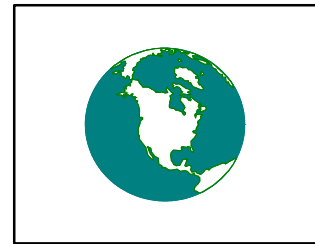


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CAR LINES

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Absolute change in GHG emissions 2003-2004 for EU-15 Member States
(source: European Environment Agency, 2006)

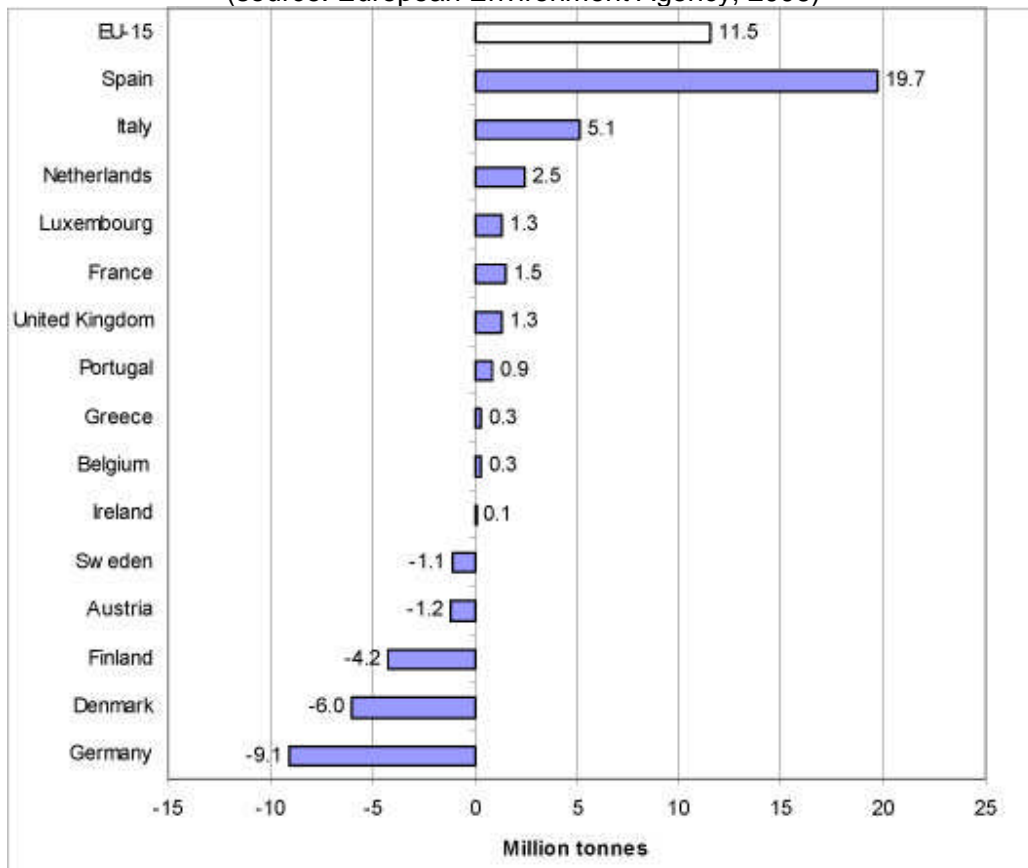


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EUROPE

1. UK Transport Pushes For Sulfur-free Diesel by 2007

The Department for Transport (DfT) wants sulfur-free fuel available throughout out UK by January 2007. It has issued a consultation document aimed at making all large fuel outlets serve only sulfur-free fuel from 1 January 2007. By setting a 3 million liters a year throughput threshold, the Government believes that this will force oil refineries to switch quickly to the environmentally friendly fuel (which it says will have a 'negligible' effect on the cost). This, says the DfT, will prevent suppliers from having to cope with both current and sulfur-free fuels at the same time, thus adding to distribution and handling costs.

EU directives mean the UK has to have only sulfur-free fuel on sale from 2009, but Brussels has encouraged member governments to arrange for widespread availability of the new fuel before that date, hence the DfT actions.

The 'sulfur-free' fuel is actually not quite free of the chemical, but can have up to 10 mg per Kg of sulfur, whilst the current fuels on sale as Ultra Low Sulfur can have up to 50 mg per Kg. The DfT claims the new fuel is 'fully compatible' with existing engines and can be used without modification. The new rules affect diesel and super unleaded petrol but not standard petrol which is subject to different arrangements.

Many refining companies have already taken the sulfur-free route voluntarily in advance of the expected legislation. There is a waiver for accidental contamination where for example fuel is delivered in the same tanker as previously contained a higher sulfur level fuel such as gas oil. It will be a defense to prove that the retailer ordered the correct grade of fuel, but that it was delivered off-spec.

2. Majority of Britons Want New Environmental Law

Three quarters of Britons would like to see a new law introduced forcing successive governments to commit to reducing carbon emissions, according to a recent survey. Environmental group Friends of the Earth, who commissioned the online poll, said 75 percent of those asked wanted governments to tackle climate change by making a reduction in carbon dioxide emissions by 3 percent each year.

Britain said in March it was likely to miss its target to slash CO2 emissions by a fifth by 2010, compared with the 1990 level.

The subject has also risen up the political agenda following the election of 39-year-old David Cameron as leader of the opposition Conservative party in December. Cameron has repeatedly talked about his desire to make the environment a priority and in April he traveled to Norway to see first hand the effects of global warming.

The poll of people aged between 16 and 64 was released to coincide with a series of Bank Holiday Monday concerts across the country to promote Friends of the Earth's climate campaign called "The Big Ask".

The online poll questioned 1,233 people over the Internet.

3. Climate Change Policies Produce Ancillary Air Quality Benefits Says EU Report

The Thematic Strategy on air pollution aims to improve European air pollution significantly by 2020. An upcoming report¹ from the European Environment Agency looks a further ten years into the future, and brings together two major policy challenges — combating climate change and reducing air pollution — in an integrated way. Thus, the report analyses projected changes in European air quality up to 2030, and explores the possible benefits of climate policies on air quality and the costs of air pollution abatement.

Existing air pollution abatement policies (i.e. those without new action taken within the framework of the thematic strategy) should lead to cleaner air in 2030 compared to 2000. However, EU's objective of attaining levels of air quality that do not give rise to significant negative impacts on and risks to human health and the environment are unlikely to be met. With existing measures only, the situation is even projected to worsen after 2020. In this scenario — the baseline scenario — 311,000 premature deaths are projected in 2030, due to pollution with ground-level ozone and fine particles (PM_{2.5}).

The EU has stated that the long-term climate objective should limit global mean temperature increase to 2 °C above pre-industrial levels. EU's contribution to meeting this target will mean climate policies which substantially reduce emissions of greenhouse gases. This, in turn, will lead to a fall in air pollutant emissions and their associated health effects, while at the same time reducing the costs of implementing existing air pollution abatement policies. In this scenario — the climate action scenario — the number of premature deaths from pollution by ozone and fine particles is projected to fall by over 20,000 per year to 288 000 by 2030. Moreover, the costs of implementing existing air pollution measures is projected to fall by EUR 10 billion per year. The avoided health costs could be valued at between EUR 16–46 billion per year.

These ancillary benefits of climate change policies stem from the fact that reducing EU greenhouse gas emissions in line with the 2°C target leads to reductions of emissions of air pollutants from fossil fuel combustion. Reductions are most notable for oxides of nitrogen (10%), sulfur dioxide (17%), and particles (8–10%) by 2030, as compared to the baseline.

Cost savings related to the implementation of existing air pollution abatement measures are highest in the EU-15. Relative abatement cost savings for oxides of nitrogen, sulfur dioxide and particles are estimated to be 20%, 12% and 14% by 2020, and more than 35%, 25% and 25% respectively by 2030.

Therefore, climate change policies can make a substantial contribution to reducing air pollution. The ancillary benefits of climate policies for air pollution are expected to be greater by 2030 than 2020, since a longer period of time would be available for implementing measures and for changes to occur in the energy system.

¹ Air quality and ancillary benefits of climate change policies, EEA Technical report, 2006, Copenhagen (upcoming).

However, it is clear that significantly greater efforts will still be necessary in the form of further targeted air pollution abatement measures in order to move closer to the EU long-term objectives. Even if the maximum feasible land-based reduction measures in relevant sectors for abatement of air pollution were combined with climate policies — the maximum feasible reduction scenario — there will still be 200,000 annual premature deaths by 2030 from ozone and fine particles. Reductions in emissions from non land-based sources, especially shipping, are necessary if the health impacts are to be brought down further.

4. Air Pollution Remains A Black Cloud Over Russian Cities

Russia's environmental watchdog called Wednesday for European car emission standards to be introduced in a bid to combat high levels of air pollution in major cities. As the flood of city dwellers seeking respite in the countryside at the weekend would seem to testify, air quality in major centers such as Moscow, St. Petersburg and Nizhny Novogorod remains a huge problem, which has not been helped by the increasing number of cars on the roads.

Alexander Bedritsky, the head of the Federal Service for Hydrometeorology and Environmental Monitoring, told an environmental conference that Russia should adopt strict European emission requirements. "For the level of air pollution to stop rising, engine production standards should be toughened to meet the Euro-2 and Euro-3 environmental standards," he said.

Bedritsky also suggested that new roads and interchanges should be built to ease congestion and cars should gradually switch to using gas as a fuel instead of gasoline.

"Unfortunately, the level of air pollution in Russia's big cities is not falling, [and] the trend has not become positive," he said, adding that increased industrial production was also not helping to maintain a fall in pollution levels that had been registered in the 1990s.

5. EU Deal On Greener Freight Funding Plan

MEPs have backed a deal with governments for a E400m continuation of the Marco Polo program to green the EU's freight transport system from 2007-13. Marco Polo II aims to push as much as possible of the expected increase in freight volumes over the period from roads onto more sustainable transport modes.

The budget has been slashed from an original European commission proposal of E740m made in July 2004. The cutback is in line with the overall EU funding framework agreed last month, according to parliamentary officials.

In other changes, funding eligibility thresholds for projects contributing to new "motorways of the sea" have been eased. "Intermodal" projects - which freight transits made on more than one transport mode - will no longer be eligible for funds.

The first-reading agreement on Marco Polo II was hammered out by government and parliament negotiators and endorsed by the full parliament. The council of ministers must now approve the deal.

If no action is taken, total road freight transport in Europe is set to grow by more than 60% by 2013. Parliament therefore adopted, by a large majority, the report by Reinhard RACK on the Marco Polo II program. This program for 2007-2013 aims at shifting the average yearly increase of international road freight towards short sea shipping, rail and inland waterways. The adoption of this first reading report concludes the procedure and means that it will enter into force on 1 January 2007.

Although the Commission proposals were warmly welcomed, the House adopted a range of compromise amendments aimed at strengthening the effectiveness of the program. The reduction of the eligibility thresholds, for instance, should be reduced and SMEs should have better accessibility to Marco Polo II. The geographical coverage of the program is the 25 EU Member States, the applicant countries, EFTA and EEA countries to the East such as Russia and Ukraine, the Balkan states as well as the Mediterranean region.

An important part of Marco Polo II is also traffic avoidance which involves encouraging the rationalization of traffic, logistics and supply chains. The incentives have already been there for a long time in the industry. The EU's role here consists of providing encouragement and exchanging experience and best practice.

A new development is the introduction of the so-called Motorways of the Sea (MoS) action, which means any innovative action directly shipping freight from roads to short sea shipping or a combination of short sea shipping with other modes of transport. A proper use of the MoS should mean that traffic flows that normally go over land can be strategically diverted and brought closer to destinations.

6. New Italian Prime Minister Will Revise Parts Of New Law But Not Rewrite It

Incoming Italian Prime Minister Romano Prodi said in an interview April 27 that his government would revise parts of the controversial delegation law written by the outgoing government but that it did not plan to pass its own version of the law.

Prodi also vowed that Italy would meet its emission-reduction targets under the Kyoto Protocol, although he admitted that a "large part" of the reductions would come from the protocol's flexibility mechanisms, which allow emission-reduction credits to be purchased from abroad.

Prodi reiterated that he would block any reversal of Italy's 1987 prohibition on nuclear power, but added that he would fund research into the safe use of nuclear fuel, possibly setting the stage for a reversal of the ban in the future.

The delegation law, originally passed in 2003, gave the government one-time permission to rewrite the country's environmental rulebook. The release of the sweeping new legislation was delayed several times before finally being signed into law April 6, just three days before the start of the April 9-10 national elections that put Prodi's coalition into power.

Prodi declined to identify the specific changes he would seek. Outgoing Environment Minister Altero Matteoli spoke frequently of developing environmental laws that did not stand in the way of economic growth. But Prodi's government, which includes members

of the pro-environmental Green party, is likely to develop more pro-environment policies. "A high priority for us will be to make sure the Italian environment will be healthy for future generations," Prodi said.

Regarding the Kyoto Protocol, Prodi vowed that Italy would meet its target for reducing greenhouse gas emissions by an 6.5 percent from 1990 levels over the treaty's 2008-2012 commitment period. At the end of 2005, Italy's emissions were estimated to be 8.1 percent above 1990 levels, and Prodi said that while he plans to back efforts to develop new environmentally friendly technologies, he doubted they would be ready in time to help Italy reach its Kyoto targets.

"Italy will meet its obligation, but it will have to do so through the purchase of credits and similar methods," Prodi said.

Last year, Berlusconi said that Italy was studying the possibility of reversing Italy's 19-year-old ban on the use of nuclear fuel, and in December some models estimating the country's future emission patterns considered the possibility of using nuclear power. But Prodi said Italy was not yet ready to use nuclear reactors.

7. Italy Appoints Green Environment Minister

Alfonso Pecoraro Scanio has been sworn in as environment minister in Italy's new center-left government under prime minister Romano Prodi. Mr. Pecoraro Scanio is chairman of Italy's Green party. In line with the coalition's electoral manifesto, he has announced a reversal of "damaging" legislation introduced by the outgoing Berlusconi government, and a boost for renewable energy production. He has also pledged to "make Italy and Italians greener". As Italian agriculture minister in the 1990s, Mr. Pecoraro Scanio was a staunch critic of GM crops.

8. Croatia Requires Labeling Of Fuel Sulfur

Petrol and diesel sold in Croatia must have its sulfur content labeled from 1 June under a new decree aimed at driving sulfur down to EU standards and increasing the use of biofuels. The country is hoping to join the bloc in the next few years. Environment minister Marina Matulovic Dropulic said that about E850m would be invested to enable Croatia's two oil refineries to produce zero sulfur fuel from 2010. The European commission recently identified a lack of marking of low and zero sulfur fuels as a barrier to take-up.

The Ivo Sanader Cabinet said the decision was made so as to prevent the sale of gasoline and diesel fuels with incorrect labels about their contents at petrol stations in the country.

9. Helsinki to Switch Half of City Buses to Biodiesel

Finland's capital plans to switch half of all public buses to biodiesel by 2007. According to the government, the three-year program will affect 700 vehicles and will cut overall bus particle emissions by a third. The project is a joint initiative of Helsinki City Transport and the city's Metropolitan Area Council. The biodiesel has been developed especially

for larger vehicles by the European oil refining and marketing company Neste. According to the company, the fuel can be produced from a range of products including biomass, animal fat, and waste cooking oil. In late February, more than 120 members of Finland's 200-member parliament signed a legislative proposal urging the government to remove taxes on biofuels. If implemented, the proposal would see the price of ethanol reduced by [Euros] 0.7 (\$0.88) per liter and biodiesel reduced by around [Euros] 0.4 per liter.

10. Spanish Labor Union Sees Widening Distance From Kyoto Goal

Spain's carbon dioxide emissions increased in 2005 to 52.9 percent over 1990 levels, making Spain the industrialized nation furthest from meeting Kyoto Protocol goals, according to a study released April 19. The report, *Evolución de las Emisiones de Gases de Efecto Invernadero en España (1990-2005)*, [Evolution of Greenhouse Gas Emissions in Spain (1990-2005)], was released by the Workers Commissions, Spain's largest labor union.

The annual report issued in 2005 puts carbon dioxide emissions up 45.6 percent over the base year, and the 2004 version put emissions for 2003 at 40 percent above 1990 levels.

Spain's burden-sharing commitment with the European Union allows for a 15 percent emissions increase over 1990 levels for the period 2008-2012.

"Spain is the industrialized country where emissions have most increased," according to the report. "Continuing this tendency will mean not being able to comply with the Kyoto Protocol."

Based on government energy plans approved over the past two years, the study predicts emissions levels will stabilize by 2011 but still surpass 1990 levels by at least 52.6 percent. At that rate, Spain would have to purchase credits for 100 million tons of emissions each year over the 2008-2012 period.

The report came days after the Spanish government submitted its greenhouse gas emissions inventory to the European Commission. The April 11 submission, which did not include emissions data for 2005, put 2004 emissions at 47.9 percent over the base year.

Both the government and labor union pointed to the energy sector as the largest source of emissions by far.

The increased used of fossil fuels in 2005 was partly the result of a 40 percent drop in hydroelectric production from 2004 levels due to low water levels brought by the country's worst drought in recorded history.

While the government's aim for 2005-2007 has been to keep emissions at 0.4 percent under 2002 levels, it has stated that most of the sacrifices necessary for meeting Spain's international agreements will come over the period 2008-2012. The government is now drafting a new national emissions allocation plan for 2008-2012. A final plan must be presented to the European Commission by June 30.

11. North Sea Ministers Agree To Reduce Ship Emissions, Discharges

On May 5th, countries bordering the North Sea agreed to work toward strengthening current standards for ships under treaties administered by the U.N. International Maritime Organization to reduce emissions of nitrogen oxides (NOx), volatile organic compounds (VOCs), and fine particulate matter. The pledges were made at the end of the two-day North Sea Conference in the Swedish City of Gothenburg, which brought together ministers from Belgium, Denmark, France, the Netherlands, Norway, Sweden, and the United Kingdom as well as representatives from Germany.

The ministers also agreed to commission a joint study into the global supply of low-sulfur fuel oil with a view to contributing to a review of IMO'S International Convention for the Prevention of Pollution from Ships ("MARPOL"). The conference also pledged to work toward the tightening of sulfur caps to 1 percent of fuel in designated "Sulfur Emission Control Areas," including the North Sea.

Ministers also agreed to work to implement a new "Clean Ship" initiative to develop criteria for evaluating the environmental performance of commercial vessels.

The conference's final declaration also called for efforts to increase the use of on-shore electricity in order to cut air emissions from ships and thus to improve air quality in port cities. Sweden, it noted, will initiate tax relief for such a provision.

According to the declaration, land-based pollutants continue to be a major threat to the North Sea, representing about 80 percent of all hazardous substances and nutrients in the body of water. It said that despite signs that discharges from land-based sources had fallen, there was still no measurable reduction in the level of nutrient concentrations and related eutrophication.

The ministers noted that due to the nature of shipping, most related environmental challenges have to be remedied at the IMO level. Still, they said, the North Sea nations have previously played a leading role in developing new and stricter environmental rules through the IMO.

In a May 12 interview, Ulf Svidén, chairman of a working group of senior civil servants at the North Sea Conference and former environmental negotiator for the Swedish government, said the agreement constituted an advance in several areas. He highlighted as particularly noteworthy a pledge to strengthen cooperation in policing, inspections, and legal matters to make it easier for countries to prosecute shipping companies responsible for illegal oil spills.

In addition, he said the conference had taken an "important decision" by recommending the introduction of an eco-labeling scheme in which incentives would be provided to encourage environmentally friendly commercial shipping.

12. Higher Petrol Prices Hit New Car Sales in the UK

Soaring petrol prices and shaky consumer confidence were blamed for an unexpectedly sharp drop in new car sales last month in the UK. Official forecasts for the full year were revised downwards for a second time as the Society of Motor Manufacturers and

Traders said the psychological impact of petrol prices finally breaching the £1 per liter barrier hit business.

SMMT figures showed April's sales were down 9.1 per cent year on year to 163,000. It revised downwards its forecast of full-year sales this year by 25,000 units to 2.35m.

Fuel price concerns appear to be reflected in the continuing strong sales performance of diesel cars, which are 15-25 per cent more economical than petrol-powered equivalents. Sales were down 6.6 per cent last month, allowing the total share of the market taken by diesels to rise above 37 per cent for the first time.

13. Dutch Bid To Cut Particulates From Cars Rejected

The European commission has rejected a Dutch proposal to effectively ban diesel cars and light vans with fine particle emissions above 5 milligrams per kilometer (mg/km) from 1 January 2007. Its decision was published in the bloc's official journal in early May.

Under the EU treaty's single market rules (article 95) the commission has the right to veto the Dutch plans. It said the Netherlands had failed to prove it had a nationally-specific problem with motor vehicle emissions. Even if it had proven this, the proposed ban would have constituted "a disproportionate obstacle" to the internal market, it added.

The Commission quoted a Dutch recent study showing that large particulate matter (PM10) levels were 10-15% lower than previously assumed as part of its argument

Current EU regulations limit particulate emissions from diesel cars and light vans to 25 mg/km. Proposals by the European Commission to cut this to 5mg/km were published last December but have yet to be finalized

14. 'Efficient-C' Diesel Hybrid Achieves 99 G/Km CO2

Ricardo, QinetiQ and PSA Peugeot Citroën have presented the results of their Efficient-C collaborative research project which has met the Department for Transport's Ultra Low Carbon Car Challenge. The two-year Efficient-C program has culminated in the delivery of a Citroën Berlingo Multispace full-hybrid diesel demonstrator vehicle emitting 99 g/km CO₂, representing 30% less fuel and emissions than the equivalent diesel production vehicle. The same diesel hybrid powertrain fitted in a C-segment 5-door saloon would emit 90g 'tank-to-wheel' CO₂.

The 5-door Euro IV-compliant Efficient-C demonstrator comprises the following integrated technologies:

- A PSA Peugeot Citroën 1.6 liter HDi diesel engine.
- A compact 23kW 288V DC electric motor mounted between the engine and the transmission, providing up to 130Nm electrical torque assist, efficient electrical power generation, regenerative braking and full electric vehicle (zero emissions) operation at low speed.
- A 5-speed automated manual transmission.
- A 288 volt Lithium-Ion battery pack and battery management system to monitor state-of-charge, cell temperature, and cell voltage balance.

- Supporting systems including a low-temperature cooling circuit to protect the electric motor and power electronics, an electro-hydraulic power assisted steering system, electrically powered air conditioning and a touch-screen driver display.
- Advanced supervisory control system based on the Ricardo rCube prototype controller to co-ordinate the many vehicle systems to meet driver demands whilst optimizing fuel economy.

The DfT's Ultra Low Carbon Challenge was launched on 29 April 2003 and invited proposals from individual companies and consortia to demonstrate the feasibility of a family sized ultra-low carbon car in the UK. The five winning proposals, which included the Efficient-C project, were announced on 15 October 2003.

Ricardo was the Efficient-C project leader and contributed program management and hybrid vehicle systems integration expertise. It also provided powertrain and vehicle control/electronics development, demonstrator vehicle build and production cost-benefit analysis.

PSA Peugeot Citroën provided expertise in vehicle architecture, and delivered the base vehicle hardware, hybrid powertrain components and engineering support to the integration of hybrid technologies, including powertrain, energy storage and associated control systems.

QinetiQ contributed expertise in the areas of energy storage, battery management and high voltage wiring systems. The company also provided prototype energy storage and management hardware to support the demonstrator vehicle.

PSA Peugeot Citroën has unveiled an enhanced traction front wheel drive version of the Berlingo 2.0HDi 600 XTR+ with a multi-plate limited slip differential. In slippery, off-road conditions this can automatically apportion up to 75 per cent of the engine's torque between the two driving wheels.

15. European Summer Smog Increases Again in 2005

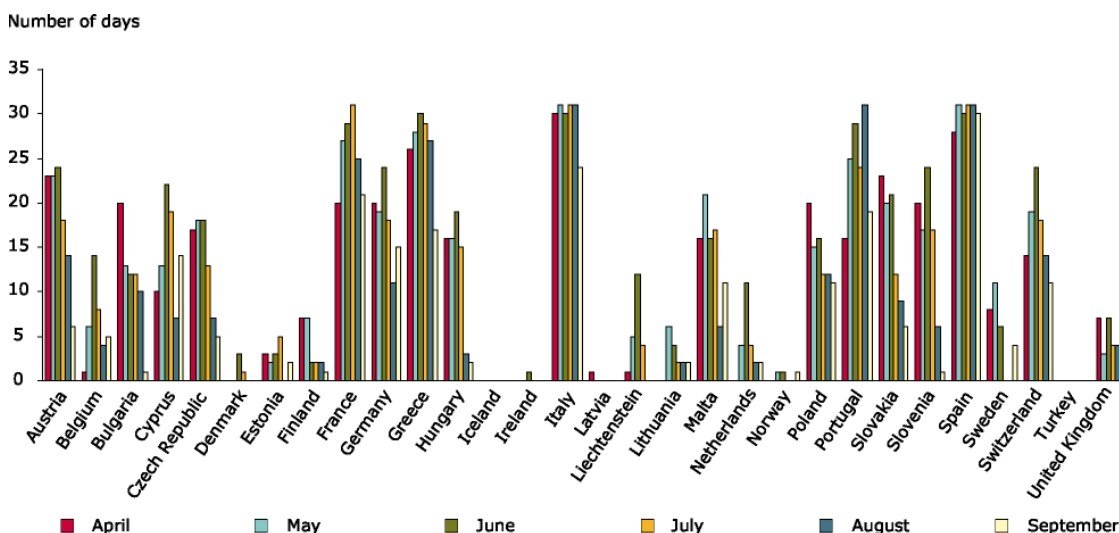
Ozone pollution across some 30 European countries rose again in summer 2005 after dipping in 2004, according to new figures from the European environment agency (EEA). The data show a general increase in breaches of various concentration thresholds and objectives set in the EU's 2002 ozone directive.

According to EEA, the EU air quality "alert" threshold of 240 micrograms per cubic meter (ug/m³) was exceeded on 127 occasions, compared with 99 the previous year.

Breaches of the threshold lasted an average of 2.4 hours, and the highest hourly ozone concentrations were reported across the Mediterranean region, in Portugal, Greece, Italy, France and Spain, but also in Romania. However, this level was breached in fewer countries and the highest peak concentration of the year was 361 ug/m³ compared with 419 ug/m³ in 2004.

Another key threshold, the 180 ug/m³ "public information" threshold, was exceeded in most countries, and at 42% of all monitoring sites against 35% the year before.

Increases in breaches of the directive's non-binding long-term concentration objectives were also observed. All countries that provided data exceeded a 120 ug/m³ limit over eight days. Moreover, 30% of monitoring sites breached this limit more than 25 times during that year, up by 11 percentage points compared with 2004.



Number of days on which at least one exceedance of the long-term objective for the protection of human health was observed per country and per month during summer 2005

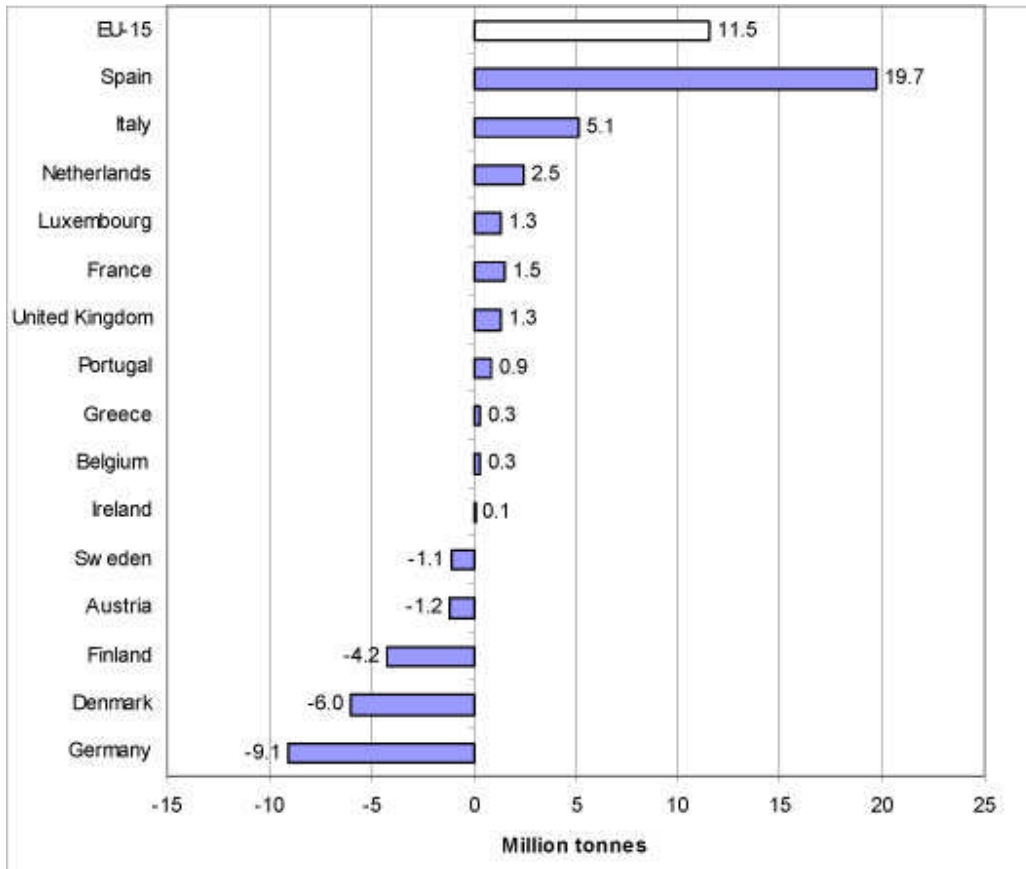
In a related development, a World Health Organization study for the Italian environment agency (Apat) has found that an average 8,220 Italian people died each year between 2002 and 2004 as a result of air pollution from ozone and fine particles (PM10). The research was based on 13 cities with population above 200,000.

16. EU Greenhouse Gas Emissions Increase For Second Year In A Row

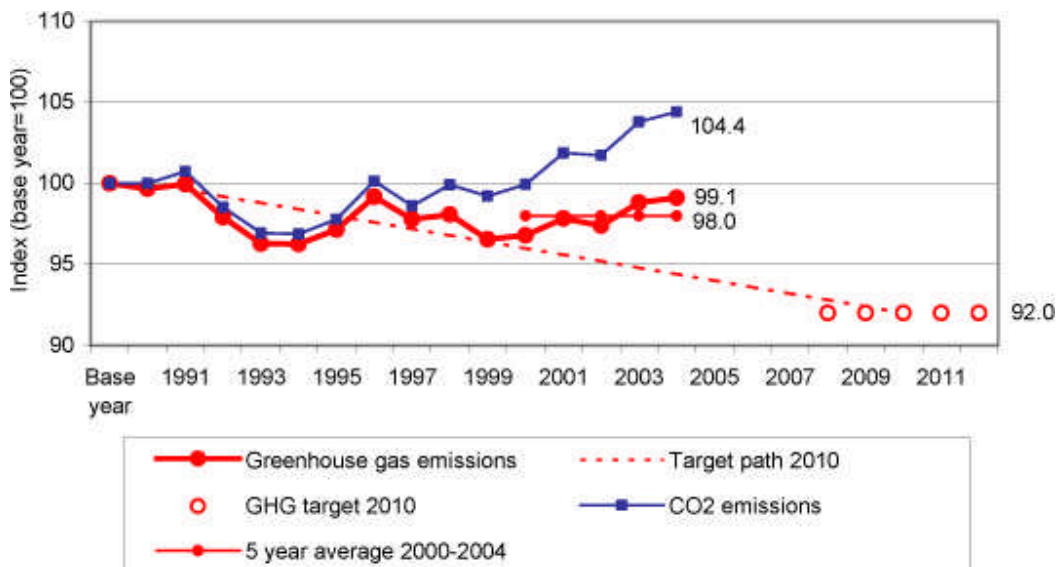
Emissions of climate-changing greenhouse gases (GHG) from the EU-25 increased by 18 million tons (0.4 %) between 2003 and 2004. Emissions from the EU-15 increased by 11.5 million tons (0.3 %) in the same period. These figures are contained in the latest GHG inventory report from the European Environment Agency (EEA).

"An increase of 0.4 % may appear small; however, the magnitude of GHG emissions is such that the actual increase is significant. In 2004, about 11 tons of greenhouse gases were released on average per person in the EU-25. The 0.4 % increase is comparable to the amount of CO₂ emissions released by 3 million people if they were to drive their cars around the earth," said Professor Jacqueline McGlade, executive director of the EEA.

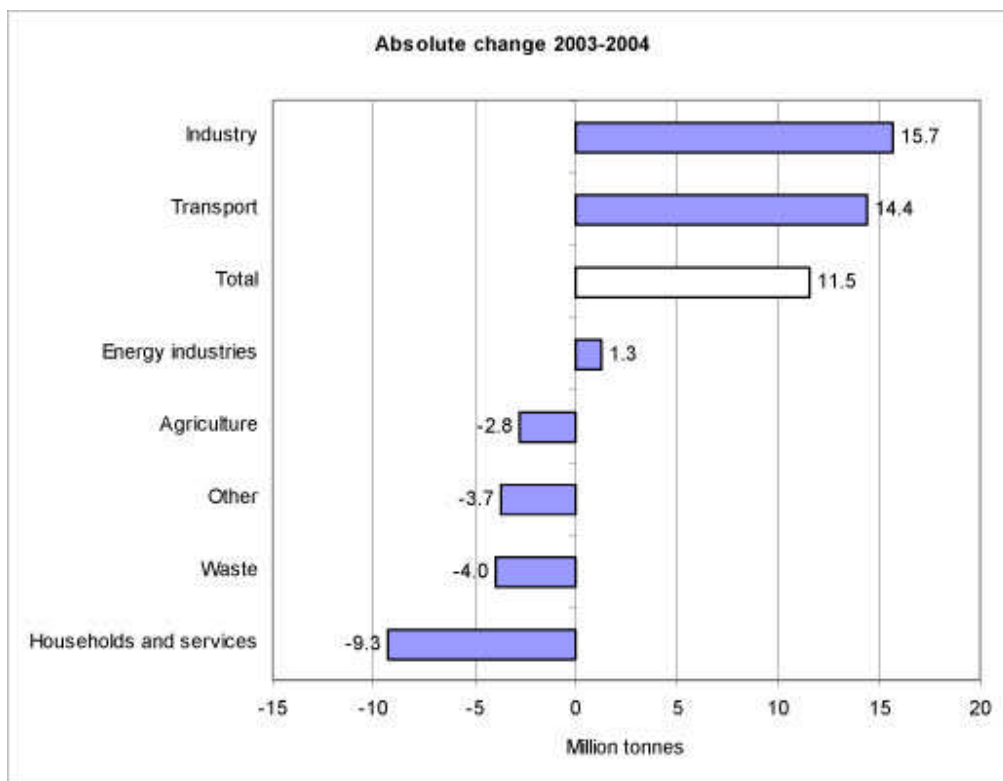
Spain and Italy saw the largest emission increases in absolute terms with plus 19.7 (4.8 %) and 5.1 (0.9 %) million tons respectively. On the positive side, 2004 saw emissions reductions from Germany (- 9.1 million tons, - 0.9 %), Denmark (- 6 million tons, -8.1 %) and Finland (- 4.2 million tons, - 4.9 %).



While, total GHG emissions for the EU-25 were 4.8 % below 1990 figures - the base year to which most GHG's are to be scaled back towards under the Kyoto protocol - the EU-15 has only decreased its emissions by 38 million tons (0.9 %) compared to the base year.



Emissions of CO₂, the most problematic GHG, were 4.4% above 1990 levels for the EU-15. Compared to 2003, CO₂ emissions increased by 0.6 %. Road transport was the biggest contributor to this trend with an increase of 12 million tons of CO₂ (1.5%). However, manufacturing of iron and steel also increased their CO₂ outputs with 8 million tons (5.4%).



In country terms, Spain increased its output of CO₂ most dramatically in 2004 as energy production switched to fossil fuels to make up for a shortfall in hydro power caused by drought. This increase in CO₂ drove the overall increase in GHG emissions in Spain in 2004.

17. U.K. Environment Agency Sees Climate Change, Waste as Priorities

Britain's top environmental priorities for the coming year include improving the national strategy for waste management and developing a policy for the second phase of the EU Emissions Trading Scheme, according to the annual report of the U.K. Department for Environment, Food, and Rural Affairs (DEFRA), released May 25. According to the report, DEFRA's "five strategic priorities" are tackling climate change and "unsustainable energy use;" promoting sustainable consumption and production; protecting the countryside and natural resources; creating sustainable rural communities; and achieving sustainable agriculture.

In an effort to fulfill climate change objectives, the report said, DEFRA this year will issue a "joint delivery plan" together with the Department for Transport and the Department of Trade and Industry.

DEFRA is also developing a code for sustainable homes that will "set out clearly specified minimum performance levels for energy, water, waste and materials efficiency."

The review also describes DEFRA's efforts to control air pollution, and says that while the department met objectives for reducing four out of seven targeted pollutants it has not yet met its objectives for the reduction of nitrogen dioxide and particulate matter. Over the next year, however, DEFRA intends to publish a new strategy on air quality and to negotiate new air quality rules, including the National Emissions Ceiling Directive.

DEFRA said that one of its key long-term objectives is the promotion of sustainable consumption and production. Ultimately, according to the report, DEFRA seeks the "decoupling of economic growth from environmental degradation" and the overall minimization of waste.

18. Anger Over Scrapping Of UK 'Greener' Car Schemes

Four "green" transport schemes designed to promote the use of environmentally-friendly vehicles have been dropped by Stephen Ladyman, the roads minister. Months after the Government announced plans to waive vehicle excise duty for cars with the lowest vehicle emissions - only to find none was commercially available in Britain - it has now scrapped grants to encourage people to buy any that might come on the market.

The cuts come with Britain already lagging behind Holland, Belgium, Ireland and France in the incentives it offers to people willing to buy low emission cars.

According to the Energy Saving Trust, tax breaks drawn up by the Dutch government are worth more than £4,000 per motorist compared with £334 in Britain.

Announcing the move, Mr. Ladyman said that European Union state aid rules limited any grants to 30-40 per cent of the cost. The low carbon car program, he said, would only pay for 8,500 vehicles a year - equivalent to 0.4 per cent of the total UK market.

Mr. Ladyman said: "I am not persuaded that giving small grants for individual purchases will deliver significant emission reductions or change the way we think about green transport." He said the money would be better spent on encouraging motorists to drive the cleanest car available in whichever class met their needs.

But it was a decision that angered green lobbying groups. "Manufacturers need strong signals to develop cleaner and more efficient vehicles," said a spokesman for the National Association for Clean Air and Environmental Protection. "They also need confidence that these signals are for real. The transport energy program has been beset with delays and uncertainty. To have the remaining schemes pulled at such a late stage is very disappointing."

Transport 2000, which campaigns for "sustainable transport", also condemned the move. A spokesman said: "This does seem something of a dither and we would want the Government to do something more pro-active than merely encouraging people to look at greener cars."

Chris Grayling, the Tory transport spokesman, said: "We should be doing everything we can to make cars cleaner and greener."

The scrapping of the low carbon car, low carbon bus, air quality retrofit and enhanced environmental vehicle grant programs was also condemned by the Freight Transport Association. A spokesman said: "The Government is making noises about encouraging environmentally-friendly operation, but does not necessarily follow it through with policies and incentives to make this a reality."

19. Switzerland to Establish National Pollutant Register

On June 6th, the Swiss Federal Department for the Environment, Transportation, Energy and Communication (DETEC) announced that it had submitted a proposed ordinance for public comment through the end of August establishing the legal basis for a national public register identifying sources of pollution. The proposal will then be further reviewed among Swiss federal agencies before being subject to final approval by the Federal Council, which is expected sometime before the end of 2006.

The creation of the registry is intended to bring Switzerland in line with its obligations under the Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters. The convention's Protocol on Pollutant Release and Transfer Registers, which was adopted in May 2003, requires signatories to create national registries on pollutant releases and off-site transfers and to make such registers available to the public.

DETEC added that once the legal basis is in place, around 1,000 large and medium-sized industrial facilities will be required to submit a report if they emit particulate matter, carbon dioxide, heavy metals, or other pollutants in quantities that exceed established thresholds.

One of the purposes of the register is to "name and shame" polluters in order to pressure them to reduce emissions.

To mitigate the cost to industry of providing exact measurements of pollutants, DETEC said the Swiss proposal allows estimates of pollution releases and transfers rather than requiring actual measurements.

NORTH AMERICA

20. Energy Department Begins First Appraisal Of Climate Effects on U.S. Energy

The Energy Department is on the verge of launching the first large-scale assessment, due to be completed in June 2007, of how increasing global temperatures and other climate change effects could affect long-range U.S. energy production and use, a DOE official said April 21. The assessment is one of 21 reports--known as Synthesis and Assessment Products--that are to address various climate-related issues under the U.S. Climate Change Science Program. The 21 separate assessments were a key recommendation of the Strategic Plan for the U.S. Climate Change Science Program issued in July 2003.

The plan called for the assessments to be completed over a four-year period between 2004 and 2007.

The energy assessment would rely heavily on already available research, such as reports completed by the electric utility industry, states, and others, on how changes in temperature and sea level could affect energy demand, the distribution of power, and other issues.

The energy assessment is due to be released in final form by June 30, 2007, following a review by the White House Science and Technology Council.

Researchers at DOE's Oak Ridge National Laboratory, who are heading the synthesis and assessment report on energy production and use, held the April 21 briefing to encourage input from industry, environmental organizations, academia, and others and to alert them of several relatively quick deadlines pending for the report.

The energy assessments were approved the week of the briefing, officials said, but deadlines for the first two drafts of the report are only months away, with the first draft due June 30 and, following a 45-day comment period, a second draft due Nov. 30.

The briefing on the assessment of Effects of Global Change on Energy Production and Use was sponsored by the U.S. Energy Association, an association of public and private energy corporations, organizations, and government agencies.

A researcher with DOE's Oak Ridge National Laboratory said interest in how climate change would affect energy needs has intensified among policymakers, researchers, and the public after Hurricane Katrina, which affected oil and natural gas platforms in the Gulf of Mexico and distribution of fuel along the Gulf Coast.

The Synthesis and Assessment Products are rooted in congressional demands for more usable information from federal agencies to formulate strategies for "preventing, mitigating, and adapting to the effects of global change," a provision in the Global Change Research Act that passed Congress in 1990.

An increasing number of reports issued over the past decade have only heightened concern among scientists and many policymakers, with many researchers suggesting a rise in global temperatures of several degrees Fahrenheit over this century. Data released earlier this year from NOAA's National Climatic Data Center and NASA's Goddard Institute for Space Studies suggest global temperatures have already risen between 1.08 degrees and 1.44 degrees Fahrenheit since 1900.

21. NOAA to Release Temperature Trend Report

The U.S. National Oceanic and Atmospheric Administration plans to release a final report in May examining the differences between temperature readings of the Earth's surface and upper atmosphere, the first of 21 climate change reports that will advise more than a dozen federal agencies that collaborate on the U.S. Climate Change Science Program, a NOAA official said April 27.

The first report, *Temperature Trends in the Lower Atmosphere: Steps for Understanding and Reconciling Differences*, will address past discrepancies in measurements of global temperatures depending upon the measurements' locations, according to Mary Glackin, assistant administrator for NOAA's Office of Program Planning and Integration.

The temperature trend assessment and other pending climate change research were discussed at an April 27 meeting of a National Academies' panel, the Committee on Strategic Advice on the U.S. Climate Change Science Program, which is providing ongoing analysis of the effectiveness of the program. The National Academies panel is to complete separate reports in 2006 and 2007 that will recommend future priorities for the science program. The panel is expected to make recommendations on the mix of climate change research currently overseen by 13 federal agencies, including NOAA, the Environmental Protection Agency, NASA, and the Energy Department.

In various drafts of the temperature trend assessment, NOAA researchers have suggested that there are fewer discrepancies between surface temperatures and temperatures in higher atmospheres than once thought, though there remain some lingering questions over the differences between surface and atmospheric temperatures measured in the Tropics.

President Bush launched the Climate Change Science Program in February 2002 to coordinate the range of U.S. climate change research and to emphasize the administration's focus on voluntary efforts and research to address increasing concerns over climate change.

In July 2003, the administration released its strategic plan for the Climate Change Science Program, which called for the 21 Synthesis and Assessment Products to be completed on a range of climate change research issues between 2004 and 2007. The 2003 strategic plan, one of several reports required under the U.S. Global Change Research Act of 1990, was criticized by members of Congress and various environmental organizations following allegations that White House environmental policymakers altered the report to emphasize uncertainties about climate change research.

22. Switch From MTBE to Ethanol Helps Drive Up Gasoline Prices

Nine months after Congress passed major energy legislation, one provision affecting gasoline formulas is helping to drive the price of gas up much faster than the rising price of crude oil. And because the new gasoline recipe contains less energy, mileage per gallon is declining.

On Friday, the 270th day after President Bush signed the Energy Policy Act of 2005, the law ended the requirement that gasoline sold in areas prone to air pollution include an "oxygenate," or a molecule including hydrogen, carbon and oxygen. A result is that refiners over most of the country's big gasoline markets, anticipating the rule, have already dropped the chemical MTBE.

The refiners were not explicitly required to drop MTBE, but virtually all have done so because it has polluted groundwater and exposed them to liability suits. By dropping it, they can offer the defense in water pollution lawsuits that they used the component only

for as long as it was required.

Until the oxygen requirement was eliminated, refiners had made gasoline with 11 percent MTBE by volume. But now refiners must replace that ingredient. And they need a substitute that is also high octane, as MTBE is. To replace it, refiners have turned in part to ethanol. Ethanol, which is made from corn, costs more than gasoline, though, and shipping it from the Midwest, where it is made, is cumbersome and expensive, because it has to go by barge, railroad tank car or tanker truck, rather than pipeline.

Along with importing vast amounts of crude oil, the United States imports more than a million barrels a day of gasoline or gasoline ingredients. The loss of the MTBE now requires more of those imports.

Ethanol is pricey and energy-poor. Its price is up by about \$1.30 a gallon in the last year, in part because of heavy demand for something to replace MTBE. But ethanol has only about two-thirds as much energy as MTBE does.

23. Poll: Most Americans Convinced Global Warming Poses Threat to Environment

The American public is becoming increasingly convinced that there is a scientific consensus regarding the existence of global warming and its potential to wreak "significant damage" on the world, a panel of survey researchers said at a policy forum April 20. Clay Ramsay, of the University of Maryland's Center on Policy Attitudes, said only 28 percent of those polled in a 1994 Cambridge University survey believed there to be a scientific consensus. But by June 2004, 43 percent of Americans believed in such a consensus, according to a survey conducted by the university's Program on International Policy Attitudes. In the most recent June 2005 PIPA survey, a slight majority, 52 percent, believed there is now a consensus, Ramsay said.

Ramsay noted that a significant percentage of those responding to the 2005 poll, 39 percent, are less convinced and believe that scientists remain divided on the existence of global warming and its impact. However, the polling trend in recent years shows there is a "growing perception of consensus" in the climate change research arena, he said.

Ramsay spoke at a policy forum for congressional staff and other interested parties sponsored by Environmental and Energy Study Institute, a nonprofit organization that promotes renewable energy and environment sustainability. He and other researchers discussed findings in nearly a dozen national polls conducted on various climate change issues in 2005 and 2006.

The speakers at the forum said public opinion polls show Americans generally believe global warming is a serious issue and that it is already affecting the Earth's climate. For example, they referred to an April 7 Gallup poll that concluded 58 percent of Americans believe climate change is already under way as a result of global warming. Sixty-two percent in the same poll said they worry about greenhouse effects either "a great deal" or a "fair amount," up from the 51 percent of those who answered the same way in a 2004 Gallup poll.

Most of the recent polling consistently finds that Americans believe climate change is

real, that it threatens humans and the environment, and that the federal government should do more to address its causes, the researchers said. For example, a November 2005 poll conducted by Fox News Corp. concluded that 77 percent of Americans believe global warming is happening--a statement supported by 83 percent of the Democrats and 66 percent of Republicans surveyed--and 60 percent described global warming as either a "crisis" or "a major problem."

A March 26 Stanford University poll conducted for Time Magazine and ABC News found that 88 percent of those surveyed think global warming threatens future generations, the researchers said at the forum.

The polls highlighted by the researchers also suggest Americans believe the federal government needs to take additional steps to address climate change. For example, 76 percent of those surveyed in a March 15 poll by the Civil Society Institute believe the federal government "is not doing enough to address global warming and develop alternative energy sources" to curb U.S. dependence on foreign oil.

While the polls suggest Americans are increasingly concerned with the effects of climate change, they also suggest continued skepticism over whether humans are the major contributor to increasing global temperatures. About 46 percent of those surveyed in the 2005 Fox News poll believe climate change is caused by human behavior, while 17 percent believe it is caused by normal climate patterns. Another 30 percent believe it is caused by a combination of human and natural causes.

Other polls suggest a higher figure, with 58 percent of those responding to an April 7 Gallup poll agreeing that increases in Earth's temperature over the last century are due more to human activities than natural changes

Thomas Brewer, associate professor with Georgetown University's MacDonough School of Business, added that opinion polls continue to show a 10-to-20-point spread between Democrats and Republicans on climate change issues. For example, 68 percent of Democrats who responded to a June 2005 ABC/Washington Post survey said they believe human activity to be a significant cause of global warming, compared with 54 percent of Republicans.

The same survey concluded that 47 percent of Democrats favor immediate "government action" to address climate change, while only 24 percent of Republicans agreed with that statement, he said.

24. Canada's Proposed 2006 Budget Downplays Environment, Climate Change

Canada's 2006 budget includes only limited support for initiatives to protect the environment and address climate change, focusing primarily on promoting the use of public transit. In his budget speech to the House of Commons May 2, Finance Minister Jim Flaherty said that Canadians are concerned about traffic congestion and the harmful emissions that are associated with it.

"This government appreciates the fact that investing in public transit infrastructure can help preserve our environment," he said.

The budget promises C\$1.3 billion (US\$1.2 billion) in additional funding to support capital investments in public transit and the introduction of a new 15.5 percent personal tax credit to offset the cost of purchasing transit passes. The tax credit would provide an individual who purchases a C\$80 transit pass each month with tax savings of up to C\$150 per year.

"The transit pass credit will be funded from reallocation within existing resources set aside for climate change programs," Flaherty said. "A substantial amount, C\$2 billion over the next five years, will be devoted to a 'made-in-Canada' climate change program currently being developed."

Flaherty's speech avoided any mention of Canada's commitment under the Kyoto Protocol to reduce its greenhouse gas emissions by 6 percent from 1990 levels by the period 2008-2012. The previous government's 2005 budget committed C\$3.2 billion in new environment-related spending, including a significant portion earmarked for initiatives to meet the Kyoto commitment.

New Prime Minister Stephen Harper and Environment Minister Rona Ambrose have indicated their preference for an approach based on reducing the energy intensity of Canadian industry, similar to the climate change approach taken by the Bush administration.

The 2006 federal budget also proposes preferential tax treatment for energy generation equipment used by the pulp and paper sector that uses biomass for fuel.

The government would implement the previously announced incentive to offer an accelerated capital cost allowance deduction for purchases by pulp and paper firms of cogeneration systems that produce both thermal energy and electricity from the residue of the pulping process, commonly referred to as "black liquor," the Department of Finance said in the Budget Plan. "This measure will encourage additional investment in technology that reduces emissions of greenhouse gases and air pollutants, while helping to improve the international competitiveness of Canadian mills," it said.

25. Canadian Minister Says Nation Unable to Meet Kyoto Commitment

Canada's greenhouse gas emissions are now 35 percent above the levels required to meet the country's Kyoto Protocol target, making compliance all but impossible, federal Environment Minister Rona Ambrose told Parliament May 10.

"To put that into perspective, that would mean that today we would have to take every train, plane, and automobile off the streets in Canada," she said. "That is not realistic. We will not reach our Kyoto target. The only way we can reach our Kyoto target is to first shut down the Canadian economy or, second, ship billions of dollars overseas."

Ambrose said Canada is not alone in having difficulty in reaching its Kyoto target.

Under the treaty, Canada is required to reduce its greenhouse gas emissions by 6 percent from 1990 levels by the period 2008-2012.

Ambrose added that 73 percent of global greenhouse gas emissions are from countries

that are not required to reduce emissions under the protocol and that this is why Canada's new government is advocating a different approach to climate change.

"We have to talk to countries that are within the United Nations framework and countries outside the framework," she said. "We need to engage countries outside the protocol, like Australia and the United States, to also make commitments. That is the approach we are going to take."

Canada is particularly concerned about China and India, which are considered developing countries under the Kyoto Protocol, but which have booming economies and are significantly increasing their contributions to overall greenhouse gas emissions, she said.

"Today, we learned that just China and India alone have increased global emissions by 15 percent in just a short decade," she said. "This is a grave concern to us. We think China and India should take on commitments."

26. Dueling Scientists Seek To Sway Canada's Harper on Kyoto Protocol

On April 19th, a group of 90 Canadian environmental scientists and oceanographers called for Prime Minister Stephen Harper to move quickly to develop a national climate change strategy. The group said in an open letter to Harper that there is unambiguous evidence of the changing climate in Canada and around the world.

"We urge you and your government to develop an effective national strategy to deal with the many important aspects of climate that will affect both Canada and the rest of the world in the near future," they said.

The April 19 letter appeared to represent a rebuttal to an April 6 open letter from a separate group of 60 Canadian and international scientists that endorsed Prime Minister Harper's plan to reconsider Canada's climate change commitments under the Kyoto Protocol.

Harper, whose Conservative Party formed a minority government in the Canadian Parliament after Jan. 23 federal elections, has consistently said that he does not believe that Canada can meet its climate change targets under the Kyoto Protocol and needs to develop a "made-in-Canada" approach. Canada is committed under the Kyoto Protocol to reduce its greenhouse gas emissions by 6 percent from 1990 levels by the period 2008-2012.

The scientists said they agree with the 2001 conclusions of the Intergovernmental Panel on Climate Change, including the panel's finding of strong evidence linking global warming to human activities. They cited the IPCC process, with its rigorous scientific peer review, as the appropriate mechanism for assessing the climate change issue. They said, however, that further research is needed on the impacts of climate change.

"Canada needs a national climate change strategy with continued investments in research to track the rate and nature of changes, understand what is happening, to refine projections of changes induced by anthropogenic release of greenhouse gases, and to analyze opportunities and threats presented by these changes," they said in the

letter.

The April 6 letter cited uncertainty over the science of climate change in support of the recently-elected prime minister's suggestion that Canada needs to seek additional public input in order to develop a "made-in-Canada" approach to addressing climate change.

"We are writing to propose that balanced, comprehensive, public consultation sessions be held so as to examine the scientific foundation of the federal government's climate change plans," the 60 scientists said. "This would be entirely consistent with your recent commitment to conduct a review of the Kyoto Protocol. Much of the billions of dollars earmarked for implementation of the protocol in Canada will be squandered without a proper assessment of recent developments in climate science." Observational evidence does not support existing computer climate models, and there is little reason to trust models predicting future climate changes, they said. But those models are the basis for the Kyoto Protocol and the "alarmist" forecasts on which Canada's current climate change policies are based, they added.

"While the confident pronouncements of scientifically unqualified environmental groups may provide for sensational headlines, they are no basis for mature policy formulation," they said. "The study of global climate change is, as you have said, an 'emerging science' ... it may be many years before we properly understand the Earth's climate system." Public consultations will provide a forum for experts on both sides of the climate change debate to present their views, and when the Canadian public realizes that there is no consensus among climate scientists, the government will be in a better position to develop plans that reflect the reality of climate change, they said.

The April 6 open letter, sent also to Environment Minister Rona Ambrose and Natural Resources Minister Gary Lunn, had originally carried the names of 61 scientists from Canada, the United States, Australia, the Netherlands, Sweden, New Zealand, Poland, and other countries. However, University of Calgary mathematics professor Gordon Swaters subsequently withdrew his endorsement of the letter on the basis that he had been told it was a petition asking for the government to put more effort into climate change research.

"I regret signing that damn petition," Swaters told reporters. "There are still a lot of mechanics and dynamics about climate change that we don't know about and a lot of subtleties that we need to unravel . . . [but] signing this petition should not be seen as an attempt to indicate that climate change is not occurring."

27. Natural Resources Canada to Eliminate Variety of Emission-Reduction Programs

On April 13th, Canadian Natural Resources Minister Gary Lunn announced the winding down of 15 Canadian climate change programs as part of the new federal government's plans for a "made in Canada" plan to reduce greenhouse gases emissions. The 15 programs will be eliminated because they have completed their work or because they are incompatible with the planned new approach, which will achieve sustained emissions reductions while protecting the strength of the Canadian economy, Lunn said in a statement.

"We will develop solutions that have clear environmental benefits to Canada and involve all Canadians," he said. "The new government under Prime Minister Stephen Harper is committed to putting an end to the massive increase in greenhouse gases emissions that Canada has seen over the past decade. To do that, we need a new approach to addressing climate change that is effective and realistic for Canada."

Programs eliminated on the basis of their work being finished include:

- The Urban Transportation Showcase Program, which supported projects to demonstrate, evaluate, and promote reduced emissions from passenger transportation in urban areas;
- The two-part Electricity Reduced Trade Barriers program, which included analysis and reporting of emissions associated with electricity generation;
- The Environmental Supply Chain Management Pilot Project, which was intended to encourage Canadian industries to become more energy efficient;
- The Off-Road Vehicle and Equipment Initiative, which reviewed ways to reduce greenhouse gases emissions from off-road vehicles and equipment including lawn mowers, power boats, mining trucks, bulldozers, snowmobiles, and farm tractors;
- The On-Site Generation and Federal Facilities program, which promoted the use of renewable energy technologies for electricity generation in federal operations; and
- The Pilot Emission Removals, Reductions, and Learnings Initiative, which provided economic incentives for emissions reductions through projects involving methane emissions from landfills, renewable energy, and carbon sinks.

Programs eliminated because they are incompatible with the new approach include:

- The Market Incentive Program, which provided power distributors in competitive markets with the option of offering customers "green" power;
- The One-Ton Challenge, which encouraged individual Canadians to reduce their annual emissions of greenhouse gases by 20 percent or one ton; and
- The Studies and Monitoring for Greenhouse Gas Reduction Program, which was intended to develop knowledge on emissions reduction opportunities.

Natural Resources Canada indicated it is still reviewing the Opportunities Envelope initiative, undertaken jointly with Environment Canada, which provided funding for cost-shared emissions reductions project with Canada's provincial and territorial governments. No new activities will be funded under that program, but existing obligations will be met, it said.

28. Freightliner, FedEx Roll Out New Hybrid Electric Trucks

Freightliner Custom Chassis Corp., FedEx Express, Eaton, Utilimaster and Detroit Diesel have all teamed to develop a "revolutionary" line of hybrid electric-powered walk-in vans. FedEx Express, which initiated the program, already has a handful of pilot units on the road and will now roll out about 100 more. The vans are expected to become a mainstay in the FedEx medium-duty delivery fleet.

With dramatically reduced emissions and improved fuel economy, FCCC's new hybrid

electric-powered vehicle is gaining national attention, says the company. In December, FedEx Express received a 2005 Blue Sky Award from CALSTART, an advanced transportation technologies consortium, in "recognition of outstanding marketplace contributions to advanced, sustainable transportation that cleans the air, improves energy efficiency and reduces greenhouse emissions."

The hybrid-electric vehicle is powered by an electric motor through an energy storage device developed by Eaton and a Mercedes-Benz MBE904 diesel engine from Detroit Diesel. Lithium-ion batteries capture and store energy during the "regenerative braking" phase of the vehicle's operation, providing a source of stored electrical power on demand. All battery charging is provided by the hybrid-electric power train, eliminating the need for a power cord or electrical outlet.

The new hybrid electric-powered walk-in vans have shown improvements in fuel economy of more than 50 percent and a 90-percent reduction in emissions, according to a press release.

29. U.S. Greenhouse Gas Index Up in 2005; Two CFCs Decline, Methane Leveling Off

A U.S. federal government greenhouse gas index showed a continuing steady rise in the amount of heat-trapping gases in the atmosphere for 2005, including an increase in carbon dioxide and nitrous oxide, the National Oceanic and Atmospheric Administration said May 1. The Annual Greenhouse Gas Index also found a leveling off of methane and a decline in two chlorofluorocarbons--CFC-11 and CFC-12--gases that contribute to the cause of the hole in the stratospheric ozone layer above Antarctica, the agency said.

Calculations done with data from previous years show that the index has been increasing since 1979, according to David Hofmann, director of the global monitoring division with NOAA Earth System Research Laboratory in Boulder, Colorado.

The index is referenced to a baseline value of 1.00 for the levels of greenhouse gases present in the atmosphere in 1990. The 2005 value for the greenhouse gas index is 1.215, up from 1.199 in 2004. The increase during 2005 was 1.25 percent, which is relatively small, the agency said. The largest increase was 2.8 percent in 1988.

Most of the increase in radiative forcing measured since 1990 is due to carbon dioxide, which now accounts for approximately 62 percent of the radiative forcing by all long-lived greenhouse gases, according to the agency.

The U.N. World Meteorological Organization released a measure of greenhouse gas concentrations in March stating that average global concentrations of greenhouse gases hit record levels in 2004.

In a related development, the Environmental Protection Agency's most recent report on greenhouse gas emissions showed an increase of 1.7 percent from 2003 to 2004, the third consecutive year the emissions have increased.

30. U.S. Makers Facing Glut of S.U.V.'s as Gas Rises

Americans shied away from large sport utility vehicles and pickup trucks in April as gas prices approached \$3 a gallon. With a battery of new S.U.V.'s waiting in the wings, domestic automakers are now facing the very situation they had hoped to avoid.

Despite gains at Toyota and Honda, declines at General Motors, Ford, DaimlerChrysler and Nissan kept vehicle sales in the United States flat in April, according to Ward's AutoInfoBank. General Motors recorded the biggest drop, selling 7.3 percent fewer vehicles than it did last April.

For the first time, Toyota became the nation's No. 3 car seller for the month, passing DaimlerChrysler. That was a symbolic victory for Toyota, which occasionally outsells Chrysler but had never outsold all of DaimlerChrysler, including Mercedes-Benz, in the United States.

The latest surge in gas prices poses a long-term problem for the domestic auto companies, which had been hoping that gas prices would moderate and make S.U.V. sales easier. Now, analysts warn it may be harder to get consumers to buy a gas-thirsty vehicle when the oil market remains so volatile.

Since 2004, when the number of light truck sales, which include pickup trucks and S.U.V.'s, peaked at 55.7 percent of vehicle sales in the United States, the American love affair with large vehicles has cooled. Last year, light truck sales fell to 54.9 percent of the market, according to Autodata. For the first three months of this year, light truck sales were down even more, to 53.8 percent.

31. GM CEO Sees Hybrids as Image Boosters, Focuses on E85

General Motors Corp. plans to stay in the hybrid vehicle business for the favorable image it projects, Chief Executive Rick Wagoner said in an interview this week, adding that the United States also needs to focus on ethanol to reduce foreign-oil dependency.

Wagoner said automakers should focus more on ethanol as an alternative fuel and that GM is focused on increasing the distribution system for fueling vehicles with E85 -- a blend of 85 percent ethanol and 15 percent gasoline. Wagoner also said he planned to discuss it with President Bush in an upcoming meeting, where he will ask Washington to focus on energy policy questions, such as how to produce and distribute more ethanol.

GM has built 1.7 million E85-equipped vehicles so far and plans to make another 400,000 this year.

Wagoner said he has no regrets about not being first to launch a hybrid vehicle, but that being a part of that market is important. "I like our emerging position," he said. GM, which started its hybrid line with two pickups -- the Chevrolet Silverado and GMC Sierra -- will launch its third hybrid, the Saturn Vue, later this year. The Vue will be its first vehicle powered by a new, more affordable hybrid system.

Wagoner said GM needs to compete on hybrid technology for "image reasons" and that it was too early to tell if demand for hybrid vehicles will wane, but there will be "a natural limit" to them.

Speaking of vehicles powered by hydrogen fuel cells, Wagoner said the first ones will be "massive money losers," but he added that the technology would further reduce US dependence on foreign oil. GM is working on bringing hydrogen technology to the market by 2010.

Despite rising gasoline prices this summer, Wagoner said he intends to stick with developing alternate fuel sources and has no plans to stray from GM's new strategy of low sticker prices and fewer incentives.

While GM does not plan any massive blowouts like its employee-discounts-for-all promotion last year, there will be some small programs this year, Wagoner said. "You'll see some interesting model-year close-out initiatives."

32. US Court to Review Duke Energy Clean Air Ruling

The Supreme Court said Monday it would hear an appeal by environmentalists of a ruling that Duke Energy Corp. did not violate clean air laws by modernizing eight coal-burning power plants in North and South Carolina without obtaining a permit. The justices agreed to review a US appeals court ruling that the utility did not violate the Clean Air Act when it undertook the modernization program at the plants between 1988 and 2000.

The appeals court ruled that Duke did not need a permit from the Environmental Protection Agency because hourly emissions from the plants would not increase. It rejected the government's argument that the law also applied to changes that result in a plant operating more hours each year. The appeals court upheld a decision by a federal judge in North Carolina.

Attorneys from an environmental group involved in the appeal hailed the US Supreme Court's decision to hear the case.

"Over 160 million Americans, more than half of the country, live in communities out of compliance with the nation's health standards and today the Supreme Court took a big step toward aiding those communities in their efforts to restore healthy air," said Environmental Defense attorney Vickie Patton.

"We're very pleased that the court agreed to review the Duke Energy decision, which rests on a flawed interpretation of the Clean Air Act, and which industry has been citing in numerous other cases in an effort to undermine essential pollution controls applicable to some of the nation's largest sources of air pollution" said another attorney, Sean Donahue.

The lawsuit was brought by the Clinton administration's Justice Department in 2000 in an effort to require power-plant operators to upgrade pollution equipment as part of projects that expand their facilities.

Several environmental groups intervened in the lawsuit. They appealed to the Supreme Court and said the case presented "recurring issues of national importance." Thirteen states -- California, Connecticut, Delaware, Illinois, Maine, Maryland, Massachusetts, Minnesota, New Hampshire, New Jersey, New York, Oklahoma and Vermont --

supported the appeal.

Even though it lost before the appeals court, the Justice Department told the Supreme Court to reject the appeal. It said the EPA under the Bush administration has proposed new regulations that "can address any difficulties caused by the court of appeals' decision." Duke Energy also opposed the appeal. The high court will hear arguments in the case and then issue a decision during its upcoming term that begins in October.

The Supreme Court's review of the case, *Environmental Defense, et al. v. Duke Energy Corporation* (No. 05-848), represents only the third environmental law case in 35 years to be taken up by the high court where environmental groups alone sought review.

The case arose in 2000, when the U.S. Environmental Protection Agency filed a Clean Air Act enforcement action against Duke Energy in federal district court in North Carolina. The federal district court for the middle district of North Carolina granted summary judgment for Duke Energy and a three-judge panel of the U.S. Court of Appeals for the Fourth Circuit unanimously affirmed the lower court's ruling on June 15, 2005. Nine days later, the U.S. Court of Appeals in Washington, DC reached a contrary result in reviewing industry challenges to national new source review (NSR) rules. The Fourth Circuit subsequently denied the U.S. EPA's and Environmental Defense's request for rehearing.

In March, U.S. Solicitor General Paul Clement and other Justice Department officials attempted to persuade the Supreme Court not to hear this case, siding with the Fourth Circuit Court's ruling and claiming there was no "square conflict among the courts of appeals."

The co-petitioners presented two issues to the Supreme Court:

- # Whether the Fourth Circuit impermissibly allowed Duke Energy to collaterally attack the legality of national rules that may be reviewed solely in the U.S. Court of Appeal in Washington, DC.
- # Whether the Clean Air Act requires EPA to interpret the term "modification" in the new source review program to encompass changes that result in an actual overall increases in air pollution.

At issue in this second question is what test federal and state regulators can use to enforce the new source review provisions. The Clinton administration used the standard of a cumulative measure of pollutants released annually in prosecuting power plants for violations.

Duke attorneys convinced the 4th Circuit that the Clean Air Act only allows violations to be based on a facility's hourly emission rate.

33. Honda: New Hybrid, New Diesel Engine And 2 New Plants In North America

In its push to fulfill its "2010 Vision" established in 1998 Honda will be introducing a new low-cost hybrid in North America in 2009 that's expected to sell 200,000 units annually worldwide. It will be produced at the company's Suzuka plant in Japan and be a

"dedicated" hybrid model.

In anticipation of the upcoming diesel boom in the U.S. after the E.P.A. switches us over to Ultra Low Sulfur Fuel in October of this year, Honda will also be introducing a new four-cylinder direct-injection diesel engine in North America that's based on its offerings in Europe.

Finally, Honda will invest \$400 million in a new U.S. assembly plant that will be operational by 2008, as well as put another \$140 million in a new engine plant in Canada. Another \$125 million is being pledged to expand the company's engine, transmission and powertrain component facilities in Georgia and Ohio, as well. All told these facilities will generate an additional 1,920 jobs in North America and boost Honda's production on the continent from 1.4 million to 1.6 million units by 2008.

Honda also announced the establishment of a goal to increase American Honda's Corporate Average Fuel Economy (CAFE) by five percent over 2005 levels by the year 2010.

Honda's 2010 Vision is a long-term corporate initiative "to become a company that society wants to exist." Initiated in 1998, this three-part 2010 Vision calls for the expansion of Honda's global operations through the year 2010 through "creating new value" for the customer, expanding local operations through "globalization" and advancing environmental and safety technologies through a "commitment for the future."

Honda also is developing a clean V-6 diesel engine. That will be an all-new engine not based on the current 4-cylinder diesel. It is Honda's view that hybrid powertrains are most appropriate for small cars, and clean diesels for medium- and large-size cars.

In 2000 on a global basis, Honda cars and trucks averaged 179.5 grams of CO₂ exhaust emissions per kilometer traveled, or about 11.6 ounces per mile. Despite increased sales of larger-sized vehicles such as SUVs and minivans, Honda reduced its average CO₂ emissions by 5 percent during the five-year period up to 2005. Honda now targets a further reduction of 5 percent or more. It thus aims to achieve a total reduction of 10 percent by 2010 compared to the 2000 level.

Honda officials have said they will not follow DaimlerChrysler and other European automakers and use urea. That leaves two other ways: reducing emissions in the combustion chambers or cleaning up the exhaust with a particulate filter and a trap for oxides of nitrogen.

34. US Sales Help Toyota To Record Revenue

Toyota, the world's most profitable carmaker, yesterday reported its fourth consecutive full-year net profit and broke through the Y20,000bn (\$180.8bn) revenue barrier for the first time on buoyant sales in the US.

The carmaker's results for the year ended March 31 highlight the divergence in fortunes between it and General Motors, which it will almost certainly overtake in terms of sales volume next year. While GM and Ford are restructuring their North American operations to try to return them to the black, Japanese automakers are capturing US market share.

Toyota's share of the US light-vehicle market reached 15.2 per cent in April, putting it slightly ahead of Chrysler. The combined share of GM and Ford shrank to 41.3 per cent. A decade ago it was close to 60 per cent.

35. Toyota Hybrid Production Is Maxed Out

Toyota Prius sales plunged 27.4 percent in April, to 8,234 units, compared to the same month last year. But the problem was limited manufacturing capacity, not lack of consumer demand, said Jim Press, president of Toyota Motor Sales U.S.A. Inc. In fact, he said, soaring fuel prices have made Toyota's hybrids hotter than ever.

The production start of the Camry Hybrid at the Tsutsumi plant in Japan meant it has had to cut back on building Prius units.

"We ended the month with a three-day supply of Prius," Press said in an interview. "Demand has never been higher. We also had a phenomenal month for Highlander Hybrid and RX 400h."

The Camry Hybrid went on sale nationwide on May 1. Most regions had received their first shipment by Friday, May 5, said spokesman John Hanson. In the two days in April that the Camry Hybrid was on sale - in California and Oregon - 47 units were sold.

As much as Toyota would like to sell more hybrids, Tsutsumi is maxed out. Toyota already is scrambling to increase the capacity there until its Georgetown, Ky., plant starts building the Camry Hybrid in September, Hanson said.

At best, Press said Toyota Motor Sales can double its U.S. hybrid sales from last year, when it sold 146,560 units.

As for the future, Press said Toyota is short of the engineering resources to accelerate its plans to bring new hybrid models to market. "Expanding hybrid volume requires increasing the number of vehicles that have the hybrid option available," he said. "That's driven by engineering resources, and it's difficult to accelerate that."

36. EPA Staff Push Agency For Tighter Particulate Pollution Controls

EPA staff are pushing agency managers to support a tightening of the proposed ambient fine particulate matter (PM2.5) standard floated by the agency late last year, arguing that stricter standards would not force the agency to amend strategies such as its Clean Air Interstate Rule (CAIR), which officials have argued is adequate in many localities to ensure attainment with existing standards.

However, any efforts to tighten the proposed limits could face an uphill battle within the Bush administration even if EPA itself endorses changes according to reports.

EPA in its proposal late last year suggested the agency would tighten a current daily standard for PM2.5 from 65 micrograms per cubic meter (ug/m³) to 35 ug/m³. However, the agency decided to leave the current annual PM2.5 standard of 15 ug/m³ in place. That decision has drawn strong criticism from EPA's Clean Air Scientific Advisory

Committee (CASAC), whose members have harshly criticized the proposal as too lax. CASAC had recommended prior to the proposal that the annual standard be tightened to 13-14 ug/m3.

The agency also floated a plan for a new "coarse" particle standard for particles between 2.5 microns and 10 microns in diameter that does not apply to agriculture and mining operations and focuses regulation of the pollution on areas with population centers above 100,000.

Staff is now reportedly urging managers to modify the proposal, focusing much of their efforts on the annual PM2.5 standard. Specifically, the EPA staff is mounting a "lobbying push" for an annual pollution limit of 14 ug/m3 -- in line with recommendations from CASAC.

While the agency ultimately is required to justify its decision based on pollution standards needed to protect public health, staff are reportedly making their case internally at least in part by arguing the stricter limit would be minimally disruptive to current EPA pollution control strategies, specifically CAIR, and that additional local controls would suffice to meet the limit.

CAIR is a broad regional strategy to reduce pollution from power plants in the eastern United States, including facilities that may be located in areas not in violation of air quality standards but which contribute to downwind nonattainment of pollution limits. EPA officials have argued publicly that CAIR, as well as other pollution control strategies to curb diesel engine emissions, would bring many areas of the country into attainment with the proposed PM2.5 standards, limiting the need for additional local measures.

EPA is under a court-ordered deadline to issue a final proposal for revising its particulate matter standards by Sept. 27, 2006.

37. Quebec Unveils Carbon Tax and California Vehicle Standards

Quebec plans to adopt California's greenhouse gas vehicle emissions standards and will become the first province to levy a "carbon tax" on oil and gas companies as part of an ambitious plan to fight global warming. The tax will raise about \$200-million a year over six years, according to provincial government officials, and will finance a C\$1.2 billion (US\$1.1 billion) Green Fund to make reductions in greenhouse gas emissions called for under the international Kyoto accord.

Quebec Premier Jean Charest and Environment Minister Claude B  chard said that from 2006 to 2012, the province will tax oil and gas companies for hydrocarbon products sold in bulk to retailers -- non-renewable fossil fuels such as heavy oil, gas, natural gas and propane. The Green Fund would be used to finance projects such as improvements to public transportation, education about emission cuts and ways to make buildings more energy efficient. Quebec already has the lowest levels of greenhouse gas emissions in Canada.

Quebec's plan also calls for new vehicles sold after 2010 to produce less greenhouse gases; standards similar to those enforced in California will apply to cars and trucks sold in the province which between 2009 and 2016 will reduce greenhouse gas emissions

produced by new cars and light trucks by 25 per cent to 30 per cent.

Quebec said the plan would still leave the province short of its Kyoto targets and demanded the country's minority Conservative government contribute around C\$330 million to fund other programs.

This poses a problem for Prime Minister Stephen Harper, who says the country cannot possibly meet its Kyoto goals and promises his Conservatives will instead create a "Made in Canada" plan to cut greenhouse gas emissions (see below).

Kyoto is particularly popular in Quebec, where Harper needs to boost support in the next federal election if he is to stand any chance of capturing a majority of seats in Parliament. The province of 7.6 million accounts for 75 of the 308 seats in the federal House of Commons.

Ryan Sparrow, a spokesman for Environment Minister Rona Ambrose, pointed out that Canada's 10 provinces did not have individual targets under the Kyoto deal, which obliges Canada to cut its emissions by 6 percent from 1990 levels by 2012. Quebec has nonetheless declared that to cut its own output of greenhouse gases by 6 percent from 1990 levels it needs to eliminate almost 14 million tons of emissions a year.

Along with Manitoba, Newfoundland and Labrador, Quebec has vowed to implement the Kyoto accord even if the federal government drops out.

Environmentalists applauded the Quebec government plan and urged other provinces to follow suit.

38. Sierra Club Gives Quebec Top Grade

The Sierra Club of Canada is giving Quebec top marks for its plan to impose a carbon tax on the petroleum industry and tighten vehicle emissions standards. Quebec won an A-plus in the environmental group's 14th annual "Rio report card" that grades provincial and federal governments on their environmental performance.

The Rio report card is intended to assess Canadian efforts to comply with the goals of sustainable development set forth at the Earth Summit in Rio de Janeiro in 1992.

Ontario earned failing grades because of its plan for a major expansion of the nuclear industry.

Other highlights from the report:

- Newfoundland and Labrador received a B-plus for developing a climate change plan and a protected areas strategy.
- Prince Edward Island got a B for its promotion of renewable energy.
- Manitoba got a B for fighting the Devil's Lake water diversion and promoting the Kyoto Protocol.
- British Columbia received a B for protecting two million hectares of the Great Bear rain forest.

Most of the other provinces were given low to failing grades and Alberta received an F for placing tar sands development above ecological priorities.

39. Canadian Environment Minister Criticizes Former Greenhouse Plan

Canada's climate change programs to date have been overly costly and have done little to help Canada meet its Kyoto Protocol commitments, Environment Minister Rona Ambrose said on May 29, citing a study by the C.D. Howe Institute. The study stressed that the previous federal government failed to bring forward an implementation plan for Canada's Kyoto commitments that would actually reduce greenhouse gas emissions and relied instead on planned purchases of foreign emission reduction credits.

Ambrose made her remarks in the House of Commons under questioning from opposition politicians. She added that the previous government's plan would have cost C\$12 billion (US\$11 billion) per year to implement, not the C\$5.0 billion per year it told the public.

The C.D. Howe Institute study, released on May 29, concluded that continuing with the previous government's plan to implement Canada's Kyoto commitments would have cost C\$80 billion over the next 35 years, but would have done little or nothing to reduce actual greenhouse gas emissions. The Canadian approach to date has focused on offering information and subsidies to encourage voluntary emissions reductions, but has avoided substantial restrictions or charges, Simon Fraser University professor Mark Jaccard said in the study. As a result, Canada's emissions have increased by 25 percent since 1990, he said.

The study cites several potential policy alternatives to move Canada onto a path of reducing its greenhouse gas emissions:

- ❖ a gradually increasing tax on emissions with offsetting reductions in other taxes to ensure no net tax increase;
- ❖ combination of taxation and market-oriented regulations requiring the development and adoption of technologies that do not emit greenhouse gases;
- ❖ implementation of a cap-and-trade regulation for large industrial emitters; and
- ❖ a phased-in regulation to shift the burden for emission management to the fossil fuel industry through a carbon management standard.

"While evidence suggests that these policies are likely to be more effective, they are not without substantial costs," the study said. "It remains to be seen if Canadians are willing to make these expenditures as part of an international effort to address the climate change risk."

40. New Group Forms To Reduce Air Pollution In Dallas

A consortium of businesses, communities and government agencies called the Blue Skyways Collaborative have agreed to commit \$90 million collectively to reduce air pollution emissions in major urban areas and transportation corridors in the central United States.

The collaborative effort focuses on several sectors including air, water and rail

transportation, on-road diesel vehicles, green energy and heavy off-road equipment.

The group will be sharing approaches to reducing diesel and other fuel-related emissions, seeking solutions to emissions problems and seeking incentives.

Some of the members of the consortium include the cities of Dallas and Houston, Port of Houston Authority, Dallas/Fort Worth International Airport, Dallas-based Earth Biofuels Inc. and the North Central Texas Council of Governments.

41. Daimler Sees Fast US Takeup of Diesel-Hybrid Buses

Diesel-electric hybrid buses could account for half the buses run by US transit agencies in three to five years, up from about 10 percent today, DaimlerChrysler AG executives said on Thursday.

Metropolitan transit agencies increasingly consider alternatives when replacing aging conventional diesel buses.

"They're all saying 'With our new bus buys, we're looking at hybrids'," said Peter Scully, chief commercial officer for DaimlerChrysler Commercial Buses.

Conventional diesel buses get about 3 miles (5 km) to the gallon of fuel, compared with 4 or slightly more for diesel-electric hybrid buses, which have generators that produce electricity as they decelerate.

The technology comes at a cost. DaimlerChrysler's diesel-electric Orion VII buses cost about US\$500,000 each, depending on how they're configured for customers, about 40 percent more than conventional diesel buses.

"It's perfect for the urban areas, for stop and go," said Andreas Renschler, head of DaimlerChrysler Truck Group and Buses, the world's biggest maker of commercial trucks, after a news conference to mark the delivery of the first of 56 Orion VII's ordered by the City and County of San Francisco.

US transit agencies consistently buy about 5,000 buses per year. New York has already opted to buy hybrids, while Atlanta, Philadelphia and Washington D.C. are testing them.

DaimlerChrysler is betting big on diesel; it doesn't plan to have a hybrid passenger vehicle on the market until 2008, roughly a decade behind Toyota Motor Corp.

Diesel engines perform more efficiently than gasoline engines in part because the fuel mix is more tightly compressed before combustion. But the heavy carbon content of diesel remains a concern for environmentalists.

Earlier on Thursday, the Chrysler Group said it would offer a diesel version of its Jeep Grand Cherokee early next year, the first full-size diesel SUV for sale in the United States.

DaimlerChrysler's first application of its Blutech diesel technology, which burns diesel fuel cleaner than regular diesel engines, will be in the Mercedes E320 rolling out this fall.

"We're improving the conventional diesel," Renschler said. "There isn't one technology solution for everything."

42. VW Diesel Interrupted

North American Volkswagen dealers next year will have fewer diesels to sell at a time when demand is growing. Volkswagen AG will change its diesel systems from an old-style mechanical fuel injection system to a new high-pressure electronic version. As a result, VW will have limited availability of Jetta and Touareg diesels during the changeover scheduled for the automaker's 2007 model year.

The diesel versions of the Golf, New Beetle and Passat will be out of VW's U.S. lineup for the 2007 model year and are scheduled to return in the first quarter of 2008, said VW spokesman Keith Price.

VW will build about 10,000 Jetta diesels for the United States between now and Dec. 31. They will be sold as 2006 models and probably will run out sometime next summer, said Price. Then VW will have just one diesel - the Touareg - in its lineup until January 2008.

Price estimated VW would import only about 1,500 Touareg diesels in 2007.

VW sells about 25,000 diesels a year in the United States.

Price said the Touareg diesel will not be available in California and four Northeastern states that have adopted California's strict emissions standards.

VW is one of a few automakers that still use a mechanical fuel injection system on its diesel engines. Most other automakers switched years ago to computer-controlled common-rail systems that make a diesel run smoother and quieter and produce less pollution.

The switchover will take almost a year because VW says it needs the time to ensure that its new system will meet stringent U.S. emissions regulations using new low-sulfur diesel fuel that will reach the United States this fall.

Traditionally, about 10 percent of VW's U.S. sales have been diesels, but demand has been growing as gasoline prices hover near \$3 a gallon.

Because there are no other diesel-powered cars in VW's price segments, the company isn't worried about losing sales during the changeover.

43. Chrysler Halts Production Of Diesel Liberty For U.S.

Toledo-built Jeep Libertys with diesel engines will no longer be made for the U.S. market, DaimlerChrysler AG announced yesterday. Despite motorists' desires for better mileage by using diesel, the company said stricter emissions standards for 2007 mean that producing the small sport-utility vehicles with that engine is no longer financially worthwhile.

The Toledo Jeep Assembly complex stopped making the vehicles for the North American market late last month, said Chrysler spokesman Dianna Gutierrez. The firm said about 11,000 diesel models have been produced since January, 2005.

The company said the change will not reduce jobs, and diesel versions will continue to be made for overseas markets, where the vehicles are called Cherokees.

"The emissions standards here are stricter versus the European market," Ms. Gutierrez said.

Chrysler "could not make a credible business case" for the investment to modify the Liberty engine, the spokesman said.

Chrysler plans to proceed, however, on making a clean-burning diesel version of the Jeep Grand Cherokee, which is built in Detroit. That engine will be supplied by Mercedes-Benz and built in Berlin.

The Liberty's 2.8-liter diesel engine gets 22 miles a gallon in the city and 27 miles a gallon on the highway, compared with 17 and 22 for a Limited with a 3.8-liter V6 gasoline engine, according to the company. The diesel is priced at least \$1,000 above the Limited.

44. U.S. EPA Formally Announces New Ultra Low Sulfur Diesel

In an effort that promises to drastically improve local air quality, the U.S. Environmental Protection Agency now requires refiners and fuel importers to cut the sulfur content of highway diesel fuel 97 percent, from 500 parts per million to 15.

When fully implemented, EPA's new ultra low sulfur diesel fuel requirements and new highway diesel engine standards will also prevent nearly 8,300 premature deaths and tens of thousands of cases of respiratory ailments such as bronchitis and asthma.



EPA regional administrator Wayne NASTRI put a white cloth at the exhaust pipe of two low sulfur diesel-powered vehicles to demonstrate the clean diesel.

At a demonstration held at an area truck stop, the EPA was joined by representatives from California Air Resources Board, Western States Petroleum Association and International Truck and Engine Corporation to announce the new fuel.

"By drastically cutting the emissions that cause soot and smog, EPA is delivering the American people cleaner engines, cleaner air and cleaner lungs, without affecting our productivity and economic might," said Wayne NASTRI, Regional Administrator, EPA, Region 9, Pacific and Southwest.

Ultra low sulfur diesel fuel enables advanced pollution control technology for trucks and buses.

Consumers will be able to purchase ultra low sulfur diesel fuel and vehicles with clean diesel technology later this year, which will produce the clean air equivalent of eliminating air pollution from 90 percent -- or about 13 million -- of today's trucks and

buses.

For California, implementation of ultra low sulfur highway diesel fuel will be complete this fall; nationally, by late 2007. When combined with full implementation of the new highway diesel engine technology by 2030, this will result in the annual reduction of 2.6 million tons nitrogen oxides and 110,000 tons of particulate matter.

In keeping with its efforts to ensure smooth implementation, the EPA is a member of the Clean Diesel Fuel Alliance, a stakeholder group dedicated to providing the public ULSD-related information.

45. Ontario Issues Tougher Standards for 15 Air Toxics

On June 7th, Ontario Environment Minister Laurel Broten proposed new standards for 15 key toxic substances as part of efforts to help the province meet air quality targets. The substances are: lead and lead compounds; cadmium and cadmium compounds; ethylene oxide; n-butanol; chlorine dioxide; chloroethane; dichloroethane; isobutanol; methyl chloride; phosphoric acid; propylene; sulfuric acid; total reduced sulfur and compounds, including hydrogen sulfide, mercaptans, and dimethyl sulfide; trimethylbenzene isomers; and toluene. Public consultations will contribute to the decisions on whether to incorporate the 15 substances into Ontario Regulation 419/05, the Ontario Ministry of Environment said in a statement. "The standards for these substances will be used primarily to assess and manage local impacts from industries on surrounding neighborhoods and communities," the ministry said.

46. Canadian Regulator Issues Emissions Warning On Oil Sands Projects

On June 1st, Canada's National Energy Board warned that the rapid pace of development of northern Alberta's oil sands poses a risk to the environment through increased greenhouse gas emissions. "The production of bitumen and synthetic crude oil emits higher greenhouse gas emissions than the production of conventional crude oil, and has been identified as the largest contributor to greenhouse gas emissions growth in Canada," it said. "Although significant progress has been made toward decreasing the intensity of greenhouse gas emissions produced by oil sands operators, additional production offsets these gains and total emissions are expected to rise."

Innovative technology could help in reducing greenhouse gas emissions associated with further development of the oil sands resources, particularly the use of carbon dioxide capture and storage technologies, the agency said. The Alberta Geological Survey has estimated that western Canadian oil and gas reservoirs offer a cumulative carbon dioxide sequestration capacity of more than 3.7 megatons, it said.

A dedicated pipeline would be needed to transport carbon dioxide from the oil sands sites to the large light oil or coalbed methane pools in the province's central area to encourage the capture, storage, and use of large volumes of carbon dioxide from oil sands projects, the Energy Board said.

The National Energy Board also pointed to the use of significant volumes of water in the extraction of bitumen from the oil sands as a key environmental issue. The production of

each barrel of synthetic crude oil from an oil sands mining operation requires the use of 2-4.5 barrels of fresh water, and planned oil sands projects would push the cumulative withdrawal of fresh water from the Athabasca River to 529 million cubic meters per year from the current level of 370 million cubic meters per year.

"Stakeholders agree that the Athabasca River does not have sufficient flows to support the needs of all planned oil sands mining operations. Adequate river flows are necessary to ensure the ecological sustainability of the Athabasca River," it said. "The accumulation of changes to the air, land, and water which results from oil sands development is a major area of concern."

ASIA-PACIFIC

47. India Oil Seeks Hike In Petrol, Diesel Prices

Faced with huge under-recoveries, Indian Oil Corporation (IOC) is seeking an immediate upward revision of petrol and diesel prices to the extent of Rs 10.50 paise per liter.

"At present prices, the company is incurring a daily loss of Rs 160 crores. IOC is facing under-recovery to the extent of Rs 10.50 per liter in petrol and diesel," IOC Chairman Sarthak Behuria told reporters. He said these prices were not sustainable, adding that the government should revise the prices upwards.

In addition to this, Behuria also urged the government to lighten the subsidy burden on account of LPG and kerosene by way of loss sharing formula along with other oil companies. In LPG, under-recovery was Rs 130 per cylinder, while that for kerosene was Rs 14 per liter.

He said IOC's Rs 7500 crore capital expenditure plans during 2006-07 would be affected if prices were not revised. "So far, all our projects are going as per schedule," he said.

To a question, he said the oil major would be able to maintain its profitability during 2005-06. The falling marketing margins would be offset by refining margins. Besides, IOC would also get a cash flow following sale of Rs 6300 crore bonds offered to it by the government. Behuria said IOC would get substantial money from dividends from other oil companies and partial sales of shares in GAIL and ONGC.

48. Bosch To Localize Advanced Diesel Technology In China

Bosch has vowed to localize its advanced diesel technology in China, amidst the trend of dieselization not only in China, but also throughout the world. The first locally developed heavy-duty diesel engine with the Bosch common rail system was launched recently, meeting Euro III emissions standards, and is upgradeable to the advanced standards of Euro IV and V with significantly lower fuel consumption and lower noise levels.

"To meet the environmental protection requirement of China and the specifications of Chinese car makers, the importance of localizing development and application is rising for diesel engine makers," said Peter Pang, president of Bosch (China) Investment Ltd. "Our technology center and manufacturing base for diesel systems in Wuxi are part of our long-term commitment to China and its booming dieselization wave," he said.

Echoing the nation's strategy to build an energy-saving society and pursue sustainable development, many domestic and foreign diesel engine makers are devoting their attention to China's market, given a time that the nation's think-tanks, non-government organizations (NGOs), as well as many experts are now urging the government to push for the development of advanced diesel-powered cars.

The combined sales value of Bosch in China hit 1 billion euros (US\$1.21 billion) last year, a 35 per cent increase over the previous year. The total investment of Bosch in China by 2005 was a recorded 620 million euros (US\$750.2 million), with a further investment of 620 million euros (US\$750.2 million) to be injected in China between 2006 and 2008.

The optimistic outlook of many foreign diesel equipment suppliers and technology owners in China has been encouraged by the nation's growing environmental protection awareness, according to Bernd Gottschalk, now president of the Germany Association of Automotive Industry. "Apart from the nation's new and favorable taxation, as well as its control policy revision for less emission cars in China, a newly-released research result of one of China's top think-tanks, the National Research Development Center of the State Council, has impressed them," he said.

The Industry Economy Research Department of the center has released a report to urge the adoption and innovation of modern diesel technology in China this month. According to the report, diesel can lower fuel consumption by 30 per cent, compared to a gasoline-powered vehicle, a decrease that could help China lessen its dependence on foreign oil by over 10 per cent by 2020. Furthermore, the report predicts that the percentage of China's diesel-powered passenger vehicles will increase from 0.2 per cent to 30 per cent by 2020, and the amount of the carbon dioxide in China's air could decrease by nearly 42 million tons. The center thus proposes that the nation encourage diesel technology innovation by diesel manufacturers through certain tax incentive policies.

"It is very encouraging for Bosch," said Rudolf Colm, member of the Board of Management of the Bosch Group.

However, diesel suppliers' outlook that the clean power will sweep China has aroused a controversial debate.

"The diesel quality in China is not high enough, and most of the diesel-powered vehicles are tractors in urban areas or some trucks now," said a senior official of Beijing Environmental Protection Bureau, "So it will take time to see the seemingly-optimistic strategy the companies are now devoting to the market to pay off." The two most serious pollution problem in China's cities at present are PM and ozone and replacing Euro 3 or Euro 4 gasoline cars with comparable diesels will exacerbate these problems.

"Despite this, we believe the diesel market is all set to boost in China," said Michael Laske, chairman of Green Diesel Initiative, an organization of auto-related companies devoting to promote diesel in China, such as Bosch, Honeywell and MAN.

"By the end of the decade we expect to see a diesel proportion of about 30 per cent in total global vehicle production," Gottschalk predicted.

49. China Wants To Slow Auto Investment

China is moving to slow investment in the auto industry, according to officials, one of several steps being taken to cool growth in sectors whose growth is outstripping demand. China's car sales in the first three months this year rose 74% from the same period a year earlier to 890,000 units, according to the data from China Association of Automobile Manufacture.

Senior officials at China's main economic planning agency said measures to prevent excess investments in the auto industry would be implemented soon. Those steps follow control measures for other industries such as ferrous alloy, aluminum, coke and cement. He Yanli, vice director of the National Development and Reform Commission's industry department said while attending a conference in Beijing.

Both foreign and domestic auto companies have been pouring billions of dollars in new investments into new vehicle factories. In March, China's Cabinet warned against overcapacity problems and said the government would limit its approvals for new auto companies.

Robust investments, sometimes in redundant capacity, are helping to keep economic growth at unsustainable levels, the government has warned. In the first quarter of this year the economy grew 10.2 percent year-on-year, the fastest pace in more than a year and well above government targets for bringing growth down to 8 percent or below.

First quarter investment in construction and factory equipment, known as fixed asset investment, rose 29.8 percent over the same period in 2005, also well above expectations.

The local auto industry began to pick up last year after slowing significantly since mid-2004 when the government took measures to curb bank lending to various sectors that it viewed as being in danger of overheating, including the auto industry.

50. Sino-SK To Cooperate On In-Use Diesel Vehicle Pollution Control

It was reported that Vehicle Emission Control Center of State Environmental Protection Administration (VECC-SEPA) and SK Corporation of Korea have joined together to develop exhaust purification devices for diesel vehicles. Recently the two parties signed the cooperative contract, and this program is supported by SEPA of China and the Ministry of Environment (MOE) of Korea.

The main pollutants from the diesel vehicles are PM and NOx. So far, domestic main exhaust purification device are the oxidation catalysts. Many domestic DOC products have problems with durability. This VECC-SK cooperation aims at researching and developing exhaust purification devices for diesel vehicles that suit the Chinese market, and applying these devices in demonstration cities.

In 2005, SEPA issued the National III, IV, and V phase emission standard for diesel vehicles. China will make efforts to have the emission control level for diesel vehicles reach Euro III equivalent standard in 2008, and to comply with the international emission control standards by 2010.

To solve the environmental pollution problem caused by diesel vehicles, SK Corporation began to research and develop the exhaust purification devices during the 90s, and accomplished the commercialization of the products early in the 21st century. During 2003 and 2004, Tokyo Japan purchased and used more than 10,000 sets of exhaust purification devices from SK; in 2005 the capital area of Korea began a demonstration program, and the market share of the SK products was the highest.

51. The Longest Chinese BRT Line Is In Operation In Hangzhou

On Apr.26th, the longest national Bus Rapid Transit (BRT) line, Hangzhou BRT No.1 line, was officially put into effect in Hangzhou. The overall length of the line is 28 kilometers with a designed average transport velocity of 28 kilometers per hour. Before Hangzhou BRT No.1 line, the longest BRT line was the "south middle axis" line of Beijing with a total length of 15.8 kilometers.

52. Guangzhou To Mass-Produce Euro III Gasoline

Mass-production of Euro III gasoline has been achieved in Sinopec Guangzhou Petrochemical Complex. It is expected that this kind of local-produced Euro III gasoline will be put into the market this year. It was reported that the company has put its low-pressure distillation equipment with an annual production capacity of 8 million tons into production, which improved its overall annual refining and processing production capacity to 13.7 million tons. The mass-production of Euro III will not only ease the tight market of processed oil around the areas of Guangdong Province, but also meet the social requirements on the fuel quality and clean production.

53. Beijing Sees Only 9 Days Of Blue Sky In April

Beijing endured a dusty month in April. The only 9 days of blue sky among the past 29 days showed the most serious air pollution in the past four years. A total of 17 days out of the past four months suffered level four or five air pollution, but there were only 9 such days in the entire previous year. More than 9000 construction sites were examined and nearly 3000 ordered to take measures to control the dust from the working sites. At the same time, 13,700 more tons of water will be used to restrain the floating dust on the streets.

Sandstorms from Mongolia and North China's Inner Mongolia Autonomous Region brought floating dust pollution to the city seven times in April, said Pei Chenghu, deputy director of the bureau. Beijing's urban area saw 60 days of blue sky this year, which is 16 days less than the same period last year.

Pei said all the relevant departments in Beijing launched dust and pollution prevention and control activities to improve the capital's air quality.

Viewing from the air quality records in the past few years, no floating dust has occurred in May, and the official said he hopes Beijing will have at least 20 days of blue sky in the next month.

54. Beijing Drivers' Car-Less Day

MORE than 200,000 members of Beijing's driving associations are being asked to leave their cars at home at least one day a month in the hope of improving air quality in the capital city.

More than 100 Beijing-based drivers' clubs jointly launched the campaign calling on local drivers not to use their cars for at least one day every month. The goal is to ease traffic jams, reduce noise and improve air quality.

There are more than 2.6 million motor vehicles in Beijing and the number is increasing by more than 1,000 a day, said Du Shaozhong, deputy head of Beijing Municipal Environmental Protection Bureau. Motor vehicle emissions are the leading cause of Beijing's air pollution, Du said. According to the city's environment department research, Beijing's vehicles spew out 3,600 tons of pollution each day.

The "no car day" campaign comes as Beijing tries to achieve 238 "blue sky days," or days with fairly good air quality this year, five days more than last year.

Beijing launched the program, called "Defending the Blue Sky," in 1998, when the city had only 100 days of blue sky. The city has increased the number of Blue Sky days by moving industry from the city and tightening vehicle emission requirements.

55. Thailand Drops Duties on Natural Gas Engines

On May 2nd, the Thai government lifted import duties on natural gas engines as part of an effort to promote clean vehicle technologies and reduce the country's dependence on fossil fuels. The Cabinet announced in a statement that it had approved a proposal from the Ministry of Finance to drop the 10 percent import duty levied on new natural gas engines. It noted the move would also apply to imports of used natural gas engines, though these will only be duty-exempt for two years. Cabinet officials have also asked local energy retailer PTT to increase the number of natural gas stations in Thailand and instructed state banks to provide preferential loans to taxi drivers seeking to modify their vehicles to run on natural gas. Minister of Finance Thanong Bidaya told reporters after the Cabinet announcement that the decisions would help the country deal with high oil prices and promote awareness of energy conservation.

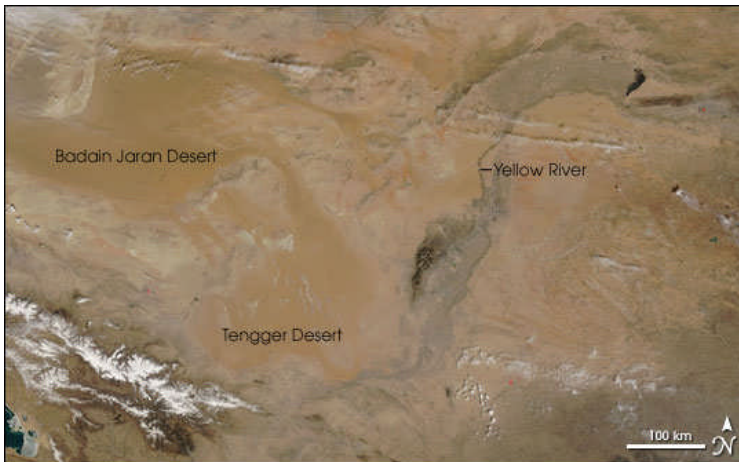
56. Environment in the 11th Five Year Plan Still Under 1% of GDP

Professor Ma Zhong from China's Renmin University suggested that China's central and local governments should increase their environmental protection investments under the 11th Five Year Plan (2006-2010). While the economy is expected to double during the 11th Five Year Plan, and environmental investment will increase 85% as compared to the 10th Five Year Plan (2001-2005), the investment remains at around 1% of GDP.

57. Beijing: Worst Air Quality Record Compared to the Same Period for Past Six Years

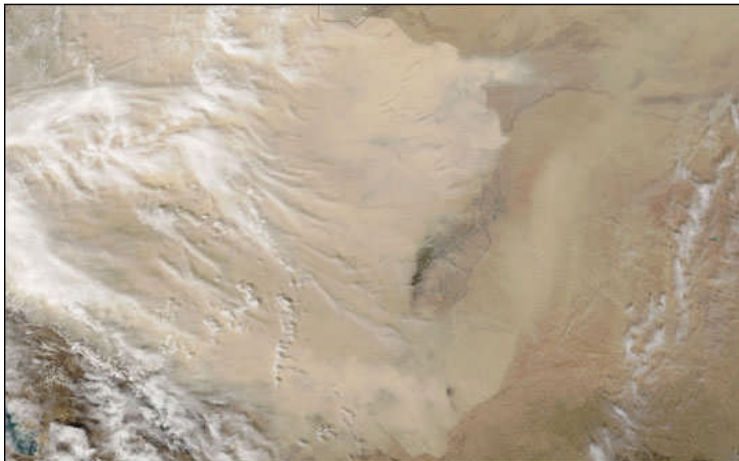
Beijing experienced five days of continuous sand storms in mid-April, marking its worst

air quality record when compared to the same time period for the past six years.



April 7, 2006

The Air Quality Index (AQI) was at 500, the highest level measured by SEPA, for two of the five days and triggered health warnings of emergency conditions. Ten provinces were affected in northern China. A major source of dust is from Hunshandak Desert in Inner Mongolia, which is approximately 200 km northwest of Beijing. This is exacerbated by the dust caused by thousands of construction projects around Beijing.

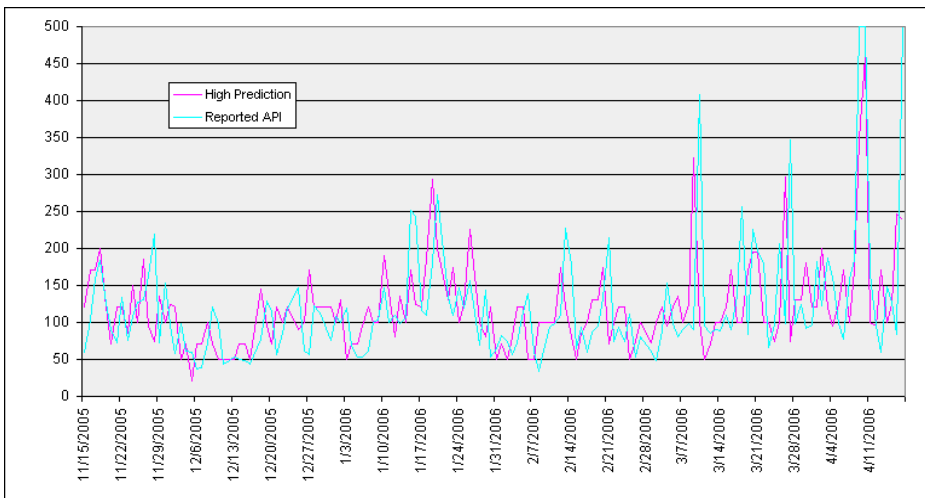


April 10, 2006

58. Beijing: API for Most Recent Six Months

Beijing's air quality forecast can be compared to the actual measured Air Pollution Index (API) for the most recent six months in the attached Graph 1 shown below. The graph shows that forecasts fall short of actual measured

pollution on heavily polluted days. China's State Environment Protection Administration (SEPA)



considers API below 100 as good air quality. Because 500 API is the highest number reported on the index, actual API on those days may be higher.

China's API is similar to that used in the U.S., however, the U.S. EPA air quality index (AQI)

measures more pollutants and is more accurate. Over 100 AQI in the U.S. is considered unhealthy.

59. Incentives Needed To Fix Ageing Car Fleet in New Zealand

Cash grants to people buying fuel efficient, low emission cars will provide the quickest way of cleaning up the country's ageing car fleet, the New Zealand Business Council says.

Sales of small cars are being pumped up by record petrol prices, and some claim the market has spoken.

However, the country was warned today that its car fleet is actually getting older and emission standards on new and imported cars need to be upgraded.

"We have become the world dumping ground for high emission used imports," the Chief Executive of the New Zealand Business Council for Sustainable Development, Peter Neilson says.

"The average age of a used import is actually going up, and is now eight years. New Zealand deserves a world class fleet. Why should we import vehicles you wouldn't be allowed to drive in Europe, Japan or in many states of the United States? Every time we take in a high emission cast-off we're adding to our Kyoto carbon bill.

"We need to phase in Euro IV-equivalent emission standards, and quickly introduce incentives for buyers of fuel efficient, low emission cars both new and used imports - to clean up the fleet. We also need cash incentives to make low emission, fuel efficient cars economic for companies to buy. At the moment, petrol would need to hit \$4 per liter, or a car travel 80,000 km a year, to make a hybrid competitive.

"Our research indicates that if we bring in cash grants, we will add about another 86,000 fuel efficient, low emission cars to the fleet each year. If we do that for five years we can switch a substantial part of the fleet to climate friendly cars and the benefits will flow through for the 13 to 20 year life of each vehicle."

The policy to provide cash grants to buyers and penalize those buying gas guzzlers, using 12 liters per 100 kilometers or more had solid nationwide support in a UMR poll. Some 61% back cash grants for new climate friendly cars, and support stays solid at 55% for the policy involving a \$2000 penalty for gas guzzlers.

The policy proposal is now being considered as part of the Government's climate change review.

The Business Council whose 51 members' \$33 billion in annual sales equate to 28% of the gross domestic product also wants emission standards raised to the latest European standards on all vehicles, including imports.

"We can make a quick, relatively easy and painless tackle on transport emissions the second highest source of greenhouse gas emissions in New Zealand," Mr. Neilson says.

"We can cut people's petrol bills by up to half and improve air quality. Already 400 people are dying prematurely each year from diseases caused by fuel particles, and treating people suffering from illnesses caused by vehicle emissions is costing \$400 million a year. It makes sense to go for a climate friendly fleet that also improves our health. Cutting the Kyoto carbon bill is a bonus."

60. Air Pollution Levels Breached In New Zealand's Mid-South Island

High levels of air pollution have been recorded in Christchurch, Timaru and Kaiapoi for the first time this winter. The Canterbury Regional Council announced that the air quality guidelines were exceeded.

Timaru had the highest reading, with a 24 hour average of 68 micrograms of suspended particulate per cubic meter of air. The National Environmental Standard allows one day with a reading greater than 50 per year.

The Regional Council says this standard is regularly breached in some parts of Canterbury, and the target is to reduce the number of high pollution days to just one, by September 2013.

61. Shanghai Buses will Use New Fuels

Before the end of this year there will be a demonstration bus line with the buses fueled with dimethyl ether (DME), and by 2010, there will be more than 1000 of these vehicles in use during the Shanghai International Exposition. In May 2005, China's first DME fueled buses, jointly developed by Shanghai Jiaotong University, Shanghai Automotive Industry Corporation and Shanghai Huayi Company, were put in use. After almost one year's operation, there is still no black smog and the noise is also lower than normal buses. The inspection result from the National Heavy Vehicle Quality Supervision and Inspection Center and National Vehicle Production Quality Supervision and Inspection Center showed that this new bus has sufficient power and the noise inside the bus is 2.5 dB (A) lower than other similar models. The emission of this bus is much better than Euro III emission standard, and the carbon emission is zero.

62. China Raises Gasoline, Diesel Prices Amid Soaring World Oil Costs

China's government has raised state-set gasoline and diesel prices by about 10 per cent in response to soaring world oil prices. It was the second time this year the government has raised fuel prices. But prices at the pump are still much lower than in the United States or other countries, at about 4.20 Yuan (52 cents US) per liter.

China's main planning agency, the State Development and Reform Commission, imposed the hike because "current prices of processed oil are far below that on the international market, which is not helpful to oil refineries in China and to ensure adequate supplies," the official Inhaul News Agency said.

But the government has resisted appeals by economists to let the market set prices, afraid that a big jump would ignite inflation and cause social unrest.

China is one of the world's top three oil consumers, along with the United States and Japan. But the government has tried to insulate the economy from soaring prices by requiring Chinese oil companies to absorb much of the increase.

Price caps have caused heavy losses for refiners, discouraging them from investing in new refining and distribution networks. That has led to gas and diesel shortages in scattered areas.

After the latest increase, local authorities were told to take steps to "ensure the income" of taxi drivers, who will be hit hard by higher prices, Xinhua said.

63. Taiwan Initiates Biofuel Bus Pilot Program

On April 22nd, Taiwan formally unveiled a pilot program to introduce buses powered by biofuels in Taipei and Kaohsiung, two of the island's largest cities. According to the Bureau of Energy, biodiesel can be used as a pure fuel or blended with petroleum in any percentage. The bureau and the Council of Agriculture (COA) are now jointly working out strategies to boost the production of biodiesel. COA in 2005 designated three sites covering 90 hectares of land to grow soybean, sunflowers, and other oilseed crops as part of the program. The area will be expanded to 2,000 hectares this year. Last June, the government set an annual production goal of 100 million liters of biodiesel by 2010. Energy officials said the government plans to introduce compulsory blending of biofuels in 2008. The Taiwan Environmental Protection Administration has made subsidies available for local governments that are interested in adopting biodiesel for garbage trucks. Currently, 780 garbage trucks in 13 of 25 Taiwan's jurisdictions are powered by biofuels.

64. Pollution, Greenhouse Gases and Climate Clash in South Asia

A new analysis by scientists at Scripps Institution of Oceanography at the University of California, San Diego, has produced surprising results showing how air pollution, global warming-producing greenhouse gases and natural fluctuations in the climate may have a range of significant consequences on the world's most populous region. In a study published in the May 15 issue of the American Meteorological Society's Journal of Climate, Chul Eddy Chung and V. Ramanathan of Scripps Oceanography describe their analysis of sea-surface temperatures and a range of other data from the Indian Ocean region. In the analysis, they found that cooler-than-normal temperatures in the northern part of the ocean have weakened the natural climate circulation and monsoon conditions in the region, resulting in reduced rainfall over India and increased rainfall over the Sahel area south of the Sahara in Africa.

As the tropical Indian Ocean heats up due to greenhouse gases, the authors say, the northern Indian Ocean, which is adjacent to highly populated regions, is not warming as quickly as the rest of the ocean, resulting in increased drought conditions that could hold repercussions for more than 2 billion people in South Asia. These conditions impact a range of industries and resources, from agriculture to freshwater availability.

The culprit behind the changes, the authors argue, is an ongoing and intricate clash between air pollution, greenhouse gases and naturally produced climate changes.

"It appears that the whole tropical region in this area is being pulled in different directions," said Ramanathan, director of the Center for Clouds, Chemistry and Climate at Scripps. "The observed trend of reduced sunlight reaching the Earth's surface, with compensating solar heating aloft from the pollution, also called the 'brown haze,' appears to be masking the greenhouse warming in the northern Indian Ocean, while the greenhouse warming continues unabated in the southern Indian Ocean. We are starting to see that the air pollution affects sunlight and is potentially having a major disruption of the rain patterns, with some regions getting more and some less."

In a separate but related study published in 2005 in the Proceedings of the National Academy of Sciences (PNAS), Ramanathan and Chung, along with their colleagues at the National Center for Atmospheric Research, the University of Washington, and in India and Switzerland, found through simulations that tiny particles of air pollution called aerosols are "masking" the warming effect from greenhouse gases.

"The greenhouse gases are pushing in one direction, warming the ocean and trying to make more rain, and the aerosols are pushing in another direction for cooler oceans and less rain. The net effect is to drive the monsoon rain system away from South Asia into the equatorial and southern oceans," said Ramanathan. "Some years the aerosols might win and in some years the greenhouse effect may win. So we are concerned that in coming decades the variability between the two will become large and it will be difficult to cope with rapid changes from year to year."

Both studies support the initiatives of Project Atmospheric Brown Clouds (ABC), a Scripps Oceanography-based international program, sponsored by the United Nations Environment Program (UNEP), investigating how dust and pollution particles are transported and their impacts on the environment, climate, agricultural cycles and quality of life. Project ABC participants from China, India, Japan, Korea, Sweden, Thailand and the United States are setting up air pollution/climate observatories in the Indo-Asia-Pacific region in an aim to integrate science with impact assessments to provide scientific information to decision makers.

In addition to Asia, similar pollution clouds, or brown haze clouds, can be seen in various regions around the world, including over major urban locations such as Los Angeles and Denver in the United States.

"About five to 10 years ago we used to think about pollution as an urban problem," said Ramanathan. "Now we have discovered, with new observations including satellite data, that these pollution clouds travel quickly and can cover an entire ocean. Scientists have shown that in a matter of five days pollution traveled from China to the United States, and in a matter of three to four days it can travel from the U.S. to Europe."

The monsoonal rainfall over India has decreased by approximately five to eight percent since the 1950s, Chung and Ramanathan note in their Journal of Climate paper. Many of the field observations referenced in the study were made during the Indian Ocean Experiment (INDOEX), a \$25 million international campaign funded by the National Science Foundation, the U.S. Department of Energy and the National Oceanic and Atmospheric Administration (NOAA), and led by Scripps in the spring of 1999.

"These remarkable studies are a further demonstration that the earth's climate, the average day-to-day weather conditions that profoundly affect virtually all sectors of

human activities, hangs in delicate balance between natural and man-made forces," said Jay Fein, program director in the National Science Foundation's Division of Atmospheric Sciences. "To adequately understand the processes that can throw our climate out of balance is among the most intellectually and technologically challenging issues facing mankind today."

65. Study Says Air Pollution Kills 1,600 In Hong Kong Each Year

About 1,600 people are killed each year in Hong Kong by illnesses related to air pollution, according to a new study released by Hong Kong universities. The research results were announced as Hong Kong's worsening air quality has become one of the most hotly debated topics in the city. The sky is frequently obscured by a haze created by traffic, coal-burning power plants and factories in southern China.

The study analyzed records for hospital admissions and deaths from 1995 to 2000, said one of the researchers, A.J. Hedley, an environmental and public health expert at the University of Hong Kong. The number of admissions and deaths rose as indicators showed that air quality worsened, according to the study's statistical analysis. The research was done by the University of Hong Kong, Chinese University, the University of Science and Technology and the think tank Civic Exchange².

Hedley said in a presentation that pollution played a role in ``1,600 deaths a year, mostly from heart attacks, stroke, pneumonia and other lung diseases." He added that 6.8 million doctor visits are caused by smog-related respiratory problems.

Researchers said air quality improvements could bring benefits of more than HK\$20 billion a year. In addition, 64,000 hospital "bed days" and 6.8 million family doctor visits could be avoided, findings show.

"If it was an infectious disease, there would be a crisis," professor Anthony Hedley from Hong Kong University's School of Public Health said. "This is a medical emergency." Unlike infectious diseases, the harm caused by pollution is "unobservable" but this is affecting the health and lung growth of young people, Hedley added.

The study says Hong Kong has poor visibility 45 percent of the time. The city is worse than Los Angeles, London, New York and Paris in terms of respirable suspended particulate air pollution levels.

Researchers counted the number of medical "events" - hospital admissions, doctor consultations or deaths - on a daily basis over a period, and looked at the numbers besides data on the amount of pollutants in the air.

They estimated that HK\$1.5 billion could be saved per year in tangible health-care costs; HK\$500 million could be saved in productivity lost due to pollution-related illness and HK\$19 billion in intangible costs, including the value of lost lives and the willingness to pay to avoid illness.

Although the Hong Kong government has said it is trying to clean up the environment,

1. ² "Air Pollution: costs and paths to a solution - Understanding the connection between visibility, air pollution and health cost, in pursuit of accountability, environmental justice and health protection"

Hedley said its actions on air pollution "can't be characterized as sufficient by any measure." He added: "It can't be regarded as sufficient by any criterion, air pollution is getting worse and we have been going backward for several years." The report states that roadside pollution levels constantly exceed local air quality objectives.

Civic Exchange chief executive officer Christine Loh Kung-wai said that comprehensive approaches were needed to improve air quality, including cleaner fuels for transport and manufacturing. "Although Hong Kong's air pollution includes regional influences, Hong Kong's transport pollution has a much more direct impact on the health of citizens at ground level, and much can be done to improve this," she said.

Chinese University professor Wong Tze-wai said that Hong Kong's air quality objectives were based on the 1987 World Health Organization Air Quality Guidelines for Europe and have not been revised since. "They are clearly outdated and offer no protection to the health of Hong Kong's citizens," Wong said. "The WHO has proposed new guidelines which will come into effect in September 2006 and the HKSAR government needs to revise its AQOs [air quality objectives] to take these new findings into account, as other countries throughout the world have already done."

Citing the government's argument that it might be meaningless to set an unattainable objective, Wong said the design of the targets depends on health rather than whether it could be reached.

66. Environmentally Friendly Indonesian Cars Need Cleaner Fuels

"Jakarta is the third most polluted city in the world, after Mexico City and Panama. And vehicle emissions account for 80 percent of the pollution," Jakarta Governor Sutiyoso said last year. People living and working in Jakarta have to pay dearly for this pollution. Research indicates that the health cost of Jakarta's air pollution was estimated at US\$220 million in 1999, and the amount has been increasing in line with the increase in the number of vehicles traversing the capital every day.

The Jakarta administration has made several efforts to improve the cleanliness of the capital's air.

Last year, the administration issued Bylaw No. 2/2005 on air pollution control, which among other things obliges all private car owners to carry out emissions tests on their vehicles twice a year and public transportation vehicles to use natural gas. Yet, the administration is still facing several obstacles to fully implement the regulation, including the lack of equipment for public transportation vehicles to switch from oil-based fuel to natural gas.

The government has also tried to push the local automotive industry to apply environmentally friendly technology in their products. In 2003, the state minister for the environment issued Decree No. 41/2003 on the emission threshold for exhaust gases of new motorized vehicles and motorized vehicles under production. The decree requires car manufacturers to apply technology based on the Euro-2 standard in the case of exhaust emissions.

"Under the ministerial decree, new-type cars produced since early 2005 must have all

passed an emission test based on the Euro-2 standard. Meanwhile, old-type automobiles that are reproduced will be given a chance to conform to this standard up to January 2007," Didin Khaeruddin, an official at the State Ministry for the Environment, said.

Chairman of the Indonesian Association of Indonesian Automotive Manufacturers (Gaikindo), Bambang Trisulo, said that the environment and energy were hot topics of discussion in the international automotive industry. "In Asia, an awareness has also developed about the use of clean energy, although there are still some constraints in respect of regulations and implementation," he noted.

According to Bambang, Indonesia's automakers are now ready to produce motorized vehicles that meet the Euro-2 standard. Yet, they face an obstacle in the fact the type of fuel suitable for such vehicles is not yet widely available on the domestic market. "We hope that unleaded fuel can be supplied to all regions so that it will always be easily available to users of these motorized vehicles," Bambang said. As the unleaded gasoline that is suitable for vehicles using the Euro-2 standard is still in short supply, the ministerial decree on emission thresholds for new-type motorized vehicles and motorized vehicles under production cannot be properly enforced.

Late last year, PT General Motors Indonesia launched New Aveo. Company sales and marketing director Antonio Zara said the car was yet to meet the Euro-2 standard. One of the considerations for the firm in deciding to launch the car was the availability of the right fuel for the car. "The Euro-2 standard requires a car to use a catalytic converter. This instrument necessitates the use of unleaded fuel," he said during the launch of New Aveo in Jakarta. He said unleaded gasoline was yet to be evenly distributed throughout Indonesia.

Zara maintained that the car does not violate the regulation that requires that the Euro-2 standard be applied to new cars. "The New Aveo is not an entirely new car. It is an old type that has undergone some minor changes. So it is not compulsory for the car to meet the Euro-2 standard," he said.

While the production of vehicles that meet the Euro-2 standard still faces problems, Jakarta's 2005 bylaw on air pollution control has apparently improved public awareness about the emission of exhaust gases from private cars. Carmakers now run their own emission test facilities.

Sutrisno Lesmono, general manager of after-sales service and spare parts at PT Nissan Motor Indonesia, said that as of November 2005, Nissan workshops had officially provided an emission test service for owners of Nissan cars and other makes. "We are applying a tighter standard than what the regional administration has set. For example, our CO content standard is 1-2 percent, far below the regional administration's standard of 4 percent," he said, adding that a car was no longer environmentally friendly with a CO content of 4 percent in its emissions.

Didin is pleased with carmakers' efforts to help keep the environment clean. "Now that an emission test is compulsory, the public, hopefully, can become more aware of the danger posed by exhaust gas emissions," he said.

To ensure that the regulation that uses the Euro-2 standard as its reference will not

simply collect dust, Didin hopes that relevant government agencies will encourage greater distribution of unleaded fuel. "January 2007 is close at hand. Make sure that the effort to reduce air pollution is not constrained by the availability of the right fuel," he said.

67. China Estimates \$200 Billion Annual Damage From Pollution

Pollution and environmental degradation cost China more than \$200 billion every year, equivalent to one-tenth of the country's economic production, according to a new government report. On June 5th, Zhu Guangyao, deputy director of China's State Environmental Protection Administration, told a news conference that the country's environmental problems are "grave," are getting worse, and that there is no cause for optimism.

His comments coincided with the release of a white paper from China's State Council outlining the country's environmental protection efforts over the past decade.³ The paper is similarly bleak but promises changes. "The discharge of major pollutants has surpassed the sustaining capacity of the environment," the paper stated. "Water, land, and soil pollution is serious, and pollution caused by solid wastes, motor vehicle emissions, and not-easily-degradable organic matter is increasing."

The white paper also outlines the government's next five-year plan for environmental protection, setting a goal of reducing overall pollution discharges by 10 percent and lowering energy consumption as a percentage of gross domestic product by 20 percent by 2010. According to the white paper, China will "change from emphasizing economic growth but ignoring environmental protection to emphasizing both environmental protection and economic growth."

China's environmental protection industry generated 457.21 billion Yuan (57 billion U.S. dollars) in revenue and 39.39 billion Yuan (4.9 billion U.S. dollars) in profits in 2004, according to the white paper which notes that China actively promotes the industrialization of environmental protection.

By the end of 2004, China had 11,623 enterprises, each with an annual sales income of more than 2 million Yuan (250,000 U.S. dollars), engaged in environmental protection, employing a total of 1.595 million workers.

During China's Tenth Five-Year Plan period (2001-2005), the State organized and conducted the national key "water pollution control technology and treatment project," and carried out the research and development of such pilot programs as motor vehicle emission purification, desulfurization of gas discharged by coal-fueled boilers, disposal of solid wastes, clean production of key sectors and other key technologies.

68. China Urged to Back-Pedal on Anti-Bike Policy

A Chinese minister has slammed city planners for pandering to private car owners and ignoring the needs of cyclists, saying China should remain the "kingdom of bicycles", according to state media. The comments by Construction Ministry Vice Minister Qiu Baoxing follow the release of a World Bank report calling on China to develop its public

2. ³ "Environmental Protection in China (1996-2005)"

transport system rather than just build more highways for cars.

"The large army of bicycles on the streets of Chinese cities amazed the West when China first opened to the outside world in early 1980s," Xinhua news agency said. But the number of bikes -- once totaling some 500 million -- had plummeted as rapidly as private car ownership had expanded, Xinhua said.

Explosive growth of motor vehicles in Chinese cities had caused severe traffic jams and posed a grave challenge to the country's energy security and urban development, Xinhua quoted Vice Minister Qiu as saying.

Qiu lamented that some Chinese cities were cutting back on bicycle lanes in order to make more room for cars, even as some Western cities were building more lanes for cyclists. He said his ministry firmly opposed the practice and had ordered cities to restore the lanes.

The number of motor vehicles on China's roads had risen 20 times between 1978 and 2004, Qiu said, adding that car numbers could increase five fold by 2020. In 2004, China had 27 million motor vehicles, he said, and that number could reach 130 million in 15 years.

Despite worsening traffic jams and pollution, Qiu said that the government wouldn't restrict car ownership but might discourage downtown driving by levying fees.

China expects to put a further 6 million cars on the road in 2006. It is estimated in Beijing alone, 1,000 extra cars are added to the city's clogged arteries every day.

69. Air Pollution Is Turning China Dry

Chunsheng Zhao from Peking University in Beijing and his colleagues studied 40 years' worth of rainfall records along with six years' satellite measurements of aerosol particles. Between 1961 and 2000 they saw a decrease in rainfall of up to 0.4 per cent per year over eastern central China. The six years for which there is satellite data show a strong correlation between the lower rainfall and an increase in aerosol particles.

The increase in pollution affects rainfall in two ways. First, extra particles increase the number of tiny cloud droplets, but these repel each other, discouraging the formation of the heavy droplets needed for rain. Second, black sooty particles absorb sunlight, raising the temperature in the upper atmosphere. This reduces the amount of mixing with the lower atmosphere, which decreases the likelihood of clouds forming.

Already the region has been feeling the impact of reduced rainfall, and the situation for agriculture looks set to get worse. "Clean air action is urgently needed," Zhao says.

70. China's Drive to Downsize and Clean Up its Cars

Worried about growing reliance on imported oil but dependent on the jobs and revenue of the auto industry, China is trying to make the cars clogging its cities and choking their skies smaller, more efficient and cleaner. Following is a summary of some of the key issues and measures being taken to tame fuel consumption and clean skies in the

world's third-largest vehicle market:

Fuel Economy

Beijing brought in its first fuel economy standards, which regulate how far a car must be able to travel on a liter of gas, in 2005. These were roughly in-line with current production standards and presented little challenge to automakers, but the second phase, which comes into force in 2008, includes some of the toughest standards in the world.

It sets standards for individual models by weight rather than across a firm's entire fleet, as the United States does. Washington has not raised car fuel economy standards for 16 years.

Engine Size

Beijing in March used its most significant changes to consumption taxes in 12 years to crack down on polluting and wasteful cars. Under the new regime, which came into effect from April 1, 2006, the largest-engined cars face tax rates nearly seven times higher than the smallest ones.

Gas-guzzling motorcycles will also face steeper tolls.

Changed taxes:		New	Old
Cars:	0.0-1.0 liters	3 pct	3 pct
	1.0-1.5 liters	3 pct	5 pct
	1.5-2.0 liters	5 pct	5 pct
	2.0-2.2 liters	9 pct	5 pct
	2.2-2.5 liters	9 pct	8 pct
	2.5-3.0 liters	12 pct	8 pct
	3.0-4.0 liters	15 pct	8 pct
	Above 4.0 liters	20 pct	8 pct
Motorcycles:	Up to 0.25 liters	3 pct	10 pct
	Above 0.25 liters	10 pct	10 pct

Engine Emissions Standards

China will introduce emissions controls equivalent to Euro III standards in 2007, covering pollutants including nitrogen oxides, carbon monoxide and hydrocarbons.

Euro IV standards will follow in 2010, regulations posted on the State Environmental Protection Agency Web site stated.

In big cities like Beijing and Shanghai Euro III engines are widespread, and some domestic car makers including Guangzhou Honda Automobile Co. Ltd are already making cars that meet Euro IV standards.

But many small local manufacturers are unable to meet the Euro III standard.

Fuel Type (Diesel V. Gasoline)

China has traditionally favored gasoline for passenger vehicles, with some cities even banning diesel cars because of their reputation for being noisy and dirty.

Technological advances eliminated these problems, however, and with fuel economy around 30 percent better than gasoline engines, and lower emissions of greenhouse gas carbon dioxide, officials are now calling for regulations to promote diesel.

But the quality of diesel is a problem, some auto firms say, and advanced engines function poorly without advanced fuel.

Fuel Pricing

Beijing has been toying for several years with the idea of a European-style consumption tax to encourage conservation.

But the three-year rally in crude oil prices appears to have led officials, already dealing with public discontent over rising prices, to shelve plans until a time when the extra cost to drivers might be less politically painful.

The government has also been reluctant to let markets control consumption, capping diesel and gasoline prices because of worries costly fuel could spark unrest or inflation.

It held fuel prices steady for eight months from the end of last July, but moved closer to international levels with two increases this year, which add up to a total rise of 15 percent.

Alternative Technology

China is working on developing its own hybrid and fuel cell technology but research is in the early stages and could take years to bear fruit.

Beijing has three trial fuel cell buses and Toyota's hybrid Prius car is on sale, although priced more than 60 percent higher than in North America and Japan.

Beijing's measures may not help it cope with oil demand expected to expand at 5 percent or more over the next five years, twice the US rate, but could prevent a big-car culture from fuelling even faster growth in the decades to follow. China burns about as much gasoline as Japan but has 10 times more people, and transportation is expected to account for over 60 percent of oil use by 2020 versus around 30 percent now.

Gasoline in the Chinese capital costs about \$2.40 a gallon, around 50 cents less than the average retail price in the United States last week but half the price in much of Europe. The handful of increases from the start of 2005 -- totaling around 33 percent, while crude oil climbed around 60 percent over the same period -- have yet to make a dent in fuel consumption. China's implied demand for gasoline rose 10.2 percent in the first four months of this year to 1.2 million bpd, while diesel consumption climbed 7.0

percent to 2.3 million bpd, data showed.

71. India's Central Pollution Control Board Touts Major Achievements

The concern for environmental quality has been an important issue in the backdrop of increasing urbanization, industrial and vehicular pollution. The Ministry of Environment & Forests has adopted a policy for abatement of pollution, which provides multi-pronged strategies in the form of regulations, legislation, agreements, fiscal incentives and other measures to prevent and abate pollution.

As a result, there is a significant decrease in air pollution levels in the city of Delhi. Various integrated approaches have been taken by the Central Pollution Control Board (CPCB)/MoEF for air pollution control. They include use of clean fuels like CNG as a transportation fuel, unleaded petrol, lower sulfur gasoline and fuel, low benzene petrol and beneficiated coal in Thermal Power Plants as well as installation of air pollution controls.

Other activities include:

- Three hundred thirteen (313) air quality monitoring stations and one thousand (1000) water quality monitoring station have been commissioned.
- The Ministry has started the monitoring of fine particulate matter (PM10) in a large number of stations and also initiated monitoring of very fine particles (Respirable Suspended Particulate Matter or PM2.5) which has significant health impacts in Delhi, Kolkata, Agra, etc. Source Apportionment Studies in 17 cities have been started for RSPM in which advance modeling and monitoring techniques are being used.
- Continuous Air Quality Monitoring Stations have been set-up in Delhi, Hyderabad, Chennai, Bangalore, Agra, Lucknow, etc. Another 12 continuous monitoring stations are being set-up in Delhi, Chennai, Bangalore and Lucknow within next three months.
- Corporate Responsibility for Environment Protection- CREP recommendations are being implemented in 17 categories of highly polluting industries. Significant reductions of air and water pollution have been achieved in industrial sectors of Cement, Iron & Steel, Large Pulp & Paper, Chlor Alkali, Aluminum and Non Ferrous Metallurgical Industries.
- The Ministry has also Enforced Bharat Stage II and Bharat State III norms (akin to EURO II and EURO III norms) for new vehicles in 11 cities for control of air pollution.
- 126 common bio medical waste management facilities have been commissioned under a public private partnership (PPP) mode. These facilities are equipped with autoclave/microwaves, incinerators and other necessary equipment as per the guidelines of CPCB.
- More than 115 Common Effluent Treatment Plants - CETP have been commissioned under the PPP mode, to solve the water pollution problem from small sector industries located in clusters.
- A National Trace Organic Laboratory is being set-up in CPCB consisting of GCMS(HR), GC-FIB, XRF, ION Chromatograph, OCLEC Analyzer etc. These sophisticated laboratories will have the facility to monitor the VOC, PCB, Hazardous Air Pollutants, and Dioxins/Furans etc.

- A trial run was carried out for use of high calorific value to hazardous waste as fuel in cement kiln. A policy is being framed for Hazardous Waste Management. A Transport, Storage, Disposal Facility - TSDF is being set-up in PPP mode. TSDF have already been set-up in Maharashtra, Gujarat, Andhra Pradesh, Kerala and other states. It is in an advanced stage of commissioning.
- The Board promoted clean technology for pollution control from different industries. Prominent among these are Membrane Cell Process in place of Mercury Cell Process in Caustic Soda industry, Cyanide free electroplating industry, Chlorine from bleaching in Pulp and Paper industry, DCDA process sulfuric acid manufacturing, Catalytic hydrogenation in manufacturing paracetamol, Gas based foundry, glass and ceramic industry in polluted areas, Dry coke quenching for coke making, Non recovery type coke oven, Super critical boilers for power generation and Waste heat recovery boilers in sponge iron plant.

72. Indian Report Describes Lack of Standards on Range of Air Pollutants

Millions of Indians breathe in carcinogenic chemicals daily, sometimes in concentrations thousands of times higher than levels considered safe, according to an independent report released on June 3. The report, Smoke Screen: Ambient Air Quality in India, from Community Environmental Monitoring (CEM) in Madras, says people exposed to highly toxic gases produced at factories, waste incinerators, and busy intersections are "condemned to breathe poisons because regulators and policy makers [have] failed to do their jobs."

CEM says India still does not have safe standards for dozens of airborne toxins despite a September 2004 order from a committee of experts set up by the Supreme Court.

However, a pollution control board official argues that the agency was making progress on the issue. "We are working on it," said Dr. B. Sengupta. "Some of the emission standards have been set," and state pollution control boards "have been taking actions to implement those standards."

The report documents at least 45 chemicals, including 13 substances known to cause cancer in humans and animals, found in 21 air samples at 13 locations across India between 2004 and 2006. Twenty-eight chemicals were found at levels that were thousands of times higher than U.S. Environmental Protection Agency screening levels for residential area air.

Some of the "known or suspected human or animal carcinogens" that were found in at least five of the 21 samples included methylene chloride, chloroform, trichloroethene, benzene and 1,2-dichloroethane. Other chemicals detected at dangerous levels were acetone, toluene, carbon disulphide, isopropyl alcohol, ethanol, n-hexane, hydrogen sulfide, methyl mercaptan, m,p-xylene, 2-butanone, and acrolein.

73. Petrol, Diesel Prices Hiked In India

The Indian government has announced a price hike of 4 Rupees (8.8 US cents) for a liter of petrol and 2 Rupees (4.4 US cents) for a liter of diesel in the aftermath of soaring

crude oil prices on global markets.

The decision was taken at a cabinet meeting chaired by Indian Prime Minister Manmohan Singh, according to Indo-Asian News Service.

The Indian petroleum ministry has sought the price hike as global crude prices have scaled over 71 U.S. dollars per barrel in recent times. The Indian government, however, had dithered in taking a final decision. The retail prices of petroleum products in India have been frozen since September last year.

74. Air Pollution Exceeds Safe Limits in Pakistan

Pakistanis are not only exposed to political and economic risks, but also the air they breathe and the water they drink are dangerously polluted. The Economic Survey of Pakistan 2005-06 said the air pollution levels in Pakistan's most populated cities were among the highest in the world and were climbing, causing serious health issues.

"The levels of ambient particulates — smoke particles and dust that cause respiratory disease — are generally twice the world average and more than five times as high as in industrial countries and Latin America," said the survey report.

Various surveys showed that the air pollution levels in cities had either crossed safe limits or reached the threshold values, said the report.

The most serious issue of air quality in Pakistan is the presence of excessive suspended particulate matter (SPM) in the ambient air. The major sources of SPM are vehicles, industry, burning of solid waste, brick kilns and natural dust.

The key factors contributing to air pollution in Pakistan are: a) rapidly growing energy demand; b) increasing industrial and domestic demand; and c) a fast growing transport sector.

In the cities, widespread use of low-quality fuel, combined with a dramatic expansion in the number of vehicles on roads, has led to significant air pollution problems. The number of vehicles has jumped from 0.8 million to about 4.0 million within 20 years, showing an overall increase of over 400 per cent.

Since 1980, a maximum growth has been seen in two-stroke vehicles, such as delivery vans, which are approximately 1,751 per cent, followed by motor cycles 541 per cent and rickshaws 159 per cent. Diesel trucks and buses have also increased at an alarming rate of 200-300 per cent since 1980.

75. Tasmanian Station Checks On Air Quality

A new strategy aimed at helping Tasmania meet national air quality standards by 2008 has been released ahead of World Environment Day. Environment Minister Paula Wriedt launched the Air Quality Strategy at the new air quality monitoring station in New Town, which recently replaced the old facility at Prince of Wales Bay.

First released for public comment as a draft discussion paper last September, the

strategy will help improve Tasmania's air by addressing topics including domestic heating, backyard burning, monitoring, education, industrial regulation and cleaner production, motor vehicle emissions, planned burning, and environmental considerations in planning.

The strategy focuses on reducing fine (PM10) and ultra fine (PM2.5) particle pollution in critical areas such as Launceston and Hobart, where wood heaters contribute greatly to the problem during winter.

A number of initiatives in the strategy are aimed at better management of wood combustion from domestic sources and industrial plants, including a four-year, \$816,000 program to upgrade the Tasmanian Air Quality Monitoring System to provide more accurate information on air pollution and its causes.

A new monitoring station will begin operating in Devonport this year.

Ms Wriedt said regulations were also being developed to address smoke from domestic wood heaters and backyard burning, including stricter controls on second-hand wood heaters. Ms Wriedt said wood heater smoke has long been a problem in Launceston, where the air quality dropped below an acceptable level more than 50 times in 1997. That happened only 14 times last year -- much closer to the national target of less than five times per year.

"While there has been significant improvement on the air quality in Launceston, we still have a way to go and the Air Quality Strategy is an important step to achieving full compliance with the national standard," she said.

76. Study Links Cerebrovascular Problems To Air Pollution in Taipei

Air pollution may contribute to cerebrovascular problems such as strokes, according to a recent study published in the *European Heart Journal*. It suggested that as the concentration of specific pollutants increases in the air, the risk of people suffering from pathological changes in cerebral vessels also rises.

Those who are at higher risk of strokes are therefore advised to avoid areas with heavy air pollution or ideally move to areas where the air quality is better.

As the concentration of ozone and carbon monoxide grows, daily emergency admissions of patients with cerebrovascular problems to hospitals increase, said the study, which was undertaken by the Institute of Occupational Medicine and National Taiwan University's Institute of Public Health.

The finding was based on a cross-analysis of Taipei's air quality and the number of daily emergency admissions to the National Taiwan University Hospital through 1997 to 2002.

Chan Chang-chuan (詹長權), a professor at the institute, estimated that once ozone levels become poor, the number of patients with cerebrovascular ailments who are hospitalized tends to grow by 10 percent.

Chan said increasing evidence showed that air pollution not only causes allergy, asthma,

deterioration of pulmonary function and cancer, it may also lead to cardiovascular and cerebrovascular diseases. No one is immune, he added.

Air pollutants may cause inflammations all over the body and pathological changes in blood vessels once they are inhaled, he said.

Air pollutants also contribute to disorientation of the autonomic nervous system, which results in cardiovascular illness such as high blood pressure, Chan explained.

Additionally, there seems to be a regional difference in the relation between air pollution and cerebrovascular diseases.

According to research conducted at Kaohsiung Medical University, as the amount of suspended substances and the concentration of nitrogen dioxide in the air increase and so does the rate of strokes on days when the temperature exceeds 20°C. However, the risk only applies to Taipei City when it is cold.

Chan suggested people who have a higher risk of suffering from cardiovascular illness should stay away from air pollutants such as the exhaust fumes of cars and scooters.

Chan also mentioned that the air quality in suburban areas may not necessarily be better than that in urban ones because of geographical, climate and industrial differences.

77. Air Pollution Becomes Eyesore For Vietnam's Most Populous City

Air pollution is becoming an eyesore in HCM City, Vietnam's largest city, so much so that it is beginning to manifest itself as public health problems afflicting the most susceptible - children and poor residents.

Overpopulation and traffic jams cause air pollution in HCM City.

The Vietnamese Government, in association with international organizations has estimated that the cost of their improved air quality project is around US\$950,000, which will get underway after it gets the nod from the Prime Minister.

To begin to address the problem, the project, conducted over 30 months would review data bases from two Children Hospitals - No 1 and No 2, carried out by HCM City's Environmental Protection Agency (HEPA).

"By correlating the data," we can assess the occurrence of health problems for children in each locality. After that, we'll provide free health care check-ups or medical insurance to local children and needy residents," said Doctor Le Truong Giang, deputy director of the city's Health Department.

Based on the results of the research, we'll set policies on air quality control, increase public awareness in areas that need it and assess what kind of affect air pollution is having on the economy, he added.

HCM City is now home to an estimated 3 million motorbikes, 400,000 vehicles and thousands of factories that together emit a huge cloud of air pollution.

Le Van Khoa, HEPA deputy director said on the internationally recognized Air Quality Control Index (AQCI), air pollution in the city is at Level 3 (poor) at 178 points on a scale from 101-200. Khoa said city air quality is spiraling downward to AQCI Level 4 (bad) 201-300, meaning the time is now to determine the best course of action, starting with the initial data analysis project.

Nguyen Dinh Tuan, HEPA director, said that policies banning leaded gasoline, developing and extensive urban public transport network and traffic systems, and tightly controlling vehicle emissions are beginning to show results, reducing the air-lead count substantially. "However, these efforts are only cursory measures for improving air quality to acceptable levels. We need tighter air control policies and implementation," Tuan added.

He suggested that managers should release a master plan on urban traffic development covering 10-20 years, control industrial air pollution and apply new technology to cut emissions.

According to figures released from Children Hospital No 1, from 1996-2005, patients with air-quality related health conditions increased 2.5 fold, from 45,000 to 110,000 children. Of which, districts 8, 10, 11, Binh Chanh, Tan Binh, Hoc Mon and Cu Chi are the localities with the highest proportion of patients with illnesses caused by air quality.

78. Singapore Seeks Comments on Plan To Reduce GHG Emissions

On May 30th, Singapore's Ministry of Natural Resources and Environment opened a four-month consultation period on a national climate change strategy that includes measures to reduce greenhouse gas emissions by introducing emissions standards for businesses and stepping up energy labeling and environmental reporting schemes.

The ministry said in its consultation paper that further action was needed to meet the government's target of reducing Singapore's carbon intensity, or carbon dioxide emissions per dollar of gross domestic product, to 25 percent below 1990 levels over the next five years.

The ministry noted that the power sector is the "single largest primary source" of greenhouse gases in Singapore, accounting for about half of total carbon emissions, and that rising oil prices were encouraging investment in even more emissions-intensive fuels such as coal. In order to "balance the potential changes in fuel sources with environmental concerns," the ministry said it was planning to introduce carbon dioxide emission standards for all new power plants that would cap emissions at the levels generated by existing oil-fueled facilities.

It said the government would also "encourage" power suppliers and "large energy-using companies" to issue reports on their carbon dioxide emissions, as corporate reporting "encourages proper disclosure of a company's environmental performance and promotes transparency of corporate decisions where they may impact the environment."

Authorities also plan to promote energy audits in the private sector, provide tax incentives for energy-efficient technology, and establish minimum energy efficiency

standards and a labeling system for industrial equipment used in Singapore.

Recognizing vehicles as another major source of greenhouse gases, the ministry said it intended to extend incentives for hybrid and natural gas vehicles and may put a mandatory fuel economy labeling system in place for new cars.

The ministry said it would promote investment and research in clean energy sources, such as photovoltaic cells. It also noted that Singapore was "well equipped" to host projects under the Protocol's Clean Development Mechanism and that it could grow into a hub of the global carbon credit trade.

79. Japanese Sets Energy Strategy Targets

On May 30th, Japan's Ministry of Economy, Trade, and Industry released a new National Energy Strategy to outline plans and targets for improving energy efficiency, reducing dependence on oil, boosting nuclear power generation, and developing biofuels and other alternative energy sources. The strategy calls for lowering Japan's fossil fuel dependence to less than 40 percent of total energy consumption by 2030 from approximately 50 percent now. It outlines four measures to achieve this:

- Improve energy efficiency of industrial equipment and facilities by 30 percent through the "top-runner" program, which gives incentives to developers of energy-efficient technologies and then subsidizes the industry wide adoption of these technologies.
- Develop alternative fuel technologies to reduce the transportation sector's dependence on petroleum from the current 98 percent to 80 percent. For example, the plan calls for raising the bioethanol ratio in gasoline to 10 by 2020.
- Develop alternative energy technologies including solar power, biomass, hydropower, and geothermal.
- Boost Japan's nuclear power capacity from 28 percent of total electricity generation to 30 percent-40 percent, at the same time improving nuclear fuel technologies.

The strategy also calls for expanding Japan's investment in oil fields, strengthening ties with oil-rich countries, and offering environmental and energy-efficiency technologies to other countries to help alleviate environmental problems and reduce competition for energy resources.

80. Australian State Increases Environmental Penalties

On May 28th, Environment Minister Mark McGowan announced that Western Australia will increase the maximum penalty for serious environmental offenses fivefold to A\$5 million (US\$3.7 million). The state will also introduce a minimum penalty of A\$500,000 for serious offenses, known as tier-one offenses. The Northern Territory is the only other jurisdiction to mandate a minimum penalty for serious environmental offenses. Draft amendments to WA's Environmental Protection Act 1986 to introduce the changes will be released later this year. The amendments will also add a civil penalty regime for environmental offenses. "The standard of proof required for civil penalties is 'on the balance of probabilities' rather than 'beyond reasonable doubt'," the minister said. "This will mean that prosecutions can be brought against offenders without the need for

lengthy and expensive hearings which tie up the court system." WA will also make it mandatory for large greenhouse gas emitters to report their emissions to the state government.

81. Toyota Aims To Boost Fuel Efficiency, Cut Emissions, Increase Hybrids

Toyota Motor Corp. intends to increase research into the plug-in hybrid technology it once scoffed at and to double the number of conventional hybrid models it sells globally by early next decade. In addition to increasing to 14 the number of hybrid models it offers, Toyota said, it plans to offer more fuel-efficient gasoline engines and to manufacture its first engines that can burn mixtures of ethanol and gas.

The first ethanol engines from Toyota -- which lags behind GM in this area -- are to be introduced next year in Brazil, which has a nationwide system for distributing the fuel. Toyota also is considering ethanol engines for the United States, company President Katsuaki Watanabe said at a briefing in Tokyo.

Watanabe said Toyota intends to improve overall fuel economy through the new initiatives.

Hybrids, which combine conventional internal-combustion engines with electric motors for improved fuel efficiency, have won favor with environmentalists. But many hope to persuade automakers to develop plug-in versions, which use larger battery packs that the owner can recharge by connecting an onboard charger to a common wall socket. Such vehicles could travel 40 or more miles at highway speeds solely on electric power before the gasoline engine would cut in and they would revert to operating as conventional hybrids. Because the urban driver commutes less than 40 miles a day on average, much of a plug-in hybrid's life cycle would be spent in all-electric mode, thus reducing gasoline consumption and harmful emissions.

Although Watanabe stopped short of promising to bring a plug-in hybrid to market, he did say Toyota "is getting close" to achieving a 50 percent reduction in the development and production costs of conventional hybrid systems for its coming models. That could lead to a steep cut in the so-called hybrid premium, which adds \$3,000 to \$9,000 to the sticker price of models Toyota sells in the United States.

Japan's top auto maker dominates the market for hybrid cars and is keen to spread the system as the main alternative to today's internal combustion engines. It currently mounts the system on seven models and has targeted sales of 1 million hybrid cars annually soon after 2010.

Toyota said it was working on improving technology across the powertrain spectrum -- alternative-fuel engines, diesel engines, gasoline engines and electric cars -- but stressed that hybrid technology was crucial in boosting the performance of each system.

"We believe that hybrids will be the core technology in the 21st century," Masatami Takimoto, executive vice president in charge of technology development, told a news conference.

Toyota's pitch comes at a time when many of its domestic rivals including Honda Motor Co., Nissan Motor Co. and Toyota affiliate Fuji Heavy Industries Ltd. have been unveiling plans to step up their development of diesel engines -- touted as a proven powertrain with superior real-life mileage, torque and towing power. With gasoline prices rising and climate-change concerns growing in the public's mind, hybrids have grown in popularity in North America, and to a lesser extent Japan. But in Europe, they are losing the battle to diesels, which are cheaper to produce and get 20-30 percent better fuel economy than gasoline cars.

Earlier, DaimlerChrysler AG, one of the most vocal proponents of diesel engines, held a separate briefing just outside Tokyo to outline their merits in a country where diesel cars have a reputation of being noisy, dirty and slow. "I know there is a lot of prejudice against diesel in this country," DaimlerChrysler Japan President Hans Tempel said, urging reporters to test-drive its newest clean-diesel cars flown in from Britain for the occasion. "Today's diesels are fun to drive, not just on the highway or cross-country," he said. The Stuttgart-based auto maker is set to launch the Mercedes E320 CDI sedan in Japan this fall -- the country's first new diesel passenger car in four years.

Joachim Schommers, a director at DaimlerChrysler in charge of diesel engine development for passenger cars, acknowledged that one powertrain could not be the sole answer for reducing carbon dioxide emissions, but said hybrids were far more expensive to build and that diesels were a more viable short-term solution.

Toyota President Katsuaki Watanabe conceded that the price premium on hybrids was still too steep and that battery technology needed more work, but said the auto maker was close to addressing those issues. "The biggest task is to halve the cost for hybrids, and we're seeing light at the end of the tunnel."

Takimoto added that costs to develop advanced diesel technology to comply with tight emissions regulations to be introduced in a few years in the United States and Japan would add up, making such cars too expensive to justify the benefits. "The potential for diesel technology is high, but whether the market would accept the high prices is a separate issue," he said, adding that Toyota was not thinking now of offering diesel cars in Japan.

Toyota executives stressed the auto maker did not have all of its eggs in the hybrid basket, saying it would offer the most suitable powertrain depending on market needs.

82. Toyota Launches Completely Redesigned Estima Hybrid

Toyota has announced the nationwide sales launch in Japan of the completely redesigned Estima Hybrid minivan through "Toyota" ("Osaka Toyopet" in the Osaka area) and "Toyota Corolla" dealers.

The Estima Hybrid was initially launched in 2001 as the world's first hybrid minivan, demonstrating new potential for hybrid vehicles. It achieved very good fuel efficiency and lean exhaust emissions, and—through the world's first use of the E-Four (electric four-wheel-drive) system on a mass-production vehicle and an ECB (Electronically Controlled Brake) system—it provided exceptional maneuvering stability.

The new Estima Hybrid features the THS II⁴, optimized for use on a minivan. The THS II was designed to achieve even better environmental and driving performance based on the concept of Hybrid Synergy Drive, which seeks to realize high fuel efficiency, low emissions, outstanding driving performance and quiet operation. As a result, the new Estima Hybrid boasts one of the world's highest fuel efficiency performances in its class⁵, which is on par with a compact vehicle⁶, and clean exhaust emissions. Furthermore, its dynamic performance surpasses that of other vehicles in its class, with high responsiveness characteristic of a hybrid vehicle, smooth, powerful acceleration and extremely quiet operation.

In addition, the adoption as standard of the E-Four system with a high-output rear motor and the first use in a minivan of VDIM (Vehicle Dynamics Integrated Management), which integrates and optimally balances drive power, steering and braking, aims to take "fun to drive" to a higher level with greater maneuverability and cruising stability.

Vehicle Overview

Hybrid System Optimized for Minivan Use

i. THS II with Motor Speed Reduction Device

- The THS II features a front motor speed reduction device that amplifies the torque from the front motor, efficiently conveys drive power, achieves smooth and powerful acceleration and contributes to the reduced size of the motor.
- The variable voltage system of the power control unit uses a booster circuit to increase the voltage supplied from the battery to the motors from 245V to 650V, increasing the power output of the front and rear motors.
- In addition to the higher speed and output front motor, the engine output has been increased to boost overall system output, providing dynamic performance with power to spare, going beyond its class.
- The hybrid system battery features improved cooling effectiveness and higher output. Installing the battery within the center console allows for versatile seat arrangements, equivalent to those of a regular gasoline-engine Estima, and a comfortable interior space.

ii. Higher-output, Higher-efficiency 2.4-liter, Four-cylinder Engine with High-expansion Ratio Cycle

- The intake and exhaust systems, as well as engine control, were improved to increase engine speed and reduce friction for higher maximum output and better fuel efficiency.

iii. Performance of Main Components of E-Four and THS II with Motor Speed Reduction Device

THS II with motor speed reduction device
Engine

Engine model 2AZ-FXE

3. ⁴ Toyota Hybrid System II

4. ⁵ Compared to vehicles of similar engine displacement

5. ⁶ Under the 10-15 test cycle outlined by the Japanese Ministry of Land, Infrastructure and Transport

Displacement [cc]		2,362
Maximum output	[kW (PS) / rpm]	110 (150) / 6,000
Maximum torque	[N-m (kg-m)]	190 (19.4) / 4,000
Front motor		
Maximum output	[kW (PS)]	105 (143)
Maximum torque	[N-m (kg-m)]	270 (27.5)
Reduction gear		
Gear ratio		2,478
Hybrid system battery		
Type		Nickel-metal hydride
Rated voltage [V]		245 (DC)
E-Four Rear motor		
Maximum output	[kW (PS)]	50 (68)
Maximum torque	[N-m (kg-m)]	130 (13.3)
Overall system		
Maximum output ⁷	[kW (PS)]	140 (190)

Fuel Efficiency, Emissions, Driving Performance, Noise

iv. World's Highest Fuel Efficiency in its Class and Clean Exhaust Emissions

- With the aim of reducing CO₂ emissions, the new Estima Hybrid boasts a fuel efficiency of 20.0 km/l (in the 10-15 test cycle outlined by the Japanese Ministry of Land, Infrastructure and Transport—MLIT), equivalent to that of a compact-class vehicle. In addition, fuel efficiency is more than 20% greater than the level called for by the Japanese 2010 standards⁸, and both NO_x (nitrogen oxides) and NMHC (non-methane hydrocarbons) have been cut, achieving emissions levels 75% lower than the 2005 standards under the Ministry's Approval System for Low-emission Vehicles. These achievements mean the vehicle qualifies for incentives under the Japanese government's Green Taxation System.
- CO₂ emissions under the 10-15 Japanese test cycle are just 116 g/km (as measured by MLIT).
- An exhaust heat recovery system has been adopted to recover thermal energy from the exhaust and use it to heat engine coolant. This reduces engine warm-up time, which enables the engine to shut off earlier when idling, contributing to further improvements in actual fuel economy.

v. Environmental Considerations

- By using Toyota's original comprehensive environmental impact assessment system known as Eco-VAS (Eco-Vehicle Assessment System), environmental

6. ⁷ Output that the system can achieve using the engine power and motor power (the motor power is dependent on battery power) (based on TMC calculations)

7. ⁸ Specified by the Japanese Law Concerning the Rational Use of Energy.

targets were set in the development stage and a life cycle assessment was conducted to allow the reduction of CO₂ emissions throughout all stages of the vehicle's life from production and use to disposal.

- In addition to using materials with excellent recyclability, greater attention has been paid to the environment by, among other means, reducing VOC (volatile organic compounds) emissions and the use of substances of environmental concern such as lead, mercury, cadmium, hexavalent chromium and others.

vi. Driving Performance

- The combination of a high-output, high-efficiency 2.4-liter four-cylinder gasoline engine with two high-performance motors provides the superior responsiveness characteristic of a hybrid vehicle with smooth, powerful acceleration that exceeds that of a conventional front-wheel-drive gasoline engine vehicle in the same class.
- Acceleration during passing: 40-70km/h in 4.2 seconds (as measured by TMC)
- Acceleration from start: 0-100km/h in 10.8 seconds (as measured by TMC)

vii. Quiet Ride

- Road noise and engine noise have been reduced by the use of more sound-absorbing materials, the optimal distribution of vibration-controlling and sound-blocking materials and the use of noise-reducing windshield glass. Combined with the Estima Hybrid's ability to operate as an electric vehicle when starting up and operating at low speeds or with a light load on the powertrain, the result is a quiet ride, clearly distinct from that of a conventional gasoline-engine vehicle.

Increase in Driving Pleasure through Greater Maneuverability and Cruising Stability

- The E-Four (electric four-wheel-drive) system's high-output rear motor assists the engine and front motor as needed and continuously optimizes the allocation of power between the front and rear wheels, delivering levels of power and drivability under bad-weather and slippery conditions that are found only in a four-wheel-drive vehicle.
- The first VDIM used on minivans comes standard. It stabilizes the vehicle before it reaches a critical state by coordinating control and achieving an optimum balance among drive power, steering and braking, thus allowing higher preventive safety and dynamic capability.

83. Toyota's Cumulative Prius Sales Top 500,000 Units

Toyota Motor Corp. announced that cumulative sales of its Prius hybrid car hit 504,700 units worldwide at the end of April, passing the half-million milestone in 8- years. Japan's top auto maker, which became the world's first to offer a gasoline-electric hybrid in 1997, has been leading the industry in promoting the fuel-sipping cars, aiming to sell 1 million units annually in the years shortly after 2010.

Demand has surged, especially after Toyota rolled out the remodeled Prius sedan in 2003 powered by a second-generation hybrid system, which improved fuel economy and performance.

The auto maker has said it wants to eventually offer the powertrain across its entire line-up. Sales of all of its hybrid vehicles, including on the Lexus badge, passed 600,000 units at the end of March, Toyota said in a statement.

Honda Motor Co., its closest rival in the hybrid market, sold a cumulative 150,069 units by the end of April since it launched the two-seater Insight model in November 1999.

84. Japan Backs Coal To Liquids Projects In China to Stem Regional Pollution

A Japanese governmental energy technology institute will begin pilot coal liquefaction projects in China in July as part of a bilateral effort to reduce pollution from coal burning there. The New Energy and Industrial Technology Development Organization (NEDO), a subsidiary of Japan's Ministry of Economy, Trade, and Industry, has reportedly signed long-term contracts to start the experiments with Datang International Power Generation of Beijing and Xinwen Mining Group.

NEDO officials said the contracts are part of China's campaign to supply 7 percent to 10 percent of its energy by liquefying coal into gasoline, fuel oil, and kerosene. Currently, China's liquefaction capacity is close to zero.

Processing costs for liquefied coal are approximately \$25 to \$30 per barrel above the resource cost, making it about equal to the current price of crude oil (around \$70 per barrel).

China draws two-thirds of its energy from coal, and the resulting pollution affects not only the Chinese but also neighboring countries, including Japan and Korea, as well as the United States, according to reports.

SOUTH AMERICA

85. Colombian Capital Moves to Cut Pollution From Diesel Vehicles, Coal-Burning Plants

On April 21st, the mayor of Colombia's capital city announced several measures to restrict the use of older diesel vehicles and to limit emissions from coal-burning industries within the city. Bogota Mayor Lucho Garzón said that diesel trucks and buses more than 10 years old would be banned from driving in four smoggy districts of the city between 7 a.m. and 11 a.m., the hours in which pollution levels are highest. The mayor also announced that coal-burning industries identified as highly polluting will be prohibited from operating between 11 p.m. and 11 a.m. The measures will be in effect May 22 through Dec. 15. Their effectiveness is to be evaluated in November.

The new air pollution rules were announced as part of a new District Environmental Plan, developed in response to a request from the city's Controller General, which reviewed the city's environmental performance in a report presented March 14.

The report was highly critical in several respects, and charged that government institutions were not coordinating their work effectively and that DAMA in particular was

not fulfilling its responsibilities.

The primary proposals in the plan, which is still being reviewed, are improving the city's air quality measurement network, strengthening clean production agreements with industries, reducing water consumption, and decreasing the use of highly polluting vehicles. The Controller General has 90 days to review the plan, according to a DAMA spokeswoman.

86. Argentine Law Mandates Biofuels by 2010, Offers Tax Incentives

On April 19th, Argentina's Congress passed legislation that will require vehicle fuels to contain at least 5 percent biofuel starting in 2010. The rule also requires compressed natural gas, which is widely used in Argentina to fuel vehicles, to be mixed with biogas from solid waste plants.

The legislation provides for fines of up to the equivalent of the cost of 100,000 liters of gasoline for major violations such as fraud and fuel adulteration. The still-to-be determined implementing government agency will set the benchmark for assessing the fines. At gas stations, 100,000 liters of the most commonly used gasoline currently cost 189,000 pesos (\$62,000).

The legislation also gives the government authority to adjust the 5 percent requirement as appropriate and to set prices.

Argentina is the world's third largest exporter of soybeans, the oil of which will be used to make biofuels. The country is also a major beef producer, and animal fat can also be used to produce fuels. Other major crops in Argentina that may be used for the purpose include maize, sunflower, sugar cane, potatoes, beets, sorghum, and cotton.

The law also contains tax incentives to encourage the development of a biofuels industry. Tax provisions will allow accelerated assets depreciation for income tax purposes and faster value-added tax rebate disbursements for companies that produce biofuels.

87. Brazil Sets Criteria for Low-Sulfur Fuel Distribution

On April 12th, Brazil's National Environmental Council (CONAMA) issued a resolution setting criteria for determining which cities will receive low-sulfur diesel fuel, according to a CONAMA official. The un-numbered resolution states that the fuel should first go to cities with the most severe air pollution, and then to cities with over 200,000 inhabitants with the most pollution, said Cleidimar Valerio, a CONAMA technical analyst. Such criteria are needed because only 27 percent of all the diesel fuel available in Brazil is low-sulfur. Until now, the government has distributed the fuel only in major metropolitan regions without regard to air pollution levels.

88. Brazil Proposes National Emission Standards For New Industrial Facilities

Brazil's National Environmental Council (CONAMA) has drafted new industrial emissions standards that may be formally issued at a meeting scheduled for May 30-31, according to CONAMA officials. The draft resolution, dated May 5, includes standards for nitrogen

oxides, sulfur oxides, carbon monoxide, carbon dioxide, and particulate matter emitted by 13 categories of industries.

The regulation will cover new facilities, including oil, gas, sugar cane, and wood boilers; steel, lead, and aluminum manufacturers; gas-powered turbines; oil refineries; pulp and paper makers; and glass, cement, and fertilizer manufacturers. The resolution was drafted so that it could be extended to other industries later.

89. Colombia Considering Diesel Import Plan To Reduce Pollution

The Colombian government is studying a diesel import plan to reduce the pollution in its capital city, Bogotá, which has been rated as the third most polluted city in Latin America, the Environment Ministry said in a statement. Under the proposal, Colombia's state-owned oil and gas company Ecopetrol would import diesel to mix with products produced domestically. Ecopetrol is considering importing 25,600 barrels per day (bpd) of diesel whose sulfur levels are less than 30 parts per million (ppm), to meet a 2007 pollution target.

"That will cost around 55 million U.S. dollars a year, but it will have an immediate impact," Environment Minister Sandra Suarez, said in the statement. She said the Colombian refineries would begin to produce better quality diesel by 2010 at the latest, according to Environment Ministry plans.

At present Colombian diesel has 4,500 ppm of sulfur, by 2007 it should be 4,000, in 2008 3,000 and 500 by 2010, she said.

Colombia is not yet ready to tackle the international regulation on PM10s (inhalable particulates 10 microns in diameter or smaller). International PM10 norms demand PM10 levels in the air below 50 ppm, but in Colombia the typical level is 70. The country should be able to comply with the protocol by 2011, the environment minister said.

90. Brazil Environment Agency Ends Strike, But Fresh Walkout Possible

On June 5th, employees of Brazil's environmental enforcement agency ended a 33-day strike despite having little to show for a walkout that temporarily crippled most of its environmental monitoring activities. An employee association official said, however, that the strike may resume if conditions are not met.

The strike included nearly all of the 6,400 employees of the Institute for the Environment and Natural Resources (IBAMA) except for those at wild animal shelters, those who monitor for and control forest fires, and those who patrol against illegal activities inside Brazil's 38 national parks, all of which were closed to visitation.

IBAMA employees claimed that government has not honored an agreement which ended a similar one-month strike in October 2004. That strike ended after the government agreed to give employees a 38 percent salary hike to keep up with cost-of-living increases since 2002 as well as higher compensation for employees with advanced degrees and for those working in remote areas. The 2004 accord also agreed to give IBAMA employees who retired before 2002 pensions similar to those of employees who retired after 2002. IBAMA employees with university degrees who retired

after a 2002 career plan was instituted got pensions equal to their end-of-career salaries, which average 5,100 reais per month (\$2,550 per month). But IBAMA employees who retired before the career plan got average pensions of R\$1,600 per month.

91. Argentina's Lower House Passes Bill to Promote Use of Hydrogen

On May 31st, Argentina's Chamber of Deputies passed a bill that calls on the government to formulate and adopt a "National Hydrogen Program" and to set up a special fund to finance research and development of hydrogen as a fuel. The bill, which now goes to the Senate, also contemplates tax incentives for the production and use of hydrogen.

"Everybody knows that hydrogen will replace oil in the future, but nobody is making the necessary investments to help achieve that goal," Deputy Alfredo Fernandez, who co-authored the legislation, said. "This legislation seeks to promote hydrogen acquisition from renewable sources such as wind, solar, geothermal, tidal, and hydraulic energy," said the lawmaker, who is a vice president of the Energy and Fuels Committee of the lower house of Congress.

Fernandez said he expects the Senate to approve the legislation within a few weeks.

Argentina's southern province of Santa Cruz last December opened what it called the first plant in Latin America to use wind power to generate hydrogen from water.

92. Brazil Pulp Plant Turns 'Black Liquor' Into Electricity

Votorantim Celulose e Papel (VCP), one of Latin America's largest pulp and paper producers, announced in late May that it had spent US\$150 million over the past five years to recycle "black liquor" by using the residue to fuel a thermo-electric plant that has made VCP over 80 percent electricity self-sufficient. Before the thermo plant was built, VCP had used part of the black liquor, a byproduct of wood pulp processing, to fuel boilers used to "cook," or break down, wood pulp, and had disposed of the rest in industrial landfills in southeastern São Paulo state, where VCP is located. The thermo plant has also saved VCP 500,000 reais (US\$227,000) in electricity bills.

AFRICA

93. New Diesel Filters Set To Improve South Africa's Cape Air

Dirty diesel vehicles, the single biggest cause of Cape Town's air pollution, are on the way to becoming cleaner. South Africa has launched its first diesel vehicle fitted with a filter that takes out most of the particles that spew from diesel vehicle exhaust pipes.

The bad news is that at this stage only the expensive passenger diesel vehicles are fitted with these filters. Another negative is that vehicles with filters require extra-clean diesel fuel, which is not readily available in this country. But because European parent companies of vehicle manufacturers are increasingly producing only vehicles fitted with filters, it is a matter of time before South Africa will have to follow suit.

Sulfur in diesel was recently reduced from 3 000ppm to 500ppm

Stuart Rayner, chairperson of the National Association of Automobile Manufacturers of South Africa, said the "new generation" diesel vehicles needed to run on fuel which had less than 50 parts per million (PPM) of sulfur. Some fuel companies produce diesel with 50ppm, but only on a small scale because it is a niche market and it is not a government requirement," Rayner said.

"This is a concern for some of our parent companies in Europe, where everyone wants to drive diesel vehicles because of the fuel economy, but no one wants to have the 'dirty diesel' stigma.

"That's why most of the diesel vehicles are fitted with the filter that takes out the particulate matter. It is a very expensive piece of equipment, but in Europe there is no market for diesel vehicles without it. So our parent companies are not designing diesel vehicles without filters, because there is no demand for it in their major markets," he said.

Rayner said while only expensive passenger vehicles were fitted with filters in South Africa, in future all diesel vehicles would have them. Fuel specifications would have to be adjusted.

This comes as the City of Cape Town has launched a campaign to make people aware of the need to keep their diesel vehicles properly serviced to avoid emitting clouds of blue smoke from their tailpipes.

On the first day of the council's free testing of diesel vehicles on Thursday last week, 49 vehicles were tested, of which three failed.

Ivan Bromfield, who heads the air pollution section, said: "The biggest problem is poor maintenance. Since we've started checking diesel vehicles in 2000, we have tested 20,478 vehicles, of which 1,477 or 7.2 percent failed. We issued fines or summons to the owners of 431 vehicles."

94. Diesel Popularity Rising In South Africa

Growing popularity for diesel vehicles among consumers and manufacturers in South Africa has prompted oil company Shell to roll out its V-Power Diesel fuel across the country.

According to iAfrica.com, diesel is becoming more popular with South African motorists as motor manufacturers are producing increasingly high performance diesel engines; the new diesel vehicle market in South Africa has grown from 15 per cent in 2000 to nearly 21 per cent in 2005.

Shell's new fuel is designed to cater to new, cleaner diesel engines and meets the lowest sulfur specification in South Africa, 50 parts per million.

The fuel will be available in over 100 of the company's largest stations around the country.

95. Wind-Free Cape Town Hit By Heavy Pollution

Cape Town has experienced one of its worst air pollution days of the year so far, because the city was virtually wind-free. The situation was compounded by people burning tires in Goodwood to get to the metal within the rubber, said City health director Ivan Toms.

An inversion layer of heavier hot air trapped lighter cool air and pollution close to the earth. The layer broke at midday, freeing pollutants to form a puffy brown haze that masked Table Mountain for most of the afternoon. Athlone and its surrounds were barely visible from De Waal Drive.

The weather office at Cape Town International Airport measured the top of the inversion layer at 21 degrees Celsius. It broke when the sun baked the ground to the same temperature. The minimum temperature was seven degrees and the maximum 25.

"Usually a southeaster picks up in the afternoon and blows away the pollution. But today the wind was hardly measurable. It probably measured at below three knots," said Carlton Fillis, weather forecaster at Cape Town International.

Toms oversees the Air Pollution Control Section of the City. He could not estimate the level of pollution measured as statistics had not yet been uploaded, but said it seemed to be worse than usual. "Asthmatics and people with wheezes will probably suffer, but carbon monoxide levels are not high enough to cause stinging of the eyes or other ailments in healthy people," said Toms.

He said air pollution typically consisted of 48 percent diesel vehicle fumes, 17 percent petrol fumes and 13 percent industry related pollution.

MIDDLE EAST**96. Most Palestinians Believe Air-Pollution Serious Problem**

A field survey has shown that most of the Palestinian public believes that air-pollution is the most serious environmental problem. On the occasion of the World's Environment Day, Dr. Nabil Kukali, Director of the Palestinian Center for Public Opinion, Beit Sahour, Associate Professor at the Hebron University, prepared a survey study on The Environmental Condition in the Territories of the Palestinian Authority.

The field survey has shown that 74.8% of the Palestinian public believes that air-pollution is the most serious environmental problem, followed by the dangerous waste 62.1% and in the third position the accumulation of rubbish (solid municipal garbage) at 61.0 %, followed at 60.3% by the contamination of the food-stuff, then the potable water at 59.5% and in the sixth position the waste-water (sewage) at 58.2%. The health risks caused by the insecticides and the fertilizers scored 57.6% and in the ninth position comes the debility of the environmental awareness at 56.6%.

The field survey has revealed that the mismanagement of the environmental affairs is the main reason for the deterioration of the environment in the territories of the Palestinian Authority and stands in the first position with 84.7%, followed in the second

position by the debility of the organs and institutions charged with the environmental protection, and in the third position the debility of the governmental spending on the environment at 72.5%.

"It is established that the majority of the Palestinian people 76.7% are ready to participate in campaigns for environmental awareness, followed by the willingness to abide by the environmental laws and regulations at 73.0% and 63.3% expressed their readiness to work voluntarily with the environmental associations and institutions," the survey said.

"78.2% of the Palestinian public pointed out that they are, at various degrees, worried about the condition of the environment in the Palestinian territories. 85.7% of these live in Gaza and 72.2% in the West Bank," it added.

Only 8.9% of the Palestinian people, according to the survey, evaluated the performance of the various environmental societies and institutions operating in the Palestinian territories at "very good," while 37.1% gave them the rating "good."

The field survey revealed that 36.7% of the Palestinians feel that the condition of the environment in the area of their residences has "deteriorated". 45.6% of these respondents live in the West Bank and 23.5% in Gaza Strip.

The overwhelming majority of the Palestinians, namely 82.3%, consider the TV their favorite means for obtaining environmental information, followed by the broadcasting stations 71.8% in the second position, and in the third position the daily newspapers scoring 55.2%.

"A total of 76.5% of the Palestinians evaluated the importance of the environmental information obtained from the various media as "very important" (27.9%) and "important" (48.6%). From these 84.5% live in Gaza and 71.3% in the West Bank," the field survey showed.

Dr. Kukali proposed the following recommendations:

- Setting-up of a scheme for the rectification and upgrading of the present environmental condition.
- Design environmental awareness programs linked with a public informative program to make people become aware of the importance of the environmental preservation.
- Introduction of the "Environmental Education and Awareness" as a school and academic subject at schools and universities in order to create an environmental awareness with the young generation. This environmental education should be boosted by the establishment of clubs and teams for the protection of the nature at the schools and universities.
- Preservation of the water resources and underground water reservoirs, as well as the rain-water collecting valleys.
- Training of the cadres required for the administration of the forests, the sanctuaries and the conservation of natural beauty and wildlife.
- A forestation of uncultivated land, protection of natural parks and trust properties. Make the year 2010 the "Year of Green Palestine."
- Development of means, methods and priorities for periodical studies and

researches, exchange of experience and know-how on environmental issues, especially with the neighboring countries, and keep up contacts with international centers for environmental information as to be acquainted with their special programs for environment protection.

- Allocation of dumping grounds for garbage disposal at a reasonable distance from housing areas, installation of waste water and sewage treatment plants and recycling units for solid waste.
- Upgrading of the sewerage systems and the installation of new Additional sewers.
- Carry out a sound urban planning, in which special attention must be made for the requirements of the environment protection, such as population growth control, planning of traffic and allocation of green zones and public parks.
- Installation of air pollution control stations all over the West Bank and Gaza Strip.
- Performance of a strict annual technical test for all kinds of motor vehicles before licensing them, and rule out the air polluting vehicles from the traffic on the roads.
- Enact environmental laws and regulations obliging companies and factories to bear the costs of transporting and processing their wastes, and encourage them to carry out recycling processes.
- Control the use of insecticides and fertilizers.

GENERAL

97. Rising Seas to Accelerate in 21st Century Say Researchers

Scientists' reports of rising sea levels and changing migrations of wildlife point to potentially severe changes in the Earth's climate this century that could result in severe impacts on fish populations as well as on U.S. coastal areas of Alaska and the Atlantic and Gulf states, researchers told a U.S. Senate panel April 26.

Steven Murawski, the U.S. National Oceanic and Atmospheric Administration's director for scientific programs, told members of the Senate Commerce Subcommittee on Global Climate Change and Impacts that climate change is a major "long-term influence" on marine ecosystems, including the world's fisheries. Increasing global temperatures are triggering rising sea surface temperatures, raising sea levels, contributing to the reduction of sea ice, and resulting in changes in the salinity of freshwater, he said.

The Senate panel held the hearing to focus on the projected and past effects of climate change on marine and terrestrial systems.

A rise in sea level is projected to accelerate during the 21st century, Murawski said, which would affect coastal zones of the United States and other nations and lead to more frequent and deeper flooding of wetlands and shorelines; increased storm surges; accelerated retreat and erosion of coastal areas; and the intrusion of salt water into coastal freshwater aquifers.

Such changes could pose an enormous threat to U.S. coastal areas, given that over half of the nation's population lives within 100 miles of the coasts, a proportion that is

increasing dramatically, Murawski said

Murawski said some researchers are reporting a decline in plankton from the oceans, which form the base of the ocean's food chain. Such declines over different periods of the Earth's history have been associated with similar reductions in fish population, he said. "Five-and-a-half million years ago we had a similar rapid loss of fish with a rapid loss of plankton," according to various research, Murawski said.

To better monitor changes in the oceans, climate, and related ecosystems, NOAA operates measurement stations throughout the world and is gradually expanding its efforts into a proposed Integrated Ocean Observing System, Murawski said. That system, "which is about 50 percent built-out," Murawski said, will better coordinate monitoring data sent from global satellites and sea buoys and improve tracking of everything from changes in regional sea temperatures to migrations of sea life.

Sen. Frank Lautenberg said that given the amount of research suggesting human activities are at least partly responsible for global warming, Congress should consider taking action now to enact mandatory curbs on greenhouse gas emissions.

"If we know human activity is a factor, we should get on with" addressing human impacts, he said. "Wouldn't it be a good idea to get going on those things?" he asked the researchers.

Thomas Armstrong, program coordinator for the U.S. Geological Survey's Earth Surface Dynamics Program, said it is clear that nature and human activity "both have a large role" in the changes now underway in Earth's climate. He said the scientific community largely agrees that human activity over the past 100 years or so has resulted in increased greenhouse gas concentrations in the atmosphere and that those increases have contributed to higher global temperatures and broad changes in the world's climate.

Also, while the Earth has experienced several "episodes" of global warming over the last 800,000 years or so, ice records indicate that the current concentrations of carbon dioxide--the key greenhouse gas linked to human activities, largely from the burning of fossil fuels--are "unprecedented during human existence," according to Armstrong's written testimony.

But when pressed by Lautenberg on whether the climate changes call for "urgent" action by policymakers, the scientist said the role of researchers is to continue to refine their measurements of various climate change indicators, not to urge policy.

"As a scientist, it's not my role to define the urgency" of the climate challenge, Armstrong said. He added that understanding the degree to which climate change is being caused by natural forces versus human activities is important to researchers because the degree of blame for each cause could have immense impacts on future mitigation efforts.

"We need to understand [which causes] are natural changes versus man-made; if we do not understand that system, there may be problems that occur" should policymakers start launching various "mitigation" efforts designed to cut greenhouse gas emissions, as these actions may have unforeseen consequences, Armstrong said.

Sen. Ted Stevens (R-Alaska) said he is not convinced the increases in temperature

recorded over the last century point to continued global warming over the next century, given that scientists have reported similar spikes over the Earth's history which were followed by sharply declining temperatures. "We could be ... at the top of the cycle and going down," Stevens said.

98. Talks Begin On Post-2012 Climate Framework

Parties to the UN climate change convention and its Kyoto protocol started a fortnight of talks on climate change in Bonn, Germany. The session included the first UN-brokered discussions on developing a framework for climate change policies after the Kyoto protocol's caps on industrialized country emissions expire in 2012.

The wide-ranging talks ended without formal conclusion. In a statement the UN said there had been a "strong consensus on the need to reduce emissions" and support for the use of economic incentives and involvement of the private sector in climate protection.

During the discussions the Austrian delegation, speaking for the EU, highlighted Europe's target of limiting global temperature rise to 2 degrees Celsius, and called for a focus on how developing countries can achieve development goals while keeping down carbon emissions.

A facilitators' report on the workshop will be circulated in August ahead of a second session in November. Two further workshops will be held in 2007.

A second stream of talks on future action is now underway in an ad hoc working group of parties to the Kyoto protocol. This is focusing on measures to be taken by industrialized countries after 2012.

Alongside the ad hoc working group, routine discussions are continuing throughout the two weeks in committees on implementation and on scientific and technical matters.

99. Thawing Permafrost Could Unleash Tons of Carbon

Ancient roots and bones locked in long-frozen soil in Siberia are starting to thaw, and have the potential to unleash billions of tons of carbon and accelerate global warming, scientists have announced. This vast carbon reservoir, contained in permafrost soil in northeastern Siberia, contains about 75 times more carbon than the amount released into the atmosphere each year by the burning of fossil fuels, the researchers said in a statement.

Siberia isn't the only place on Earth with massive lodes of permafrost -- parts of Alaska, Canada and northern Europe have them too. The Siberian area is possibly the world's largest, covering nearly 400,000 square miles (1.036 million sq km), with an average depth of 82 feet (25 meters), and probably holds about 500 billion metric tons of carbon. This is twice what scientists previously believed was there.

Cars, power plants and other fossil fuel burners release at least 6 billion metric tons of carbon dioxide into the atmosphere annually, contributing to global warming, the scientists said.

As the Siberian permafrost thaws, it will release the carbon contained in old grass roots and buried animal bones into the atmosphere, in what could be an unstoppable contributor to global climate change, according to the researchers.

Earlier climate models may have failed to account for this possible component of global warming. If all Siberian permafrost thawed and released its carbon in the form of heat-trapping carbon dioxide, it could nearly double the 730 billion metric tons of carbon now in the atmosphere, the scientists said.

100. Targeting Air Pollution, Poor Nations Aid Climate

China's car efficiency standards are tougher than those of many industrial states -- a somewhat surprising fact that reveals how efforts by developing nations to limit pollution or conserve energy may also help brake global warming.

Many poorer nations argue that, for them, development must take precedence over saving the planet. But they also want to tackle pollution that is choking their densely populated cities, and are keen to curb energy waste as oil prices soar. The measures developing countries are taking to cut down fossil fuel use may limit a surge in emissions of heat-trapping gases from power plants, factories and cars.

"Automobile efficiency standards are more stringent in China than in many industrialized countries," said Richard Kinley, officer-in-charge of the United Nations Climate Secretariat in Bonn. "That is one example of action by developing countries, driven by national development reasons, which also has climate benefits".

How to enlist nations such as China or India in the fight against climate change is a big question hampering UN efforts to extend the Kyoto Protocol, which binds almost 40 industrial nations to cut emissions of heat-trapping gases until 2012.

Poor countries say they cannot accept Kyoto-style caps on emissions of greenhouse gases, mainly from burning fossil fuels, in any extension of the pact from 2013. They say they need to burn more energy to drive economic growth. "Removal of poverty is the greater immediate imperative" said Prodipto Ghosh, secretary of India's Environment Ministry.

But the need to save money and improve standards of living in choked cities has forced developing nations to take action.

China, the world's most populous nation with 1.3 billion people and a fast-growing economy, faces pressure to curb air pollution as it builds more power plants, adding 500 megawatts of capacity per week, mostly using high-polluting coal.

"Improved air quality is the main reason for investments in technologies to cut energy waste" in China, India and Brazil, said Mark Radka, head of the Paris-based energy branch of the UN Environment Program (UNEP). "Reducing greenhouse gas emissions is a bonus but not a strong motivation," he said.

Last month, the World Bank said pollution was growing rapidly in India and China

because of inefficient investment in energy.

Brazil generates almost all its electricity from hydropower and is building 40 new hydropower stations. Banks in India are seeking ways to lend to businesses to encourage them to cut energy waste.

A recent UN study showed that countries from Nicaragua to Mongolia had greater than expected potential for windmills. China says its use of renewable energy in 2000 amounted to the equivalent of burning 33 million tons of coal.

As part of Kyoto, rich nations can invest in energy projects in developing countries -- such as a scheme to generate power from rotting trash in Brazil or a wind power project in Morocco -- and claim credits to help meet the Kyoto goals back home.

So far, about 200 projects have been approved with another 760 in the pipeline under the Clean Development Mechanism (CDM). Some estimates say the scheme could channel US\$100 billion in investments to developing nations.

"Win-win market mechanisms like CDM should be further explored," China wrote in a report to the UN climate talks in Bonn last month.

Kyoto obliges industrial states to cut emissions by at least 5.2 percent below 1990 levels by 2008-12. Countries began preliminary talks on how to extend the deal beyond 2012 in Bonn.

Developing nations say rich states have to take the lead in making cuts because of their unfettered use of fossil fuels since the Industrial Revolution in the 18th century. But nations bound by Kyoto -- mainly the European Union, Japan and Canada -- account for only about a third of world emissions of greenhouse gases and say other countries must join in if the UN-led scheme is to make a difference.

President George W. Bush pulled the United States out of Kyoto in 2001, arguing that it wrongly excluded poor nations and that emissions caps would harm the US economy. The United States is the world's biggest emitter of greenhouse gases, at 24.4 percent of the world's total and an average 20.1 tons for each citizen. Washington prefers big investments in new technology to Kyoto's caps.

China is second with 12.1 percent of the world total. Per capita emissions are just 2.7 tons, but growing fast. India's 1.1 billion population accounts for 4.7 percent of the world total and 1.2 tons per capita.

101. Earth Hottest It's Been in Perhaps 2000 Years

The National Academy of Sciences, after reconstructing global average surface temperatures for the past two millennia, said the data are "additional supporting evidence ... that human activities are responsible for much of the recent warming." Other new research showed that global warming produced about half of the extra hurricane-fueled warmth in the North Atlantic in 2005, and natural cycles were a minor factor, according to Kevin Trenberth and Dennis Shea of the National Center for Atmospheric Research, a research lab sponsored by the National Science Foundation and

universities.

The academy had been asked to report to Congress on how researchers drew conclusions about the Earth's climate going back thousands of years, before data was available from modern scientific instruments. The academy convened a panel of 12 climate experts, chaired by Gerald North, a geosciences professor at Texas A&M University, to look at the "proxy" evidence before then, such as tree rings, corals, marine and lake sediments, ice cores, boreholes and glaciers.

Combining that information gave the panel "a high level of confidence that the last few decades of the 20th century were warmer than any comparable period in the last 400 years," the panel wrote. It said the "recent warmth is unprecedented for at least the last 400 years and potentially the last several millennia," though it was relatively warm around the year 1000 followed by a "Little Ice Age" from about 1500 to 1850.

Their conclusions were meant to address, and they lent credibility to, a well-known graphic among climate researchers _ a "hockey-stick" chart that climate scientists Michael Mann, Raymond Bradley and Malcolm Hughes created in the late 1990s to show the Northern Hemisphere was the warmest it has been in 2,000 years.

It had compared the sharp curve of the hockey blade to the recent uptick in temperatures _ a 1 degree rise in global average surface temperatures in the Northern Hemisphere during the 20th century _ and the stick's long shaft to centuries of previous climate stability.

That research is "likely" true and is supported by more recent data, said John "Mike" Wallace, an atmospheric sciences professor at the University of Washington and a panel member.

Rep. Sherwood Boehlert, R-N.Y., chairman of the House Science Committee, had asked the academy for the report last year after the House Energy and Commerce Committee chairman, Rep. Joe Barton, R- Texas, launched an investigation of the three climate scientists.

The Bush administration has maintained that the threat from global warming is not severe enough to warrant new pollution controls that the White House says would have cost 5 million Americans their jobs.

"This report shows the value of Congress handling scientific disputes by asking scientists to give us guidance," Boehlert said. "There is nothing in this report that should raise any doubts about the broad scientific consensus on global climate change."

The academy panel said it had less confidence in the evidence of temperatures before 1600. But it considered the evidence reliable enough to conclude there were sharp spikes in carbon dioxide and methane, the two major "greenhouse" gases blamed for trapping heat in the atmosphere, beginning in the 20th century, after remaining fairly level for 12,000 years.

Between 1 A.D. and 1850, volcanic eruptions and solar fluctuations had the biggest effects on climate. But those temperature changes "were much less pronounced than the warming due to greenhouse gas" levels by pollution since the mid-19th century, the

panel said.

The National Academy of Sciences is a private organization chartered by Congress to advise the government of scientific matters.