a renewable fuel standard requiring an annual average of 2 percent biodiesel in diesel fuel and 5 percent ethanol in gasoline sold in the province. Greenhouse gas emissions from the renewable diesel or ethanol must be at least 25 percent lower than from the equivalent fossil fuel, the province said. To ensure the standard's success, the province will expand its Bioenergy Producer Credit Program and extend it until 2016. The province's budget for the fiscal year beginning April 1, 2011, allocates C\$336 million to support bioenergy production in the province over the next three years, including C\$58 million in 2011–12. An Alberta government backgrounder said research indicates that the average consumer will pay an additional C\$34 per year per vehicle for fuel as a result of the new standard. Biodiesel is made from a variety of feedstocks, including vegetable oil and waste cooking oil. Environment Canada in February published draft regulations to require 2 percent renewable fuel content in all diesel fuel and home heating oil sold in Canada as of July 1.

47. Saskatchewan to Subsidize Renewable Diesel Fuel

On March 23rd, Canada's Saskatchewan province launched a program of grants for producers of renewable diesel as part of its 2011–2012 budget. The provincial government defines renewable diesel as a diesel fuel substitute made from renewable materials that include biomass feedstock from agriculture and forest biomass. The program is expected to benefit Saskatchewan farmers by offering them a new market for off-grade canola. The five-year, \$26 million program will provide a 13-cent-per-liter grant to eligible producers starting on April 1st. The program will wind up in 2016. According to an analysis commissioned by the Canola Council of Canada and released in November 2010, Canadian canola as a feedstock in biodiesel reduces life-cycle greenhouse gases by 90 percent compared to fossil-based diesel.

48. EIA Reports 4.3% Drop in Transportation GHGs Although VMT Increased

US VMT rose slightly in 2009 while emissions from gasoline and diesel fuel declined, a result EIA attributes as a likely result of more efficient vehicles and increased consumption of biofuels.

Total US greenhouse gas (GHG) emissions were 6,576 million metric tons carbon dioxide equivalent (MMTCO_{2e}) in 2009, a decrease of 5.8% from the 2008 level, according to Emissions of Greenhouse Gases in the United States 2009, a report released by the US Energy Information Administration (EIA).

Since 1990, US GHG emissions have grown at an average annual rate of 0.4%. The results for 2009 represent the largest percentage decline in total US GHG emissions since 1990, the starting year for EIA's data on total GHG emissions. EIA Administrator Richard Newell attributed

the decline to the economic downturn, combined with an ongoing trend toward a less energy-intensive economy and a decrease in the carbon-intensity of the energy supply.

Total estimated US GHG emissions in 2009 consisted of 5,446.8 million metric tons of carbon dioxide (82.8% of total emissions); 730.9 MMTCO₂e of methane (11.1% of total emissions); 219.6 MMTCO₂e of nitrous oxide (3.3% of total emissions); and 178.2 MMTCO₂e of hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆) (2.7% of total emissions).

Emissions of energy-related carbon dioxide decreased by 7.1% in 2009, having risen at an average annual rate of 0.8% per year from 1990 to 2008. Among the factors that influenced the emissions decrease was a decline in Gross Domestic Product (GDP) of 2.6%. The energy intensity of the US economy, measured as energy consumed per dollar of GDP (Energy/GDP), fell by 2.2% in 2009. Year-to-year declines in energy intensity are relatively common, EIA noted

49. U.S. Automakers Will Profit from Higher Fuel Efficiency Standards

As the United States gears up for higher vehicle fuel efficiency standards, two new reports from investors and industry experts conclude that U.S. automakers will be more profitable than they are today at a fleet wide 42 mile per gallon average in 2020. The same research group projects that by 2015, less than five years away, more than one in 20 cars sold in the United States will be hybrid, plug-in or full electric vehicles.

The two reports were produced by Citigroup Global Markets and Ceres' Investor Network on Climate Risk with the University of Michigan Transportation Research Institute, Baum and Associates and Meszler Engineering Services.

The fuel economy analysis evaluates the impact that changes to the U.S. Corporate Average Fuel Economy (CAFE) standards and greenhouse gas emissions standards may have on the auto industry in 2020. Today's CAFE standard is 24.1 mpg for cars and light trucks combined, and is mandated to rise to 30 mpg by 2016.

In May 2010, President Barack Obama directed the U.S. Environmental Protection Agency and the National Highway Transportation Safety Agency to develop the next phase of the CAFE standards for model years 2017 to 2025. (The most fuel-efficient car on the U.S. market, the Toyota Prius, gets 50 mpg.) Federal and California state agencies tasked with developing these standards are considering a range representing an annual decrease in carbon dioxide emissions of three to six percent.

The Citigroup-Ceres report states, "These goals are eminently achievable technologically and cost-effective." The report finds that stronger mileage and greenhouse gas standards will boost profits and sales in 2020 for the auto industry worldwide, with the Detroit Three - Ford, General Motors and Chrysler - seeing the biggest financial benefits.

Walter McManus, an economist at the University of Michigan Transportation Research Institute and director of the Automotive Analysis Group, said, "Our research indicates that increasing industry average fuel economy to 42 miles per gallon by 2020 could raise industry variable profit by \$9.1 billion, or eight percent. Most of the added profit, \$5.1 billion, could go to the Detroit Three." Other beneficiaries will be U.S.-based suppliers of key fuel-saving technologies, from turbochargers to direct injection, dual-clutch transmissions.

Dan Meszler of Meszler Engineering Services said, "Between now and 2020 much of this technology is expected to mature, so that a 2020 CAFE requirement of 42 miles per gallon should produce consumer savings starting at gas prices of \$2.00 per gallon." "Since current and expected future gasoline prices far exceed that price," said Meszler, "these technology-driven fuel savings are extremely cost effective and indicate that a 42 mile per gallon CAFE program will not only reduce petroleum imports, but save consumers money."

Investors are also poised to benefit. Lily Donge, manager for environment and climate change at Calvert Asset Management Company, said, "Investors often view tighter environmental regulations as an impediment to growth but these reports offer a refreshing counterpoint. Stricter environmental standards actually have the potential to spark innovation and improve the competitive positioning of U.S. automakers."

The second report is an overview of the electric vehicle industry, with a focus on individual company product plans, key technological issues, and industry initiatives and government policies that may influence further development of electric vehicles. The key conclusion here is that the U.S. electric vehicle industry is already robust and viable, and will grow further under strong standards and other government policies that will boost demand for electric and plug-in-electric cars. Alan Baum of Baum & Associates, who produces long-range industry analyses with a focus on fuel economy and electric vehicles, said, "Our study shows that the automakers are well positioned to meet the fuel economy requirements necessary in 2020 with a variety of approaches already in their product plans. Consumer interest in fuel economy, and their expectation that gas prices will remain high, suggests that consumers will purchase these products."

By 2015, Baum & Associates forecasts over 100 alternative fuel models available in the U.S. market covering the four technology groups, including fuel cells, but many of these products will sell only in modest volumes. The forecast anticipates that sales will grow from roughly 2.5 percent of the total market this year to 6.3 percent by 2015, with total sales of over 900,000 units that year. Regular hybrids will remain most prevalent in both number of vehicle offerings and volume - approximately 55 percent of projected volume - with plug-ins and full electrics each representing about 20 percent of projected volume.

ASIA-PACIFIC

50. ICCT Praises China's Vehicle Pollution Control Effort but Problems Remain

In recent years, following the extremely rapid increase in vehicle population in China, the vehicle pollution problem has become increasingly prominent. An authoritative transportation organization, the International Council on Clean Transportation, recently published the "Assessment Report of China Vehicle Emission Control Measures." The report shows that China's vehicle emission prevention and control measures have been effective at reducing pollution emissions, but that many problems and shortcomings remain which must be overcome.

The report points out, from 2000 to 2010, China's vehicle population increased over three times from 63.8 million to 200 million, but that total pollution emissions only increased 0.3 times. Each pollutant was reduced by over 50%. The accumulated reductions from the control measures adopted were 38 million tons NO_x, 44.5 million tons HC, 238 million tons CO, and 7 million tons PM emissions. At the same time, China has established a vigorous vehicle pollution prevention and control policy system, successively issuing nearly 100 vehicle pollution prevention and control technical standards, including new vehicle source control, in-use vehicle labeling

management, yellow-label vehicle rapid scrappage and more, which have had clear results. These measures have had a striking social and environmental benefit.

“Through more than 10 years of persistent efforts, China has established a comprehensive vehicle environmental management system, and succeeded in implementing a series of strict pollution prevention and control measures, which have brought about impressive results,” said Walsh, the Chair of the International Council on Clean Transportation who has provided consulting for China’s elimination of lead from gasoline, setting of vehicle emission standards, and more, during an interview on the 15th of April.

At the same time, he pointed out that China’s vehicle emission prevention and control still has many problems and shortcomings which must be overcome. First, the delay in the supply of low sulfur fuel is the biggest obstacle and bottleneck to the development of vehicle environmental technology; mismatched vehicles and fuels can greatly reduce the implementation effectiveness of pollution emission standards, and simultaneously seriously restrict the advancement of vehicle pollution control technologies. Second, the capacity of vehicle environmental supervision management is seriously inadequate; the deployment and funding support for staff and equipment is not adequate to correspond to the situation of vehicle pollution prevention and control. Third, there is a lack of incentives and penalties implemented in parallel with environmental policies and measures, no effective methods and levers such as the use of taxes and price. The environmental enthusiasm of fuel and vehicle manufacturers and consumers has not been effectively adjusted.

To respond to the pollution emission problems brought about by the continued increase in China’s vehicle population in the future, the report offers a few suggestions. First, continue strictly implementing vehicle emission standards, and shrink the environmental technology gap with developed countries. Second, continue reducing sulfur levels in motor vehicle fuel, and comprehensively promote vehicle emission standards and motor vehicle fuel standards. Third, strengthen in-use vehicle inspection and maintenance systems and build a vehicle environmental inspection database. Fourth, aggressively promote the scrappage of high emitting yellow-label vehicles – the government can consider setting up a fund for subsidizing the fixing or scrapping of yellow-label vehicles. Fifth, strengthen environmental labeling management of in-use vehicles – consider expanding the use of labels, and include the labels on vehicles before purchase, to promote environmentally-friendly consumption.

According to the introduction, the International Council on Clean Transportation is an international public interest organization. Over the past few years, it has continually provided transportation environmental management policy consulting to different governments around the world.

51. Beijing to Launch Clean Air Action Plan

Beijing will release the "Beijing Municipal Clean Air Action Plan" in the near future in an attempt to increase the percentage of annual blue-sky days to 80 percent by 2015, said Chen Tian, head of the Beijing Municipal Environmental Protection Bureau (BMEPB), on April 18th.

Chen said that under the "Beijing Municipal Clean Air Action Plan," coal will no longer be used in Beijing’s six urban districts by 2015. Beijing will first control coal-smoke pollution by transforming the equipment of large coal-fired power plants in the six urban districts as well as 520 coal-fired boilers and coal stoves of local households. Beijing has four large coal-fired power plants in Chaoyang and Shijingshan districts. Chen said that these power plants, except

for the Guohua Power phase I project, should complete clean energy transformations over the next five years. Furthermore, a total of 520 coal-fired boilers will be replaced by pollution-free boilers, including all boilers with a steam flow of more than 20 tons and some with a steam flow below 20 tons

Chen said that more than 90,000 households in the new Dongcheng and Xicheng districts, including those living in economy buildings, will all use clean energy instead of coal by 2014. Households near the Fifth Ring Road that currently use coal stoves for heating will first have access to the central urban heating supply and gradually have gas-fired or other clean energy-fired urban central heating. Furthermore, Beijing will introduce a stricter urban access system for enterprises, no longer permitting high-pollution chemical and metallurgical enterprises to build plants in Beijing.

Chen said that according to the clean air action plan, Beijing will ban 400,000 old vehicles that cannot meet emissions standards from the city roads by 2015. Meanwhile, the municipal environmental protection authorities will conduct regular inspections and impose stricter emissions restrictions on new vehicles.

Furthermore, environmental protection agencies at all levels will make greater efforts to reduce the level of dust, smoke and soot in the air. The Ministry of Environmental Protection is drawing up plans to carry out joint prevention and control of air pollution in key areas of northern China including Beijing, Tianjin, and Hebei Province.

Chen predicted that in the next five years, the concentrations of six pollutants, including sulfur dioxide and nitrogen dioxide will meet Beijing's air quality standards, and the annual average concentration of the total suspended particulates and breathable particles in the air will both drop by around 10 percent. Ozone pollution will be gradually reduced, and the percentage of days meeting class 1 and class 2 air quality standards will reach 80 percent by 2015.

52. Focus on Green Growth, Leadership Changes Could Spur Investment in Southern China

Regulatory changes triggered by China's 12th Five-Year Plan (2011–2015) as well as the changes in top leadership in 2012 will bring business and investment opportunities to companies in Hong Kong and southern China with expertise in environmental protection, new energy sources, and carbon emissions reduction, experts said at a forum in Hong Kong on April 8th.

China is simultaneously targeting “green growth” to address heavy pollution and resource security as well as “balanced growth” to continue a fast pace of economic development, with adjustments in its industrial structure, the support of seven key strategic industries, and by moving away from an export-led economy to one of greater domestic consumption, Wang Yi, director general of the Institute of Policy and Management at the Chinese Academy of Sciences in Beijing, said at a forum organized by The Climate Group.

When China's top leadership changes in 2012, Wang said the country should see a “new investment tide” for at least two or three years, basing this on how other large investment surges occurred after leadership changed in the past.

And while China has issued a road map for the next five years, experts said to pay close attention to the forthcoming and more detailed provincial plans. Of particular interest will be the

18 special plans and 78 sector-focused plans that will “be coming out gradually this year,” Wang said.

Businesses with technologies used to lower carbon and energy intensity, reduce emissions of sulfur dioxide and nitrogen oxides, or address wastewater treatment and water pollution could tap into the Chinese market to help the country meet reduction goals within these categories, Wang said.

There is a particularly ripe opportunity for Hong Kong-based and foreign companies to use their expertise in Guangdong province in southern China, which is the largest energy-consuming province, experts said. Guangdong will be looking to reduce its energy use due to a forthcoming provincial regulation on energy consumption as well as its low-carbon pilot policies, Wing Chu, an economist with the Hong Kong Trade Development Council, said.

Wing said a gap exists for small- and medium-sized businesses to fill in Guangdong in such areas as energy efficient air conditioning, residual heat capture technologies, green lighting, power systems enhancement, and utilization of new energy resources. “There will be a steady demand for pollution control services,” Wing said, due to more stringent environmental protection standards in Guangdong.

Over the next five years, he said, Guangdong is expected to spend 200 billion Yuan (\$30.6 billion) on air and water pollution controls, with about half of that devoted to wastewater pollution control and remediation.

Five cities and eight provinces, including Hong Kong's neighboring city of Shenzhen and the province of Guangdong, have been chosen to pilot low-carbon development programs, which will need technical expertise in developing product standards and labeling and in creating better statistical and accounting systems for its carbon dioxide emissions record, Wang said.

The Ministry of Housing and Rural-Urban Development is also in the process of formalizing standards for labeling and certification of building energy-efficiency which will be “something similar, but not exactly like” the Leadership in Energy and Environmental Design (LEED) system in the United States, Wu Changhua, greater China director of The Climate Group, said.

According to Wang, developing and utilizing clean coal technology, which is still in research and pilot phases in China, “will be crucial” for China to meet its carbon intensity reduction goals. He said a carbon trading market would be established “gradually,” likely by region with specific sectors participating, and mostly in the initial low-carbon development areas.

Wang also said it is likely that a “super” ministry of energy could be established in the next few years to help oversee the regulation of the energy industry as well as the national Energy Law, which could be finalized around the same time.

Wang also hinted that there could be further restructuring of government bodies around 2013 because of a “lack of coordination” between various ministries and government departments in the planning process.

Lack of coordination regarding policies, planning, and pricing between the National Energy Administration and other ministries have led to bottlenecks and slowed the pace of development of such things as advanced grid technology, pricing support needed to connect renewable

energy sources to the electricity grid, and infrastructure needed to support electric vehicles, experts said.

Because of Japan's recent nuclear crisis, China has said it will suspend approval for new nuclear developments until a thorough safety review has been conducted. The government "could double the target for solar energy installation if nuclear power development is reduced," Wang said. China has a target of reaching 20 gigawatts of installed solar power capacity by 2020, but this could go as high as 50 gigawatts if plans are revised, Wang said.

53. Toyota's and Others' Low-Emission Cars to Be Manufactured In China

Toyota is planning to start production of low-emission cars in China as it looks to tap into growing demand in the country. Akio Toyoda, the president of Toyota Motors said the company was keen on introducing its latest technologies to the Chinese market. "We want to introduce all our environmental technologies to China," Mr Toyoda said.

Interest in greener vehicles in China is growing as the country works towards reducing its pollution levels. Along with being the world's biggest car market, China has also become the world's biggest polluter. As the government looks to cut down emission levels in the country, car makers are gearing up to cater to growing demand for environmentally-friendly cars.

Recently, Honda Motors' chief executive Takanobu Ito said the company plans to start production of electric cars in China by next year.

Ford Motors has also announced plans to introduce a test fleet of electric vehicles to the Chinese market later this year. "With China aiming to go green on the road with new-energy vehicles, the country is the perfect platform to showcase Ford's advanced technologies in the electrification plan," said Joe Hinrichs, chief executive of Ford China.

The push is coming not only from international carmakers but even domestic manufacturers. Geely Automobiles and Dongfeng Motor group have both said they plan to start production of electric and hybrid vehicles by end of next year. Dongfeng Motors has even set a target of selling 100,000 electric cars by 2015.

54. Chinese Auto Industry Still a 'Weak Giant' with Too Many Small Companies

Zeng Qinghong, general manager of Guangzhou Automobile Industry Group Co, says despite the numerous media reports that more than 18 million cars have been sold in China last year, the auto industry is still "a weak giant". "There are too many small car companies with too little production capacity," Zeng says.

Guangzhou Automobile Industry Group Co (GAGC) is one of the top five auto groups in China and is based in South China's Guangdong province. Last year, the company sold about 700,000 cars, mostly joint-venture brands with Toyota and Honda.

Zeng has been working in Guangzhou for 30 years, since he was 18 in 1979. First as a motor mechanic, then a technician, later an engineer, and finally a manager, Zeng witnessed how a local factory grew into one of the biggest national auto groups in the country.

Last year, Zeng witnessed another revolution in the Chinese market. While auto giants such as General Motors were struggling and while Toyota was busy handling its recall, many Chinese

auto companies experienced a bull market, as indicated by total sales figures. But with a growing industry, the stakes have been raised for Chinese automakers and higher profits are now expected. Competition within China, Zeng says, is now reaching fever pitch.

Figures from China Automotive Technology & Research Center show that by 2015, 20 major auto groups and 10 original equipment manufacturers (OEMs) will reach a total production capacity of 31.24 million, which will be almost half of global sales. Zeng and other industry insiders say that with increased production come many issues, including over-duplication of projects, outdated production facilities and blind expansion. The industry veteran says change must be made immediately.

"In the near future, big companies will eat up smaller ones, and the existing big companies will consolidate through mergers and acquisitions," he says. Zeng predicts that eventually the number of auto companies will be reduced to 10, and five auto centers will be formed across the country. "The five auto centers will be located in the North, South, East, West and Central China. I hope GAGC will be the one in the South," Zeng says. He says that in order for companies to survive, they will have to have an annual production capacity of at least 2 million cars.

In September of last year, the central government issued a policy that encourages conglomeration, lending support for M&As among Chinese auto companies. GAGC acted quickly. Three months ago, GAGC acquired Gonow, a private auto company, and laid out bases in Hangzhou, Taizhou (both in East China's Zhejiang province) and Dongying (in East China's Shandong province). Recently, the government approved the reorganization of GAGC-Mitsubishi assets.

But Zeng warns that automakers should not expand blindly. "For GAGC, markets in Hunan, Guangdong, Zhejiang and other southern provinces will be our major targets," Zeng says. "Any potential M&A has to be done under this blueprint."

But in addition to encouraging integration among auto companies, government policies have made the urban auto market more difficult for automakers. Local governments such as in Beijing have issued strict auto purchase restrictions to relieve severe congestion problems in major cities. Customers now need to pay more, monetarily or in terms of energy costs, to own a car. For a bigger share of the increasingly competitive market, GAGC, like other major manufacturers in China, have begun to tap into second- and third-tier cities as well as the rural market. "Although products sold in this market are mainly mid- to low-end, we cannot ignore the great potential," Zeng says. "Besides, with the growth of disposable income and improvement of logistics, we believe the sales of high-end cars will catch up soon in rural areas." The GAGC-Gonow, priced at 50,000 Yuan (5,389 euros), is expected to become a major brand in second- and third-tier cities.

But mergers have not been exactly smooth for automakers. Zeng says that he found flaws in laws and regulations governing M&As. "Sometimes a deal might get approved by the National Development and Reform Commission, but rejected by the China Securities Regulatory Commission," he says. "This is one of the big problems in closing out deals." A member of the Chinese People's Political Consultative Conference, China's top political advisory body, Zeng raised this issue during the recent two sessions. "In M&As, it is good for the government to point the direction, but the deals should be done by the companies," Zeng says. "Detailed instructions from the government can only make a company die sooner."

To be more competitive, Zeng says GAGC is cutting on labor costs. "We will raise the level of automation to gain more production capacity, and gradually phase out manual labor," he says.

55. China Plans to Take Lead in New-Energy Vehicles

China will launch a development plan in energy-saving and the new-energy vehicle industry to make the country a leader in the sector over the next 10 years, with government funding of 100 billion Yuan (\$15.28 billion). The long-expected plan, jointly drafted by the Ministry of Industry and Information Technology (MIIT), the Ministry of Science and Technology, the Ministry of Finance, and the National Development and Reform Commission, has been submitted to the State Council for final approval, said Su Bo, vice-minister of the MIIT.

According to the draft plan, which has a specific focus on hybrid and pure-electric vehicles, China is aiming for the top position in the global new-energy vehicle sector with sales volumes of 5 million units by 2020, as the government plans to invest in core technologies to build a strong and competitive new-energy vehicle industry chain.

The draft plan also said that during the country's 12th Five-Year Plan (2011-2015), China aims to have a production capability of 1 million new-energy vehicles, with pure-electric and plug-in hybrid vehicles accounting for 50 percent. Moreover, to promote the development of core technologies to ensure a sustainable future for the sector, the central government will establish as many as five businesses to produce batteries and electric motors by 2015. Reportedly, the nation aims to lower the price of batteries used for electric vehicles to 2 Yuan for each watt-hour by 2015 and 1.5 Yuan a watt-hour by 2020 as part of a stimulus plan for the new-energy vehicle industry.

With the government's heavy investment plans, Chen Qingquan, chairman of the World Electric Vehicle Association, said he expects China will lead the electric-vehicle sector with an estimated 15 percent market share for hybrid and pure-electric vehicle sales in the world's biggest automobile market by 2020. That compares with JPMorgan Chase & Co.'s estimate that electric vehicles will only account for 1 or 2 percent of global vehicle sales by then.

"The Chinese government's focus on pure-electric and plug-in hybrid vehicles is strategic and quite reasonable to make the nation's auto industry competitive in the global market, as Western countries have dominated the traditional auto technologies," said Gao Li, an auto analyst with Huachuang Securities. "Moreover, China's competitive edge in batteries, electric motors, and lithium and rare-earth resources can help the nation to become a leader in the electric-vehicle industry," he added. As the production costs of electric vehicles largely depend on the battery, Gao said he believes that by 2012, China will have 100,000 new-energy vehicles, which will drive a battery industry worth 6 billion Yuan.

A Chinese expert told Xinhua that the largest barrier in developing new-energy vehicles is convincing customers to view them as a safe, practical and cost-effective substitute for traditional cars. Jia Xinguang, chief analyst with China Automotive Industry Consulting and Development Co., said that the eco-friendly car industry is still a newcomer industry, and customers are finding it difficult to accept new-energy cars.

A major concern of customers is that this industry's technology is not as mature as the traditional car industry, leading many to worry about the safety of new-energy cars, said Jia. "Customers also worry about the convenience of using a new-energy vehicle. For instance, if you buy an electric vehicle, there might be difficulties in charging the battery," he said.

Jia also noted that the high prices of those vehicles also intimidate some potential buyers. Priced at around 250,000 Yuan (about 38,200 U.S. dollars), the hybrid Prius model produced by Toyota has experienced slack sales in China as Chinese consumers consider it expensive.

The most urgent task of both the industry and the government is to solve these problems to enhance customer acceptance, Jia said.

56. Emerging Global Electric Vehicle Demand Presents Challenges for China

Driven by four global megatrends—reducing CO2 emissions, oil security concerns, growing congestion, and rapid technology advances—countries worldwide are focusing strongly on vehicle electrification with China emerging as an important test-bed for innovation, according to a new study financed by the World Bank.⁹ The study analyzes China's New Energy Vehicles Program, as well as the Ten Cities, Thousand Vehicles Program, which was launched by the Chinese government in 2009 to stimulate electric vehicle development through large pilots, initially in ten cities, and now in 25 Chinese cities. The findings are based on in-depth research and interactive sessions with government, municipal and industry leaders and were discussed at a workshop jointly hosted by Beijing Municipality and the World Bank.

The study estimates that global sales of plug-in vehicles will likely comprise 10 percent of new vehicle sales by 2020. This rapid growth is expected to usher in a new global electric vehicle era estimated to be worth US \$250 billion worldwide in ten years, creating unprecedented opportunities across the transport sector. Yet, China and other countries face steep challenges in promoting electric vehicles.

According to Oliver Hazimeh, Director and Head of the Global e-Mobility Practice at PRTM, "The shift from combustion to electric vehicle technologies presents an opportunity to rethink mobility strategies worldwide, and to create a new generation of mobility options." He continued, "We will see significant technological and business model innovation as we move toward a new urban mobility paradigm." The team's analysis of electric vehicle policy, technology and commercial models revealed the following:

- Strong Chinese policy momentum: Currently, Chinese electric vehicle policies promote EV use through purchase subsidies, which is not unusual at this stage of market development. Looking ahead, policies will need to support institutional and technology innovation, vehicle-charging infrastructure and manufacturing capacity.
- Integrated charging solutions: The infrastructure and technology for charging electric vehicles in China focuses on buses, trucks or taxis. However, as private car demand rises, integrated battery charging solutions will be needed to ensure that vehicle charging is safe, does not disrupt the electrical grid, and provides high service levels to consumers.
- Need for common standards: As the industry matures, new common, ideally global standards for charging, safety, and battery disposal will be needed for both manufacturers and consumers. Developing common standards within China, where there are fewer larger utilities, should be easier than in other countries. State Grid, the

⁹ "The China New Energy Vehicles Program: Challenges and Opportunities " study was conducted by consulting firm PRTM, with additional support provided by the Electrification Coalition (EC), International Council on Clean Transport (ICCT) and the Innovation Center for Energy and Transportation (ICET).

largest Chinese utility, has established charging standards, but these differ from U.S. and European standards which would add to cost and inhibit access to global markets.

- **New business models needed:** New business models are likely to emerge for car batteries, including for used batteries. China will likely see new alliances formed between electric companies, auto makers, and cities. These new business models must be commercially viable and cover the cost of charging infrastructure, as the industry cannot rely forever on government funding. Revenue from services such as advertising will help offset the cost of infrastructure.
- **Customer acceptance:** In the long run, consumers will only commit to electric vehicles if they think these cars are worth the additional cost. Even when lifetime ownership costs become favorable, up-front electric vehicle costs will still be higher than conventional vehicles and with a longer payback period.
- **Greenhouse Gas (GHG) benefits:** Electric vehicles will have significant low GHG emission potential and can leverage the benefits of China's plans to improve the carbon intensity of its electricity grid. In the longer term, a large electric vehicle population also stands to have a role in grid storage which, combined with renewable energy production, can further reduce GHG emissions.

57. Qingdao Constructs China's First Commercial Electric Bus Power Station

Construction on a power station for electric buses began on April 10 in Xuejiadao development zone, Qingdao. The project, with a planned total investment of 290 million Yuan (\$44.3 million), will become the first commercial power station for electricity-driven buses in China. Once completed, the station will provide electricity-recharging services for 180 twelve-meter long electric buses, some of which operate in tunnels under the Jiaodong Bay, Shandong province. The station is expected to be completed in June.

Chen Gang, deputy chief engineer of the project said, "Electric buses can get recharged in the station's recharging system, and the battery replacement work will be operated by a robot. The bus battery status is monitored by the real-time monitoring center, which takes charge of the battery replacement." The average replacement interval for each bus is about eight minutes. The power station can recharge six buses at the same time, and the worn out batteries will be retrieved for further processing.

A traditional fuel bus will annually release about 200kg of hydrocarbon, 220kg of carbon monoxide, 320kg of carbon dioxide, and 20kg of other particles. The introduction of zero-emission transportation can improve the air quality in the under-bay tunnel.

As for the advantages electric buses possess over traditional fuel buses, Chen Gang said, "The electric bus's engine is driven by electricity. It's cheaper and more reliable, and can also lower the operating costs of public transportation."

58. Hong Kong Allocates \$38.6 Million to Fund Testing of 'Green' Vehicles, Technology

Companies in Hong Kong's transportation sector can apply for funding to test new vehicles and technology that will reduce greenhouse gas and air pollutant emissions and improve air quality as part of a 300 million HKD (\$38.6 million) Pilot Green Transport Fund, the Environmental Protection Department of the Hong Kong Special Administrative Region announced on March 29th. The funding will subsidize costs of retrofitting vehicles or installing technology "not already in common use" locally, the department said.

For vehicles, the subsidy will cover the difference between the cost of an alternative-energy vehicle and of one that uses conventional fuels, or 50 percent of the total cost, whichever is higher.

To be eligible for funding, technology must meet a number of criteria, including that it “outperforms its conventional counterpart by emitting significantly less air pollutant or greenhouse gas, or demonstrating much better fuel economy,” according to the Green Transport Fund website. Test products may include alternative-energy vehicles like hybrids or emission reduction devices, such as diesel particulate filters, catalytic reduction devices, exhaust gas recirculation systems, and wet scrubbers.

Each individual transportation company may apply for up to 9 million HKD (\$1.2 million) for each application and receive a maximum of 12 million HKD (\$1.5 million) in total funding.

59. China Slowing Down High-Speed Trains

China will begin forcing its growing fleet of high-speed trains to operate at slower speeds, the country's railways chief said in an interview with state-run media. Sheng Guangzu, head of China's Ministry of Railways, said in an interview with the Communist Party's People's Daily newspaper that the decision will make tickets more affordable and improve energy efficiency on the country's high-speed railways.

Mr. Sheng, who took over the Ministry of Railways in February after his predecessor resigned amid a corruption investigation, said trains in China needed to serve all parts of society. “China is vast and there are regional differences in economic and social development, so railway construction norms can't be uniform,” Mr. Sheng said in the interview. He didn't specify how much ticket prices might be reduced.

The state-run Xinhua news agency reported last month that some \$28.5 million had been embezzled as part of the Beijing-to-Shanghai high-speed rail project, which has been celebrated by officials as one of China's greatest transportation achievements. That probe has widened in recent weeks to include Zhang Shuguang, a chief ministry engineer.

High-speed rail in China has grown steadily in scope and train speed in recent years. The World Bank estimated in a report last year that by 2012 China will have at least 42 trains with maximum speeds above 250 kilometers an hour and will have laid more high-speed railway than the rest of the world combined. China's government has invested heavily in the projects as well: The Beijing-Shanghai line alone costs around \$33 billion.

Experts have questioned the safety of China's high-speed railways. An executive at a non-Chinese high-speed train manufacturer said running trains above speeds of 330 kilometers an hour poses safety concerns and higher costs. At that speed threshold, wheels slip so much that you need bigger motors and significantly more electricity to operate. There is also so much wear on the tracks that costs for daily inspections, maintenance and repairs go up sharply. That's why in Europe, Japan and Korea no operators run trains above 320 kilometers an hour, the executive said, adding that above 330-350 kilometers an hour it is safer and possibly cheaper to float the trains magnetically.

In the interview, Mr. Sheng said high-speed trains will begin operating at a maximum 300 kilometers an hour from July 1, compared with previous speeds of around 350 kilometers an

hour. Many of the country's intercity trains will operate at speeds between 200 and 250 kilometers an hour.

Improving energy efficiency in high-speed trains is one reason for the change, Mr. Sheng said. Trains operating at 350 kilometers an hour require twice as much energy as those operating at 200 kilometers an hour, he said.

Tickets for high-speed trains also can be twice as expensive as the highest-class tickets on regular-speed trains. A high-speed rail ticket between eastern China's Wuhan and Guangzhou, for example, costs 469 Yuan, or about \$70. That is prohibitively expensive for many Chinese, and has resulted in at least some trains operating almost empty, industry experts say.

The People's Daily interview doesn't say how the country's celebrated Beijing-Shanghai high-speed rail route, which is under construction and slated to open in June, will be affected by the new measures. Trains running on that line are designed to operate at around 380 kilometers an hour, faster than any train in China today

60. China, India, Brazil Pledge Emission Limits to United Nations Climate Body

China, India and Brazil pledged to limit their greenhouse gas emissions in documents submitted to the United Nations Framework Convention on Climate Change, formalizing commitments made in Copenhagen in December 2009.

China said it will try to lower carbon-dioxide emissions per dollar of economic output at least 40 percent by 2020 from 2005 levels, according to a document dated March 18th. India said it aims to cut emissions per dollar at least 20 percent in the same period while Brazil said it'll slash heat-trapping gases more than a third from projected 2020 levels.

The pledges were among those made by 48 nations included in a non-binding document that forms part of agreements reached in Cancun, Mexico, last December. Climate negotiators at the time said emissions goals would be documented while not publishing the actual numbers.

While the commitments are not legally enforceable, they formalize promises made in the Copenhagen Accord, an agreement reached in the Danish capital in 2009 that was rejected as a formal UN document because countries including Bolivia, Sudan and Tuvalu didn't accept it.

In a second document, dated March 10th, the UN compiled emissions reductions goals for the 27-country European Union and 15 developed nations, including the U.S., Japan, Canada and Australia.

61. Auto Firms Ask For Delay on Thai Tax; Emission Standards Main Focus Of Debate

Local carmakers want a year to prepare details of a new excise tax structure for automobiles, saying the one-month deadline given by the government is too short for such a complex issue. "We agree in principle that the tax system should be revamped, but we want to achieve this goal smoothly since the restructuring will affect not only automobile manufacturers, but also parts suppliers," said Payungsak Chartsutipol, chairman of the Federation of Thai Industries (FTI). The FTI will submit a letter to the prime minister asking for a special joint public and private committee to review the new tax system, saying it should not take longer than a year.

The new tax structure is to be based chiefly on vehicle emissions instead of engine size as under the current regime.

"Our stance is to ask for time to adjust ourselves, said Mr Payungsak. I really hope to see the government thinking about this aspect cautiously and transparently. The developed countries that designed tax rates based on emission spent many years to find the best solution. "We [automakers] are still dealing with imported auto parts supply disruptions because of Japan's natural disaster. Even now no one can predict when suppliers will return to normal production levels."

At a March 22 meeting of the Joint Public and Private Consultative Committee, the government asked public and private sector representatives to conclude their proposals for a tax revamp within a month. However, industry executives at the meeting questioned how authorities arrived at the carbon dioxide emission levels to be used as a base for taxes and whether the levels are appropriate. Some makers are worried about whether they can meet the revised emissions levels. They also differ on the grace period needed to prepare for the new system. Some manufacturers say they need a grace period of only three years, while others want as many as five.

Mr Payungsak said that since the car companies all have different views on the tax revamp, the FTI has asked the government to extend the deadline to a year from now. "The effects on the industry of any tax change will vary, so there needs to be sufficient time to adjust. This is especially true for carmakers that will have to make a huge investment to comply with the new tax system," he said.

Earlier, the authorities decided on a flat rate of 30% on vehicles with engines smaller than 3,000cc, but vehicles with engine capacity larger than that would remain subject to the present 50% tax. Vehicles emitting CO₂ at a rate of fewer than 150 grams per kilometer would have five percentage points shaved off the 30% base, whereas those emitting more than 200 grams/km would face a five-percentage-point hike.

Cars emitting CO₂ at 150-200 grams/km would be taxed at 30%.

The new tax rates will also apply to pickup trucks, and manufacturers have expressed grave concern that this would hurt production, sales and exports of the vehicles that have long been Thailand's product champions.

However, a senior Japanese auto executive said the new system should include a complete rather than a partial revamp for the sake of fairness. For example, under the present system pickup trucks and SUVs are taxed lower than passenger cars at 3-20%, depending on model and engine size. However, their emission levels are higher, and if the level surpasses 200 grams/km, the five percentage points more they would be taxed under the new system would still be lower than the duty on passenger cars. "Also, some vehicle models carry big engines but run on natural gas that emits low CO₂ levels. These would still be taxed at a high rate though, making it even more confusing," said the executive.

Finance Minister Korn Chatikavanij said earlier that he wanted the new excise tax structure submitted for cabinet consideration rapidly.

The new structure is also aimed at encouraging carmakers to increase safety standards, as vehicles with safety systems exceeding legal requirements, such as ABS brakes, would face lower taxes.

62. New Zealand Aims To Halve 1990 Emissions By 2050

New Zealand will target halving its emissions from 1990 levels by 2050, a plan that will require major changes to the economy, the government has announced. "Setting a long-term target provides long-term certainty about where domestic climate change policy is headed so we can plan and invest accordingly," Minister for Climate Change Nick Smith said in a statement.

The main tool to cut carbon will be the country's emissions trading scheme, with other major initiatives including increasing the use of public transport, energy and biofuels policies as well as research to mitigate the effects of agriculture, which accounts for almost 50 percent of emissions.

The emissions trading scheme ramped up from July 1 2010, when sectors accounting for about half of all emissions in energy and industry were included. The economically crucial agriculture sector will be included in 2015.

New Zealand's emissions rose by 23 percent between 1990 and 2008 to 74.7 million tons of carbon dioxide equivalents.

The target will need to be regularly reviewed to take into account changes in technology as well as developments by other countries.

"New Zealand's contribution to global emissions is very small and our objective should be neither to lead nor lag but do our fair share," Smith said.

63. Australia Wrestles with Upstream Emissions

As long as coal keeps generating the lion's share of electricity in Australia, the environmental benefits of driving plug-in, electric cars will be under question. There are only a few hundred registered fully electric vehicles on the road, and many are run by enthusiasts who connect them to homes powered by renewable energy. But if masses of new electric cars end up forming a significant portion of the nation's vehicle fleet in the next decade, they would simply exchange the carbon dioxide coming from a tailpipe for the CO₂ flowing from coal-fired power plants.

"In terms of carbon dioxide emissions, there's a lot of misinformation put out on both sides of the story," says Dr Phillip Paevere, an electric vehicle expert at the CSIRO. "The truth of the matter is, from the research we have done at CSIRO and other studies around the world, ... if you replace highly efficient internal combustion vehicles with inefficient electric vehicles, given the [electricity] grid mixture in Australia, then you're probably no better off. "Of course, Australia's vehicle fleet is not all highly efficient though."

With the nation slated to get one fifth of its power from renewable energy by 2020, the equation will start to shift in time for a large-scale electric vehicle roll-out, however. "As the grid mixture changes, the net benefits of electric vehicles in terms of carbon emissions keep rising," he says. "Changing the grid mixture is by far the biggest net CO₂ benefit you can get. It is the key thing."

There are few real incentives to drive an electric car in Australia and, given the relatively high price of the few available vehicles, more economical ways of making a bigger difference to greenhouse gas emissions. The most intelligent environmental choice at the moment might be to buy a highly fuel-efficient or hybrid vehicle for less cash, and invest the balance in buying 100 per cent green power or installing a rooftop solar panel system.

In most cases, a vehicle's fuel use still accounts for most of the greenhouse gases it produces. But, depending on how often and how far a car is driven during its lifespan, the "embodied" emissions used to fabricate the metal, plastic and rubber used to build a vehicle can be responsible for more emissions than the carbon dioxide coming out of its tailpipe.

A full life-cycle analysis would include the emissions caused during the mining process, and the electricity used to smelt metals. Measuring this is highly complex. "It's an extremely difficult thing to do because it involves sharing ... commercial information from so many sources," Paevere says.

"It's a component-based supply chain with many different manufacturers. There are no agreed measurement standards. It requires an agreed approach to be developed before you can start doing it accurately and the comparisons can be made."

64. Maersk Switches To Low-Sulfur in Singapore

Maersk Line has participated in the Maritime Singapore Green Initiative by switching to low-sulfur fuel in Singapore. The fuel switch supports the Maritime and Port Authority of Singapore's engagement with the shipping line community to reduce carbon and sulfur emissions in Singapore. Maersk Line signed the Maritime Singapore Green Pledge, stating its commitment to safeguard the Singaporean environment by driving towards cleaner and more fuel efficient shipping services.

Maersk Line's goal is to drive its operations towards zero sulfur while cutting CO₂ by at least 25% per container between 2007 and 2020.

Since its first fuel switch in 2006 in California, Maersk Line has advocated for sulfur reductions beyond regulatory requirements, and for establishing a level playing field in partnership with ports, authorities, shipping lines and customers.

As part of the company's global 'Zero SO_x' program, Maersk Line has committed itself to implementing at least ten fuel switch programs before 2015. (EHL)

65. Afghans Suffer From Heavy Air Pollution

Air pollution in Afghan big cities, particularly the capital city Kabul, has reached an alarming point as the head of the National Environment Directorate, Mustafa warned last Sunday of dire consequences if air pollution is not checked. "Living condition would become impossible within the next seven years if the status quo of air pollution continues in Kabul and other major towns," Zahir said at a seminar, adding many people would migrate from the capital city to other places due to heavy pollution.

Battered streets, roaming old and used cars, lack of adequate sewerage and poor sanitation have largely contributed to the pollution in Kabul and sister cities in the war-wrecked Afghanistan.

Often a thick ply of dust consisting of carbon dioxide, sulfur and other hazardous chemical elements are seen covering the Kabul sky instead of clouds. "I will be delighted to see blue sky and light clouds over Kabul city like past years when Afghanistan was peaceful and green, blossoming gardens and fragrant landscape," a resident of Afghan capital Kabul, 55-year Bashir said. Bashir who like many Afghans goes only by one name said his country is not an industrialized nation to have so many plants and factories to pollute the environment.

Meantime, he was of the view that mismanagement of authorities and poor awareness of citizens are the main cause of pollution in Kabul and other cities at large.

He said that in some cases the public bath owners burn tires and other chemical items to heat water, while others have constructed plants and brick kilns on the outskirts of the city which eventually damage the environment.

66. Toyota, Aims To Double Profit, Promotes Canadian as Top Non-Japanese Exec

Toyota Motor Corp., unveiling a new business plan to double operating profit by 2015, will remove its head of North America from a downsized board and promote Canada chief Ray Tanguay to be its highest non-Japanese executive. Yoshi Inaba, 65, continues to lead Toyota North America and Toyota Motor Sales U.S.A. while becoming one of 18 directors to lose board seats. Tanguay, 61, who helped craft the plan, moves to a newly created position of senior managing officer on April 1st.

The world's biggest automaker will also position North America as its global center of development for mid-sized vehicles such as the Camry sedan, in a new push to delegate more authority to regional operations and better tailor vehicles to local markets.

"In North America, our operations will attain even more autonomy and local integration," President Akio Toyota said while announcing the mid-term business plan. "For the Camry and other vehicle series, we plan for North America to become a global center responsible for R&D and production as well as exports," he said.

The blueprint, dubbed the Toyota Global Vision, outlines Toyota's strategy to return to growth after being hammered first by the global financial meltdown and then its biggest recall crisis. It is the first mid-term business plan floated by Toyoda since the grandson of the automaker's founder took over as president in 2009, with the company mired in losses.

Toyoda emphasized that the new management mentality shuns numerical targets. The pursuit of sales volume by previous administrations has often been faulted for pushing the company to expand faster than its human resources and engineering firepower could cope with.

But the chief executive still managed to outline several goals to be achieved by 2015:

- Nearly double operating profit to at least 1 trillion yen (\$12.2 billion).
- Boost annual sales of Toyota and Lexus vehicles to 9 million, from 7.53 million this year
- Deliver sustainable profit margins of 5 percent.
- Expand emerging market business to account for half of global sales, from 40 percent.
- Generate 15 percent of global sales from China, the world's largest auto market.

To get there, Toyota is streamlining its management system to strip out unnecessary layers of decision making and put high-level executives closer to more hands-on positions.

The shakeup is Toyota's biggest management overhaul in eight years. Toyoda will slash the board to 11 members from the current 27, pending approval at the company's shareholder meeting, usually held in June. As expected, among those removed will be Inaba, whom Toyoda handpicked two years ago to fix the company's troubled U.S. operations. Though he is leaving the board, Inaba will remain in his current position as chief officer of the North America Operations Group, COO of Toyota Motor North America Inc. and chairman of Toyota Motor Sales. He will continue to report to Executive Vice President Atsushi Niimi, who is in charge of North America, China and global production.

To raise the profile of North American operations and inject more globalization into the Japanese company, Toyoda also promoted Tanguay. He will be the highest ranked non-Japanese executive at the company. Tanguay is currently a managing officer in charge of manufacturing in Canada. Before his promotion, Tanguay was tapped to spearhead a group of global committees that generated the targets and priorities outlined in the Global Vision.

Four other foreigners rank one rung below him: James Lentz, president of Toyota Motor Sales U.S.A.; Steve St. Angelo, chairman of Toyota's Kentucky and Mississippi plants; Didier Leroy, president of Toyota Motor Europe; and Johan van Zyl, president of South African operations. Each is a managing officer and unaffected by the shuffle. Toyota hasn't had a non-Japanese board member since Jim Press, who left the company in 2007 to join Chrysler.

Toyoda sidestepped a question about whether it was time to elevate another foreigner or an external member to the board to inject more outside voice. He said that the establishment of a regional advisory committee comprised of seven external academics, business leaders or policy makers would address that need. Serving on the board will be Mark Hogan, a former vice president at General Motors Co. and former president of parts supplier Magna International. He is a long-time friend of Toyoda's and was retained as an adviser to the company last September. The committee also includes Alexis Herman, former U.S. Secretary of Labor under President Bill Clinton.

"It's a bit premature," Toyoda said. "Rather than have external members on the board, we have the advisory board in which we can seek advice of intellectuals in various regions."

Toyota will also eliminate vice-chairman positions. Vice Chairmen Katsuaki Watanabe and Kazuo Okamoto will step down from the company's board.

Strategically, a big part of the mid-term plan is to penetrate booming markets such as China, India, Brazil and Russia, where Toyota is currently lagging behind global rivals. "We will focus on emerging markets and environmental vehicles," Toyoda said. "We will decide when and how much to increase capacity in emerging markets if we need to."

Toyota has fallen behind rival Honda Motor Co. in terms of profit and operating margin. Toyota's earnings were initially hit by the worldwide financial crisis. But its reputation and sales were further battered by a spiraling quality crisis that has generated more than 20 million recalls since the fall of 2009, to address unintended acceleration and other problems.

Toyota's forecasts are based on exchange rates of 85 yen to the U.S. dollar and an annual sales volume of 7.5 million vehicles, Toyoda said. The automaker is planning a separate mid- to long-term management plan "soon," he said.

Toyota's 2015 operating profit target of \$12.2 billion compares with a 550 billion yen (\$6.67 billion) forecast for the current fiscal year ending March 31. That's still below the record 2.27 trillion yen (\$27.5 billion) it earned in fiscal year 2007.

The 9 million-vehicle sales estimate is up from 7.53 million units forecast this fiscal year.

Fast-growing China, India and Brazil offer the biggest opportunities for Toyota. The automaker relies on North America for about 60 percent of its operating profit, excluding exports, according to the company. As part of a new focus on emerging markets, Toyota added the Etios compact in India in December and is readying the car for sale in China, Thailand and Brazil.

Toyota's slimmer board may help it adapt to challenges and changes in the global industry more quickly, according to analysts. Honda, Japan's third-largest automaker, also reorganized its management, last month cutting the number of company directors to 12 from 20.

67. Hong Kong Unveils 300 Charging Stations to Serve Electric Vehicles

On March 15th, Hong Kong's government formally unveiled a network of 300 fast-charging points for electric vehicles that covers all of its 18 districts to support a growing market for the vehicles. The government, power companies, and property developers collaborated to establish the charging points, which are now available for public use. The network's launch "sends a strong message that Hong Kong is preparing to become an EV-friendly city" by giving it "the essential infrastructural support in anticipation of the growth of our EV fleet," Hong Kong Special Administrative Region Financial Secretary John Tsang said at the ceremony.

The 300 charging points are in residential, commercial, and shopping center parking areas, Tsang said. Tsang said a Pilot Green Transport fund, which will provide incentives for consumers and businesses to use vehicles such as all-electric and hybrid automobiles, will be finalized and announced toward the end of March. Guidelines also will be issued on incentives for property developers to include electric vehicle charging points in parking areas of future and existing buildings.

About 100 electric vehicles are currently on the road in Hong Kong, Tsang said.

The government plans to set up charging points in government parking lots that will be available for public use. It also will purchase about 200 electric vehicles for government use and will continue to waive the first registration taxes on individual consumer purchases of all-electric vehicles, the government said in a prepared statement.

The ceremony was held the same day the all-electric Nissan LEAF was launched in Hong Kong, which was its first Asia launch outside Japan, according to the government. Nissan has set aside 200 LEAF vehicles from its first production cycle for corporate clients in Hong Kong, the government said.

68. India Increases Environment Budget, Plans Tax Incentives for Hybrid, Electric Cars

India's Ministry of Environment and Forests will see its budget for the next fiscal year increase marginally over the current year, from Rs 2,200 crore (\$488 million) in fiscal 2010 to Rs 2,300 crore (\$510 million) in fiscal 2011. The budget includes Rs 600 crore (\$133 million) specifically allocated for the protection and regeneration of forests, cleanup of inland water bodies, and general pollution remediation.

Presenting the budget to Parliament on February 28th, Finance Minister Pranab Mukherjee also outlined a National Mission for Hybrid and Electric Vehicles, with tax cuts to encourage use of the vehicles, as part of the general budget for fiscal 2011, which runs from April 1, 2011, through March 31, 2012.

Out of the Rs 600 crore allocation for specific environmental programs, Mukherjee said Rs 200 crore (\$44 million) would be allocated to the National Mission for a Green India, which was announced one week earlier. The money will be provided from the National Clean Energy Fund announced in the previous budget, the corpus of which has been created by levying a tax on coal at the rate of Rs 50 (\$1.10) per ton.

The National Mission for a Green India, part of the country's National Action Plan on Climate Change, aims to plant or improve 10 million hectares (24.7 million acres) of forest cover by 2020 at a total cost of Rs 46,000 crore (\$10 billion). (See related story.)

Another Rs 200 crore has been allocated from the National Clean Energy Fund for pollution remediation programs, with another Rs 200 crore allocated for the cleanup of significant lakes and rivers.

Mukherjee said the National Mission for Hybrid and Electric Vehicles would encourage the manufacture and sale of the vehicles. Details of the mission have yet to be disclosed. However, Mukherjee said the excise duty on hybrid vehicle kits, which can be attached to petrol or diesel vehicles to enable the use of alternative fuels, could be cut in half, from 10 percent to 5 percent. Already, the customs and countervailing duty on import of certain hybrid vehicle parts has been removed. The proposal follows an incentive package, announced in November 2010, to provide 95 crore rupees (\$2.1 million) to manufacturers of hybrid vehicles.

The president of the Society of Manufacturers of Electric Vehicles, Naveen Munjal, welcomed the tax breaks. In a statement, Munjal said, "The government is finally realizing the importance of electric and hybrid vehicles in the Indian automotive sector. This is bound to give a huge boost to the sector once the final policy is formulated."

The New Delhi-based Center for Science and Environment, which has been lobbying for an end to what it sees as tax incentives for sport utility vehicles and diesel-fueled cars, criticized the finance minister for "losing courage" and failing to remove diesel subsidies on private vehicles and to strengthen public transport. On February 28th, Anumita Roychowdhury, the center's executive director of research and advocacy, told the press, "The market trend clearly shows that diesel is aiding the shift towards bigger cars that drink more fuel. While 85 per cent of petrol cars sold in India have less than 1,200 cc engines, 64 per cent of diesel cars are just under 1,500 cc and the rest of them above. Despite fuel efficiency, bigger engines will always use more fuel and cheaper diesel will encourage people to buy bigger and more powerful cars. This will undermine energy security."

69. Indian State of Delhi Raises Taxes on Diesel Vehicles to Reduce Air Pollution

The Indian state of Delhi, which includes the national capital of New Delhi, adopted a budget for the fiscal year starting April 1 that increases taxes on diesel vehicles by 25 percent to limit air pollution. The state assembly approved the measure March 28. The additional tax will be 25 percent of all the existing taxes (road tax, value-added tax, etc.) on diesel vehicles and will be applied upon registration of the vehicle in Delhi.

In her March 22nd budget address, Delhi Chief Minister Sheila Dikshit said, "Many studies have pointed out that in spite of the use of CNG [compressed natural gas] in all public transport vehicles and also by many private vehicles in Delhi, the growing number of diesel vehicles is adding to air pollution," she said.

The budget also removes the value-added tax levied on most bicycle sales.

The two moves were welcomed by environmental groups. Anumita Roychowdhury, executive director of research and advocacy and head of the air pollution control team at the New Delhi-based think tank Center for Science and Environment, told the press via e-mail: "These two momentous decisions together strengthen the foundations of green budgeting in the capital city, establish the polluter-pays principle and make a strong statement against the misuse of diesel subsidy by the rich car and SUV owners."

Because of the subsidy, aimed at public transportation and transporters of goods, diesel costs 40 rupees per liter (\$3.37 per gallon) while petrol costs roughly Rs 50 (\$1.12) per liter (\$4.24 per gallon). This has made diesel vehicles popular as private cars, especially SUVs, which are aspirational buys for the newly affluent middle class.

Some 800,000 diesel vehicles are sold annually in India, accounting for a steady 30 percent of all vehicle sales, despite the fact that diesel vehicles are 15 percent to 20 percent more expensive than their petrol counterparts because of higher taxes and more expensive engine technology.

Environmentalists have been demanding higher taxes on diesel vehicles countrywide, arguing that diesel emissions are worse for public health. The Center for Science and Environment said increased use of cheap diesel would make India more energy-insecure as it imports 70 percent of its fossil fuels.

The Delhi budget includes another significant green step: Nearly 25 percent of its Rs 13,600 crore (\$3.02 billion) total will be allocated to public transportation. This includes Rs 1,071 crore (\$238 million) for the third phase of the Delhi Metro and Rs 450 crore (\$100 million) for 14 new rapid-transit bus corridors. The National Capital Region of Delhi has the world's largest fleet of public transport vehicles running on CNG. However, public transportation remains inadequate and highly inefficient, leading most people to rely on private vehicles. Delhi has the highest number of motor vehicles in the country, accounting for 15 percent of all new vehicles sold in India, helping to make it one of the 10 most polluted cities in the world.

Under the new budget, bicycles costing up to Rs3,500 (\$77) will be exempt from the value-added tax. Bicycles are the primary mode of transport for most of Delhi's poorer residents.

Delhi has historically led other states in introducing green policies. Its decision to make all public buses and auto-rickshaws switch to CNG in the late 1990s has improved air quality and has been a model for other cities in India and elsewhere.

70. China Sets Environmental, Energy Targets For 12th Five-Year Plan

China's national leadership has announced a series of environmental targets for the country's 12th Five-Year Plan (2011-2015) covering energy consumption, carbon intensity, renewable energy capacity, industrial water use, pollutant emissions, and heavy metal contamination. Major goals for the draft five-year plan were announced by Premier Wen Jiabao and approved by the National People's Congress at its annual meeting March 5-14 in Beijing.

The final version of the five-year plan will not be released publicly until it goes through one more review by the State Council, China's top decision-making body, in the coming weeks. Provinces, municipalities, autonomous regions, and industrial sectors are completing their separate 12th Five-Year Plan drafts based on the national document. These will be released over the coming months.

Zhang Lijun, vice minister of the Ministry of Environmental Protection told a March 12th news conference that he could not give final details on the forthcoming five-year plan, but he did summarize what the environmental portion would include. He said the two main goals of the environmental portion in the next national planning document will be to “handle environmental problems that impact sustainable development, and tackle environmental problems that may impact people's health.” This will be achieved by enhancing cuts in pollutant emissions, improving the quality of environmental supervision, preventing environmental accidents, and trying to balance development and environmental protection in rural and urban areas, Zhang said.

In his address, Wen announced a goal to cut energy intensity, or consumption per unit of gross domestic product (GDP), by 16 percent from 2010 levels by 2015. He said carbon intensity—or carbon dioxide emissions per unit of GDP—would be reduced 17 percent during the same time period.

In January, a Ministry of Environmental Protection official said China would set provincial targets to reduce energy and carbon intensity, with eastern coastal areas having higher goals than provinces in the central or western part of the country.

During the 11th Five-Year Plan (2006–2010), China reduced energy intensity by 19.1 percent compared to 2005 levels, slightly short of its goal of a 20 percent cut.

On March 4th, Zhang Guobao, the former head of the National Energy Administration and a current Chinese People's Political Consultative Conference Standing Committee member, told the state-run Xinhua news agency that in the forthcoming national planning document China would include a cap on total energy consumption at the equivalent of 4 billion metric tons of coal by 2015, though Wen did not mention this goal in his work report.

In a report released on February 28th, the Chinese Academy of Engineering warned that China's total energy use could reach the equivalent of 5.1 billion metric tons of standard coal by 2015 if it were not curtailed. The report suggested that China needs to limit its use to the 4 billion metric tons equivalent by 2015 to meet its carbon and energy intensity reduction goals.

In 2010, China used the equivalent of 3.2 billion metric tons of coal to produce its energy. According to data released by the National Bureau of Statistics (NBS) on February 28th, coal use increased 5.3 percent for the year, while crude oil consumption was up 12.9 percent,

natural gas use rose 18.2 percent, and electricity use increased by about 13 percent nationwide. About 73 percent of China's energy currently comes from the burning of coal.

According to a Climate Policy Initiative report released in Beijing on February 26th, transportation and construction are the largest energy-consuming sectors in China. Between 2005 and 2008, energy consumption rose 28 percent in the construction sector and 25 percent in the transportation sector, the report said. The country is expected to see an average annual increase of 4.24 percent in total energy use over the next five years, Zhang said.

Pilot projects for reducing energy use and cutting emissions will be implemented across the energy sector in the next five years, Zhang said.

In August 2010, China announced that it had designated five provinces and eight cities as low-carbon pilot development zones where specific projects to increase energy efficiency and reduce carbon emissions were being planned. China is expected to lay out plans for a possible carbon market as well as an environmental tax policy in the coming months, though details are currently sparse. According to a December 2010 report from research firm APCO Worldwide, environmental taxes such as a carbon tax are being considered and could be implemented around 2013, while a carbon trading market likely would not be operational until 2015.

Luo Zhigang, head of the energy research institute at the Chinese Academy of Sciences branch in Guangzhou, recently told reporters that Guangdong province has proposed developing a regional carbon trading market as part of its low-carbon pilot development plans and is waiting for approval from the National Development and Reform Commission (NDRC) before making a formal announcement.

In his address, Wen also said the government aims to have 11.4 percent of China's energy capacity come from non-fossil fuel sources—including nuclear, hydropower, wind, solar, and biomass—by 2015. At the end of 2010, such sources made up 8.3 percent of capacity. China measures overall installed capacity without considering whether it is connected to the national electricity grid and the country has faced difficulties connecting renewable energy such as wind and solar to the grid. A report recently released by the State Electricity Regulatory Commission found that only 0.7 percent of China's on-grid energy in 2010 was supplied by solar, wind, or biomass sources. The report said that while China leads the world in installed wind capacity, at about 41 gigawatts, less than half is connected to the grid. Under China's Renewable Energy Law, grid companies must connect renewable energy sources to the national grid system, but enforcement has apparently lagged.

China has two major grid companies, State Grid Co. and China Southern Grid Co.

More announcements are expected regarding spending on more technologically advanced “smart grid” systems that would allow for better storage and transmission of renewable energy, according to recent state media reports.

NDRC has previously said it hopes to have non-fossil fuel energy sources make up 15 percent of the country's total installed energy capacity by 2020. A “New Energy Industry” plan that has been in the drafting stage for at least the past year also is part of the planning for the 12th Five-Year Plan. Government officials previously announced that China would target “seven strategic new industries” for development, including new energy technologies, new energy vehicles, and grid transmission development.

China also will try to reduce its industrial water consumption by 30 percent per unit of value-added GDP, according to the government work report, which did not indicate a baseline or target year.

Some 400 of China's 600 large- and medium-sized cities face severe water shortages because of pollution, lack of delivery infrastructure, and geographical challenges, Bu Shu, a senior engineer at the Ministry of Water Resources, told the Beijing Morning Post, the official newspaper of the Beijing municipal government, on March 5th.

China also is expected to raise its forest coverage rate to 21.66 percent, Wen said in his address. At the end of 2010, forestland covered 20.36 percent of the country, according to government figures.

Over the next five years, China will aim to reduce emissions of major pollutants by 8 percent to 10 percent from 2010 levels, Wen said in his address. Under the country's 11th Five-Year Plan, sulfur dioxide emissions and chemical oxygen demand in wastewater discharges were targeted for reduction by 10 percent compared to 2005 levels. Under the next five-year plan, they are to be reduced by 8 percent below 2010 levels. Nitrogen oxides in air and ammonia nitrogen in wastewater also will have 10 percent reduction targets compared to 2010 levels.

Ma said ammonia nitrogen "is playing quite a significant role in damaging water quality" throughout China. While government actions to control water pollution are welcome, Ma said, the efforts are "still limited because there are many other pollutants impacting water resources." It has been "quite a challenge to bring down water pollution levels in the past five years," Ma said. "With all the massive infrastructure projects being built, especially developments in cities that haven't had proper wastewater facilities, there has been a discharge of a large volume of water pollutants."

While China met its goals for cutting sulfur dioxide emissions and levels of chemical oxygen demand in the past five years, a pollution census released by the Ministry of Environmental Protection (MEP) late in 2010 revealed that actual chemical oxygen demand levels were higher because agricultural discharges were not figured into the total for the reduction policy.

Also in the next five-year plan, China will set emissions reduction targets for five heavy metals—lead, mercury, chromium, cadmium, and arsenic—in certain polluted zones, Minister of Environmental Protection Zhou Shengxian said at a March 4th news conference. According to his ministry, the heavy metals emissions reduction program will focus on 138 polluted zones in 14 provinces and regions. Provincial governments must develop targets, write specific plans for remediation efforts, and report back to the ministry by the middle of 2011, Zhou said. Zhou said an estimated 75 billion Yuan (\$11.4 billion) in investment will be needed to combat pollution in the battery manufacturing sector alone. The chemical and mining industries also were identified as major heavy metals polluters.

A recent survey by the Ministry of Environmental Protection found that 40 percent of farmland in the Pearl River Delta area of South China's Guangdong province is contaminated with heavy metals, with 10 percent of that area having "excessive levels" of pollution. An earlier report by 34 environmental organizations pointed to the information technology industry as a major source.

In a report on the ministry's annual work conference, China Environmental News, the ministry's news agency, said the ministry will focus on prevention and control of heavy metals, organic

pollutants, and radioactive substances in the next five years. The ministry also said three regions—the Beijing-Tianjin corridor and surrounding Hebei province, the Yangtze River Delta around Shanghai, and the Pearl River Delta around Guangzhou—would be targets of stricter environmental protection efforts in the next five years.

In an Internet discussion preceding the National People's Congress, Wen said China's gross domestic product targets during the 12th Five-Year Plan (2011-2015) will be lowered to 7 percent from the current 8 percent, due partly to a need to better manage resources and protect the environment. China cannot continue “to sacrifice the environment at the cost of high-speed growth,” Wen said in the discussion with citizens on February 27th on the website of the state-run Xinhua news agency. The current economic model has “put pressure on the environment and resources” that is ultimately “unsustainable.”

On February 28th, Minister of Environmental Protection Zhou published an essay through China Environment News, his ministry's official media outlet, saying that strains on the country's environment and resources could impact economic growth if a better balance is not attained. The “depletion, deterioration and exhaustion of resources and the deterioration of the environment have become serious bottlenecks constraining economic and social development,” Zhou wrote. Zhou suggested that greenhouse gas emissions audits would begin to become part of the environmental impact assessment process sometime during the 12th Five-Year Plan period.

71. Provinces, Cities Chart Course of Action on Energy, Environment for Next Five Years

As China's National People's Congress (NPC) outlined its 12th Five-Year Plan (2011–2015) during its annual meeting in Beijing, the country's provinces, municipalities, and autonomous regions were completing their own five-year plans for energy infrastructure and environmental development. During the NPC annual meeting, which concluded on March 14th, Premier Wen Jiabao announced a series of environmental targets for the five-year plan, covering energy consumption, carbon intensity, renewable energy capacity, industrial water use, pollutant emissions, and heavy metal contamination. (See above.)

Among Chinese municipalities, Beijing hopes to reduce its use of coal, while Chongqing plans to develop its auto industry. Many provinces and cities will take part in the country's pilot projects for low-carbon development. Guangdong province in southern China will work to develop its energy infrastructure, and energy and water infrastructure figure in many central provinces' plans. In eastern China, Jiangsu province hopes to curb air pollution, starting with the publication in September of a list of major polluters, while energy and mining will play a large role in many western provinces.

In the next five years, Beijing will work toward a goal to obtain 80 percent of its power from non-coal sources, including natural gas, nuclear, hydropower, solar, and wind energy, Gao Xinyu, director of the Municipal Development and Reform Commission's energy office, told the state-run Xinhua news agency March 4. Gao said that in five years the city hopes that its annual coal consumption can be reduced to 20 million metric tons, with no trucks carrying coal allowed within the city's fifth ring road by 2015.

The city will designate all primary and secondary schools as “Sunshine Campuses,” allowing them to tap subsidies to install solar water heating systems, according to Xinhua.

Beijing also will promote more energy-efficient buildings, continue to remove older vehicles from roads, set stricter tailpipe emissions standards for buses, and develop industries in environmental protection sectors, China Energy News reported on February 23rd.

Chongqing municipality in south-central China will focus on developing its new-technology auto industry as part of its five-year plan and under its designation as a low-carbon pilot city, according to China Energy News.

Guangdong province will emphasize development of its energy infrastructure in the next five years, according to a February 21st report from Southern Daily, a state-run newspaper in the provincial capital of Guangzhou. This will include further nuclear power development and increased infrastructure for the use of natural gas, as well as faster development of renewable energy sources such as wind and solar, according to the report. The province also will concentrate on infrastructure to transfer clean water from western China and continue with the construction of ultra-high-voltage electricity transmission lines.

Guangdong province and its city of Shenzhen, which is directly across the Sham Chun River from the Hong Kong Special Administrative Region, have also been chosen as pilot zones for low-carbon projects. The National Development and Reform Commission is reviewing proposals and is expected in the next few months to announce the projects to be developed in each jurisdiction. Liaoning, Hubei, Shaanxi, and Yunnan are the other low-carbon pilot provinces. Besides Shenzhen, other low-carbon pilot cities are the Chongqing and Tianjin municipalities, Xiamen in Fujian province, Nanchang in Jiangxi province, Guiyang in Guizhou province, Baoding in Hebei province, and Hangzhou in Zhejiang province. The low-carbon plans will include adjusting industrial and energy structures, increasing energy efficiency, introducing carbon sinks to absorb carbon dioxide from the atmosphere, and controlling greenhouse gas emissions. All the provinces and cities are expected to release their specific plans in the coming months.

72. Pollution to Get Officials Black Mark

China's determination to ditch the model of unsustainable development - with its cost to the environment and intensive use of resources - got a push from the National Audit Office. In its mission statement on the implementation of China's 12th Five-Year Plan (2011-2015), the audit office said a key task will be "building a resource-efficient and environmentally-friendly society and enhancing audits on resources and the environment". It calls on subordinate authorities to step up audits on land, mines, water and energy resources to disclose disordered development, low-efficiency utilization, waste and damage.

Moreover, auditors at all levels are urged to disclose pollution and environmental hazards and to punish responsible parties for not carrying out environmental protection policies.

Some governments are not determined to control pollution caused when their predecessors were in office and their inaction leaves the problems to irreversibly deteriorate while new pollution emerges, the report said. Experts told China Daily that the audit system's supervision efforts, if resolutely carried out, would help ease the situation by holding officials responsible.

Wang Shuyi, an environmental law professor from Wuhan University, said the audit supervision is "especially favorable" as the country has yet to establish laws to protect specific environment aspects, such as soil.

However, "without laws, audits, as a means of prevention and remedy, are far from enough to address more than 6.7 million hectares of polluted soil and other pollution in China," he said.

73. "Time to Clean Up Chinese Rural Area Pollution": Official

The program to reduce pollution between 2011 and 2015 will include emission targets for rural areas, Li Ganjie, vice-minister of environmental protection, told the press. The country's vast rural areas, included in the program for the first time, are becoming more polluted than cities, he said. "Pollution from agricultural sources already contributes to more than half of the country's total emissions," said Li. "It is high time that we addressed these problems."

The central government announced reduction targets for major water and air pollutants by 8-10 percent from 2011 to 2015. But Li did not specify the contribution of rural areas in meeting these targets.

Between 2006 and 2010, the country saw a double-digit drop in emissions of major water and air pollutants. But pollution from rural areas was not included in the calculation - a reason some environmentalists say may explain why the country's ecology continued to deteriorate despite the statistics.

Ma Jun, director of the Institute of Public and Environmental Affairs, welcomed the move as people in rural areas have suffered severely from pollution caused by rapid industrialization and urbanization, but were not given adequate support and funding to tackle the problem. "As a result, the countryside has become both a victim and producer of pollution," said Ma. The deterioration of the rural environment also threatens urban dwellers through food supplies, he said.

A total of 9 billion tons of household wastewater and 280 million tons of garbage are produced in rural areas every year, but most of the country's 600,000 villages do not have adequate treatment facilities.

About 65 percent of the 47 million tons of fertilizers and pesticides used every year are swept off by rainfall and end up in rivers and lakes, or in underground water, according to Li.

Livestock has also been singled out by experts as a major culprit. Some 2.7 billion tons of livestock excrement is generated annually but only 20 percent is properly treated, according to Zhang Yongtai, an environmental expert from Nanjing Institute of Environmental Science.

The first national pollution census conducted in 2007 showed that agricultural emissions accounted for 43.7 percent of the country's chemical oxygen demand, a measurement of water pollution. Agriculture also accounted for 57.2 percent of nitrogen emissions and 67.3 percent of phosphorus emissions, also indicators of water pollution.

The spread of industrial pollution into the countryside - especially from small illegal factories - has threatened people's livelihood, hindered sustainable development and sometimes caused social instability, Li said.

Between 70 to 80 percent of environmental complaints his ministry received each year come from rural areas, according to Li. In the latest scandal, 4,500 tons of toxic sludge from an illegal aluminum smelter in Guangdong province flooded croplands on March 21, the Guangzhou-

based Nanfang Daily reported. Incidents like this revealed the weakness of environmental governance and law enforcement at county level, said Ma.

The central government planned to allocate 9.5 billion Yuan (\$1.45 billion) for 2011 and 2012 to improve the rural environment. But Li estimated at least 100 billion Yuan from the central budget is needed to clean up 200,000 heavily polluted villages. The money will be spent on protecting freshwater sources, constructing treatment facilities for household sewage, garbage, and human and animal waste. The construction of centralized and large-scale livestock breeding farms is also highlighted.

Li also vowed to strengthen numbers of environmental personnel at grassroots levels during the next five years.

74. Most of Beijing's Olympic Pollution Cleanup Said Evaporated a Year Later

Developed-world proponents of the "China Model" often point to environmental degradation as an example of the intractable sort of problem authoritarian governments, free of the need for grinding public debate, are good at addressing. But in new study examining one of the country's highest profile environmental problems, a team of Chinese and U.S.-based economists casts some doubt on that thesis.

The subject of the study, published by the National Bureau of Economic Research, is Beijing's air quality, which changed markedly before and after the 2008 Olympics.

Beijing spent more than \$10 billion to clean up its polluted air before the Olympics. According to the study, the government managed to improve air quality by 30% during the games, compared to year-earlier readings. But a year after the games, about 60% of those gains had evaporated.

What's one to make of this? Like many others, the authors of the NBER study — Yuyu Chen and Guang Shi of Peking University, Ginger Zhe Jin of the University of Maryland and Naresh Kumar of the University of Iowa — give credit for the impressive improvement in air quality during the Olympics to China's authoritarian system. Countries with such governments can make huge efforts to clear away problems when they are motivated to do so, they say.

The measures taken in what the authors describe as "the largest natural experiment in air cleaning" in Olympic history were indeed huge: Coal, steel and chemical plants were shuttered, vehicle traffic was reduced and auto-emission standards were increased.

There has been some suspicion Beijing cooked the books by prohibiting researchers from taking pollution readings at the site of the games and releasing only an official "daily air pollution index." The researchers tried to compensate for that by examining pollution readings taken by National Aeronautics and Space Administration satellites which crossed China twice a day. The NASA readings generally confirmed what the Chinese government was reporting.

Why did the improvements dissipate so quickly? The authors lay part of the blame on China's authoritarian political system. "Air quality improvement is a long time process and largely depends on the dynamic interplay of government policies and private compliance" — in other words, the kind of action that a democracy can manage, once the society reaches a consensus for a cleaner environment. Beijing's efforts, by contrast, "were largely government-driven, much more intensive and implemented in a relatively short period," they say. That may be

characteristic of an authoritarian government which may have a “shorter-than-average time horizon than a democratic regime,” they write.

But developing-nation democracies don't have much to boast about either. India, for instance, hasn't managed to improve air quality despite high-profile efforts, according to studies the authors cite.

The economists recommend what economists always recommend – more research. As for Beijing, the air hasn't been unusually awful lately. According to measurements reported hourly by the U.S. embassy, the air has generally been “unhealthy for sensitive groups,” with a few hourly readings of “very unhealthy” and one or two readings of “good.” Beijing residents may hope that continues, but they know from experience to expect that it won't.

75. China Seeks Public Comment to Inform Drafting of National Climate Change Law

China's top planning body, the National Development and Reform Commission (NDRC), has issued a call for public comment to help inform the drafting of a proposed law on national actions to deal with climate change. Ma Aimin of NDRC's climate change department told the China Daily on March 22nd that the legislation is currently “at the stage where it is being prepared, assessed and where public opinion is being collected.” Ma said a draft is expected to be ready by the end of 2011.

Comments are due by September 30th.

No official draft of the proposed law has been released, but past remarks by officials and a chapter in the recently released national 12th Five-Year Plan (2011-2015) could give some indication of China's intentions. Chen Zhili, vice chairman of Standing Committee of the National People's Congress (NPC), told the state-run Xinhua news agency in November that the proposed law would basically follow an NPC resolution on climate change from August 2009, the climate change framework established under the United Nations in 1992, and the Kyoto Protocol of 1997 that acknowledges “common but differentiated responsibilities” for developed and developing countries in setting targets for reducing carbon dioxide emissions, which envisions different levels of action based on each country's historical contributions to climate change and their financial and technological ability to tackle the problem.

In the final draft of the 12th Five-Year Plan released on March 17th, text in Chapter XXI, Section III says China will “adhere to the common but differentiated responsibilities, actively participate in international negotiations, and promote a fair and reasonable international regime to address climate change.”

China has pledged “domestically binding” cuts in carbon intensity, or emissions per unit of gross domestic product, by 40 percent to 45 percent by 2020 compared to 2005 levels. Under the 12th Five-Year Plan, China plans to cut carbon intensity 17 percent by 2015 compared to 2010 levels, which is in line with the 2020 goal.

The text of the five-year plan says China will respond to climate change through a balance of “mitigation and adaptation” and will work to control greenhouse gas emissions by adjusting its industrial structure, increasing energy efficiency and energy conservation, increasing forest coverage, and controlling total energy consumption. It says that in the next five years, the country will accelerate the use of renewable energy sources and low-carbon technology and

attempt to control carbon dioxide emissions from industry, construction, transportation, and agriculture.

The document also pledges to establish low-carbon product standards, a labeling and certification system, statistical accounting of greenhouse gas emissions, and a domestic carbon trading market by the end of 2015. Many of these initiatives are expected to be launched in China's low-carbon pilot programs in various provinces (Hubei, Guangdong, Liaoning, Shaanxi, and Yunnan) and cities (Baoding, Chongqing, Guiyang, Hangzhou, Nanchang, Shenzhen, Tianjin, Xiamen).

76. China Minister Warns Pollution, Waste Imperil Growth

China faces acute environmental and resource strains that threaten to choke growth unless the world's second-biggest economy cleans up, the nation's environment minister said in an unusually blunt warning. In an essay, Zhou Shengxian also said his agency wants to make assessing projected greenhouse gas emissions a part of evaluating proposed development projects. That could give China's Ministry of Environmental Protection more sway in climate change issues, an area dominated by agencies whose main interest is shoring up industrial growth.

Zhou set environmental worries at the heart of China's next phase of economic development. "In China's thousands of years of civilization, the conflict between humanity and nature has never been as serious as it is today," Zhou said in the essay published in the China Environment News, his ministry's official newspaper. "The depletion, deterioration and exhaustion of resources and the deterioration of the environment have become serious bottlenecks constraining economic and social development."

Zhou's words highlight the policy struggle in China between stoking growth and taming pollution and resource consumption. Recently, Premier Wen Jiabao also said the country should aim for slower, cleaner growth.

Chinese officials often promote the need to maintain fast economic growth to pull hundreds of millions of citizens out of hardship. But Zhou said prospects for growth could be threatened unless smoggy skies, polluted rivers and reckless exploitation of mine reserves are taken much more seriously in setting policy. "If we are numb and apathetic in the face of the acute conflict between humankind and nature, and environmental management remains stuck in the old rut with no efforts in environmental technology, there will surely be a painful price to pay, and even irrecoverable losses," said Zhou.

China is now the world's biggest emitter of greenhouse gases from burning fossil fuels and other human activities that scientists say are causing global warming. It is the world's biggest polluter and biggest consumer of resources across a range of other measures.

In 2009, nearly 20 percent of the length of China's monitored rivers and lakes had pollution worse than Grade 5, making the water officially unfit for even irrigating crops, according to government statistics.

To double the size of the economy between 2000 and 2020 and keep environmental conditions at levels met in 2000, China will have to improve its efficiency in using resources by 4 to 5 times compared to 2000 levels, said Zhou, citing findings of the Chinese Academy of Sciences.

China has repeatedly promised to clean up distressed rivers and lakes and smog-filled skies. But it often fails to match rhetoric with resources and the will to enforce those vows.

77. China Battery Plant Manager Held in Lead Poisoning Case

The general manager of a battery plant in eastern China faces environmental pollution charges after lead emissions from the plant poisoned nearly 170 villagers, including 53 children, state news agency Xinhua reported. Ying Jianguo, manager at the Taizhou Suqi Storage Battery Co. Ltd in Zhejiang province, was detained, said Pan Fangdi, a local official. He added that three government officials, including the deputy chief of the district's environmental protection office, were suspended for failing to supervise the region properly.

In the latest of a string of heavy metal pollution cases in China, 168 villagers in the Shangtao village near Taizhou city were found to have elevated lead levels in their blood, Xinhua reported, citing local officials and a provincial health department statement. Three of the adults had more than three times the safe limit for humans, the report added, although nobody was found to be suffering from severe lead poisoning.

"An inspection of the battery plant showed that lead readings in gas and water discharged from the plant exceeded the legal limit, which also resulted in excessive lead in the earth nearby," it quoted local environment official Jiang Xincai as saying.

Villagers are being advised to avoid eating food grown in the area as the lead had probably contaminated groundwater, Xinhua said. The battery plant is located just meters away from the village and opened in 2005, it added.

Production has now been halted and will not be resumed until the pollution problem is fixed, Xinhua said.

In January state media reported that more than 200 children in another eastern province had been poisoned by lead from battery plants located too close to houses.

Lead poisoning often builds up slowly as a result of repeated exposure to small amounts of lead. It can damage various parts of the body, including the nervous and reproductive systems and the kidneys, and it can also cause high blood pressure and anemia.

Lead is especially harmful for young children as it can lead to learning difficulties and behavioral problems.

China's environment ministry has called for urgent measures to tackle heavy metal poisoning as cases of mass poisoning have aroused widespread public anger. In 2009, protesters broke into a smelting works they blamed for the lead poisoning of more than 600 children, smashing trucks and tearing down fences.

78. Japan's Air Quality Improved in Fiscal 2009

Stringent laws and technological advances helped to improve Japan's air quality in fiscal 2009, with monitoring stations recording lower levels of nitrogen oxides and sulfur oxides, the Ministry of the Environment reported on February 28th. Some 95.7 percent of the country's 423 emission monitoring points registered nitrogen oxides levels below maximum tolerance levels, up slightly from 95.5 percent of stations in fiscal 2008, the ministry said. For suspended particulate matter,

99.5 percent of the monitoring sites were within tolerance levels, up from 99.3 percent. Sulfur oxides levels were within tolerance levels at all points, while carbon monoxide levels were unchanged at 0.5 parts per million (ppm) per hour. Levels of photochemical oxidants—smog caused by the reaction of nitrogen oxides and hydrocarbons in sunlight—also remained unchanged from fiscal 2008 levels at 0.048 ppm per hour. While most pollutant levels decreased across the nation as a whole, Japan's urban areas still lagged in performance, particularly regarding levels of nitrogen oxides, an official of the ministry's Water and Air Environment Bureau said. For example, 92.9 percent of urban monitoring points recorded nitrogen oxides within tolerance levels, lower than the national average but up from 92 percent in fiscal 2008.

79. Chinese Airlines Plan Legal Challenge To Inclusion in EU Emissions Trading System

China's airlines plan to join a coalition of international airlines and industry organizations in challenging the European Union's inclusion of foreign airlines in its Emissions Trading System (ETS), a representative of the China Air Transport Association (CATA) told reporters on March 29th. CATA contends that "flaws exist" in the EU trading rules for greenhouse gas emissions and that applying them to foreign airlines entering EU airspace "violates international law".

EU legislation finalized in 2008 requires all airlines arriving in or departing from the European Union to participate in the ETS starting in 2012, meaning they will receive an allowance of carbon dioxide emissions credits, and must buy additional credits for excess emissions. The European Commission said March 7 that airlines will have their carbon emissions capped at 212.9 million metric tons in 2012.

Zhu Qingyu, a spokesman for CATA, said his organization is helping carriers that fly routes to Europe, such as Air China, China Southern Airlines, China Eastern Airlines, and Shandong Airlines, to prepare a joint lawsuit challenging the legality of their inclusion in the EU ETS along with the International Air Transport Association, the Air Transport Association of America, and other U.S. airlines. It was not clear what court the group would approach.

The Air Transport Association, American Airlines, Continental Airlines, and United Airlines filed a case with the High Court in London in late 2009, but the action was referred to the Court of Justice of the European Union in mid-2010 for an interpretation of EU law (Case No. C-366/10, Air Transport Association of America v. Secretary of State for Energy and Climate Change).

"We will cooperate to safeguard the common interests of global airlines," Zhu said. CATA issued a letter on behalf of its member airlines on March 10th, expressing "grave concern and strong opposition" to inclusion in the ETS. It argued that as a developing country, China should not be subject to mandatory emissions trading requirements, citing the country's position in international climate negotiations that developed and developing countries have "common but differentiated responsibilities" regarding emissions reduction.

CATA also said the ETS rules and the European Union's "unilateral actions" violate the Convention on International Civil Aviation, or the Chicago Convention, but it did not elaborate. It said any emissions trading system for international airlines should be set up by agreement "by governments of all industry members" and not by "unilateral implementation."

CATA's letter was posted March 21 on the Civil Aviation Resource Net of China, the country's main civil aviation news website.

CATA estimates that Chinese airlines would face about 200 million Yuan (\$30.5 million) in added costs during the first year of compliance with the EU ETS rules, Wei Zhenzhong, secretary-general of the organization, told Beijing Times March 22. Wei said the extra costs would have to be passed on to consumers if the challenge fails. The newspaper said the Ministry of Foreign Affairs, the Ministry of Commerce, and the Civil Aviation Administration of China have set up a group to coordinate action against the EU rules. Wei said he hoped the central government would impose sanctions if the lawsuit fails.

AFRICA

80. South Africa Outlines Plan to Phase in Cleaner Diesel, Upgrade Refineries by 2017

A draft position paper issued by South Africa's Department of Energy outlines plans to modernize the country's transportation fuels by phasing in use of Euro 5 grade fuel and upgrading all South African refineries to produce it by 2017. In its Discussion Document on the Review of Fuel Specifications and Standards for South Africa, the department said it aims to reduce levels of sulfur in both petrol and diesel as well as benzene in petrol to meet Euro 5 emissions standards to improve air quality.

Minister of Energy Dipuo Peters said at a March 8 media briefing that the proposed migration to cleaner fuels is driven by both environmental and health concerns.

Maximum sulfur content would be lowered from 500 parts per million (ppm) to 10 ppm, while allowable levels of benzene would be reduced from 5 percent to 1 percent. Aromatics in petrol would be reduced from 50 percent to 35 percent.

According to the paper, which is open for public comment until May 6, all refiners would be required by legislation to reconfigure their facilities to meet the Euro 5 fuel specifications by 2017. The country's fuel currently is compatible with Euro 2 standards.

"South Africa is not operating in isolation," the paper said. "It cannot be against the current global trend of lowering maximum limits of sulfur content of fuels and other parameters such as the aromatics and benzene content of petrol."

Peters said low sulfur levels will allow for the introduction of more efficient engines, resulting in lower carbon dioxide emissions. That would "complement" September 2010's introduction of a carbon tax on new vehicle sales based on certified levels of carbon dioxide emissions. "The introduction of the latest vehicle technology hinges on the availability of enabling fuels in the economy," Peters said.

The discussion document said the government aspires to have one Euro 5 refinery up and running by 2015 able to produce a standard fuel grade of 50 ppm of sulfur and a better grade of 10 ppm.

South African Petroleum Industry Association (SAPIA) adviser Anton Moldan said: "We support the need to review the existing specifications and to identify those that will provide the most benefit to the country as a whole. SAPIA is currently in the process of preparing a submission to the DOE on the Discussion Document."

SAPIA said on its website that government policies must consider South Africa's unique characteristics, including its high number of older vehicles, differing geographic conditions such as a wide range of altitudes, and large number of poor residents. Headquartered in suburban Johannesburg, SAPIA represents the common interests of the South African subsidiaries of British Petroleum, Chevron, Shell, Total, and South Africa's Engen and PetroSA.

Drawing from experiences in the European Union, Japan, and the United States, DOE estimated that the extensive refinery modifications for producing cleaner fuels of Euro 4 or better would take four to six years to complete. It put the capital investment required for the refineries to produce at the Euro 5 level at \$3.7 billion.

In her remarks, Peters noted transportation's contribution to South Africa's high carbon profile as well as the country's plans to host the U.N. climate change summit in November and trade concerns. "As responsible citizens of the world, we cannot continue using fuels that result in emissions of more greenhouse gas emissions than those partners with whom we trade," she said.

According to the International Energy Agency, South Africa is the 13th-largest emitter of carbon dioxide from fuel combustion in the world, accounting for 1.1 percent of the global total. The country's draft climate change strategy, published in November, expressed worry that high emissions rates could leave economic sectors "trade exposed" as other countries shift away from purchasing carbon-intensive goods.

The issue of cost will be addressed once each refinery has been evaluated, she said, adding: "There are approaches that can be considered including differentiated taxes which create an advantage for high quality fuel." For instance, the discussion paper said, in China, India, and the Philippines, less polluting transport fuels are taxed at a lower rate to create an incentive for their use through a lower pump price.

According to DOE, the country's refinery capacity is 708,000 barrels daily, including 513,000 from crude oil, 150,000 from coal-to-liquids, and 45,000 from gas-to-liquids.

South Africa last saw a move toward cleaner fuels at the beginning of 2006 when the government banned the addition of lead for all grades of petrol and required diesel sulfur levels to fall from a permissible 3,000 ppm to 500 ppm.

Other African nations are moving in the same direction. In February, Kenya launched a low-sulfur diesel initiative, moving from a 10,000 ppm limit to 500. According to the United Nations Environment Program, Tanzania also is scheduled to institute a 500 ppm limit this year. The island nation of Mauritius adopted a similar limit in August 2010. According to UNEP, the African Refiners Association has set a target of upgrading its refineries to produce 50 ppm fuel by 2020.

The National Association of Automobile Manufacturers of South Africa (Naamsa) has long called for improvements to South Africa's fuel standards, saying the current fuel supply was out of sync with the next generation of fuel-efficient vehicles. The association did not return calls for comment.

SOUTH AMERICA

81. Latin American Countries to Expand Renewables' Share in Energy Mix

Latin American countries have launched a variety of initiatives to tap their rich natural energy resources, including hydro, wind, solar, and geothermal power. Mexico, Argentina, Brazil, and Peru have enacted laws, provided incentives, or set targets to generate a minimum percentage of their electricity from renewable sources. In contrast, Colombia's inexpensive electricity and ample petroleum reserves are likely to hold expansion of its renewable sector to a moderate pace.

A construction boom has been under way in Mexico's renewable energy field, most notably in the wind power sector. The country also has compiled an atlas pinpointing the best areas for solar and wind technologies.

While Brazil will continue to rely heavily on its abundant hydropower resources, electricity generation from biomass and wind is expected to grow faster than the government has predicted.

Argentina is tapping the winds that whip its southern Patagonia region. Meanwhile, increases in biodiesel production have made the country the world's third largest biodiesel producer.

Peru's government is moving aggressively to bolster the use of biomass, geothermal, solar, and wind power to serve its fast-growing economy. However, its ambitious plans to build more hydroelectric dams have run into local opposition.

Mexico has made great strides in renewable energy with laws, incentives, and a growing list of companies banking on cleaner energy projects, government officials and environmental experts say. Renewables in Mexico are undergoing a construction boom that began about four years ago, most actively in wind farm development, which grew from 3 megawatts (MW) to 500 MW in installed capacity. Solar panels also are beginning to take off, while mini-hydro and biogas projects are picking up at a slower pace, experts say.

"We have a great potential to explore other technologies such as solar and wind, where we have a map that registers points throughout our national geography where we can launch these developments of renewable energy," the Energy Ministry told the press. The ministry was referring to the Mexican Atlas of Wind and Solar Renewable Resources, presented by President Felipe Calderon in December 2010.

Total public and private investment in wind energy comes to \$5.5 billion, according to the Energy Ministry. Wind farms in Oaxaca State in southern Mexico have gained a reputation as being among the best sources of renewable energy in the world. The completed La Venta II and Eurus projects combined have about 330 MW of installed capacity, while a third 200 MW project is almost complete, with about a dozen others are in the works.

Meanwhile, photovoltaic panels are gaining popularity in households and industries throughout the country. Investment over the past four years has reached \$125.5 million and photovoltaic installations connected to the energy network total 25.11 MWp (megawatt-peak), the ministry said. The Bicentennial Photovoltaic Solar Park installed in 2010 in Aguas Calientes state, for example, has 1 MWp capacity.

"In Mexico, the average solar irradiation fluctuates between 5 and 6 KW hour [kilowatt-hours] per square meter per day, which is up to 70 percent higher than the great developers in solar use installed around the world," the Energy Ministry said.

In contrast, small 5 to 8 MW biogas projects capturing methane at landfills in Monterrey, Queretaro, and Aguas Calientes states are not expanding quickly enough, according to Odon de Buen, an energy consultant and former director of the Energy Ministry's National Energy Conservation Commission.

While Mexico has not passed a law requiring that a certain percentage of its energy come from renewable sources, Calderon has set a 25 percent target for renewable energy use for electricity by 2012. In 2007, he presented a special program and strategy on climate change and renewable energy to reduce carbon dioxide emissions and establish dozens of programs to help the country reach its goals, including 35 percent renewable use by 2024.

Laws on the books governing the renewable industry include the 2008 Renewable Energy Use and Energy Transition Financing Law. It obliges ministries to promote renewable projects and allows small-scale generators to be compensated for externalities, or the cost of health and environmental damages avoided by not using fossil fuels. Regulations to the law helped establish model contracts for generators of renewable energy of up to 30 MW, but companies have stalled on important investment projects because externality compensations are not yet being applied, analysts said.

In 2007, Mexico adopted a Law for the Promotion and Development of Biofuels, opening the biofuel industry to private producers. The 2008 Efficient Energy Use Law requires large consumers to report energy use.

In the next 10 years, biomass and wind power will account for a much larger percentage of Brazil's energy matrix than current plans forecast, government officials, energy specialists, and environmentalists told the press. Brazil's 10-Year Energy Expansion Plan (PDEE) covering 2010–2019, envisions that by 2019, biomass and wind power will account for 8.7 percent of the energy matrix. Hydropower will supply 73.9 percent of the country's energy, followed by fossil-fueled thermo plants (15.3 percent) and nuclear reactors (2.1 percent). The current PDEE forecasts that through 2019, wind energy will add 5,300 MW of power to the grid and that biomass energy, mainly from thermo plants fueled with sugar cane waste, will add 5,400 MW.

“The current PDEE estimates for wind and biomass energy expansion are much too low because it was drafted before the government's first two renewable energy auctions in December 2009 and August 2010 showed a much higher-than-expected demand and competitive prices for wind and biomass energy,” a spokesman for the Energy Research Institute, the arm of the Mines and Energy Ministry that drafts PDEEs, told the press on March 14. “As such, the government plans to hold such auctions every year.”

At the 2009 auction, companies contracted with buyers to supply energy from 71 wind projects with 1,805 MW of capacity at an average price of 148.4 reais (\$85 at the time) per megawatt-hour. At the 2010 auction, the government sold 2,047 MW of wind power from 70 projects at an average price of R\$130.8 (\$78.20 at current rates) per MWh and 712.9 MW of biomass power from 12 projects at an average price of R\$144.2 (\$86.20) per MWh.

Because Amazon dams are the cheapest source of renewable energy in Brazil, the current PDEE calls for starting construction of 39 hydroelectric dams between 2014 and 2019, with the biggest of them to be in the Amazon. In December 2007, the government sold the concession for the Santo Antônio dam, in the western Amazon, to a consortium that offered the lowest price for the energy it generated, R\$78.87 (\$45) per MWh.

Argentina derives only 0.1 percent of its energy from renewable sources, but in January 2007 it enacted legislation (Law 26190) mandating that by 2016, 8 percent of the country's energy, or 2.5 gigawatts, must come from renewables. To this end, the law provides a series of tax cuts, subsidies, and other incentives. In December 2009, after a tender for 500 MW in wind power received offers for 1,200 MW—mostly in windy Patagonia, near the southern tip of the continent—the government said it would step up its plans. On top of offers to build 27 wind farms, potential investors came up with projects to build several biofuel, solar, biomass, micro-hydropower dam, and biogas plants. The administration has estimated that those and other projects should bring in \$2.5 billion in investments.

Separately, the government has announced plans to build what it described as one of the world's largest wind power farms, a \$2.4 billion, 600–900 MW facility in Patagonia. According to an industry report, climate patterns, extensive empty lands, and technology advancements could turn Argentina into a wind-power world leader, with the potential of more than 2,000 GW from wind farms.

Meanwhile, biodiesel output in Argentina rose 51 percent in 2010 and is expected to grow another 24 percent this year to 3.1 million metric tons, pushing the country from fifth to the world's third largest producer.

Argentina's biofuel is mostly derived from soybean oil, of which it is the world's top supplier. Its biofuel contains 7 percent vegetable oil and the government plans to raise this to 10 percent soon. Some major U.S. farm producers are behind this trend—Louis Dreyfus Argentina owns a 305,000 metric ton biofuel plant, while the local unit of Cargill is putting the final touches on a 240,000 metric ton facility. One reason the biofuel industry is growing so fast is because soybeans carry a 35 percent export tariff, while the levy on soy by-products are less than half that duty.

Additionally, the federal government has launched a program to build a \$20 million, 8.4 MW electricity generation plant powered by biofuel made from used cooking oil. Some 200 nongovernmental organizations will be hired to collect the oil from homes, and deals also have been made with some 500 restaurants, including fast food chains McDonald's and Burger King. The project is sponsored by Genren, a program launched in 2009 by the Energy Secretariat to help reduce emissions of greenhouse gases by 2.9 million metric tons of carbon dioxide equivalent per year.

In addition, the nuclear crisis in Japan after the March 11 earthquake and tsunami has led to renewed calls in Argentina to ditch plans to dramatically increase nuclear energy output above its soon-to-be-reached 1,750 MW capacity and to focus on expanding renewable energy sources instead.

Peru's government has an aggressive plan in place to change the country's energy mix, emphasizing the installation of hydroelectric and other clean-energy generating facilities over the next few years.

Environment Minister Antonio Brack said the government's long-term plan, which is outlined through 2040 (Supreme Decree 064-2010-EM, Nov. 24, 2010), is based on renewable energy sources.

President Alan Garcia's administration has published a series of laws to promote alternative energy sources, including Legislative Decree 1058 (June 28, 2008), which calls for 5 percent of

new energy added annually to come from alternative sources. A specific norm for geothermal energy (Supreme Decree 019-2010-EM, April 8, 2010) was published last year to facilitate investment.

Energy demand in Peru's fast-growing economy is forecast to increase by 9 percent annually in the next five years, requiring at least 450 MW to be added to the grid each year, according to the Ministry of Energy and Mines. Gas-generated thermal power has been the principal source of new energy in the past few years, but there are numerous hydroelectric and alternative plants also in the works.

The ministry currently lists 26 temporary concessions for hydroelectric plants, which would add 6,600 MW. The government has also authorized the construction of new plants that will add 800 MW in the next three years. In addition, there are six temporary concessions for wind farms, which could add 700 MW. Temporary concessions give companies up to two years to carry out feasibility studies.

The ministry estimates that Peru has the potential for 60,000 MW in hydropower, 20,000 MW in wind farms, and 20,000 MW from geothermal generation.

The first concessions for alternative renewable sources were awarded in February 2010. They included two biomass projects for 27.4 MW, three wind farms for 142 MW, and four solar energy projects for 80 MW, as well as 17 concessions to produce 162 MW from small hydroelectric plants under 20 MW in capacity. A second tender in August 2010 awarded one small hydroelectric concession.

The government's investment promotion agency, ProInversion, closed a tender in late March for 544 MW of hydroelectric power. The plants will produce more than 900 MW, with the difference being sold on the market. The plants must be ready by the end of 2016.

The 27 alternative concessions awarded before August 2010 are required to come on line no later than Dec. 31, 2012. Several are already far along. The first biomass project, a 4.8 MW plant that will use methane from Lima's largest landfill, will start production in the second half of 2011. The energy ministry has approved environmental impact studies for two of the three wind farms that will be located on the northern coast, the 80 MW Cupisnique wind farm and the 32 MW Talara wind farm. The Peruvian-Spanish company behind them, Energia Eoloica, expects production to start in the second half of 2012.

Spain's Grupo T-Solar, which holds outright the concession for two solar projects and is partnered with Spain's Solarpack Corp. in two others, is in the final stages of receiving the green light to begin construction on its first project, with a capacity of 20 MW, in the southern desert department of Tacna.

The energy ministry also has granted a series of exploration contracts for geothermal development, most recently to Peru's Andes Power Peru and Australia's Hot Rock Peru, in the south of the country. There are six other companies with authorizations or concessions.

Colombia's renewable energy capacity will grow only moderately in the coming decades because the country has plentiful, inexpensive energy and lacks government incentives for renewables, according to analysts and people in the industry. At present, depending on the amount of rainfall, between 50 percent and 80 percent of Colombia's electricity is generated by hydroelectric dams and the country also has plentiful fossil fuel resources. Energy from solar,

wind, and biomass sources is more expensive than conventional energy and the government has created few incentives to encourage the development of renewable energy. At present only 1.4 percent of total electrical generating capacity comes from renewables. Overall, Colombia aims to generate 3.5 percent of its electricity from renewable sources by 2015 and 6.5 percent by 2020.

Colombia currently has a 19.5 MW wind farm in the Guajira region. The Inter-American Development Bank (IADB) says the country also has 169 MW of generating capacity from hydroelectric plants of below 10 MW capacity, which are defined as renewable, and 20 MW of wind power. Colombia plans to complete a 7.5 MW wind project on San Andres Island in 2011.

There are several planned alternative energy projects, including 10 MW of wind and 2 MW of solar, to be built by the state petroleum company Ecopetrol, and 50 MW of geothermal energy and 20 MW of wind planned by Isagen, an electrical company, according to a November 2010 report by IADB and the Ministry of Mines and Energy. However, according to the bank, Isagen has said that the wind farm will not be viable without a 35 percent capital subsidy.

The sugar cane and palm industries also employ vegetable mass cogeneration. According to the IADB, 35 MW of biomass cogeneration exist in Colombia.

Energy-strapped Uruguay is aggressively boosting renewable energy capacity with private sector help. It expects to produce 500 MW of wind energy and 200 MW from biomass by 2015, enough to cover more than half the domestic electricity consumption, which can reach 1,200 MW at peak season. Additionally, the tiny nation wedged between Argentina and Brazil—which unlike its neighbors has no oil or natural gas of its own and has banned nuclear plants—in 2010 launched a drive to promote small-scale wind, solar, biomass, and micro-hydropower plants both at residential and small-industry levels and to let the state-run utility purchase their surpluses.

If all goes according to plan, Uruguay, declared a “natural country” by law, will have one of the largest shares of wind power in the world, the government says. As part of this plan, in March 2011 it awarded contracts for construction of three wind farms to three different corporations that will produce a total 150 MW and said it soon will hold a fresh tender for three more plants of equal capacity.

The government has made it clear that it lacks the financial resources to boost renewable energy output and has stressed that it will rely heavily on public-private partnerships.

Renewable energy plans in Uruguay are spurred by a combination of factors that include frequent droughts affecting hydroelectric dams; rising prices of oil and gas needed to power its thermal plants; strong, stable winds; and abundant rice husk from its large paddy fields and wood chips from two huge paper-pulp mills that can become a burden if not used for biomass-based energy.

MIDDLE EAST

82. Expert Suggests Electric Vehicles to Cut UAE Emissions

If the UAE goes for electric vehicles in the next five years and 10,000 vehicle owners switch from gas-powered passenger cars to electric vehicles, over 33,000 metric tons of carbon dioxide (CO₂) emissions will be eliminated from the environment. Dr Wajdi Ahmed, Technical Solutions

Director for GE. Digital Energy in the Middle East, said this during his briefing on “Electric Vehicle: Smart Solution for Transportation System Sustainability” at the Dubai Global Energy Forum at the World Trade Centre on Tuesday. EV (electric vehicle) is the generic name for PHEV (plug-in hybrid electric vehicles) and BEV (battery electric vehicles), which Dr Ahmed claimed to have zero emission, a clean source of recharging energy with higher reliability minus noise pollution. He said that the entire Middle East is expected to have 67 per cent CO2 emission growth between 2010 and 2030. “UAE and other countries in the GCC recorded four million metric tons of CO2 emission in 2005 alone.”

This shows, he said, that these countries need a smart grid solution as population growth plus industrial growth call for high electricity and transport demands.

“An estimated 115 per cent increase in electricity demand within the Middle East is expected between 2010 and 2030. More than a million registered cars in the UAE can contribute to the reduction of speed and CO2 emission if they go for electric vehicles.” He said that Dubai is not lagging behind as the same is already in the vision of His Highness Shaikh Mohammed bin Rashid Al Maktoum, Vice-President and Prime Minister of the UAE and Ruler of Dubai. However, he said three important things are still to be done for the electric vehicle to be on Dubai’s road. “We still need policy regulation, public awareness and technology challenges. There is no EV integration and no incentive yet to produce EV and for people to buy them.” Dr Ahmed also said that public awareness is yet to be done. “There is a lack in public awareness on “green vehicles” and absence of academia in EV space and performance metrics in speed against “green”. A propaganda, he said, has to be done to push these incentives. “It is a tough road as there is also a minimal focus on EV suppliers in the region as well as environmental challenge as this area is hot and humid.”

HEALTH

83. Babies Born Earlier When Mom Lives Near Traffic

Babies are born earlier when their mothers live near a concentration of freeways and main roads, a study of 970 mothers and their newborn babies in Logan City, south of Brisbane, has found. Senior research fellow Associate Professor Adrian Barnett from Queensland University of Technology’s (QUT) Institute of Health and Biomedical Innovation (IHBI) said the study, published in the online journal Environmental Health, showed that the more freeways and highways around a pregnant woman’s home, the higher the likelihood of her baby being born prematurely.

“The most striking result was the reduction in gestation time of 4.4 per cent or almost two weeks associated with an increase in freeways within 400 meters of the women’s home,” said Professor Barnett, whose earlier study found a strong association between increased air pollution and small fetus size. “Although the increased risks are relatively small, the public health implications are large because everyone living in an urban area gets exposed to air pollution. Pre-term and low-birth weight babies stay in hospital longer after birth, have an increased risk of death and are more likely to develop disabilities.”

Professor Barnett said although air pollution levels in south-east Queensland were low compared with industrial cities, people’s exposure to the chemical toxins in vehicle emissions was relatively high because of our outdoor lifestyle and open houses.

The study counted the number of roads around the mother's homes up to a 500 meter radius. "We examined the distance between the home and busy roads to find the distance at which most of the negative effects on birth outcomes occurred because this has implications for local governments planning expansions or new roads," he said. Most of the effects were within a 200-metre radius, but negative health effects were present up to 400 meters.

Professor Barnett said the study had also taken into account the effects of smoking levels and the socio-economic status of the mothers.

The effects of noise pollution were considered to be a possible contributing factor, but Professor Barnett said it was difficult to separate the effects of air and noise pollution. "Vehicles braking and starting means that road junctions have some of the highest levels of noise and air pollution," he said. "Disturbed sleep during pregnancy may cause extra stress and be a risk factor for adverse birth outcomes.

"This study points to the fact that pregnant women should reduce their exposure to traffic. A reduction in traffic emissions through improved vehicles or increased public transport use would have immediate health benefits by giving children a better start to life."

84. Polluted Air Leads to Disease by Promoting Widespread Inflammation

Chronic inhalation of polluted air appears to activate a protein that triggers the release of white blood cells, setting off events that lead to widespread inflammation, according to new research in an animal model.¹⁰ This finding narrows the gap in researchers' understanding of how prolonged exposure to pollution can increase the risk for cardiovascular problems and other diseases.

The research group, led by Ohio State University scientists, has described studies in mice suggesting that chronic exposure to very fine particulate matter triggers events that allow white blood cells to escape from bone marrow and work their way into the bloodstream. Their presence in and around blood vessels alters the integrity of vessel walls and they also collect in fat tissue, where they release chemicals that cause inflammation.

The cellular activity resembles an immune response that has spiraled out of control. A normal immune response to a pathogen or other foreign body requires some inflammation, but when inflammation is excessive and has no protective or healing role, the condition can lead to an increased risk for cardiovascular diseases, diabetes and obesity, as well as other disorders.

Though many questions about the beginning of this process remain unanswered, the scientists predict that the damage may originate in fluid that lines the lung. Tiny molecules in this fluid change structure after being exposed to polluted air, and that change appears to set off this cascade of damaging white blood cell behavior by activating a receptor called "toll-like receptor 4." The job of toll-like receptor 4, or TLR4, is to recognize specific characteristics of pathogens and then send out signals to activate other players in the immune system. Mice that lack this molecule don't produce as much inflammation after exposure to pollution as do normal mice,

¹⁰ T. Kampfrath, A. Maiseyeu, Ying, Z. Shah, J. A. Deiuliis, X. Xu, N. Kherada, R. D. Brook, K. M. Reddy, N. P. Padture, S. Parthasarathy, L. C. Chen, S. Moffatt-Bruce, Q. Sun, H. Morawietz, S. Rajagopalan. Chronic Fine Particulate Matter Exposure Induces Systemic Vascular Dysfunction via NADPH Oxidase and TLR4 Pathways. *Circulation Research*, 2011; 108 (6): 716 DOI: 10.1161/CIRCRESAHA.110.237560

suggesting that TLR4 has a prominent role in the body's response to chronic exposure to particulate matter.

"Our main hypothesis is that particulate matter stimulates inflammation in the lung, and products of that inflammation spill over into the body's circulation, traveling to fat tissue to promote inflammation and causing vascular dysfunction," said Sanjay Rajagopalan, professor of cardiovascular medicine at Ohio State and senior author of the study. "We haven't identified the entire mechanism, but we have evidence now that activation of TLR4 influences this response."

Many of these researchers already have documented the link between chronic exposure to polluted air and high blood pressure, diabetes and obesity. They now aim to pinpoint how and where the earliest damage occurs.

For this study, the scientists exposed different groups of mice to either filtered air or air containing between eight and 10 times more fine particulates than the ambient air in an urban environment -- an average of approximately 111 micrograms per cubic meter. The mice were exposed for six hours per day for five days per week for at least 20 weeks.

The polluted air contained fine particulates that are so tiny -- 2.5 micrometers or smaller in diameter -- that they can reach deep areas of the lungs and other organs in the body.

For most of the experiments, the effects of exposure to pollution were compared in normal mice and mice deficient in TLR4. After exposure to polluted air, the normal mice showed higher levels of white blood cells known as inflammatory monocytes in their spleens and circulating in their bloodstream than did mice breathing filtered air. Deficiency of TLR4 diminished this effect in mice breathing dirty air. That suggested that if the receptor is not active, the monocytes will not be released.

Other findings implicated yet another potential compound involved in the damage. The increase in monocytes was accompanied by an increase in superoxides in the blood vessels. These compounds are designed to kill pathogens, but they are toxic if they have no bug to fight. They are produced by an enzyme called NADPH oxidase -- and NADPH oxidase is found inside monocytes.

In an experiment comparing normal mice and mice lacking a component of the NADPH oxidase enzyme, the mice without the enzyme produced fewer oxygen free radicals in response to polluted air than did normal mice. "The free radicals can have a high impact on vascular function," explained Thomas Kampfrath, a postdoctoral researcher in Ohio State's Davis Heart and Lung Research Institute and first author of the study. Indeed, an examination of the aortas of these mice showed that vessels in animals exposed to polluted air exhibited exaggerated responsiveness to stressors -- a sign of incipient hypertension, or high blood pressure, Kampfrath said.

Yet another model of mice genetically altered so their monocytes express yellow fluorescent protein allowed the researchers to observe exactly where the monocytes traveled in segments of mouse muscles and fat tissue. In mice breathing polluted air, the monocytes began to stick to blood vessel walls and fat cells. "This is a sign that the monocytes are responding to inflammatory stimuli -- which in our case is particulate matter -- and then in turn they can cause more inflammation because they release inflammatory factors," said Rajagopalan, who is also the associate director for vascular research at the Davis Heart and Lung Research Institute.

Those factors include what are called proinflammatory cytokines, including TNF α (tumor necrosis factor alpha), MCP-1 (monocyte chemoattractant protein) and IL-12 (interleukin-12). These are chemical messengers that cause inflammation, most often to fight infection or repair injury. When they circulate without an infection to fight, the body experiences excess inflammation. Mice breathing polluted air showed higher levels of these cytokines in their blood than did mice breathing filtered air. And the mice deficient in the TLR4 receptor showed dramatically lower levels of the cytokines.

"Most of our experiments initially assessed global inflammation. The monocytes are virtually everywhere in the body," Rajagopalan said. "And then we asked the question, how does it happen, and where does it come from?"

Kampfrath in particular is focused on the lung's role in this process. Those same cytokines were also significantly elevated in the lungs of mice that had experienced prolonged exposure to polluted air, and the lack of TLR4 activation lowered this effect. Protective fluid in the lung contains molecules called phospholipids, and this research showed that those molecules become oxidized -- meaning a chemical reaction changes their shape and function -- after they are exposed to polluted air. That much is determined. And a series of experiments in different types of white blood cells demonstrated that when the cells are treated with oxidized phospholipids, they will release those proinflammatory cytokines. The lack of TLR4 in those cells diminishes these effects.

These experiments confirmed that these activities in the lung could trigger inflammation seen throughout the rest of the body in mice exposed to polluted air. The question that remains unanswered, however, is the process by which phospholipids become oxidized after chronic lung exposure to dirty air, Kampfrath said. "After exposure, there is an increase in oxidized phospholipids in the lung fluid. We know it happens, but we don't know how," he said. "What we do know is that the increase in oxidized phospholipids in turn promotes inflammation."

In an editorial in the same issue of *Circulation Research*, Daniel Conklin of the University of Louisville wrote, "Is the mystery solved regarding the mechanism how inhaled [fine particulate matter] exposure stimulates vascular inflammation and injury? Well, probably not completely, but the present scenario laid out ... connects findings from their study with many disparate human and animal epidemiological/exposure studies into a plausible story."

85. Air Pollution Exposure Affects Premenopausal Breast Cancer Risk

Exposure to air pollution early in life and when a woman gives birth to her first child may alter her DNA and may be associated with premenopausal breast cancer later in life, researchers at the University at Buffalo have shown. Methylation is a chemical process that has been implicated in determining which genes in a cell are active, a process essential to normal cellular function. The findings indicated that higher air pollution exposure at birth may alter DNA methylation, which may increase levels of E-cadherin, a protein important to the adhesion of cells, a function that plays an essential role in maintaining a stable cellular environment and assuring healthy tissues.

Women with breast cancer who lived in a region with more air pollution were more likely to have the alteration in the DNA in their tumor than those who lived in a less-polluted region, results showed. Higher air pollution concentration at the time of first child birth also was associated with changes in p16, a gene involved in tumor suppression, according to findings.

Results of the research were presented on April 6th at the 2011 American Association for Cancer Research meeting in Orlando, Fla.

Lead investigator Katharine Dobson, MPH, an epidemiology doctoral student and research assistant in UB's Department of Social and Preventive Medicine, says of the findings: "To our knowledge, this is the first study to examine exposure to ambient air pollution at key points in a woman's lifetime." The investigation looked for an association between exposure to pollution and alterations to DNA that influences the presence or absence of key proteins. Such genetic changes are thought to be major contributors to cancer development and progression, including at very early stages," Dobson says.

The study is based on data from the Western New York Exposures and Breast Cancer (WEB) study, which collected information from 1,170 women with recently diagnosed breast cancer and 2,116 healthy women who lived in New York's Erie and Niagara counties between 1996 and 2001. This research involved only cancer cases.

Participants provided information on where they were born, where they lived at the time of their first menstrual period, and, if they had children, where they lived when they bore their first child. Data from air monitors operating in the relevant time periods was used to determine the amount of particulate matter at each participant's residence at those time periods. Air pollution data from 87 sites in Western New York was matched with residence location at year of birth, year of menarche and year of first child birth.

"We found that decreased E-cadherin promoter methylation was associated with higher exposure at birth, and increased p16 methylation with higher exposure at the time of a first child birth," says Dobson. "For breast cancer cases, menopausal status appeared to modify the association between air pollution exposure and E-cadherin promoter methylation, with premenopausal women more susceptible to these early exposures than postmenopausal women."

More research is needed to determine the role of air pollution in DNA methylation in breast cancer development and progression, and to address changing air pollution contents and levels over time, Dobson notes

Jo L. Freudenheim, PhD; Menghua Tao, MD, PhD; Jing Nie, PhD; and Matthew Bonner, PhD, all from UB, contributed to the study, as well as researchers from Lombardi Comprehensive Cancer Center, Georgetown University, Washington D.C.; Roswell Park Cancer Institute, Buffalo, N.Y.; Potomac Hospital, Woodbridge, Va.; and University of Nevada Health Sciences System, Las Vegas, Nev.

The study was funded by the National Cancer Institute.

GENERAL

86. Emerging Markets Growth Affecting Carbon Emissions Reduction

Light-vehicle sales in emerging markets have surpassed the share of sales from economically mature regions, but this will make it more difficult to control vehicle carbon emissions, according to J.D. Power and Associates. The shift in sales is led largely by growth in China. "This marks a new world order with respect to global automotive sales," said John Humphrey, senior vice-president of automotive operations at J.D. Power and Associates. "Mature markets like the

United States, Western Europe and Japan are only expected to return to pre-recessionary sales levels by 2015, and during that period they will be overshadowed by exponential growth in China, India, Brazil and Russia. With China at the forefront, emerging markets have overtaken mature markets, and will continue to be the primary source of growth for the sector going forward.”

In 2010, sales in emerging markets made up 51 per cent of global sales, but are expected to increase steadily to 60 per cent in 2015. Sales in China in 2015 are projected to total 29 million units, with the U.S. following with just 16.5 million units.

Global light-vehicle sales are expected to increase from 77 million units in 2011 to 103 million in 2015, and to 125 million by 2020. Of this total, the BRIC countries (Brazil, Russia, India and China) are expected to account for 57.7 million sales, or 46 per cent of the global total. While it took approximately 95 years to get to the first 500 million passenger vehicles simultaneously in operation, achieved in 2010, it will only take another 20 years for units-in-operation on the world’s roads to exceed one billion with the addition of the emerging markets.

This shift in global auto sales will be a major obstacle to controlling or reducing emissions from internal combustion engines, the forecast company said. Countries that are still developing economically and technologically may be less inclined or less capable of keeping pace with global normals and standards for emission reductions. Buyers in these markets also tend to be more sensitive to price pressure than those in economically mature markets, favoring sales of traditional internal combustion engines. It is unlikely that buyers in developing markets will pay the premium for hybrid or battery-powered vehicles.

“Although some governments are taking steps to reduce auto-related carbon emissions, the sheer volume of vehicles being added to the global fleet over the next decade will largely negate these efforts,” Humphrey said. “The global growth pattern points to vehicle carbon emissions and overall air quality getting worse before they get better.”

87. IEA Roadmap Sees 27% Biofuel Use By 2050

Global biofuel production could be increased 14-fold by 2050 without adversely affecting food security or the environment, according to a technology roadmap published by the International Energy Agency (IEA). This would allow a 27% market penetration compared with 2% today and save 2.1 gigatons of CO₂ – around a fifth of the total reductions expected from transport. The effect on fuel prices should be marginal and biofuels could be competitive with fossil fuels by 2030 under some circumstances.

But savings on this level would require major efficiency improvements for fuels made from existing feedstocks such as sugar and oil seed, and the elimination of emissions from indirect land use change. Biofuels from lignocellulosic feedstocks would also have to reach commercial viability within ten years, says the IEA.

A third of the 3 billion tons of biomass that would be needed annually by 2050 could come from waste and crop residues, according to the agency's roadmap. However, the land area dedicated to biofuel crops would also have to increase three-fold to 100 million hectares – around 2% of total agricultural land.

Achieving biofuels' full potential will cost about \$12 trillion over the next 40 years. This includes further government support for research and development and measures to encourage investment in the first commercial-scale production units.

Land use needs to be carefully managed to avoid feedstocks outcompeting food crops, the IEA recommends. Governments must also introduce mandatory and internationally-aligned sustainability standards. The EU already has sustainability criteria for biofuels and certification schemes are being launched.

“We find that there is a substantial scope for an increase in the use of biofuels, especially for heavy modes of transportation, like planes, marine vessels, and heavy trucks where you can't expect electricity to be a viable alternative,” Bo Diczfalusy, director of sustainable energy policy and technology for the IEA, said during a presentation on the report at the Organization for Economic Cooperation and Development's Washington Center in Washington, D.C.

“Making this feedstock available in a sustainable way, without compromising food security, threatening biodiversity or limiting smallholders' access to land, will require a sound policy framework and involvement of all stakeholders along the production chain,” the report said.

In addition, the report said “novel technologies” such as algae biofuels and sugar-based hydrocarbons also will need to be developed, and the first commercial-scale advanced biofuel plants will need to come online within the next decade.

88. IEA: Faster Progress on Clean Energy Required To Meet Climate Change Goals

The contribution of renewable energy to electricity generation must double by 2020 if international goals to hold global warming to manageable levels are to be achieved, the International Energy Agency said in a report released April 6.

The Paris-based agency, which advises 28 wealthy, high-energy-consuming countries, made its comments in a Clean Energy Progress Report, which assessed deployment of these technologies worldwide.

Warning that demand for fossil fuels is still outpacing clean-energy deployment, the report said governments will have to deploy more, faster if the world is to achieve carbon dioxide emissions reduction targets necessary to keep global warming within 2 degrees Celsius (3.6 degrees Fahrenheit) in this century. U.N. scientists have said that figure is a statistical threshold beyond which the probability of catastrophic climate change increases greatly.

The 71-page report surveyed policies and public spending on research, development, demonstration, and deployment of technologies, including renewable energy, energy efficiency, electric vehicles, nuclear power, biofuels, and carbon capture and storage (CCS). It makes recommendations for future policy and spending.

The agency presented the report in Abu Dhabi at the second Clean Energy Ministerial meeting. The first ministerial was held in Washington, D.C., in July 2010.

On the success side, IEA said at least 10 countries now have “sizeable” domestic markets for solar energy, up from three in 2000. Global installed wind power capacity at the end of 2010 approached 194 gigawatts, more than a tenfold increase from 2000.

Still, coal has met 47 percent of global new electricity demand over the past decade, eclipsing clean energy efforts. IEA said more aggressive clean energy policies are needed, including removal of fossil fuel subsidies and implementation of incentives for cleaner energy options.

It said worldwide renewable electricity generation since 1990 grew an average of 2.7 percent, less than the 3 percent growth in total electricity generation. Consequently, “achieving the goal of halving global energy-related [carbon dioxide] emissions by 2050 will require a doubling of all renewable generation use by 2020 from today’s level,” it said.

IEA said switching to less carbon-intensive fuels, such as to natural gas from coal, and improving the efficiency of coal plants will allow significant reductions in carbon dioxide emissions and should be a top priority.

However, achieving the 50 percent target for greenhouse gas emissions reduction by mid-century also will require a big investment in CCS, the report said. IEA has said that about 100 large-scale CCS projects are needed by 2020, and more than 3,000 by 2050, while only five are operating today. “While there are over 70 CCS projects currently planned ... it is uncertain how many will be realized because of recent delays in allocating public funding,” the agency said.

The report urged governments to commit to at least 10 years of support to markets for electric and plug-in hybrid vehicles. Support should include price subsidies; assistance with construction of recharging infrastructure; cooperation with cities to ensure cohesive urban, regional, and national systems; and funding of research and design, IEA said.

89. Policymakers Discuss Further Black Carbon Cuts

Meeting at the forty-eighth session of the Working Group on Strategies and Review in Geneva, countries are considering concrete strategies to reduce black carbon emissions, one of the air pollutants identified by scientists as an important link to climate change because of its role in contributing to global warming. The United Nations Economic Commission for Europe (UNECE) Convention on Long-range Transboundary Air Pollution is the first international treaty to take steps to curb such emissions, once again leading the way in addressing emerging pollution issues in an ever more complex and interconnected world.

The reduction of black carbon is being targeted through a revision of the Convention’s Protocol to Abate Acidification, Eutrophication and Ground-level Ozone (Gothenburg Protocol), which will now include black carbon as a component of fine particulate matter. The detailed dispositions of the Protocol to include black carbon and determine black carbon emission reduction measures are the subject of negotiations by representatives of Parties to the Protocol.

The International Institute for Applied Systems Analysis estimates current anthropogenic emissions of black carbon from the UNECE area at about 800 Gg, which represents about 15% of the world’s total. Nearly 50% of these emissions originate from the United States of America and the Russian Federation, while another 25% is produced by the EU-15.

Black carbon, like ozone, is a so-called “short-lived climate forcer” i.e., a warming agent with a relatively short lifetime in the atmosphere ranging between days and weeks. Reducing levels of such agents in the atmosphere is therefore a means to improve air quality, and thus human health, but also to immediately act on slowing down climate change.

According to the findings of the Ad Hoc Expert Group on Black Carbon discussed by policymakers this week, black carbon emissions in the UNECE region are expected to decline between 2000 and 2020 by about one third, primarily as a result of ongoing implementation of current emission control legislation in the transport sector. However, additional measures could reduce them by another 40% by 2020.

The most important sectors with black carbon mitigation potential are:

- Residential combustion: Nearly 50% of the remaining mitigation potential for black carbon emissions in the UNECE region is to be found in the residential heating sector. This will become the dominating source of black carbon emissions in most countries in the region by 2020, and cause about half of total emissions. This trend could be even stronger if additional biomass combustion is promoted as a climate policy measure. Mitigation measures include increasing combustion efficiency, for instance via the use of wood pellets (instead of raw wood or biomass) and modern combustion stoves and boilers.
- Off-road machinery vehicles, such as diesel propelled heavy vehicles used in industry, construction, agricultural and forestry, which have a long lifetime and often are poorly maintained, offer the second largest reduction potential for black carbon emissions in the UNECE region — about 20%. This can be achieved mainly through eliminating high-emitting vehicles and accelerated introduction of diesel particle filters (DPFs).
- The Road transport sector can deliver additional reductions through the elimination of high-emitting vehicles (super emitters) and accelerated introduction of DPFs for light duty and heavy duty vehicles, as well as retrofitting of existing vehicles. Overall, in 2020 these measures would account for less than 10% of the total mitigation potential in the UNECE region.
- Open burning of agricultural waste: An effective ban on this could account for about 10% of the total reduction potential for black carbon emissions.

It should be stressed that these measures cannot replace carbon dioxide reductions, which are indispensable to mitigate long-term climate change.

The current revision of the Gothenburg Protocol with the inclusion of black carbon is scheduled for completion and adoption by December 2011.

In the medium and long term, the UNECE Air Convention will investigate more closely the regional impacts of reducing the levels of tropospheric ozone and its precursors, including methane and carbon monoxide, considering both climate change and air quality/health/agriculture benefits. Importantly, the solutions implemented by UNECE member States could successfully be replicated in other regions, especially in Asia, where air pollution is a serious and growing concern (emissions of black carbon from China and India alone account for approximately 25%–35% of global emissions, and new estimates indicate that black carbon emissions for China in 2006 have doubled since 2000).

90. Climate Change Directly Affecting Development: Former World Bank VP

Climate change is not just an environment issue but also has socioeconomic implications, and it is directly affecting development all over the world, Former Vice President of the World Bank Vinod Thomas said recently during an interview with Xinhua.

"There is now evidence linking increase in CO₂, increase in sea temperature, increase in precipitations in some place and lack of that in some other places, and therefore, more extreme events (happen)," Thomas told Xinhua on the sidelines of the IMF and World Bank spring meetings in Washington.

"This has been now translating into loss of income, into loss of life and loss of livelihood from Pakistan to Australia, to China, all over the world," said Thomas, currently director-general of Independent Evaluation Group (IEG) at the World Bank Group.

According to a recent IEG report, the frequency of disastrous heat waves (such as in Europe in 2003 and in Russia in 2010) and floods (such as Pakistan 2010) may have doubled, due to climate change. Sea level may rise two to five feet this century, imperiling coastal cities, populous deltas and low-lying islands. Unabated, climate change could derail development, with a one-in-fourth chance of an 11 Fahrenheit rise this century.

Despite the fact that the developed countries are responsible for climate change, Thomas said, the worst effects of climate change are on the poor. Climate change "affects areas unfortunately where the density of population is even more than the environment can hold and heavily appropriated by the poor," he said, adding that developed countries need to do far more than they are doing currently in addressing the challenge.

"Developed or industrial countries have to bear a huge responsibility and do far more than they are doing to produce more green energy, to reduce energy subsidies, to improve energy efficiency, to invest in renewable and really put a burden on those who are polluting at a high level," he said. "And United States will be a case and much more will need to be done in this respect."

However, Thomas said the middle-income countries now contribute more to the increase in CO₂ emissions and they need to take actions too. "If the middle-income countries like India, China, Brazil, Russia, do not take strong actions, all that the industrial countries will do, will not be enough," said Thomas.

He thought there were a set of actions that can be taken, which is good for climate, good for the economy and good for the poor. However, they are not being taken. One example is energy efficiency. According to him, increasing energy efficiency in some countries could save 25 percent in terms of the energy use.

Other examples include reforestation. Thomas thought reforestation and stopping deforestation could be "one of the biggest things" developing countries can do, again good for the economy, good for the poor, good for climate.

91. Google Maps Will Guide EV Drivers to Charging Stations

Google, Inc. is about to take the guesswork out of finding an electric vehicle charging station. The Internet giant has partnered up with the US Department of Energy's National Renewable Energy Laboratory and other stakeholders to use Google Maps as the primary platform for coordinating a database that provides up-to-date information on the whereabouts of EV charging stations nationwide. The project is being conducted through DOE's Alternative Fuels and Advanced Vehicles Data Center, which already features an online alternative fuels location finder that includes EV charging stations.

The new partnership is coordinated with a \$5 million funding program from DOE, which will pair up local governments with private companies to speed up the development of an EV charging station infrastructure. On the government side, that involves updating and streamlining permitting procedures for charging stations, as well as developing a framework of incentives to encourage the use of EV's by consumers, businesses, and organizations. On the business side, that means the arrival of new opportunities for companies that design and construct charging stations to expand more rapidly and create new green jobs.

EV's are already starting to make inroads into fleet vehicles, including government fleets, so the new initiative isn't starting from scratch. It also has a head start as part of the Clean Cities Initiative, a DOE program that has been going on since 1993 to reduce auto emissions. The \$5 million will be doled out on a competitive basis, so it will be interesting to see how that affects the dynamic between state and local governments, given that at least some of the probable applicants are located in states where governors have already turned down funding for federal transportation projects (namely, high speed rail).

Aside from the EV charging station project, Google is also having a hand in promoting solar energy. Earlier this year, researchers at the University of California – San Diego teamed up with Google Earth to fine-tune a solar power map that enables California home owners and solar companies to calculate the most cost-effective placement of rooftop solar panels, coordinating peak use rates along with the sun's location.

92. Climate Change Targets Developing World's Cities

Many fastest-growing cities, especially those in the developing world, stand to suffer disproportionately from the effects of climate change, according to a new study. Few urban areas are taking the necessary steps to protect their residents -- billions of people around the globe -- from such likely events as heat waves and rising seas, according to research to appear in *Current Opinion in Environmental Sustainability and European Planning Studies*. They are also failing to cut their own emissions of climate-warming greenhouse gases, the study found.

"Climate change is a deeply local issue and poses profound threats to the growing cities of the world," study author Patricia Romero Lankao, a sociologist specializing in climate change and urban development, said in a statement. Because half of Earth's population is in cities, scientists like Romero Lankao are focusing on the potential climate change impacts in these areas. The mere fact that they are cities, with densely packed construction, places their populations at greater risk from natural disasters, including those expected to be made worse by climate change.

Storm surges can inundate heavily populated coastal areas and heat waves can warm up paved cities more than surrounding areas, Romero Lankao found. And these events can be amplified in an urban environment.

In cities, prolonged hot weather can exacerbate existing levels of air pollution, causing health problems. Poorer urban neighborhoods that lack reliable sanitation, drinking water or roads are at increased risk, according to Romero Lankao, of the U.S. National Center for Atmospheric Research.

The number of city-dwellers worldwide has quadrupled since 1950, the study found, projecting that by 2020, more than 500 urban areas will have a million residents or more. But urban

leaders are largely failing to prepare for coming natural disasters that could affect their people, including building public transport that would cut greenhouse emissions, she said.

"Cities can have an enormous influence on emissions by focusing on mass transit systems and energy efficient structures," she said. "But local leaders face pressures to build more roads and relax regulations that could reduce energy use."

She noted that some cities' efforts to cut emissions are part of a larger push to ease traffic and other problems. She cited central London's Congestion Charging Zone, which aims to encourage more use of public transit, as one example. In Latin America, Curitiba, Brazil, and Bogota, Colombia, are integrating new development with mass transit systems.

Romero Lankao's study was conducted in association with the United Nations Human Settlements Program and funded by the U.S. National Science Foundation.

93. Arctic Sea Ice Ties for Smallest Area This Winter

Even at its largest, Arctic sea ice extent this winter was among the smallest ever seen, apparently tying with 2006 for the least amount of ice covering the region around the North Pole, U.S. researchers reported. Sea ice on the Arctic Ocean usually starts growing in September and hits its maximum area in February or March; this year, the maximum appeared to occur on March 7th, when ice stretched over 5.65 million square miles (14.64 million square km), according to the National Snow and Ice Data Center.

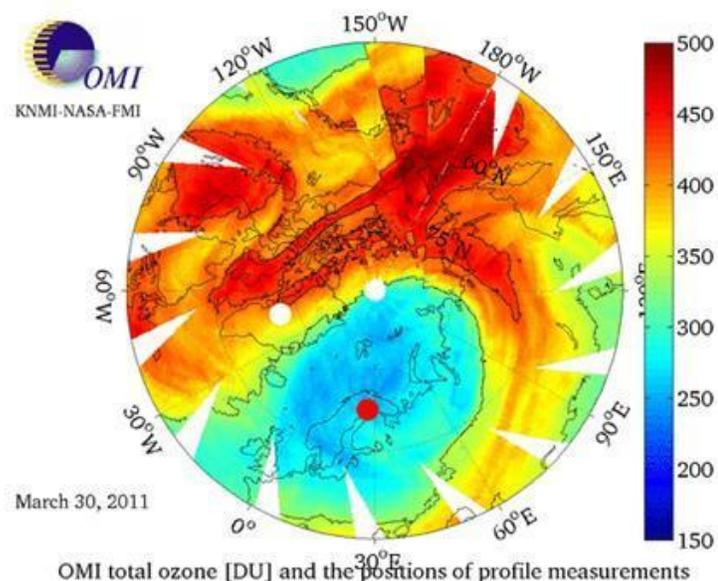
That area of ice-covered water is 471,000 square miles (1.2 million square km) below the average maximum ice extent observed by satellites from 1979 to 2000, the center said in a statement. Recently, the extent of the ice had shrunk for five straight days, but there is a chance it could expand again, the center said. "Sea ice extent in February and March tends to be quite variable, because ice near the edge is thin and often quite dispersed," the statement read.

This thin ice is sensitive to weather, which can make it move or melt quickly, and it often stays around the maximum for days or weeks, as it has done this year.

Arctic sea ice extent -- the area the ice covers in summer and winter -- is one measure scientists use to track changes in global climate.

94. Record Depletion Of Ozone Recorded Over Arctic: U.N.

Record loss of the ozone, the atmosphere layer that shields life from the sun's harmful rays, has been observed over the Arctic in recent months, the World Meteorological Organization said recently. "Depletion of the ozone...has reached an unprecedented level over the Arctic this spring because of the continuing presence of ozone-depleting substances in the atmosphere and a very cold winter



in the stratosphere," the WMO said in a statement.

Observations from the ground, balloons and satellites show that the region has suffered an ozone column loss of about 40 percent from the beginning of the winter to late March, according to the United Nations agency. The highest ozone loss previously recorded over the Arctic, about 30 percent, occurred in several seasons over the past 15 years or so, according to a WMO spokeswoman.

"If the ozone depleted area moves away from the pole and toward lower latitudes one can expect increased ultraviolet (UV) radiation as compared to the normal for the season," WMO said, adding that the public should check their national UV forecasts.

But any increase in UV radiation over lower latitudes away from the Arctic -- which could affect parts of Canada, Nordic countries, Russia and Alaska in the United States -- would not be of the same intensity as one suffers in the tropics, it said.

UV-B rays have been linked to skin cancer, cataracts and damage to the human immune system. "Some crops and forms of marine life can also suffer adverse effects," the agency said.

Unlike over Antarctica, large ozone loss is not an annually recurring phenomenon in the Arctic stratosphere, where meteorological conditions vary much more each year.

The record ozone loss over the Arctic comes despite the "very successful" Montreal Protocol aimed at cutting production and consumption of ozone-destroying chemicals such as chlorofluorocarbons (CFCs) and halons, the WMO said. The substances were once present in refrigerators, spray cans and fire extinguishers, but have been phased out. Nevertheless, due to the long lifetimes of these compounds in the atmosphere, it will take several decades before their concentrations return to pre-1980 levels, the target laid down in the 1987 pact, it said.

95. Chances of IMO Deal on Climate Slipping Away

The continuing impasse between developing and developed nations at an International Maritime Organization (IMO) meeting has dampened hopes of a deal on CO₂ from ships this year. Representatives from industrialized nations and emerging economies were pitted against each other in a series of lengthy debates during the five-day meeting of the IMO's GHG working group in London.

The meeting particularly focused on market-based mechanisms. Options under consideration included an emission trading scheme (ETS), emission charges for all shipping and levies on ships not meeting efficiency standards.

But discussions were held back by a group of countries led by India, China, Brazil and South Africa, which continue to contest the IMO's equality principle. As reported before, they want different conditions for developing and developed countries, in line with the UNFCCC principle of "common but differentiated responsibility".

The Bahamas put forward a compromise that would see a mandatory 25% cut in emissions, but flexibility as to how the industry achieves it. Other countries also made proposals, including financial concessions for developing countries.

The European Commission has threatened to include shipping in the EU ETS if the IMO fails to reach an agreement in 2011. It is likely to wait until after the IMO's general assembly meeting in November and December's UN climate meeting in Durban before pushing ahead with unilateral action.

96. Shipping Industry Calls for Public Investment to Spark Shift to LNG

The shipping industry is pushing for public investment to help drive a major shift to the widespread use of liquefied natural gas (LNG), seen as the best option for meeting strict emissions limits in the Baltic and North seas. The areas serve as a test case for how the global shipping industry will respond to increasingly stringent environmental requirements under the International Maritime Organization. Because the two seas are designated Emission Control Areas (ECAs) under IMO, ships operating in the area are required to meet a 1 percent limit on sulfur in emissions, or 10,000 parts per million (ppm), through the use of low-sulfur fuel or the scrubbing of exhaust emissions. In 2015, the ceiling will be lowered to 0.1 percent, or 1,000 ppm.

The North American ECA, which runs along the east and west coasts of the United States and Canada, will become enforceable in August 2012, and shippers there will face similar challenges. Additional ECAs are expected to be designated in the near term, while stricter limits on sulfur emissions will be extended globally by 2020.

The global shipping industry also faces new rules for emissions of nitrogen oxides. Increasingly stringent limits are being placed on new ships at the global level as well as within pollutant-specific ECAs over the next five years. IMO also is considering first-time limits on carbon dioxide emissions from ships. Its Marine Environment Protection Committee is expected to vote in July on a proposed energy efficiency design standard for new ships.

The emissions issue will help to shape global fleet development over the coming decades.

Studies suggest use of LNG would yield the needed emissions reductions in a more cost-effective way than the alternatives. Use of LNG also is seen as a potential bridge to the eventual use of more advanced fuels, such as hydrogen or fuel cells.

The switch, however, will require the building of expensive new ships and vast fueling infrastructure. Industry is calling on governments to provide subsidies for LNG facilities and to include new LNG-fueled ships in government-owned fleets to help lead the conversion.

While industry wants government support for the switch, it also is lobbying policymakers to postpone the special rules for the ECAs and to instead harmonize the requirements globally. Several ship owners associations in the Baltic Sea recently issued a report examining alternative requirements that would spread out the emissions limits over a longer period of time. They hope to demonstrate that a relaxation of the current rules is economically justifiable and would have limited environmental impact.

Because changes to the current rules are seen as unlikely, traffic is expected to shift toward Russian ports in Kaliningrad and St. Petersburg, as well as to the northern parts of Norway, where the emissions rules do not apply and shipping will be cheaper.

Meanwhile, supporters of LNG are anticipating public opposition to the construction of new ships and infrastructure for the more volatile fuel type, particularly following the events in Japan,

where a natural disaster has destabilized nuclear power plants. Rules being written at IMO that will aim to guarantee the safety of gaseous fuels for ships are seen as a central driver for LNG-fueled shipping.

The Baltic Sea is heavily congested with ship traffic. It accounts for an estimated 11 percent of all world shipping, with more than 2,000 ships operating at any given time. All the countries surrounding the Baltic Sea are taking measures to prevent the irreversible collapse of the sea's ecosystem from an accumulation of pollution. Ship emissions have been linked to harm to the Baltic Sea ecosystem as well as to human health. Estimated emissions from ships operating in the Baltic equal all land-based nitrogen oxides emissions and twice the sulfur oxides emissions from Denmark and Sweden combined.

The options to meet the stringent new sulfur and nitrogen oxides emissions ceilings are limited. Shippers can switch to lower-sulfur fuels, but rising demand is expected to prohibitively increase prices. Emissions scrubbers can be installed, but they require significant modifications to the ship and waste disposal systems at ports. A switch to LNG-fueled shipping offers major advantages in emissions profiles and the ships are ideal for the short hauls common in the Baltic. LNG fuel would reduce ship emissions of nitrogen oxides by 85 percent to 90 percent and emissions of sulfur oxides and particles by 100 percent compared to conventional fuel. It also would reduce greenhouse gas emissions by 15 percent to 20 percent, according to the Norway-based risk assessment group DNV. "LNG offers close to elimination of local pollution from shipping," the group said in a June 2010 report, *Greener Shipping in the Baltic Sea*.

Over the long term, LNG also likely would be the cheaper option compared to scrubbers or low-sulfur distillate fuels. "In a 20 year perspective, which would be a conservative lifetime for a ship, it is estimated that the LNG solution has the lowest present value of costs with USD 4 million less than the scrubber option and USD 12 million less than the [ultra-low sulfur marine gas oil] option," the DNV report said.

LNG fuel has advantages over petroleum in emissions profiles, abundance, and predicted price stability. But a significant investment in infrastructure will be required. To bring down the price of LNG, full scale liquefaction plants and efficient distribution must be established, the DNV report said.

Ships powered by LNG must be newly built and not retrofitted, as they require special engines, a vaporizer, and double insulated piping. A particular challenge is the space taken up by the fuel tanks, which reduces shipping payload. The bunkering, or fueling, operation will require advanced technology to supply the ships from pipelines. In addition, the volatility of natural gas compared with petroleum could lead to a public backlash against perceived higher risks from natural gas.

IMO's International Code of Safety for Gas-Fueled Ships is expected to be made mandatory. There currently is a draft version before the Subcommittee on Bulk Liquids and Gases and the final code is expected to be delivered by the end of 2014. The code will cover ship and engine design, safety procedures, and fueling operations. Land-based bunkering operations will be subject to the rules of individual countries. The code also is expected to address future possible application of hydrogen and fuel cell technologies in the sector. The work will be based on the German maritime industry research and development project *Clean Energy for Ships*, which aims to spread the use of fuel cells in international merchant shipping through commercial, full-scale demonstrations.

While the IMO rules will play a role in ensuring safety and allowing the development of the alternative technology, the shipping industry says governments must lead the way. “Ship-owners will not invest in LNG-fuelled vessels until an LNG fuel supply infrastructure is in place, and LNG fuel suppliers will not invest in infrastructure until there is a large fleet of LNG-fuelled vessels,” the DNV report said. “The challenge is how to get started.” “Governments should encourage the establishment of LNG bunkering infrastructure in the Baltics, and if they in addition require LNG fuel for new state owned or contracted ships, e.g. ferry routes and military and coast guard vessels, the shipping industry will follow,” the report said.

At the EU level, shippers are targeting the European Regional Development Fund, which seeks to reduce levels of unequal development within the 27-country bloc. Its funds are available to the newer member states around the Baltic Sea, and could be applied to areas where new LNG facilities are being proposed, such as Lithuania, Poland, and Estonia. Industry is pressing for a modification of the fund's rules to allow investment in the build-out of LNG-fueled shipping in the Baltic Sea.

One of industry's main arguments in asking for public funds is the possibility that emissions could actually increase under the policy if cargo transport moves back to roads, which could occur if shipping becomes too expensive due to the use of low-sulfur fuels. Road transport produces more emissions per ton than does shipping, and it is the European Union's stated policy to shift cargo transport from roads to the sea.

Within the Baltic Sea area, Russia stands to gain from the rules, as it has not ratified Annex VI, the IMO convention under which the rules are enforced. As a result, ships operating in Russian territorial waters will not be subject to the rules, so a ship sailing from one country that has also not ratified Annex VI to Russian ports in Kaliningrad, the Russian enclave on the Baltic Sea between Poland and Lithuania, or to St. Petersburg can burn high-sulfur fuel all the way through the North and Baltic seas. Since Russia is outside the rules, it also can sell cheaper, high-sulfur fuel that will no longer be available at ports in the European Union. Russia also is involved in projects to expand the use of LNG, such as those under the Baltic Energy Forum, as it is a major supplier of the fuel.

97. FIA Advises Policies to Boost Electric Car Uptake

Persuading consumers to buy electric cars will require a broad range of policy and technological measures, according to a recent report published by international automobile federation FiA. For example, it calls for standardized approaches to battery technologies and charging, something the EU is already addressing. EU standards body CEN hopes to agree a work program on issues affecting electric cars soon. This will include recommendations on batteries and charging but not on the standards themselves yet.

Other recommendations in the FiA report include more research to develop batteries' lifespans and cut their costs. Consumers may also be put off buying second-hand electric cars if there is no standard testing procedure for their batteries.

However, the FiA warns governments against backing particular technologies. Plug-in hybrids and battery vehicles will be niche products for the next 15 years, so policymakers must continue to encourage more efficient internal combustion engines.

Countries developing vehicle taxes and traffic management policies should base them on the carbon emissions of particular vehicles rather than their technology, it says.

98. Engine Manufacturers Unveil Tier 4 Technologies At Conexpo

The 2011 ConExpo/Con-Agg trade show, the world's largest trade fair for the construction and construction materials industries, was held in Las Vegas NV March 22-26 at the Las Vegas Convention Center. A number of engine manufacturers were present to unveil and/or showcase their nonroad Tier 4 technologies as well as some on-road developments relevant to construction equipment.

With the unveiling of some Tier 4f strategies that continued to use a mixture of many of the same technologies used for Tier 4i, it is readily apparent that there is no one common Tier 4f solution that will emerge. Rather, Tier 4f will include a variety of technologies including cooled EGR, diesel particulate filters, diesel oxidation catalysts, SCR as well as technologies using no aftertreatment as well. A number of manufacturers unveiled SCR strategies, especially for larger engines, that no doubt will be attractive for applications where minimizing the engine's fuel consumption is important. It is also apparent that across the entire range of engines from 37 kW (50 hp) and up subject to Tier 4f PM limits intended to force the use of diesel particulate filters, the PM standard can be met without one.

Strategies that allow the PM limit to be met without a DPF include SCR only, cooled EGR with a catalyzed flow through particulate aftertreatment and for the case of engines above 560 kW (750 hp), possibly no aftertreatment at all.

When EPA promulgated the nonroad Tier 4 regulations, the intent was to force manufacturers to adopt wall flow diesel particulate filters for engines over 25 hp. With the various solutions that are emerging that use no diesel particulate filters, it is not clear what the US EPA's reaction will be. If a further tightening of the particulate standards emerges, the most likely option would be to adopt particulate number limits as tightening of the mass-based PM limits is likely infeasible due to the measurement challenges at ultra-low PM concentrations.

99. Volvo Trucks to Start Selling Heavy Hybrid Trucks

As part of the Volvo Group's focus on hybrid vehicles, Volvo Trucks is now commencing sales of heavy hybrid trucks, under the name Volvo FE Hybrid, to customers in selected European markets. The hybrid trucks permit fuel savings of up to 30 percent and will be used primarily in distribution and refuse operations in an urban environment.

The application of hybrid technology is best suited to densely populated areas, which involve the highest incidence of vehicle starts and stops. Volvo FE Hybrid is a parallel hybrid so that energy from the diesel engine and electric motor is used either simultaneously or independently of each other. The technology switches automatically between the two power sources. Volvo's hybrid technology has also been developed to maximize recycling of energy generated from braking. No extra charging from external sources is required. Electric power also cuts noise levels.

Depending on the driving cycle, the Volvo FE Hybrid can cut fuel and carbon dioxide emissions by between 15 and 20 per cent. In addition, using the electric compactor on the hybrid refuse trucks, up to 30 per cent can be saved.

The trucks will initially be produced in a limited series of about 100 vehicles, starting in June. These trucks will be delivered during the period 2011 to 2013 to customers in selected European markets.

For many years, the Volvo Group has invested in the development of hybrid vehicles and Volvo Buses launched serial production of hybrid buses at its plant in Poland in 2010.

100. Hino Trucks' Introduces New Class 4 And 5 Diesel-Electric Hybrids

Hino Trucks has unveiled a new addition to its product lineup during the NTEA Work Truck Show in Indianapolis. Hino will offer four models of the newly designed Class 4 and Class 5 cab over engine (COE) trucks. In the class 4 market, Hino will offer the 155 diesel model and the first ever U.S. class 4 diesel-electric hybrid model, the 155h. The 155 and 155h models will carry a 14,500 lb. GVW rating. In the class 5 market, Hino will offer the 195 diesel model and the first ever U.S. class 5 diesel-electric hybrid model, the 195h. The 195 and 195h models will carry a 19,500 lb. GVW rating.

All models are powered by the Hino J05E Series engine. The 5-liter engine is rated at 210 hp and 440 lb. ft. of torque. Utilizing Aisin's A465, 6-speed automatic transmission, the Hino hybrid is the first to be packaged with an automatic transmission.

Both models feature an ergonomically friendly wide cab with a North American standard 33-inch frame rail width, a 56,900 PSI frame, and a standard center mounted rear fuel tank. The cab's styling emphasizes aerodynamics and visibility with an angled windshield, narrow pillars and rounded-radius curves. Inside, the new cab uses its increased width to provide room for drivers up to 6 ft. 6 in. tall, seating for three and a versatile mobile workspace with a variety of organizational storage options. A crew cab version will also be available.